



**HAZARD COMMUNICATION
AND
SDS
MANUAL**

FEBRUARY 2022

PART 1

**HAZARD
COMMUNICATION
PROGRAM**

John Plott Co., Inc.

HAZARD COMMUNICATION PROGRAM

The Hazard Communication Program has been developed by the company in accordance with OSHA Regulations 1926.21 and 1926.59 and 1910.1200. Employees will be trained under the guidelines of the program.

Any questions or comments regarding the Hazard Communication Program should be directed to the supervisor and/or Management.

Chemical Inventory

Hazardous chemicals are inventoried by the office on a regular basis. Any new chemicals brought to the work site by the Company will be included on the hazardous chemical inventory list.

Container Labeling

All chemicals on-site are used from an original container or a temporary container, only in small quantities for immediate use. Any chemical left after work is completed must be returned to the original container, if it is not returned to the original container it must be labeled. No unmarked containers of any size are to be left in the work area unattended.

The Company will rely on the manufacturer's applied labels whenever possible, and will ensure that these labels are not removed or if damaged are replaced. Each container will be labeled with the identity of the hazardous chemical and any appropriate hazard warnings.

Safety Data Sheets (SDS)

The Company will have an up-to-date copy of the safety data sheets (SDS). Each SDS will be in English and shall contain:

- a) The name of the chemical.
- b) The physical hazards.
- c) The health hazards.
- d) The primary route of entry.
- e) The OSHA permissible exposure limit.
- f) Any general precautions for safe handling.
- g) The date of preparation or the date of the last change to the SDS.
- h) The name, address and telephone number of the chemical manufacturer.

SDS are kept at the office and are accessible to all employees. Job specific SDS will be readily available to the employees working on specific job sites. If an employee cannot locate an SDS sheet contact the office.

Supervisors are responsible for having the appropriate up-to-date SDS available to employees.

Employee Training in Haz Com

General

Employees are trained to work safely with hazardous chemicals. Employee training will include:

- a) Methods that may be used to detect a release of hazardous chemicals in the workplace.
- b) Physical and health hazards associated with chemicals.
- c) Protective measure to be taken.
- d) Safe work practices, emergency response and use of personnel protective equipment.
- e) Information on the Hazardous Communication Standard.
- f) Labeling and warning systems.
- g) The employees Right to Know.
- h) An understanding of the Safety Data Sheet (SDS).
- i) Global Harmonization
- j) Pictograms

On-Site Training

Supervisors are responsible for site specific hazardous chemical training. Training includes:

- a) Types of chemicals on the job site.
- b) Hazards created by chemicals on the job site.
- c) First aid and emergency procedures, when exposed to specific chemicals.
- d) Using appropriate personal protective equipment for hazardous chemical handling.

Hazards of Non - Routine Tasks

Supervisors inform employees of any special tasks that may arise which would involve possible exposure to hazardous chemicals.

Review of safe work procedures and use of required PPE is conducted prior to the start of such tasks. Where necessary, areas are posted to indicate the nature of the hazard involved.

Multi - Employer Workplaces

Other on - site employers are required to adhere to the provisions of the Hazard Communication Standard.

The Company will provide to other employers on multi - employer job sites, copies of SDS on hazardous chemicals that are used by the Company. Those employers will be responsible for providing their employees with the information necessary to prevent exposure to the Company's hazardous chemicals.

Employers working on the job site with the Company will provide the Company with SDS on each hazardous chemical that they use on the job site. The Company is responsible for providing its employees with the information necessary to prevent exposure to the other employer's hazardous chemicals.

PART 2

SDS

SAFETY DATA SHEET (SDS)

A Safety Data Sheet (SDS) is a fact sheet for a chemical which poses a physical or health hazard at your work site. SDS must be in English and contain the following information:

- Identity of the chemical (as used on the label)
- Physical hazards
- Health hazards
- Primary routes of entry
- Whether it is a carcinogen
- Precautions for safe handling and use
- Emergency and first aid procedures
- Date of preparation of last revision
- Name, address, and telephone number of manufacturer, importer, or other responsible party

If relevant information in one of the categories was unavailable at the time of preparation, then the SDS must indicate that no information was found. Blank spaces are not permitted. If you find a blank space on a SDS, contact your supervisor.

Your company must have a SDS for each hazardous chemical it uses. Copies must be made readily available at your work sites. When you travel between work sites during the day, the SDS may be kept at a central location.

If there are workers from other companies at your work site, they must be made aware of the chemicals you use and the location of your SDS. They must do the same for you. All SDS can be at a central location and managed by the general contractor.

Labels and Labeling Requirements

Containers of hazardous chemicals must be labeled in English. Information may also be presented in other languages for non-English speaking employees, but English is required. It is required that labels contain the following information:

- Identity of the hazardous chemical
- Appropriate hazard warnings
- Name and address of the chemical manufacturer, importer, or other responsible party
- Pictograms

On individual stationary containers you may use signs, placards, batch tickets, or printed operating procedures in place of labels.

Where the chemical is intended only for the use of the employee marking the transfer during his or her work shift, the company is not required to label portable transfer vessels. If, however, that vessel or container is transferred for use on another work shift, it has to carry a label.

How to Read an SDS

An SDS must precede or accompany the initial shipment but does not have to be physically attached to it. If you receive subsequent shipments of the same item, a new SDS is not required to be sent to you unless the chemical make-up of the product changes.

To ensure proper record keeping and maintenance of SDS, you should:

- Make sure any employee who purchases supplies for your company is on the lookout for SDS.
- Include a request for a SDS and a label that meets the requirements of the Hazard Communications Standard on all purchase orders.
- Ask for a SDS for any material bearing a label indicating it is a hazard unless a SDS is already on file.
- To deal with the multi-employer situation, you may request information from other contractors on the site about hazardous substances and chemicals known to be at the site.

While SDS will appear in many different formats, they will contain essentially the same information. The information on a SDS is extremely technical in nature and should be used as a reference or as a backup to information on a label. A SDS tracking OSHA Form 174 would offer the following information:

SECTION 1 – IDENTIFICATION

1. Chemical name, as it appears on the label.
2. Manufacturer's name and address.
3. Emergency telephone number in the event of an emergency involving the substance.
4. Date prepared and the signature of the preparer.

SECTION II – HAZARDOUS INGREDIENTS / IDENTITY INFORMATION

1. Hazardous Components: Contains the specific chemical identity, its formula, and any common names it is known by.
2. OSHA Permissible Exposure Limits (PEL): PEL is the permissible maximum amount of the chemical a person may be safely exposed to without harm.
3. American Conference of Governmental Industrial Hygienists Threshold Limit Value (TLV): TLV is the concentration of a chemical in the air that can be breathed for five consecutive eight-hour workdays by most persons without harmful effects. It is generally expressed in parts per million.
4. Other limits recommended: Any other recommended limitation on the use of the chemical by any agency, scientific group, or organization should be included.

SECTION III – PHYSICAL / CHEMICAL CHARACTERISTICS

1. Boiling Point: The temperature at which a liquid boils.
2. Vapor Pressure (mm Hg): Vapor pressure measures a liquid's tendency to evaporate. The higher the pressure, the faster it will evaporate.
3. Vapor Density: Indicates the weight of an equal volume of air. If a vapor is heavier than air (vapor density greater than 1), it will sink to the ground. If it is lighter than air (vapor density less than 1), it will rise.
4. Solubility in Water: Indicates whether the chemical can mix with water in any ratio without separating.
5. Appearance and Odor: A brief description of the chemical's color and smell.
6. Specific Gravity: Ratio of the weight of the material to the weight of an equal volume of water. The specific gravity determines whether the material floats or sinks in water. Specific gravity values less than or equal to 1 indicate that water should not be used to extinguish a fire involving the substance unless the water comes from automatic sprinklers.
7. Melting Point: Indicates the temperature at which a solid changes to a liquid.
8. Evaporation Point (Butyl Acetate 1): Indicates the temperature at which a substance evaporates.

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

1. Flash Point: Indicates the lowest temperature at which a liquid gives off enough vapor to ignite in air when exposed to a flame.
2. Flammable Limits: Indicates the range of vapor concentrations which will explode when an ignition source is present.
3. Extinguishing Media: Materials suitable for putting out a fire involving the identified chemical. These fire fighting agents are: water fog, foam, alcohol foam, carbon dioxide, and dry chemical. The four classes of fire are:
 - Class A – paper, wood, straw, cloth
 - Class B – flammable and combustible liquids
 - Class C – fire involving energized electrical equipment
 - Class D – combustible metals
4. Special Fire Fighting Procedures: Indicates the chemical's special characteristics when it comes in contact with fire.
5. Unusual Fire and Explosion Hazards: Indicates any special types of hazards requiring attention. The description will indicate whether the chemical is difficult to extinguish, will re-ignite spontaneously, and how it reacts with water and other extinguishing agents.

SECTION V – REACTIVITY DATA

1. **Stability:** Indicates conditions that contribute to the stability or instability of a chemical when it is exposed to heat, pressure, or excessive shock during storage, use, misuse, or transport. Look to this section to identify specific conditions to be avoided.
2. **Incompatibility (materials to avoid):** Indicates various materials or conditions you must keep the chemical away from to avoid adverse reactions.
3. **Hazardous Decomposition or By-products:** Indicates gases or vapors which are released when the chemical is burned or decomposes.
4. **Hazardous Polymerization:** Polymerization is a chemical reaction when molecules of the chemical combine with molecules of another chemical to form a larger, different material. This reaction is accompanied by the release of large amounts of energy which can produce fire or other hazards. Polymerization can occur when the chemical comes in contact with certain plastics, rubber, or coatings.

SECTION VI – HEALTH HAZARD DATA

1. **Route(s) of Entry:** A chemical may enter the body either through inhalation, by contact with the skin or eyes, or by being swallowed.
2. **Health Hazards:** Indicates any long-term (chronic) or short-term (acute) effects on the human body.
3. **Carcinogenetic:** Indicates whether the chemical causes cancer.
4. **Signs and Symptoms of Exposure:** Indicates and describes the effects of exposure to the chemical and the most common resulting sensations.
5. **Medical Conditions Severely Aggravated by Exposure:** Indicates how the chemical will affect any pre-existing medical conditions.
6. **Emergency and First Aid Procedures:** Indicates first aid procedures to use in order to reduce the hazardous effects of the chemical. The techniques covered will deal only with inhalation of the chemical, and skin or eye contact with it.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING

1. **Steps to be taken in case Material is Released or Spilled:** Indicates precautions such as avoid breathing gases and vapors; avoid contact with liquids. This section also gives recommended techniques to use in controlling land or water spills.
2. **Waste Disposal Methods:** Indicates proper disposal of the chemical and contaminated materials.
3. **Precautions to Take in Handling and Storage:** Indicates safe handling and storage procedures to be taken to avoid hazardous reactions.
4. **Other Precautions:** Indicates special precautions to use in handling or disposing of the chemical.

SECTION VIII – CONTROL MEASURES

1. The measures indicates in this section should be taken whenever the chemical is handled or disposed of during normal use. They are not measures to be used solely during emergencies or accidental spills.
2. **Respiratory Protection:** If needed, specifies type of respirators required by OSHA when the chemical is used, even as a precautionary measure in non-emergency situations.
3. **Ventilation:** Indicates ventilating systems needed to prevent over-exposure to the chemical. "Local exhaust" ventilation is a system with high speed and low volume. "Mechanical (general) ventilation" is the regular ventilation system used to heat / cool an enclosed area in a permanent facility.
4. **Protective Gloves:** Indicates whether or not gloves must be worn when the chemical is handled. If gloves are required for skin protection, the type of material they should be made of will be indicated.
5. **Eye Protection:** Indicates appropriate eye protection, such as face shields, safety goggles or glasses.
6. **Other Protective Clothing:** Indicates protective equipment and the materials they should be made of to effectively prevent skin contact.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

SECTION X – REACTIVITY AND STABILITY

SECTION XI – TOXICOLOGICAL INFORMATION

SECTION XII – ECOLOGICAL INFORMATION

SECTION XIII – DISPOSAL CONSIDERATIONS

SECTION XIV – TRANSPORT INFORMATION










SECTION XV – REGULATORY INFORMATION

SECTION XVI – OTHER INFORMATION

Hazard Communication Standard Pictogram

The Hazard Communication Standard (HCS) requires pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

<p>Health Hazard</p>  <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	<p>Flame</p>  <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	<p>Exclamation Mark</p>  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
<p>Gas Cylinder</p>  <ul style="list-style-type: none"> • Gases Under Pressure 	<p>Corrosion</p>  <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	<p>Exploding Bomb</p>  <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
<p>Flame Over Circle</p>  <ul style="list-style-type: none"> • Oxidizers 	<p>Environment (Non-Mandatory)</p>  <ul style="list-style-type: none"> • Aquatic Toxicity 	<p>Skull and Crossbones</p>  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

For more information:



U.S. Department of Labor



OSHA[®]

Occupational Safety and Health Administration

www.osha.gov (800) 321-OSHA (6742)

PART 3

INDEXED SDS

SDS
MANUAL

INDEX OF SDS SHEETS

Updated 2/22/2022

A. CONCRETE MATERIALS, ASPHALTS AND AGGREGATES

1. Asphalt
2. CMU Block
3. Concrete Mix
4. Concrete Ready Mix
5. Concrete Structural Units
6. Hydraulic Cement
7. Limestone (Vulcan Quarry)
8. Mortar Mix
9. Non Shrink Grout
10. Sandstone (Vulcan Quarry)

B. FUELS, OILS AND GREASES

1. 2-Stroke Mixing Oil
2. Diesel Fuel (On & Off Road)
3. Gasoline
4. Gear Oil
5. Grease
6. Hydraulic Oil
7. Motor Oil
8. Propane
9. Diesel Exhaust Fluid (DEF)

C. GENERAL JOBSITE SUPPLIES

1. Battery Acid
2. Brake Fluid
3. Calibration Kit for Air Monitor
4. Chlorine (Granular)
5. Coal Tar Epoxy
6. Epoxy (Anchoring)
7. Fertilizer
8. Galvanize Coating
9. Glue (PVC)
10. Injectaflex Resin (For Active Water Leaks)
11. Marking Paint
12. Pipe Lube

13. Polyethylene Vapor Barrier
14. Purple Primer
15. Rock Splitting Grout
16. Thread Paste
17. WD-40
18. Anti-Seize

D. OFFICE SUPPLIES

1. Air Duster
2. Clorox Cleaner
3. Dial Liquid Soap
4. Glass Plus
5. Lysol Disinfectant Spray
6. Lysol Wipes
7. Pledge
8. Toner (Kyocera)

E. PIPE MATERIALS

1. Aluminized Steel Drain Pipe
2. Asphalt Coated Steel Drain Pipe
3. Ductile Iron Pipe
4. HDPE Pipe
5. PVC Pipe

F. SHOP & MECHANIC SUPPLIES

1. Antifreeze
2. 4-N-1
3. Battery Saver
4. Big Blast
5. Brake Away
6. Cherry Blast Soap
7. Clear Seal
8. Ice Eraser
9. Knock Out
10. Mechanics Helper
11. Panel Brite
12. Peak Performance
13. Safety Kleen
14. Slither

15. Solar Shield
16. White Lube

G. WELDING & CUTTING MATERIALS

1. Abrasive Blades & Wheels
2. Compressed Acetylene
3. Compressed Oxygen
4. Welding Rod (6010)
5. Welding Rod (308L-16)
6. Welding Rod (7018)

***A. CONCRETE MATERIALS,
ASPHALTS AND AGGREGATES***

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1.) ASPHALT

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BASE ASPHALT PAVEMENT MIX

SAFETY DATA SHEET

OSHA HCS (29 CFR 1910.1200)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product identifier	Base Asphalt Pavement Mix
Chemical Name	Mixture
CAS No.	Mixture
Trade Name(s)	Petroleum Asphalt / Road Paving Asphalt / Hot Mix Asphalt / Blacktop / Bitumen / Warm Mix Asphalt
Relevant identified uses of the substance or mixture and uses advised against	
Identified Use(s)	Road Paving Asphalt
Uses Advised Against	None.
Details of the supplier of the safety data sheet	
Company Identification	Midsouth Paving, Inc. 500 Riverhills Park, Suite 590 Birmingham, AL 35242
Telephone	(205) 995-5900
Emergency telephone number	
Emergency Phone No.	Not classified as dangerous for supply/use. Please contact the supplier above during normal business hours.

SECTION 2: HAZARDS IDENTIFICATION

Classification of the substance or mixture	
OSHA HCS (29 CFR 1910.1200) / GHS Classification	Not classified as dangerous for supply/use.
Label elements	
Hazard Symbol	None
Signal Word(s)	None
Hazard Statement(s)	None
Precautionary Statement(s)	None
Other hazards	Contact with hot ASPHALT PAVING MATERIALS causes skinburns. May cause eye irritation. Fumes may cause upper respiratory irritation (nose & throat). Skin contact may increase susceptibility to sunburn. Poisonous hydrogen sulfide gas can accumulate in the head-space of containers of certain asphalt products. Mechanical disruption (e.g., milling, cutting, chipping) of cured asphalt pavement may release crystalline silica dust from the aggregate.
Additional Information	Avoid breathing dust/fume/gas/mist/vapors/spray. As necessary, Wear protective gloves/protective clothing/eye protection/face protection. Wash hands and exposed skin after use.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Composition/information on ingredients	% wt.	CAS No.
Aggregate (crushed stone, sand, gravel, slag)	70 - 97	Various
Petroleum asphalt / bitumen [^]	3 - 7	8052-42-4
Reclaimed Asphalt Pavement (RAP)	0 - 25	Mixture
Reclaimed Asphalt Shingles (RAS)	0 - 10	Mixture
Polymers and Natural Rubbers	< 0.5	Various
Process oils (inherent in refined petroleum asphalt)	< 0.1	Various
Anti-strip or other amine-based additives	< 0.1	Various
Warm-mix additives	< 0.1	Various

[^]Contains: <0.05% of 3 - 7 ring Polycyclic Aromatic Hydrocarbons (PAHs).

Other Substances in the product which may present a health or environmental hazard, or which have been assigned occupational exposure limits, are detailed below. Please see Section 8 of SDS for more details.

- Contains: <0.1% airborne crystalline silica (inherent in aggregate) and <0.1% hydrogen sulfide.
- Hydrogen sulfide gas can accumulate in the head space of containers of certain asphalt products.
- Heated product releases asphalt fume.

Additional Information - None

SECTION 4: FIRST AID MEASURES



Description of first aid measures

Inhalation	Not normally required. Move person to fresh air. Apply artificial respiration if necessary. If symptoms persist, obtain medical attention.
Skin Contact	Causes burns. Immediately cool skin where asphalt binder has adhered to skin. Allow asphalt binder which remains on the skin to fall off naturally. DO NOT REMOVE. If problem persist or coverage is extensive, get medical attention.
Eye Contact	Flush eyes with water for at least 15 minutes while holding eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation develops and persists, get medical attention.
Ingestion	Not normally required. Do not induce vomiting. Do not give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

Most important symptoms and effects, both acute and delayed None known

Indication of any immediate medical attention and special treatment needed None known

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

- Suitable Extinguishing Media
- Unsuitable Extinguishing Media

Extinguish with carbon dioxide, dry chemical, foam or water spray.
None anticipated.

Special hazards arising from the substance or mixture

Combustion causes toxic fumes. Combustion products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Sulfur oxides

Advice for fire-fighters

A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes.

Environmental precautions

Not normally required.

Methods and material for containment and cleaning up

Allow product to cool/solidify and pick up as a solid.

Reference to other sections

None

Additional Information

None.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes.

Conditions for safe storage, including any incompatibilities

- Storage temperature
- Incompatible materials

Store at temperatures not exceeding the product's flash point.
Strong oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Occupational Exposure Limits

SUBSTANCE.	CAS No.	(8hr TWA)		(STEL)		Note:
		PEL (OSHA) *	TLV (ACGIH)	PEL (OSHA)	TLV (ACGIH)	
Asphalt fume	-----	-----	0.5 mg/m ³ ⁽¹⁾	-----	-----	See below
Crystalline Silica (respirable particulate)	-----	$\frac{10 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$	0.025 mg/m ³ ^	-----	-----	See below
Hydrogen sulfide	7783-06-4	-----	1 ppm	20 ppm ceiling	5 ppm	50 ppm peak

⁽¹⁾Inhalable benzene-soluble fraction; ^Suspected Human Carcinogen; *Refer to OSHA 29 CFR 1910.1000 & 29 CFR 1926.55; 8hr TWA = 8 hour time-weighted average; STEL = Short Term Exposure Limit.

Recommended monitoring method

NIOSH 5042 (Asphalt Fume), NIOSH 7500 (Crystalline Silica), Electrochemical sensor (hydrogen sulfide).

Exposure controls

Appropriate engineering controls

Use only outdoors or in a well-ventilated area.

Personal protection equipment

Eye/face protection

The following to be used as necessary: Safety Glasses



BASE ASPHALT PAVEMENT MIX

Skin protection (Hand protection/ Other)



The following to be used as necessary: Leather or thick textile gloves.

Respiratory protection



In case of inadequate ventilation wear respiratory protection. Use NIOSH approved respiratory protection. Air-purifying respirator with combination organic vapor cartridge / particulate filter may be sufficient. Check with protective equipment manufacturer's data.

Thermal hazards

Use gloves with insulation for thermal protection, when needed.

Environmental Exposure Controls

Do not discharge waste and/or cleaning water via public sewer system. Ensure waste is collected and contained.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid
Color.	Dark brown / Black
Odor	Asphalt / Bitumen
Odor Threshold (ppm)	Not available.
pH (Value)	Not available.
Melting Point (°C) / Freezing Point (°C)	Not available.
Boiling point/boiling range (°C):	> 371 (>700 °F)
Flash Point (°C)	> 232 (> 450 °F)
Evaporation Rate	Not available.
Flammability (solid, gas)	Not applicable.
Explosive Limit Ranges	Not applicable.
Vapor pressure (Pascal)	Not determined.
Vapor Density (Air=1)	Not determined.
Density (g/ml)	2.2 - 2.7
Solubility (Water)	Negligible
Solubility (Other)	Not known
Partition Coefficient (n-Octanol/water)	Not available.
Auto Ignition Point (°C)	Not available.
Decomposition Temperature (°C)	Not available.
Kinematic Viscosity (cSt) @ 40°C	Not available
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Other information	Not available.

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions.
Chemical stability	Stable.
Possibility of hazardous reactions	May react violently with: Strong oxidizing agents
Conditions to avoid	Incompatible materials
Incompatible materials	Oxidizers
Hazardous decomposition product(s)	Combustion causes toxic fumes. Combustion products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Sulfur oxides

SECTION 11: TOXICOLOGICAL INFORMATION

Exposure routes: Inhalation, Skin Contact, Eye Contact

Information on toxicological effects

Revision: 11 June 2015

BASE ASPHALT PAVEMENT MIX

Acute toxicity	LD50 (rat): >5000 mg/kg bw LD50 (dermal): >2000 mg/kg bw LC50 (inhalation, fume): >94.4 mg/m ³
Irritation/Corrosivity	May cause irritation to skin, eyes and respiratory system.
Sensitization	Not to be expected
Repeated dose toxicity	NOAEL(rat): 28 mg/m ³ LOAEL (rat): 149 mg/m ³
Carcinogenicity	Not to be expected at typical road paving temperatures.

NTP	IARC	ACGIH	OSHA
No.	2B*	No.	No.

Mutagenicity	Not to be expected.
Reproductive toxicity	Not to be expected.

Other information * IARC (2013, volume 103) identifies that "occupational exposures to straight-run bitumens and their emissions during road paving are possibly carcinogenic to humans (Group 2B)." However, classification as a carcinogen under OSHA 29 CFR 1910.1200 is not warranted given the absence of positive cancer findings in human epidemiological studies and in cancer studies with laboratory animals when exposed dermally or by inhalation to asphalt products or fume condensates that are typical of road paving applications. IARC (2013, volume 103) also identifies that "occupational exposures to oxidized bitumens and their emissions during roofing are probably carcinogenic to humans (Group 2A)." Roofing shingle are sometimes recycled into road paving asphalt mix. Emissions from oxidized bitumen, e.g., from shingles, at road paving temperatures are not expected to be qualitatively different than emissions from straight-run bitumens, and therefore would not warrant a carcinogen classification under OSHA 29 CFR 1910.1200.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Short term	LL50 (48 hour): >1000 mg/l (Fish) LL50 (48 hour): >1000 mg/L (Aquatic Invertebrates) EL50 (48 hour): >1000 mg/L (Aquatic Plants)
Long Term	No data
Persistence and degradability	The product is poorly biodegradable.
Bioaccumulative potential	The product has low potential for bioaccumulation.
Mobility in soil	The product has low mobility in soil.
Results of PBT and vPvB assessment	Not classified as PBT or vPvB.
Other adverse effects	None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Disposal should be in accordance with local, state or national legislation. Consult an accredited waste disposal contractor or the local authority for advice.
Additional Information	None known.

SECTION 14: TRANSPORT INFORMATION

Ground or Water Domestic Voyage (DOT): Not regulated when transported below 240°C (464 °F).

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture:

TSCA (Toxic Substance Control Act) - Inventory Status: All components listed or polymer exempt.

Revision: 11 June 2015



BASE ASPHALT PAVEMENT MIX

RCRA Hazardous Waste Number (40 CFR 261.33): None

US RCRA Hazard Class: Not applicable.

Designated Hazardous Substances and Reportable Quantities (40 CFR 302.4):

Chemical Name	CAS No.	Typical %wt.	RQ (Pounds)
None	-----	-----	-----

SARA 311/312 - Hazard Categories: None

- Fire Sudden Release Reactivity Immediate (acute) Chronic (delayed)

SARA 313 - Toxic Chemicals (40 CFR 372):

Chemical Name	CAS No.	Typical %wt.
None	-----	-----

SARA 302 - Extremely Hazardous Substances (40 CFR 355):

Chemical Name	CAS No.	Typical %wt.	TPQ (pounds)
None	-----	-----	-----

SECTION 16: OTHER INFORMATION

Additional Information

The following sections contain revisions or new statements: 1-16.

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

2.) CMU BLOCK

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Safety Data Sheet (SDS)

Product: Concrete Masonry Unit (CMU or Block)
SDS No: 001
Version No.: 1.0
Preparation Date: 04/22/2015
Revision Date: Not Applicable (N/A)

SECTION 1. IDENTIFICATION OF THE MIXTURE AND SUPPLIER

1.1 Product Identifier:

Product name: Concrete Masonry Unit (CMU or Block)
Product code: Various
Formula: Mixture

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses: Construction
Uses advised against: Any use other than those recommended

1.3 Details of the supplier of the safety data sheet:

Manufacturer/Supplier: Best Block, LLC
Street Address: 2088 FM 949, Alleyton, TX
Country ID/Postcode: USA/78935
Customer service telephone: 888-464-9341
E-mail address (competent person): productinfo@bestblock.com

1.4 Emergency telephone number:

Emergency telephone number: 877-347-8096
Hours available: 24 hours a day / 7 days a week

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture:

Concrete Masonry Units (CMU) are defined by OSHA as an article (under normal conditions, no more than minute or trace amounts of a hazardous chemicals are released and the article does not pose a physical hazard or health risk to employees).

No SDS is required for articles; however, this SDS is provided to communicate hazards associated where activities related to the CMU Block (cutting, grinding, crushing, drilling or breaking) may result in the release of a hazardous substance in DUST.

GHS Classification(s) for CMU Block according to OSHA Hazard Communication Standard (29 CFR 1910.1200) under normal handling conditions:

None

Product: Concrete Masonry Unit (CMU or Block)

SDS No: 001

Version No.: 1.0

Preparation Date: 04/22/2015

Revision Date: Not Applicable (N/A)

GHS Classification(s) for dust generated from cutting, grinding, crushing, drilling or breaking of CMU Block according to OSHA Hazard Communication Standard (29 CFR 1910.1200) under use conditions that may result in the release of hazardous substances:

Skin Corrosion/Irritation, Category 2 (H315)

Eye Damage/Irritation, Category 2 (H319)

Specific Target Organ Toxicity-Repeated Exposure (STOT-RE), Category 1 (H372)

Note: The CMU dust classifications are based on (1) individual ingredient classifications (i.e., Silica Sand [SiO₂], Limestone, Portland Cement, Fly Ash, etc.), (2) the final chemical composition of the CMU Block (based on cement chemistry) and (3) the form of the material (dust). Further, the Specific Target Organ Toxicity-Repeat Exposure is a conservative classification based on the potential presence of respirable crystalline silica. Best Block LLC, has not performed analysis for the presence of respirable crystalline silica under these handling conditions.

Additional information:

For full text of GHS Hazard statements (H-statements) and associated Precautionary statements (P-statements), see below.

2.2 Label elements

The Hazard Pictograms, Signal Word and Precautionary Statements only apply to activities that may release hazardous substances from the CMU (i.e., cutting / grinding / crushing / drilling / breaking).

No Hazard Pictograms, Signal Word or Precautionary Statements are applicable to the CMU Block.

Hazard Pictograms that apply to the dust generated from cutting, grinding, crushing, drilling or breaking of the CMU Block:



Signal Word:

Danger

Hazard Statements:

**(For CMU Dust
Generated from Cutting,
Grinding, Crushing,
Drilling or Breaking)**

H315: Causes skin irritation.

H319: Causes eye irritation.

H372: Causes damage to lungs through prolonged or repeated inhalation exposure.

Precautionary Statements:

**(For CMU Dust
Generated from Cutting,
Grinding, Crushing,
Drilling or Breaking)**

P260: Do not breathe dust.

P270: Do not eat, drink or smoke while using this product.

P271: Use only outdoors or in a well-ventilated area.

P264: Wash thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302 + P352: IF ON SKIN: Wash with plenty of water.

P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P314: Get medical advice/attention if you feel unwell.

P321: See the SDS for specific treatment.
P332 + P313: If skin irritation occurs, get medical advice/attention.
P337 + 313: If eye irritation persists, get medical attention.
P362 + P364: Take off contaminated clothing and wash before reuse.
P501: Dispose of generated dust in accordance with local / regional / national / international regulations.

2.3 Other hazards related to CMU dust generated from cutting, grinding, crushing, drilling or breaking:

Listed Carcinogens: Silica dust (respirable, crystalline fraction) in the form of quartz.

IARC: Yes **NTP:** Yes **OSHA:** No **Other:** No (European Union)

Hazardous Properties: Dust generated from cutting, grinding, crushing, drilling or breaking may cause eye damage and skin irritation. May be irritating to respiratory tract. Respirable crystalline silica may cause damage to lungs upon repeated inhalation exposures.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Description of the mixture:

The product is a solid concrete block that, when subjected to cutting, grinding, crushing, drilling or breaking, may form hazardous dusts.

3.2 Hazardous Ingredients:

Name	CAS No.	Weight %	GHS Classification per OSHA Hazard Communication (29 CFR 1900.1200)
Silica dioxide (quartz)	14808-60-7	0-90%	STOT-RE, Category 1 (H372)*
Portland Cement	65597-15-1	8-15%	Skin Corrosion/Irritation, Category 2 (H315) Eye Damage/Irritation, Category 1 (H318) STOT-Single Exposure, Category 3 (H335)
Fly Ash	68131-74-8	0-4%	STOT-RE, Category 1 (H372*)

* The Specific Target Organ Toxicity-Repeat Exposure (STOT-RE) is a conservative classification based on the presence/potential presence of respirable crystalline silica.

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures:

Inhalation: If dust generated from cutting, grinding, crushing, drilling or breaking is inhaled, remove person to fresh air and keep comfortable for breathing. Get medical attention if respiratory symptoms persist.

Skin contact: If dust generated from cutting, grinding, crushing, drilling or breaking is on skin, wash with soap and water. Get medical advice/attention if irritation occurs/persists.

Eye contact: If dust generated from cutting, grinding, crushing, drilling or breaking is in eyes, rinse cautiously with water for several minutes. Get medical advice/attention if irritation occurs/persists.

Ingestion: No specific first aid measures are required.

4.2 Most important health effects related to CMU dust generated from cutting, grinding, crushing, drilling or breaking, both acute and delayed:

Acute effects: Direct exposure to dust generated from cutting, grinding, crushing, drilling or breaking may cause eye damage/irritation, skin irritation and respiratory irritation. Dust can dry and irritate the skin and cause dermatitis. Can irritate eyes and skin through mechanical abrasion.

Delayed effects: Chronic exposure to inhaled dust generated from cutting, grinding, crushing, drilling or breaking may cause lung damage from repeated exposure. Chronic inhalation of dusts containing free crystalline silica may result in silicosis.

4.3 Indication of any immediate medical attention and special treatment needed:

Seek first aid or call a doctor if contact with dust generated from cutting, grinding, crushing, drilling or breaking with eyes occurs and irritation remains after rinsing.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing Media:

Suitable extinguishing media: Product is not flammable. Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media: Not applicable; the product is not flammable.

5.2 Special hazards arising from the substance or mixture:

Hazardous combustion products: None known.

5.3 Advice for firefighters:

Special protective equipment and precautions for firefighters: As with any fire, wear self-contained breathing apparatus, MSHA/NIOSH (approved or equivalent) and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures associated with CMU dust generated from cutting, grinding, crushing, drilling or breaking:

For Non-Emergency Personnel:

Protective equipment: In case of exposure to dust generated from cutting, grinding, crushing, drilling or breaking, wear specified protective equipment. (See Section 8).

Emergency procedures: Avoid the creation of dust generated from cutting, grinding, crushing, drilling or breaking. Use scooping, water/flushing/misting or vacuum cleaning systems. Wet methods of cutting, grinding, crushing, drilling or breaking are the preferred method of controlling dust.

For Emergency Responders:

Protective equipment: In case of exposure to dust generated from cutting, grinding, crushing, drilling or breaking, wear specified protective equipment. In case of fire, use self-contained breathing apparatus with full face mask.

6.2 Environmental Precautions

Discard any product or dust residue in compliance with local regulations.

6.3 Methods and material for containment and cleaning up:

For containment and cleaning up: After cutting, grinding, crushing, drilling or breaking activities, use scooping, water spraying/flushing/misting or ventilated vacuum cleaning system to clean up dust generated from cutting, grinding, crushing, drilling or breaking. Use closed containers. Do not use pressurized air to clean dust.

Other information: Take measures to avoid dust formation during cutting, grinding, crushing, drilling or breaking activities.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe handling:

Protective measures: Avoid contact with dust generated from cutting, grinding, crushing, drilling or breaking with skin, eyes, and clothing. Avoid breathing dust. Wash thoroughly after handling. Wet methods of cutting, grinding, crushing, drilling or breaking are the preferred method of controlling dust.

Measures to prevent fires: Not applicable; material is non-flammable.

Measures to prevent dust generation: Vacuum, scoop, or use water mist/spray/flush to remove generated dust during cutting, grinding, crushing, drilling or breaking activities. Do not use pressurized air. Wet methods of cutting, grinding, crushing, drilling or breaking are the preferred method of controlling dust.

Measures to protect the environment: Not applicable; material is not an environmental hazard.

Advice on general occupational hygiene: Practice good housekeeping. Avoid formation of dust generated from cutting, grinding, crushing, drilling or breaking. Do not breathe dust. Use adequate exhaust ventilation, dust collection and/or water mist to maintain airborne dust concentrations below permissible exposure limits. Respirable crystalline silica dust may be in the air without a visible dust cloud. In case of insufficient ventilation, wear a NIOSH approved respirator for silica dust when using, handling, storing or disposing dust from this product. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing that has become dusty. Avoid eating, smoking, or drinking while handling the material.

7.2 Conditions for safe storage, including any incompatibilities:

Storage conditions: Minimize dust produced during loading and unloading.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters applicable to CMU dust generated from cutting, grinding, crushing, drilling or breaking:

United States

OCCUPATIONAL EXPOSURE LIMITS FOR HAZARDOUS SUBSTANCES IN THE WORKPLACE					
SUBSTANCE		OSHA PEL TWA / STEL (mg/m ³)	NIOSH REL TWA / STEL (mg/m ³)	ACGIH TLV TWA / STEL (mg/m ³)	CAL - OSHA PEL (mg/m ³)
Calcium Oxide		5	2	2	-
Crystalline Silica	Total Quartz	30 ÷ (%SiO ₂ +2) (Total Quartz)	-	-	0.3
	Respirable Crystalline Silica	10 ÷ (%SiO ₂ +2)	0.05	0.025 (α-quartz & cristobalite)	0.1
	Cristobalite	-	0.05	0.025 (α-quartz & cristobalite)	0.05 (respirable)
Particulates Not Otherwise Regulated	Total	15	15	-	10
	Respirable	5	5	-	5

8.2 Exposure controls:

8.2.1. Exposure Controls

Engineering controls: Ventilation should be adequate to maintain the ambient workplace atmosphere below the exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure to dust generated from cutting, grinding, crushing, drilling or breaking. Wet methods of cutting, grinding, crushing, drilling or breaking are the preferred method of controlling dust.

8.2.2. Personal Protective Equipment

Respiratory protection: Wear a NIOSH/MSHA approved particulate respirator if exposure to dust generated from cutting, grinding, crushing, drilling or breaking is unavoidable and where occupational exposure limits may be exceeded. If airborne dust exposures exceed the PEL or TLV, a self-contained breathing apparatus or airline respirator is recommended.

Eye and face protection: If eye contact with dust generated from cutting, grinding, crushing, drilling or breaking is anticipated, wear protective glasses with side shields. Avoid contact lenses.

Product: Concrete Masonry Unit (CMU or Block)

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Preparation Date: 04/22/2015

Revision Date: Not Applicable (N/A)

Hand and skin protection: Wear gloves and protective clothing to minimize skin contact with dust generated from cutting, grinding, crushing, drilling or breaking. Wash hands with soap and water after contact with material.

Foot protection: Wear American National Standards Institute (ANSI) approved hard-toed safety shoes when handling CMUs.

8.2.3. Environmental Exposure Controls

Instructions to prevent exposure: No special requirements. Discard any product or dust residue in compliance with local regulations. Wet methods of cutting, grinding, crushing, drilling or breaking are the preferred method of controlling dust.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Property	Value	Property	Value
Appearance:	Solid Block	Lower Explosive Limit (LEL):	Not applicable
Odor	Odorless	Vapor Pressure (Pa):	Not applicable
Odor threshold	Not applicable	Vapor Density:	Not applicable
pH (25°C):	Not available	Relative Density/Specific Gravity:	2.2 – 2.8
Melting/Freezing Point (°C):	Not applicable	Water Solubility:	Negligible
Initial Boiling Point (°C):	Not applicable	Partition Coefficient: <i>n</i>-octanol/water:	Not applicable
Boiling Range (°C):	Not applicable	Auto-ignition Temperature (°C):	Not applicable
Flash Point(°C):	Not applicable	Decomposition Temperature (°C):	Not available
Evaporation Rate:	Not applicable	Viscosity:	Not applicable
Flammability (solid, gas):	Not combustible	Explosive Properties:	Not applicable
Upper Explosive Limit (UEL):	Not applicable	Oxidizing Properties:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity	Stable inert material
10.2 Chemical stability	Stable inert material
10.3 Possibility of hazardous reactions	None known.

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Revision Date: Not Applicable (N/A)

10.4	Conditions to avoid	None known
10.5	Incompatible materials	None known
10.6	Hazardous decomposition products	None known

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Acute toxicity:	No data is available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking. No ingredients within the mixture exhibit acute toxicity.
Skin corrosion/irritation:	Contact with dust may cause skin irritation.
Serious eye damage / irritation:	Eye Irritant. Eye contact with dust generated from cutting, grinding, crushing, drilling or breaking may cause eye irritation.
Respiratory or skin sensitization:	No data is available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking. No ingredients exhibit sensitization effects.
Germ cell mutagenicity:	No data is available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking. No ingredients exhibit mutagenic effects.
Carcinogenicity:	No data is available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking. Crystalline silica (respirable) has been identified as a carcinogen by IARC and NTP.
Reproductive toxicity:	No data is available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking. No ingredients exhibit reproductive toxicity.
STOT single exposure:	No data is available on the CMU dust generated from cutting, grinding, crushing or drilling.
STOT repeated exposure:	No data is available on the repeated inhalation of CMU dust generated from cutting, grinding, crushing, drilling or breaking. Repeated inhalation of CMU dust generated from cutting grinding, crushing or breaking may cause lung damage if respirable crystalline silica is present. Crystalline silica (respirable) has been shown to cause silicosis after repeated exposure.
Aspiration hazard:	Not applicable, the material is a not a liquid.

SECTION 12. ECOLOGICAL INFORMATION

No data available on the CMU dust generated from cutting, grinding, crushing, drilling or breaking.

SECTION 13. DISPOSAL CONSIDERATIONS

Considered a non-hazardous waste. Follow applicable federal, state and local regulations.

Product: Concrete Masonry Unit (CMU or Block)

SDS No: 001

Version No.: 1.0

Preparation Date: 04/22/2015

Revision Date: Not Applicable (N/A)

SECTION 14. TRANSPORT INFORMATION

Regulatory Entity

US DOT	Shipping Name	Not regulated
	Hazard Class	Not regulated
	ID Number	Not regulated
	Packing Group	Not regulated

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations / legislation specific to the mixture:

United States Regulations

Toxic Substances Control Act (TSCA) Inventory Status	All components of this product are listed on the TSCA Inventory or are exempt from listing.	
SARA (Section 311/312)	Reactive Hazard	No
	Pressure Hazard	No
	Fire Hazard	No
	Immediate/Acute Toxicity	No
	Delayed/Chronic Toxicity	Yes – respirable crystalline silica
SARA Section 313 Information:	This product does not contain any toxic chemicals listed under 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA).	
Clean Air Act (CAA)	This product does not contain any toxic chemicals listed under the CAA at concentrations greater than 0.1%.	
Volatile Organic Compounds (VOCs)	VOC Content (weight %).	0 wt. %
	Remarks:	Estimated
State Right-to-Know Status	California Prop. 65:	Crystalline Silica.
	Massachusetts:	Silica, Crystalline-Quartz; Calcium oxide; Calcium carbonate (Limestone); Portland cement; Iron oxide dust.
	New Jersey	Silica, Crystalline-Quartz; Calcium oxide; Calcium carbonate (Limestone); Cement, Portland, Chemicals; Iron oxide.
	Pennsylvania:	Quartz (silica dioxide); Calcium oxide; Calcium carbonate (Limestone); Cement, Portland, Chemicals; Iron oxide.

Product: Concrete Masonry Unit (CMU or Block)
SDS No: 001
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Preparation Date: 04/22/2015
Revision Date: Not Applicable (N/A)

Dispose of all waste product and containers in accordance with federal, state and local regulations.

SECTION 16. OTHER INFORMATION

16.1 Indication of changes:

Initial SDS prepared on 04-07-2015

16.2 Abbreviations and acronyms:

ANSI: American National Standards Institute
CAA: Clean Air Act
Cal/OSHA: California Department of Industrial Relations - Division of Occupational Safety and Health
CAS: Chemical Abstract Service Registry Number
CFR: Code of Federal Regulations
CMU: Concrete Masonry Unit
CWA: Clean Water Act
GHS: Globally Harmonized System of Classification and Labeling
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
LEL: Lower explosive limit
MSHA: Mine Safety and Health Administration
NA: Not Applicable
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
Pa: Pascal
PEL: Permissible exposure limit
SARA: Superfund Amendments and Reauthorization Act
SDS: Safety data sheet
STEL: Short-term exposure limit
STOT-RE: Specific target organ toxicity-repeated exposure
STOT-SE: Specific target organ toxicity-single exposure
TLV: Threshold limit value
TSCA: Toxic Substances Control Act
TWA: Time-weighted average
UEL: Upper explosive limit
USA: United States of America
US DOT: United States of Department of Transportation
VOC: Volatile organic compound

16.3 Other hazards:

Hazardous Materials Identification System (HMIS)

Degree of hazard: 0 = low, 4 = extreme

Health: 1*

Flammability: 0

Reactivity: 0

** Dust generated from cutting, grinding, crushing, drilling or breaking activities may result in a chronic health hazard (Category 3 Health Hazard)*

Personal Protection: B

Product: Concrete Masonry Unit (CMU or Block)

SDS No: 001

Version No.: 1.0

Preparation Date: 04/22/2015

Revision Date: Not Applicable (N/A)

Disclaimer:

This SDS has been prepared in accordance with the Hazard Communication Rule 29 CFR 1910.1200. Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

— End of Safety Data Sheet (SDS) —

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3.) CONCRETE MIX

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CEMENT & CONCRETE PRODUCTS™

C1: Portland Cement Based Concrete Products

SAFETY DATA SHEET

(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
5 Concourse Parkway, Suite 1900
Atlanta, GA 30328

Emergency Telephone Number
INFOTRAC (800) 535-5053
Information Telephone Number
(800) 282-5828

SDS C1

Revision: Mar-19

QUIKRETE® Product Name	Item #(s)
Fence Post Mix	1005
Fiber-Reinforced Concrete Mix	1006
Crack Resistant Concrete Mix	1006-80
Pro-Finish Crack Resistant Concrete Mix	1006-68
QUIKRETE 5000 Concrete Mix	1007
QUIKRETE 6000 Concrete Mix	1007
Pro-Finish QUIKRETE 5000	1007-85
Lightweight Concrete Mix	1008
Basic Concrete Mix	1015
Maximum Yield Concrete Mix	1100-80
Concrete Mix	1101-10, -20, -40, -60, -80, -90
Green Concrete Mix	1101-63, -73
B-Crete	1101-81
Red-E-Crete Concrete mix	1101-91, -87; 1141-62, -63, -92, -93, Bulk NR810035
Countertop Mix	1106-80
Form & Pour Concrete Mix	1120-80/NR810065
Form & Pour Concrete Mix MS	1120-80/NR810065
All-Star Concrete Mix	1121
Rip Rap	1129
Rip Rap Scrim	1134-80
Handicrete Concrete Mix	1141-59, -60, -80
RiteMix Concrete	1171-60
Fiber Reinforced Deck Mix	1251-80, -81
All-Star Crack Resistant Concrete Mix	1470-03
All-Star 5000 Concrete Mix	1470-01
FlowCrete 5000 (Mix 801)	8080026/NR80026
Mix 801 Concrete Mix	NR81001

Product Use: Portland cement-based, aggregated products for general construction

SDS C1

QUIKRETE Companies, LLC

3/11/2019

See most current revision of this document at www.QUIKRETE.com.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Silica, Portland cement

2.1 Classification of the substance or mixture

Carcinogen – Category 1A

Skin Corrosion – Category 1B

Eye Damage – Category 1

Skin Sensitization – Category 1B

Specific Target Organ Toxicity Repeat Exposure – Category 1

Specific Target Organ Toxicity: Single Exposure – Category 3

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause cancer through chronic inhalation

Causes severe skin burns and serious eye damage

May cause an allergic skin reaction

Causes damage to lungs through prolonged or repeated inhalation

May cause respiratory irritation

Harmful if swallowed.

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Wear impervious gloves, such as nitrile. Wear eye protection, protective clothing and rubber boots.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Use only in a well-ventilated area. Wear a NIOSH approved respirator (mask) such as N95 in poorly ventilated areas, when used for extended periods, when use is frequent, or when permissible exposure limits may be exceeded.

Do not breathe dust.

If swallowed: Rinse mouth. Do NOT induce vomiting.



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If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

If significant skin irritation or rash occurs: get medical attention.

Immediately seek medical attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information

The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water. If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr (VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None



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SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS No.</u>	<u>% by Weight</u>
Sand, Silica, Quartz	14808-60-7	60-100*
Portland Cement	65997 15 1	10-30*
Fly Ash	68131-74-8	5-10*

*The concentrations ranges are provided due to batch-to-batch variability.
None of the constituents of this material are of unknown toxicity.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures**General information:**

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated inhalation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

4.3 Indication of immediate medical attention and special treatment needed:

Immediately seek medical advice if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Non-flammable and non-combustible

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None



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5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. **DO NOT BREATHE DUST.** In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended. Wear appropriate PPE (See section 8). Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children. Keep container tightly closed and prevent exposure to humidity. Do not allow water to contact the product until time of use to preserve product utility.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Silica Sand, crystalline	14808-60-7	0.05	0.025 (resp)
Portland Cement	65997-15-1	5 (resp) 15 (total)	10 (resp)
Fly Ash	68131-74-8	N/A	N/A

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.



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8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands and feet:

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact. Wear rubber boots when stepping in concrete. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:

Wear a NIOSH approved respirator (mask) such as N95 in poorly ventilated areas, when used for extended periods, when use is frequent, or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information

Appearance	Form: Granular Solid Color: Gray to gray-brown colored Odor: None
pH-value at 20°C (68 °F):	13 (10%)
Boiling point/Boiling range:	Not applicable
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	2.6 to 3.15

Solubility in / Miscibility with

Water:	Insoluble
VOC content:	0 g/L VOC

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability



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Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

10.6 Hazardous Decomposition or By-products

Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Causes severe skin burns. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: Harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure

Short Term

Skin Corrosion/Irritation: Causes severe skin burns.

Serious Eye Damage/Irritation: Causes severe eye damage.

Respiratory Sensitization: Not available

Skin Sensitization: May cause an allergic skin reaction.

Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation.

Aspiration Hazard: Not available

Long Term

Carcinogenicity: May cause cancer through chronic inhalation.

Germ Cell Mutagenicity: Not available


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Reproductive Toxicity: Not available

Specific Target Organ Toxicity- Repeated Exposure: (Category 1) Causes damage to lungs through prolonged/repeated exposure

Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

May cause long-term adverse effects to the aquatic environment. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential:

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

12.5 Other Adverse Effects

No further relevant information available.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations
Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

SDS C1

QUIKRETE Companies, LLC

3/11/2019

**CEMENT & CONCRETE PRODUCTS™****14.1 Environmental hazards:**

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical**Canada**

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Hazardous Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the HPR.

15.2 US Federal Information**SARA 302/311/312/313 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

**CEMENT & CONCRETE PRODUCTS™**

15.3 State Right to Know Laws

California Prop. 65 Components



WARNING: This product can expose you to chemicals including crystalline silica which is known to the State of California to cause cancer and hexavalent chromium compounds which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is “toxic” for purposes of the Massachusetts Toxic Use Reduction Act.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list.

TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7. All constituents are listed in the TSCA inventory.

SECTION XVI – OTHER INFORMATION

Last Updated: March 11, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by

The QUIKRETE Companies, LLC

End of SDS

4.) READY MIX CONCRETE

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Safety Data Sheet

Section 1. Identification

GHS product identifier:	Ready Mix Concrete
Other means of identification:	Concrete, Colored Concrete, Freshly Mixed Concrete
Relevant identified uses of the substance or mixture and uses advised against:	Ready Mix Concrete is used in the construction of various structures and objects.
Supplier's details:	Bama Concrete Products Bama Concrete Birmingham 1608 17 th Street Tuscaloosa, Al. 35401 205-345-6622
Emergency telephone number (24 hours):	205-799-2810

Section 2. Hazards Identification

GHS Classification:	CARCINOGENICITY – Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) – Category 2 SKIN CORROSION/IRRITATION – Category 1C SERIOUS EYE DAMAGE/EYE IRRITATION – Category 1 SKIN SENSITIZATION – Category 1
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GHS label elements

Hazard pictograms:



Signal word:	Danger
Hazard statements:	May cause cancer May cause damage to organs (lung) through prolonged or repeated exposure Causes severe skin burns and eye damage Causes serious eye irritation May cause an allergic skin reaction

Precautionary statements:	
Prevention:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash any exposed body parts thoroughly after handling. Avoid breathing dust. Contaminated clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response:	If exposed or concerned: Get medical advice/attention if irritation or rash occurs. If on skin: Take off immediately all contaminated clothing. Rinse/wash skin with plenty of water/shower. Wash contaminated clothing before reuse. If in eyes: Rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do.
Storage:	Restrict or control access to ready mix concrete (store locked up).
Disposal:	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazards not otherwise classified (HNOC):	None known

Supplemental information:	Respirable Crystalline Silica (RCS) may cause cancer. Wet, freshly mixed concrete is not expected to pose respiratory concern. Ready Mix Concrete is comprised of cement, additives and a naturally occurring mineral complex that contains varying quantities of quartz (crystalline silica). When set/cured Ready Mix Concrete is subjected to various natural or mechanical forces it may produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated
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inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC and NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.

Section 3. Composition/information on ingredients

Substance/mixture: Ready Mix Concrete

CAS number/other identifiers

Ingredient name	%	CAS number
Aggregates	> 35	Varies
Portland Cement	> 25	65997-15-1
Ashes	0 – 25	Varies
Water	> 5	7732-18-5
Crystalline Silica (Quartz)	> 0.1	14808-60-7

Any concentration shown as a range is to protect confidentiality or is due to process variation. Portland Cement may contain trace (< 0.05%) amounts of chromium salts or compounds (including hexavalent chromium) or other metals (including nickel compounds) found to be hazardous or toxic in some chemical forms. These metals are present mostly as trace substitutions within the principal minerals. Other trace constituents may include potassium and sodium sulfate compounds. There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye Contact:	If exposed or concerned: get medical attention. Do not allow individual to rub eyes. Flush eyes gently under running water for 15 minutes or longer, making sure that the eyelids are held open. Other than washing with water, do not attempt to remove material from eyes. Remove contact lenses, if present and easy to do. Obtain medical attention for eye contact with wet concrete.
Inhalation:	Move exposed individual to fresh air. Dust in throat and nasal passages should clear naturally by coughing, sneezing and nasal discharge. Obtain medical attention if symptoms persist or develop later.
Skin Contact:	Wash affected areas with water and soap. Remove contaminated clothing and wash before reuse. If irritation persists or develops later, obtain medical attention.
Ingestion:	Ingestion is not a common route of occupational exposure. If swallowed and irritation or discomfort occurs, obtain medical attention.

Most important symptoms/effects, acute and delayed potential acute health effects

Eye contact:	Exposure to dust from dry ingredients or hardened cement can cause irritation and tearing of the eyes. Exposure to wet concrete may result in irritation or burns.
Inhalation:	Symptoms of exposure may include upper respiratory discomfort with coughing and sneezing. Inhalation may cause upper respiratory tract infection. A "rare" acute form of silicosis may develop from inhalation of extremely high concentrations of crystalline silica over a period of several months to five years.
Skin contact:	Ready Mix Concrete contains Portland Cement, which may contain trace amounts of hexavalent chromium and is linked with allergic sensitization reactions in some individuals. These reactions may lead to contact dermatitis and skin ulceration. Exposure to dust from dry ingredients or hardened cement can cause skin irritation, dermatitis and/or redness to the exposed skin. Wet concrete exhibits caustic, abrasive and dehydrating properties. Irritation or pain may be delayed for several hours and cannot be relied upon as an indication of exposure.
Ingestion:	Ingestion is not a common route of occupational exposure. If swallowed and irritation or discomfort occurs, obtain medical attention.

Over-exposure signs/symptoms

Notes to physician:	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
Specific treatments:	Not Applicable
Protection of first-aiders:	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
General information:	Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). If addicted to tobacco, smoking will impair the ability of the lungs to clear themselves of dust.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media:	Not combustible. Use extinguishing agent appropriate for surrounding flammable materials
Unsuitable extinguishing media:	None known.
Specific hazards arising from the chemical:	Not combustible. Nonflammable. Spalling of hardened concrete may occur under conditions of intense heat.
Hazardous thermal decomposition Products:	Material is not combustible.
Special protective actions for fire-fighters:	Material is nonflammable. Use appropriate procedures for surrounding flammable materials.
Special protective equipment for fire-fighters:	Use protective equipment appropriate for surrounding materials. No specific precautions.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For response personnel:	Keep unprotected personnel out of the area. Do not dry sweep dusty material. All local and Federal laws governing waste disposal must be followed.
Environmental precautions:	Clean spilled material immediately. Contain spills and wash water to prevent run-off into public waterways. Remove wet concrete from roadways immediately. Do not dry sweep spilled dusty material.

Methods and materials for containment and cleaning up

Small spill:	Alkali resistant gloves, long sleeves, long pants and safety glasses should be used by clean up personnel for wet concrete releases.
Large spill:	Waterproof boots and goggles should be used. Eye protection and appropriate respirator protection should be used to protect clean up personnel against dust.

Section 7. Handling and storage

Precautions for safe handling

Protective measures:	Use personnel protective equipment to avoid direct contact with concrete. Remove contaminated clothes as soon as possible. Dust may be generated during handling or mixing dry powder or from cutting, breaking or crushing hardened material. Use wet cutting methods when possible.
Advice on general occupational hygiene:	Observe good industrial hygiene practices. Promptly remove dusty clothing and launder before reuse.
Conditions for safe storage, including any incompatibilities:	Store away from moisture, acids, and other incompatible materials. Store and use material in such a way as to prevent release to drains or waterways.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Particulates not otherwise classified (CAS SEQ250)	ACGIH TLV (United States, 3/2012) TWA: 3 mg/m ³ . Form: Respirable particles TWA: 10 mg/m ³ . Form: Inhalable particles OSHA PEL (United States, 6/2010) PEL: 5 mg/m ³ . Form: Respirable fraction PEL: 15 mg/m ³ . Form: Total dust TWA: 5 mg/m ³ . Form: Respirable fraction TWA: 15 mg/m ³ . Form: Total dust
Portland Cement	ACGIH TLV (United States, 3/2012) TWA: 3 mg/m ³ . Form: Respirable dust TWA: 10 mg/m ³ . Form: Total dust OSHA PEL (United States, 6/2010) PEL: 5 mg/m ³ . Form: Respirable dust PEL: 15 mg/m ³ . Form: Total dust
Crystalline Silica (Quartz) (CAS 14808-60-7)	ACGIH TLV (United States, 3/2012) TWA: 0.025 mg/m ³ . Form: Respirable dust OSHA PEL (United States, 6/2010) TWA: 10 mg/m ³ . Form: Respirable dust TWA: 30 mg/m ³ . Form: Total dust

Appropriate engineering controls:	The use of ventilation or other engineering controls may be necessary to maintain airborne levels below any applicable limits. Under normal operations general ventilation should suffice.
Environmental exposure controls:	Use general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.
Exposure guidelines:	OSHA PELs, MSHA PELs, and ACGIH TLVs are 8-hr TWA values. NIOSH RELs are for TWA exposures up to 10-hr/day and 40-hr/wk. Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled. Terms including "Particulates Not Otherwise Classified," "Particulates Not Otherwise Regulated," "Particulates Not Otherwise Specified," and "Inert or Nuisance Due" are often used interchangeably; however, the user should review each agency's terminology for differences in meanings.

Individual protection measures

Hygiene measures:	Use good personal hygiene practices. Do not consume or store food in the work area. Wash hands thoroughly before eating, drinking, or smoking.
Eye/face protection:	Safety glasses with side shields should be worn as minimum protection from dust. Dust goggles or full face protection should be worn when very dusty conditions are present or are anticipated.

Skin protection

Hand protection:	Use alkali resistant gloves to provide hand protection from concrete.
Body protection:	Clothing with long sleeves will provide protection. Waterproof boots high enough to prevent cement from entering should be worn when workers will be standing in wet concrete. Contaminated work clothing should be washed after use.
Other skin protection:	Clothing with long sleeves and long pants should be used to prevent contact with wet concrete.
Respiratory protection:	The need for respiratory protection should be evaluated by a qualified professional. The use of respirators for controlling exposures in excess of the PEL must comply with OSHA and MSHA requirements for medical surveillance, respiratory fit testing, repair and cleaning, and user

training. In dusty areas, air monitoring for dust and quartz should be conducted regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including but not limited to, wet suppression, ventilation, process enclosure, and enclosed employee work stations.

Section 9. Physical and chemical properties

Appearance

Physical State:	Flowable, granular mud-like material	Lower and Upper explosive flammable limits	No test data available
Color:	Gray	Vapor pressure:	No test data available
Odor:	None	Vapor density:	Not applicable
Odor threshold:	Not applicable	Relative density:	1.5-3.0
pH:	12-13 in water	Solubility:	Not applicable
Melting point:	Not applicable	Solubility in water:	Negligible
Boiling point:	Not applicable	Partition coefficient: n-octanol/water:	Not applicable
Flash point:	Not applicable	Auto-ignition temperature:	No test data available
Burning time:	Not applicable	Decomposition temperature:	No test data available
Burning rate:	Not applicable	SADT:	Not applicable
Evaporation Rate:	Not applicable	Viscosity:	Not applicable
Flammability (solid, gas):	No		

Section 10. Stability and reactivity

Reactivity:	Stable
Chemical Stability:	This material is considered stable under recommended handling and storage conditions.
Possibility of hazardous reactions:	Polymerization will not occur.
Conditions to avoid:	Keep dry until used. Avoid contact with incompatible compounds.
Incompatible materials:	Wet cement may react with acids, aluminum, ammonium salts, alkali and alkaline earth compounds.
Hazardous decomposition products:	None

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity:	Not reported to be acutely toxic.
Irritation/Corrosion:	Skin: May cause skin burns or skin ulcers. Eyes: May cause eye irritation or serious eye damage. Respiratory: Studies indicate an increased risk of lung cancer from chronic exposure to respirable crystalline silica. This effect was more pronounced in those with silicosis. Studies have also linked crystalline silica exposure with autoimmune diseases and kidney disorders.
Sensitization:	May cause sensitization due to the potential presence of trace amounts of hexavalent chromium.
Mutagenicity:	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity:	See chart below.

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Portland Cement	-	-	A4	-
Crystalline Silica (Quartz) CAS 14808-60-7	-	1	A2	Known to be a human carcinogen

Reproductive toxicity: Not expected to be a reproductive hazard.
Teratogenicity: Not expected to be a teratogenic hazard.

Specific target organ toxicity (single exposure)

Name	Category	Route of Exposure	Target Organs
Crystalline Silica (Quartz) CAS 14808-60-7	-	Inhalation	Not reported to have effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of Exposure	Target Organs
Crystalline Silica (Quartz) CAS 14808-60-7	-	Inhalation	May cause damage to organs (lung) through prolonged or repeated exposure.

Potential chronic health effects: General: Prolonged inhalation of respirable crystalline silica may be harmful. May cause damage to organs (lungs) through prolonged or repeated exposure. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and the thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Aspiration hazard: Due to the physical form of the product it is not an aspiration hazard.

Section 12. Ecological Information

Persistence and degradability: No available data.
Bioaccumulative potential: No available data.
Mobility in soil: No available data.
Other adverse effects: No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods: Dispose of waste product and unused product in compliance with federal, state and local requirements. Used material which has become contaminated, may have significantly different characteristics based on the contaminant and should be evaluated accordingly. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

Section 14. Transportation information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	-	-	-
Additional information	-	-	-

Special precautions for user: It is the responsibility of the transporting entity to follow all applicable laws, regulations, and rules regarding the transport of this material.

Section 15. Regulatory Information

U.S. Federal regulations:

OSHA Hazard Communication Standard, 29 CFR 1910.1200	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200
TSCA Section 12(b) Export Notification (40 CFR 707, Subpart. D):	Not regulated
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):	Not listed
CERCLA Hazardous Substance List (40 CFR 302.4):	Not listed
Clean Air Act Section 112 (b): Hazardous Air Pollutants (HAPs):	Not regulated
Clean Air Act Section 112 (r) Accidental Release Prevention (40 CFR 68.130):	Not regulated
Safe Drinking Water Act (SDWA):	Not regulated

SARA 311/312

Composition/information on ingredients

Name	%	Fire Hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Crystalline Silica (Quartz)	>1	No	No	No	No	Yes

SARA 313

	Product name	CAS number	%
Form R-Report requirements	Crystalline Silica (Quartz)	14808-60-7	Not regulated

State regulations

California Prop. 65

WARNING: This product contains crystalline silica and chemicals (trace metals) known to the State of California to cause cancer.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Crystalline Silica (Quartz) CAS 14808-60-7	Yes	No	No	No

International regulations

Ingredient name	CAS #	TSCA	Canada	WHMIS	EEC
Portland Cement	65997-15-1	Yes	DSL	D2A	EINECS
Water	7732-18-5	Yes	DSL	-	EINECS
Crystalline Silica (Quartz)	14808-60-7	Yes	DSL	-	EINECS

WHMIS Classification:

D2A "Materials Causing Other Toxic Effects"



Section 16. Other Information

Date of issue: 06/01/2015

Version: 06/01/2015

Revised Section(s): N/Ap

Notice to reader

While the information provided in this safety data sheet is believed to provide a useful summary of the hazards of ready mix concrete as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product. In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with ready mix concrete to produce ready mix concrete products. Users should review other relevant material safety data sheets before working with this ready mix concrete or working on ready mix concrete products.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY _____, except that the product shall conform to contracted specifications. The information provided herein was believed by the _____ to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

Abbreviations

ACGIH — American Conference of Governmental Industrial Hygienists
CAS — Chemical Abstract Service
CERCLA — Comprehensive Emergency Response and Comprehensive Liability Act
CFR — Code of Federal Regulations
DOT — Department of Transportation
GHS — Globally Harmonized System
HEPA — High Efficiency Particulate Air
IATA — International Air Transport Association
IARC — International Agency for Research on Cancer
IMDG — International Maritime Dangerous Goods
NIOSH — National Institute of Occupational Safety and Health
NOEC — No Observed Effect Concentration
NTP — National Toxicology Program
OSHA — Occupational Safety and Health Administration
PEL — Permissible Exposure Limit
REL — Recommended Exposure Limit
RQ — Reportable Quantity
SARA — Superfund Amendments and Reauthorization Act
SDS — Safety Data Sheet
TLV — Threshold Limit Value
TPQ — Threshold Planning Quantity
TSCA — Toxic Substances Control Act
TWA — Time-Weighted Average
UN — United Nations

5.) CONCRETE PIPE & STRUCTURAL UNITS

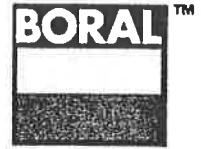
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Material Safety Data Sheet

This document has been prepared to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

45 N.E. Loop 410, Suite 700
San Antonio, Texas 78216
Phone: (210) 349-4069
FAX: (210) 349-8512
E-mail: info@BORAL.com

Boral
Material
Technologies



Classification: Calcium Aluminum Silicate

IDENTITY (As used on label and list)

Boral Class F Fly Ash

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I - Identity Information

Chemical Name NA	Emergency Telephone Number 1 (800) 424-9300 (CHEMTREC)
Chemical Family Coal Ash	Telephone Number for Information (210) 349-4069
Date Prepared 15-Feb-93	Date Revised 12-Apr-04

Section II - Hazardous Ingredients

Ingredients	CAS#	% Weight	Exposure limits	
			OSHA PEL mg/m ³	ACGIH TLV mg/m ³
Calcium Aluminum Silicates	Various	>80%	15	10
Quartz (Respirable)	14808-60-7	Varies	10/(%SiO ₂ +2)	0.05
Iron Compounds	Various	Varies	Not Available	Not Available

The above chemistries are provided for industrial hygiene and environmental purposes and are not intended to represent product specifications. Composition is variable depending on coal source and power plant characteristics. This data has been compiled from data believed to be reliable. Elements such as aluminum, arsenic, boron, calcium, chromium, cobalt, copper, gold, lead, molybdenum, nickel, silver, tin, titanium, vanadium, and zirconium may be present in trace amounts.

Section III - Physical/Chemical Characteristics

Boiling Point (°F) Not Applicable	Specific Gravity (H₂O=1) Not Applicable	NFPA HEALTH 1 NFPA FLAMMABILITY 0 NFPA REACTIVITY 0 NFPA SPECIAL:
Vapor Pressure (mm Hg.) Not Applicable	Percent Volatile by Mass (%) Not Applicable	
Vapor Density (AIR=1) Not Applicable	Evaporation Rate (Butyl Acetate=1) Not Applicable	
Solubility in Water Not Applicable	pH 4-12 (1%w/w)	

Appearance and Odor
Grayish powder, odorless.

Section IV - Fire and Explosion Hazard Data

Flash Point Not Applicable	LEL Not Applicable	UEL Not Applicable
Extinguishing Media Not Applicable		
Special Fire Fighting Procedures Not Applicable		
Unusual Fire and Explosion Hazards Not Applicable		

Section V - Reactivity Data

Material as shipped are not reactive

Section VI - Health Hazard Data

ACUTE EFFECTS OF OVEREXPOSURE:

- Eye:** May cause irritation by abrasion with dust.
- Skin:** Dust may cause irritation in hypersensitive individuals.
- Inhalation:** Dust may cause congestion and irritation in nasal and respiratory passages.
- Ingestion:** No known acute effects.

CHRONIC EFFECTS OF OVEREXPOSURE:

Excessive exposures to respirable particulate (dust) over an extended period of time may result in the development of pulmonary diseases such as silicosis

CHRONIC EFFECTS OF OVEREXPOSURE:

Excessive exposures to respirable particulate (dust) over an extended period of time may result in the development of pulmonary diseases such as silicosis

CARCINOGENICITY:

The following carcinogenicity classifications for crystalline silica have been established by the following agencies:

- OSHA:** Not regulated as a carcinogen
- IARC:** Group 1 carcinogenic in humans
- NIOSH:** Carcinogen, with no further categorization
- NTP:** Known Carcinogen

WARNING:

Material may contain crystalline silica, a chemical that has been determined by the agencies listed above to cause cancer and other chemicals known to cause cancer, birth defects and other reproductive harm. Inhalation of dust above established or recommended exposure levels should be avoided by use of proper ventilation and/or use of NIOSH and/or MSHA approved respirator

Section VII - Precautions for Safe Handling and Use

VENTILATION: Provide adequate ventilation to maintain exposures below the OSHA PEL and ACGIH TLV for quartz and other substances

RESPIRATORY PROTECTION: None required under PEL. IF PEL is exceeded, use a MSHA or NIOSH approved respirator

PROTECTIVE GLOVES: Work gloves as needed

EYE PROTECTION: Recommend Safety goggles or safety glasses. Eye wash stations should be readily accessible.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT As Needed

Steps to be taken in cas Material is Released or Spilled:

Clean up for use or disposal. Dampen with water mist to control dust (airborne dust) before removal. Do not use compressed air. If loaded on trucks, wet down material to prevent dusting during transport. Observe local, state, and federal regulations pertinent to reporting requirements.

Waste Disposal Method:

Dispose of in landfill or coal ash disposal pond. Observe local, state and federal regulations. This material is not RCRA hazardous waste.

Precautions to Be Taken in Handling and Storing:

Store in dry conditions. Minimize dust. Avoid creating dust.

Section VIII - First Aid and Medical

Skin: Wash with soap and water. If an allergic reaction causes a rash that does not heal within a few days, consult a physician

Eyes: Flush with running water. Obtain medical assistance if irritation continues.

Ingestion: Do not induce vomiting. See a physician

Inhalation: Remove from exposure to airborne particulates

Medical Conditions Aggravated by Exposure:

Excessive dust exposure may aggravate any existing respiratory disorders or diseases. Possible complications or allergies resulting in irritation to skin, eyes, and respiratory tract may occur from excessive exposure to dusts.

Section IX - Other Regulations

RCRA:

This material is not a RCRA hazardous waste.

RCRA Section 311/312:

Material as shipped is subject to Section 311/312 reporting.

EPCRA Section 313:

Material as shipped is not subject to Section 313, Toxic Chemical Release Inventory reporting requirements

DOT:

Material as shipped is not a hazardous material as per DOT regulations

UN/NA Code:

None

Placard Required:

None

Labeling Requirement:

None

The information and recommendations set forth herein are based on data we have in our possession and we have reason to believe is accurate. It is, however, the user's responsibility to determine the safety, toxicity, and suitability for his own use of the herein described product. Because the actual by others is beyond our control, Boral Material Technologies Inc. makes no warranty expressed or implied regarding accuracy of the data or the results to be obtained from the use thereof.

MATERIAL SAFETY DATA SHEET (MSDS)

PORTLAND CEMENT

Section I – Identity

Manufacturer's Name and Address: NATIONAL CEMENT COMPANY OF ALABAMA, INC.
80 National Cement Drive
P.O. Box 460
Ragland, Alabama 35131

Telephone Number: 205-472-2191

Emergency Telephone Number: 205-472-2787

Chemical Name and Synonyms: Portland cement. Portland Cement is also known as Hydraulic Cement (CAS #65997-15-1)

Trade Name and Synonyms: Coosa Cement, Type 1,1B, and 3

MSDS Information: This MSDS was produced in February 2004 and replaces any prior versions. (Reviewed and approved September 16, 2009 DG)

Section II – Chemical Data

Chemical Family:

Calcium Compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of the product.

Major compounds:

3CaO.SiO ₂	Tricalcium silicate	CAS # 12168-85-3
2CaO.SiO ₂	Dicalcium silicate	CAS # 10034-77-2
3CaO.Al ₂ O ₃	Tricalcium aluminate	CAS # 12042-78-3
4CaO. Al ₂ O ₃ .Fe ₂ O ₃	Tetracalcium aluminoferrite	CAS # 12068-35-8
CaSO ₄ .2H ₂ O	Calcium sulfate dihydrate (gypsum)	CAS # 13397-24-5

Small amounts of CaO, MgO, Na₂SO₄, K₂SO₄ may also be present.

Formula:

Portland cement consists of finely ground Portland cement clinker mixed with a small amount of calcium sulfate dihydrate (gypsum). The final product may also contain small amounts of liquid or solid grinding aids. Portland cement clinker is a sintered material produced by heating to high temperature (greater than 1200° Celsius) a mixture of substances such as limestone and shales or clays mined from the earth's crust, with possible additions of waste materials. The substances manufactured are essentially hydraulic calcium silicates contained in a crystalline mass, not separable into the individual components.

Trace Elements:

Trace amounts of naturally occurring harmful chemicals might be detected during chemical analysis. For example, under ASTM standards, Portland cement may contain up to 0.75% of insoluble residue, some of which may be free crystalline silica. Other trace constituents may include calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, and chromium and nickel compounds.

Hazardous Ingredients:

Portland cements are listed by OSHA in 29 CFR 1910.1000, Table Z-1-A, and require material safety data sheets (FR, January 19, 1989), MSHA (30 CFR 55.5. -1, Ref.2, ACGIH TLV's for 1973, Appendix E) and ACGIH (TLV's for 1984-85, Appendix D) list portland cements as nuisance dusts. NTP, IARC, or OSHA does NOT list Portland cements as carcinogens. It may, however, contain trace amounts of substances listed as carcinogens by these organizations. NTP, IARC, and OSHA do not list the grinding aids used in the manufacturing of Portland cement at this facility as carcinogens.

The main hazardous ingredients of Portland cement are:

Portland cement – approximately 95% by weight
ACGIH TVL-TWA (1995-1996) = 10 mg total dust/m³
OSHA PEL (8 hour TWA) = 50 million particles/ft³

Gypsum - approximately 5% by weight
ACGIH TVL-TWA (1995-1996) = 10 mg total dust/m³
OSHA PEL (8 hour TWA) = 10 mg total dust/m³
OSHA PEL (8 hour TWA) = 5 mg respirable dust/m³

Quartz (CAS # 14808-60-7) – less than 0.10% by weight or volume
ACGIH TVL-TWA (1995-1996) = 0.10 mg respirable quartz dust/m³
OSHA PEL (8 hour TWA) = (10 mg total dust/m³) / (%silica +2)
NIOSH REL (8 hour TWA) = 0.05 mg respirable quartz dust/m³

Grinding agents - approximately 0.06% by weight
NTP, IARC, and OSHA do not list these grinding agents as carcinogens.

Section III – Physical Data

Boiling point:	Not applicable – Portland cement is a powdered solid
Vapor pressure:	Not applicable – Portland cement is a powdered solid
Vapor density:	Not applicable – Portland cement is a powdered solid
Solubility:	Slight (0.1 – 1.0%)
Specific gravity (H ₂ O = 1)	3.15
Evaporation rate:	Not applicable – Portland cement is a powdered solid
Appearance and odor:	Gray or white powder, no odor
Melting point:	Not applicable

Section IV – Hazards Identification

Emergency Overview:

Portland cement is a light gray powder that poses little immediate hazard. A single short-term contact with the dry powder is not likely to cause serious harm. However, contact of sufficient duration with wet Portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. The same type of destruction can occur if wet or moist areas of the body come in contact with dry Portland cement.

Potential Health Effects:

Relevant routes of exposure:

Eye contact, skin contact, inhalation, and ingestion.

Effects resulting from eye contact:

Contact with airborne dust may cause immediate or delayed irritation or inflammation. Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see section V) and medical attention to prevent significant damage to the eye.

Effects resulting from skin contact:

Exposed persons may not feel discomfort until hours after a hazardous risk exposure has ended and significant injury has occurred. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly with wet cement.

Contact with dry Portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry portland cement contacting wet skin or contact with moist or wet portland cement may cause more severe effects including thickening, cracking or fissuring of the skin. Prolonged contact can cause severe skin damage in the form of caustic chemical burns.

Some individuals may exhibit an allergic response upon skin contact with Portland cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this effect after years of contact with Portland cement products.

Effects resulting from inhalation:

Contact with Portland cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.

Portland cement may contain trace amounts of free crystalline silica. Prolonged contact with respirable free crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. Crystalline silica is now classified by IARC as a known human carcinogen

(Group 1). NTP has characterized respirable silica as “reasonably anticipated to be a carcinogen”.

Effects resulting from ingestion:

Although small amounts of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland cement should not be eaten.

Medical conditions which may be aggravated by inhalation or dermal exposure:

Pre-existing upper respiratory and lung diseases.

Unusual (hyper) sensitivity to hexavalent chromium (chromium⁺⁶) salts.

Section V – First Aid

Eyes:

Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Consult physician immediately.

Skin:

Wash skin with cool water and pH-neutral soap or a mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged contact with wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin contact with dry cement.

Inhalation of airborne dust:

Remove person to fresh air. Seek medical help if coughing and other symptoms do not subside. Inhalation of large amounts of Portland cement requires immediate medical treatment.

Ingestion:

Do not induce vomiting. If conscious, have the victim drink plenty of water and seek medical attention immediately.

Section VI - Fire and Explosion Data

Flash point	Portland cement is non-combustible and non-explosive
Flammable and explosive limits:	Not applicable
Auto ignition temperature:	Not applicable
Extinguishing media:	Not combustible
Special firefighting procedures:	Not applicable
Hazardous combustion products:	Not combustible
Unusual fire and explosion hazards:	None

Section VII – Stability and Reactivity

Stability:	Stable. Keep dry until used.
Conditions to avoid:	Unintentional contact with water
Incompatibility:	Wet Portland cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal. Reaction with these substances liberates hydrogen gas.
Hazardous decomposition:	Will not spontaneously occur. Addition of water results in hydration and produces (caustic) calcium hydroxide.
Hazardous polymerization:	Will not occur.

Section VIII – Toxicological and Ecological Information

Ecotoxicity:	No recognized unusual toxicity to plant and animals.
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Section IX – Handling & Storage/Spill Procedures

Handling and storage:

Keep Portland cement dry until use. Normal temperatures and pressures do not affect the material.

Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after contact with dust or wet cement mixtures or fluids.

Spill procedure:

Collect dry material using a scoop. Avoid cleanup methods that cause dust to become airborne. Avoid breathing the dust. Scrape up wet material and place in appropriate container. Allow the material to dry before disposal. Do not attempt to wash Portland cement down drains. Emergency procedures are not required.

Small amounts of material can be disposed of as common waste or returned to the original container for later use. Large volumes may require special handling. Dispose of waste material according to local, state and federal regulations.

Section X – Exposure Controls / Personal Protection

Skin protection:

Avoid contact with unhardened Portland cement products. If contact occurs, wash affected area with soap and water. Where prolonged exposure to unhardened Portland cement may occur, wear impervious, abrasion, and alkali-resistant gloves and boots, and protective clothing to eliminate skin contact. Where required, wear boots that are impervious to water to avoid foot and ankle contact.

The use of barrier creams is advised. However, barrier creams should not be a substitute for gloves. After working with cement, workers should wash with a pH neutral soap. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean, dry clothing.

Respiratory protection:

Avoid actions that can cause the cement dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits. Use NIOSH/MSHA (under 30 CFR 11) approved respirators in poorly ventilated areas. Note: Respirators and filters purchased after July 10, 1998 must be certified under 42 CFR 84.

Ventilation:

Use local exhaust or general dilution ventilation to control exposure within acceptable limits.

Eye protection:

Wear safety glasses with side shields or tight fitting goggles. In extremely dusty environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with Portland cement or fresh cement products.

Section XI – Transportation Data

Hazardous materials description/proper shipping name

Portland cement is not hazardous under U.S. Department of Transportation (DOT) regulations.

Hazard class

Not applicable

Identification number

Not applicable

Required label text

Not applicable

Hazardous substances/reportable quantities (RQ)

Not applicable

Section XII – Other Regulatory Information

Status under USDOL-OSHA Hazard Communication Rule, 29 CFR 1910.1200

Portland cement is considered a “hazardous chemical” under this regulation, and should be part of any hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302

Not listed

Hazard category under SARA (Title III), sections 311 and 312

Portland cement qualifies as a “hazardous substance” with delayed health effects

Status under SARA (Title III), Section 313

Not subject to reporting requirements under Section 313

Status under TSCA (as of May 1997)

Some substances in Portland cement are on the TSCA inventory list

Status under the Federal Hazardous Substances Act

Portland cement is a “hazardous substance” subject to statutes promulgated under the act.

Status under California Proposition 65

This product contains chemicals (trace metals), including free crystalline silica, known to the State of California to cause cancer, birth defects, or other reproductive harm. California law requires to give the above warning.

Status under the Workplace Hazardous Materials Information System (WHMIS)

Portland cement is considered a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulation (Class E – Corrosive Material) and is therefore subject to the labeling and MSDS requirements of the WHMIS

Section XIII – Abbreviations and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ASTM	American Society for Testing and Materials
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
DOT	Department of Transportation
FR	Federal Register
ft ³	Cubic foot (cubic feet)
IARC	International Agency for Research on Cancer
m ³	Cubic meter(s)
MSDS	Materials Safety Data Sheet
MSHA	Mine Safety and Health Administration
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit

RQ	Reportable Quantity
SARA	Superfund Amendment and Reauthorization Act of 1986
TLV	Threshold Limit Volume
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
USDOL	United States Department of Labor

Section XIV – Other Information

Portland cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that Portland cement reacts chemically with water, and that some of the intermediate products of this reaction (present while the cement is “setting” or “hardening”) pose a far more severe hazard than does Portland cement itself.

While the information provided in this MSDS is believed to provide a useful summary of the hazards of Portland cement as it is commonly used, the MSDS cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

The data furnished in the MSDS does not address hazards that may be posed by other materials mixed with Portland cement to produce Portland cement products. Users should review other relevant MSDSs before working with Portland cement or its products (i.e. portland cement concrete).

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY NATIONAL CEMENT COMPANY OF ALABAMA, INC., except that the product shall conform to contracted specifications. The information provided herein was believed by NATIONAL CEMENT COMPANY OF ALABAMA, INC. to be accurate at the time of preparation or prepared from sources to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product, and to determine the suitability of the product for its intended use. Buyer’s exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer’s claim is based contract, breach of warranty, negligence or otherwise.

Material Safety Data Sheet

(Natural Sand or Gravel)

1. IDENTIFICATION

Chemical Name:	Natural Sand or Gravel	Chemical Formula:	N/A
Trade Name:	Sand or Gravel	Molecular Weight:	N/A
Synonyms:	Construction Aggregate	DOT Identification No:	None

2. PRODUCT AND COMPONENT DATA

Component(s) Chemical Name	CAS Registry No.	% (Approx)	Exposure Limits
Natural Sand* or Gravel*	None	100	See section 6
*Composition varies naturally – typically contains quartz (crystalline silica).	14808-60-7	>1	

3. PHYSICAL DATA

Appearance and odor: Angular or round multicolored particles. No odor.
 Specific Gravity: 2.55 – 2.80
 Boiling point (At 1 Atm.): N/A
 Vapor Density in Air (Air = 1): N/A
 Vapor Pressure (mmHg @ 20°C): 0
 % Volatile, By Volume: 0%
 Evaporation Rate (at 1 Atm, and 25°C; n-butyl acetate = 1): 0
 Solubility in Water: Negligible

4. REACTIVITY DATA

Stability: Stable
 Conditions to Avoid: Avoid contact with incompatible materials (see below).
 Incompatibility (materials to avoid): Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosion. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.
 Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling.
 Hazardous Polymerization: Not known to polymerize

5. FIRE AND EXPLOSION HAZARD DATA

Flashpoint (Method used): Not flammable
 Flammable Limits in Air: Not Flammable
 Extinguishing Agents: None required
 Unusual Fire and Explosion Hazards: Contact with powerful oxidizing agents may cause fire and/or explosions (see section 4 of this MSDS).

6. TOXICITY AND FIRST AID

EXPOSURE LIMITS (When exposure to this product and other chemicals is concurrent, the exposure limit must be defined in the workplace.)

Unless specified otherwise, limits are expressed as eight-hour time-weighted averages (TWA). Limits for cristobalite and tridymite (other forms of crystalline silica) are equal to one-half of the limits for quartz.

ABBREVIATIONS: TLV = threshold limit value of the American Conference of Governmental Industrial Hygienists (ACGIH); MSHA PEL = permissible exposure limit of the Mine Safety and Health Administration (MSHA); OSHA PEL = permissible exposure limit of the Occupational Safety and Health Administration (OSHA); $\mu\text{g}/\text{m}^3$ = milligrams of substance per cubic meter of air.

Other Particulates: 2001 ACGIH TLV® = 10mg/m³ (inhalable/total particulate, not otherwise specified), 2001 ACGIH TLV® = 3mg/m³ (respirable particulate, not otherwise specified); OSHA PEL = 15mg/m³ (total particulate, not otherwise regulated), OSHA PEL = 5mg/m³ (respirable particulate, not otherwise regulated).

Respirable Crystalline Silica (SiO₂/quartz): ACGIH TLV® = 0.05mg/m³; MSHA and OSHA PEL = 10mg/m³ ÷ (%SiO₂ + 2) for respirable dust containing crystalline silica.

Total dust, respirable and nonrespirable: 1973 ACGIH TLV® = 30mg/m³ ÷ (%quartz + 3).

Total Dust: MSHA PEL = 10mg/m³ (for nuisance particulates listed in Appendix E of the 1973 ACGIH TLV® booklet).

Per ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions such as those described below.

Medical Conditions Aggravated By Exposure: Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) and/or dysfunction. Exposure to dust may aggravate existing skin and/or eye conditions.

Primary Route(s) of Exposure

Inhalation

Skin

Ingestion

Acute Toxicity

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion.

SKIN ABSORPTION: Not expected to be a significant exposure route.

INGESTION: Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dusts may irritate the nose, throat, and respiratory tract by mechanical abrasion. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits.

Use of natural sand and gravel for construction purposes is not believed to cause additional acute toxic effects. However, repeated overexposures to very high levels of respirable crystalline silica (quartz, cristobalite, tridymite) for periods as short as six months have caused acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

First Aid

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or later develops.

SKIN: Wash with soap and water. Contact a physician if irritation persists or later develops.

INGESTION: If person is conscious, give large quantity of water and induce vomiting; however, never attempt to make an unconscious person drink or vomit. Get immediate medical attention.

INHALATION: Move to fresh air. Dust in throat and nasal passages should clear spontaneously.

Contact a physician if irritation persists or later develops.

For emergencies, contact

Heather Carter
(your company's designated emergency contact)

Chronic Toxicity

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, a lung disease. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Smoking may increase the risk of developing lung disorders, including emphysema and lung cancer. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica. There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with adverse health effects involving the kidney, scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) and other autoimmune disorders. However, this evidence has been obtained primarily from case reports involving individuals working in high exposure situations or those who have already developed silicosis; and therefore, this evidence does not conclusively prove a causal relationship between silica or silicosis and these adverse health effects.

Several studies of persons with silicosis also indicate an increased risk of developing lung cancer, a risk that increases with the duration of exposure. Many of these studies of silicosis do not account for lung cancer confounders, especially smoking. Sand or gravel is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP'S Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

7. PERSONAL PROTECTION AND CONTROLS

Respiratory Protection

For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.1\text{mg}/\text{m}^3$, a NIOSH approved dust respirator is recommended. For respirable quartz levels that exceed or are likely to exceed an 8-hr TWA of $0.5\text{mg}/\text{m}^3$, a NIOSH approved HEPA filter respirator is recommended. If respirable quartz levels exceed or are likely to exceed an 8-hr TWA of $5\text{mg}/\text{m}^3$, a NIOSH approved positive pressure, full face respirator or equivalent is recommended. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements.

Ventilation

Local exhaust or general ventilation adequate to maintain exposures below appropriate exposure limits.

Skin Protection

See "Hygiene" section below.

Eye Protection

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Hygiene

Wash dust-exposed skin with soap and water before eating, drinking, smoking, and using toilet facilities. Wash work clothes after each use.

Other Control Measures

Respirable dust and quartz levels should be monitored regularly. Dust and quartz levels in excess of appropriate exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee work stations.

8. STORAGE AND HANDLING PRECAUTIONS

This product is not intended or designed for use as an abrasive blasting medium or for foundry applications, and should not be used for these purposes.

Follow the personal protection and controls set forth in Section 7 of this MSDS when handling this product. Respirable crystalline silica-containing dust may be generated during processing, handling, and storage.

Do not store near food and beverages or smoking materials.

9. SPILL, LEAK AND DISPOSAL PRACTICES

Steps to be Taken in Case Material is Released or Spilled

The personal protection and controls identified in Section 7 of the MSDS should be used as appropriate. Spilled material, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Wetting of spilled material and/or use of respiratory protective equipment may be necessary. Do not dry sweep spilled material.

Prevent spilled materials from inadvertently entering streams, drains, or sewers.

For emergencies, contact Kenneth Carter
(your company's designated emergency contact)

Waste Disposal Method

Pick up and reuse clean materials. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

10. TRANSPORTATION

DOT Hazard Classification: None

Placard Required: None

Label Required: Label as required by the OSHA Hazard Communication Standard [29 CFR 1910.1200 (f) and applicable state and local laws and regulations.

For Further Information Contact: Place here the name, address, and telephone number of the operator or responsible party who can provide more info about the hazardous chemical.

Kenneth Carter 7655 C.R. 24 Clinton AL. 205-258-5559

Date of Preparation: Sept. 29, 2020

205-240-3816

Emergency Information: Your company's designated emergency contact.

Notice: _____ believes the information contained herein is accurate; however, _____ makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein by any party. The provision of the information contained herein is not intended to be and should not be construed as legal advice or as ensuring compliance with any federal, state or local laws and regulations. Any party using this product should review all such laws, rules or regulations prior to use.

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

MATERIAL SAFETY DATA SHEET

3/21/2014

E9900

SECTION I - PRODUCT IDENTIFICATION

Address: Engineered Wire Products, Inc.
PO Box 313 / 1200 N. Warpole St.
Upper Sandusky, OH 43351
Telephone: 800/842-8581
Product Name: Low Carbon Steel Products - All Grades

SECTION II - HAZARD COMMUNICATION INGREDIENTS

Primary Metals	Gen. Chem. Formula	C.A.S. Number	% Wt.
Iron	Fe	7439-89-6	>99
Manganese	Mn	7439-96-5	<1

SECTION III - PHYSICAL DATA

Boiling Point (°F)	N/A	Percent volatile by volume	N/A
Vapor Pressure (MM Hg @ 20°C)	N/A	Evaporative rate (ethyl ether=1)	N/A
Vapor Density (Air = 1)	N/A	PH information	N/A
Solubility in Water	N/A	Specific gravity (H ₂ O = 1)	Approx. 8

Appearance and odor: odorless solid with metallic lustre.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (°F)	N/A	Special fire fighting instructions	N/A
LEL/UEL	N/A	Unusual fire explosion hazards	N/A
Fire & Explosion Hazards	N/A	Flammability limits (% / vol.)	N/A

Product is non-combustible.

SECTION V - REACTIVITY DATA

Stability: Stable.

Hazardous Polymerization: Will not occur.

Comments: Metal fumes and certain noxious gases such as CO may be produced during welding or burning operations. Refer to Sections VI and VII for more information.

SECTION VI - HEALTH HAZARD INFORMATION

Primary Route(s) of Entry:

Inhalation, skin contact.

Effects of Exposure:

No toxic effects would be expected from its inert solid form. Prolonged, repeated exposure to fumes or dusts generated during heating, cutting, brazing or welding may cause the following adverse health effects:

Inhalation

Iron (Fe): Siderosis, no fibrosis
Manganese (Mn) Pneumonitis. CNS involvement, including irritability, difficulty in walking, speech disorders, compulsive behavior, masklike face and Parkinson-like syndrome.

Eye Contact:

May cause irritation.

Ingestion:

May cause irritation to mouth and throat.

Exposure Limits:

<u>Ingredient</u>	<u>GSHA PEL (Mg/M3)</u>	<u>ACGIH TLV (Mg/M3)</u>
Iron (Fe)	10 (as Fe ₂ O ₃ fume)	5 (as Fe ₂ O ₃ fume)
Manganese (Mn)	5	1.0 (as fume)

SECTION VII - EMERGENCY AND FIRST AID PROCEDURES

Inhalation:

Move to fresh air. Seek medical attention if deemed necessary.

Eye Contact:

Immediately wash eyes with large amounts of water for five minutes, occasionally lifting the upper and lower lids. Seek medical attention if deemed necessary.

Ingestion:

Seek medical attention if deemed necessary.

SECTION VIII - SPILL, LEAK & DISPOSAL PROCEDURES

Action to take for spills (use appropriate safety equipment):

N/A

Waste disposal method:

Handle as non-hazardous solid waste

SECTION IX - SPECIAL HANDLING INFORMATION

Ventilation:

Ventilation, as described in the Industrial Ventilation Manual produced by the American Conference of Government Industrial Hygienists, shall be provided in areas where exposures are above the permissible exposure limits or threshold limit values specified by OSHA or other local, state, and federal regulations.

Respiratory Protection:

A properly fitted, NIOSH - approved, dust-fume respirator should be worn during welding or burning whenever welding fumes exceed the threshold limit value (TLV) or other recommended limits, in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Protective Clothing:

Use appropriate protective clothing, such as welder's aprons and gloves, when welding or burning.

Eye Protection:

Use face shield (8" minimum) and/or goggles when welding, burning or grinding.

SECTION X - SPECIAL PRECAUTIONS / ADDITIONAL INFORMATION

Precautions to be taken in handling and storage: None

DOT Information:

Hazardous material proper shipping name: N/A

Hazard Class: N/A

Identification Number: N/A

EPA Hazardous Waste Number: N/A

WARNING

STEEL PRODUCTS CONTAIN VARIOUS CONSTITUENTS IN THE BASE METAL AND COATINGS OF VARYING TOXICITY AND CONCENTRATION. DURING METAL WORKING ACTIVITIES SUCH AS WELDING, BURNING, GRINDING, HEATING AND FORGING METAL FUMES AND GASES MAY BE GENERATED, WHICH MAY BE DANGEROUS TO YOUR HEALTH. AVOID BREATHING THESE FUMES AND GASES. MECHANICAL VENTILATION OR RESPIRATORS MUST BE UTILIZED IF NATURAL VENTILATION IS NOT SUFFICIENT TO MAINTAIN CONTAMINANTS BELOW THE OSHA PERMISSIBLE EXPOSURE LEVEL (PEL).

IF WORKERS DEVELOP SYMPTOMS OF EXPOSURES TO FUMES AND GASES, MOVE PERSONS FROM CONTAMINATED AREA TO FRESH AIR AT ONCE.. GIVE ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED, OR OXYGEN, IF NECESSARY. GET MEDICAL ATTENTION, IF NECESSARY.

FOR FURTHER INFORMATION, REFER TO THE APPROPRIATE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT.

All data are subject to reasonable variation. This information is supplied in good faith by Engineered Wire Products, Inc. and is applicable to the product as shipped. Your application of the product may change its characteristics. THE DATA PROVIDED HEREIN ARE BELIEVED CORRECT OR ARE OBTAINED FROM SOURCES BELIEVED TO BE GENERALLY RELIABLE. ENGINEERED WIRE PRODUCTS, INC. SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT, AND ENGINEERED WIRE PRODUCTS, INC. ASSUMES NO OBLIGATION OR LIABILITY FOR RELIANCE ON THE INFORMATION CONTAINED IN THIS DATA SHEET.

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6.) HYDRAULIC CEMENT

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SAFETY DATA SHEET



Issue Date: March 20, 2017

Revision Date: June 25, 2018

Version: 2017

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name(s): ChemPlug, ChemPlug F, ChemPlug S

Other Means of Identification

SDS #: F3000, F3010, F3016

Recommended Use: Concrete Restoration

Restrictions on Use: No Data

Supplier of the Safety Data Sheet including Address:

ChemMasters Inc.
300 Edwards Street
Madison, OH 44057

Telephone Numbers

Company Phone Number

Phone: 800-486-7866, 440-428-2105

Fax: 440-428-7091

Emergency Telephone: ChemTrec 800-424-9300

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards:

Harmful if swallowed, causes severe skin burns and eye damage, suspected of causing cancer by inhalation of respirable crystalline silica, may cause respiratory irritation, may cause damage to lungs through prolonged or repeated exposure by inhalation, and may cause an allergic skin reaction.

Target Organs: Lungs

GHS Classification:

Acute Toxicity Oral – Category 4

Carcinogenicity – Category 2

Eye damage/eye irritation – Category 1

Skin sensitization – Category 1

Skin irritation – Category 1

Specific target organ toxicity – repeated exposure – Category 2, Respiratory System

Specific target organ toxicity – single exposure – Category 3, Respiratory System

Label Elements, including precautionary statements

Pictograms:



Signal Word: DANGER

Hazard Statements:

- H302 Harmful if swallowed
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage
- H335 May cause respiratory irritation.
- H351 Suspected of causing cancer.
- H373 May cause damage to organs through prolonged or repeated exposure if inhaled.

Precautionary Statement(s)**Prevention:**

- P201 Obtain special instruction before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P264 Wash hands and skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:

- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P310 Immediately call a POISON CENTER/doctor.
- P303+P313+P310 IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with plenty of water or shower. Immediately call a POISON CENTER/doctor.
- P363 Wash contaminated clothing before reuse.
- P333+P313 If skin irritation or rash occurs: Get medical advice or attention.
- P304+P340+P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P314 Repeated Exposure: Get medical advice/attention if you feel unwell.

Storage:

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P405 Store locked up

Disposal:

- P501 Dispose of contents/container in accordance with local/regional/national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS**Component**

Crystalline Silica in the form of Quartz	CAS#: 14808-60-7	25-35%
Cement Mixture	CAS#: 65997-15-1 & 65997-16-2	65-75%
Calcium Magnesium Hydroxide	CAS#: 39445-23-3	1-5 %
Additives	Proprietary	<1%

Ingredients not listed on this safety data sheet are considered to be non-hazardous according to OSHA 1910.1200 or are not present above their cutoff levels. Where a range is displayed, the exact percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

General Advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

Inhalation: If breathed in, move person into fresh air and keep comfortable for breathing. Consult a physician.

Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician.

Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Skin Contact: Remove contaminated clothing. Wash off with soap and plenty of water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Material is Non-combustible. Use Water spray, alcohol-resistant foam, dry chemical, or carbon dioxide for surrounding fire.

Specific Hazards Arising from the Chemical

Avoid breathing dust. Wet cement is caustic.

Hazardous Combustion Products

Calcium Oxide, Sulfur Dioxide

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus and full protective gear for firefighting.

Further Information: See Section 7 for safe handling and storage.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Avoid actions that cause the material to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment during any cleanup and response activities.

Environmental Precautions

Do not wash cement down sewage and drainage systems or into bodies of water.

Methods and Material for Containment and Cleaning Up

Place spilled material into a container. Scrape wet material and place in container. Allow material to dry or solidify before disposal. Dispose of cement according to Federal, State, Provincial and Local regulations.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for Safe Storage, Including any Incompatibilities

General information: Keep bagged material dry until used. Stack bagged material in a secure manner to prevent falling. Bagged material is heavy and poses risks such as sprains and strains to the back, arms, shoulders and legs during lifting and mixing. Handle with care and use appropriate control measures.

Incompatibilities: Water will cause product to solidify.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Component Exposure Limits

Cement CAS#: 65997-15-1 OSHA 15 mg/m³ T (Total) / 5 mg/m³ R (Respirable)

Silica, Quartz CAS#: 14808-60-7 OSHA TWA 10 mg/m³, ACGIH TWA 0.025 mg/m³

Calcium Magnesium Hydroxide Hydrated CAS#: 39445-23-3 OSHA TLV 5 mg/m³

Appropriate Engineering Controls

Local Ventilation: Recommended

General Ventilation: Recommended

Individual Protection Measures, such as Personal Protective Equipment

Eye/Face Protection: Use proper protection – Safety Glasses as a minimum

Skin and Body Protection: Wash at mealtime and end of shift. Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc.). Use chemical protective gloves as a minimum and wash skin promptly upon any skin contact.

Respiratory Protection: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice. Wash hands before & after breaks and work day.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State

Appearance: Solid Powder

Color: Gray

Odor: Mild

Odor threshold: No Data

<u>Property</u>	<u>Value</u>	<u>Remarks – Method</u>
Vapor Pressure	Not Available	
Vapor Density	Not Available	
Relative Density	Not Available	
pH (In Water)	12-13	
Melting/Freezing Point	Not Relevant	
Solubility	Not Available	
Evaporation Rate	Not Available	
Flash Point	Not Relevant	
Flammability Limits	Not Available	
Flammability (Solid, gas)	Not Relevant	
Auto Ignition Temperature	Not Available	
Initial Boiling Point/Boiling Range	Not Available	
Decomposition Temperature	Not Available	
Viscosity	Not Available	
Specific Gravity	Not Available	

10. STABILITY AND REACTIVITY

Chemical Stability:

Stable.

Possibility of Hazardous Reactions:

Hazardous polymerization will not occur.

Conditions to Avoid:

Keep dry until use. Avoid contact with incompatible materials.

Incompatible Materials:

Wet cement is alkaline and is incompatible with acids, ammonium salts and aluminum metal. Cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

Hazardous Decomposition Products:

None known

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Inhalation, Skin Contact, Eye Contact, Ingestion

Symptoms of Exposure:

Inhalation: May cause respiratory irritation

Skin: Causes severe skin burns. May cause allergic skin reaction.

Eyes: Causes serious eye damage

Ingestion: Irritation of the digestive system may occur if large amounts are swallowed.

Numerical measures of toxicity:

Acute Toxicity Value: Silica-LD50 oral rat 22,500 mg/kg

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-Term Exposure

Dermatitis:

Irritant Dermatitis is caused by physical properties of cement including alkalinity and abrasion. **Allergic Dermatitis** is caused by sensitization to hexavalent chromium (Chromate) present in cement. The reaction can range from a mild rash to severe skin ulcers. Persons already sensitized may react to the first contact with cement. Others may develop allergic dermatitis after years of repeated contact with cement.

Carcinogenicity:

IARC: 1-Group 1: Carcinogenic to humans (Quartz)

ACGIH: No component of this product is present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: Carcinogenic to humans (Quartz)

OSHA: No component of this product is present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Specific target organ toxicity: Single exposure – No data available.

Specific target organ toxicity: Repeated exposure – Category 2, Respiratory System.

Silicosis: Silicosis is caused by the inhalation and retention of respirable crystalline silica dust.

Simple Chronic Silicosis - results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable

crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).

Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.

Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Pre-Existing Conditions: Cement dust is irritating to the nose, throat and respiratory tract causing coughing and sneezing. Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated.

12. ECOLOGICAL INFORMATION

Eco toxicity: Not expected to be hazardous to the environment.

Persistence and Degradability: No Data Available

Bioaccumulation: No Data Available

Mobility: No Data Available

Other Adverse Effects: No Data Available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes: This product is not expected to be a hazardous waste under RCRA. Place spilled material into a container. Scrape wet material and place in container. Allow material to dry or solidify before disposal. Dispose of according to Federal, State, Provincial and Local regulations.

Contaminated Packaging: Dispose of as unused material.

14. TRANSPORT INFORMATION

DOT: Not a Dangerous Good

IATA: Not a Dangerous Good

IMDG: Not a Dangerous Good

Marine Pollutant: No

15. REGULATORY INFORMATION

International Inventories

TSCA: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

US Federal Regulations

SARA 302: None Known

SARA 311/312 Hazard Categories: Acute Health Hazard, Chronic Health Hazard

SARA 313 Hazard Categories: None Known

CWA (Clean Water Act): None Known

Supplemental State Compliance Information

California:

Warning: This product contains the following chemical(s) listed by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) as being known to cause cancer, birth defects or other reproductive harm.

Quartz CAS#:14808-60-7
Hexavalent Chromium Compounds

New Jersey Right TO Know

CAS Number	Component Name
14808-60-7	Quartz

Pennsylvania Right To Know

CAS Number	Component Name
14808-60-7	Quartz

Massachusetts Right To Know

CAS Number	Component Name
14808-60-7	Quartz

U.S. EPA Label Information: No Data

16. OTHER INFORMATION

HMIS Classification:

Health hazard:	2
Flammability:	0
Physical Hazards:	0

NFPA Rating:

Health hazard:	2
Fire:	0
Reactivity Hazard:	0

Issuance Date: March 20, 2017

Revision Date: June 25, 2018

Revision Note: Reviewed & Updated

Date of Previous Version: July 10, 2014

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

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7.) LIMESTONE (VULCAN QUARRY)

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Limestone Rock Asphalt (LRA) Aggregate

1. Identification (Begin Here)

Product name:

Limestone Rock Asphalt (LRA) Aggregate

Other means of identification/Synonyms/Common Names:

LRA Air- Separator Dust, LRA Flexible Base, LRA Quarry Screenings, LRA Ultrafines

Recommended use:

Limestone Rock Asphalt (LRA) Aggregate is used as a construction material.

Recommended restrictions:

None known

Manufacturer/Contact info:

Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

General Phone Number:

1.866.401.5424

Emergency Phone Number:

1.866.401.5424 (3E Company, 24hours/day, 7 Days/week)

Website:

www.vulcanmaterials.com

2. Hazard(s) Identification

Physical hazards:

Not Classified

Health hazards:

Carcinogenicity-Category 1A
Specific target organ toxicity, repeated exposure- Category 2

Signal word:

Danger

Hazard statement:

May Cause Cancer (Inhalation).
Causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)



Precautionary statement:

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required. Wear protective gloves, protective clothing, eye protection, and face protection.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response

- If exposed or concerned get medical advice/attention.

Disposal

- Dispose of contents/container in accordance with all local, regional, national, and international regulations.

Supplemental information:

Respirable Crystalline Silica (RCS) may cause cancer. Limestone Rock Asphalt (LRA) Aggregate is a naturally occurring mineral complex that contains varying quantities of quartz (crystalline silica). LRA may be subjected to various natural or mechanical forces that produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to IARC, NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite

and cristobalite) may also be present or formed under certain industrial processes.

3. Composition/information on ingredients

Chemical name	CAS number	%
Limestone	1317-65-3	93 - 95
Quartz (crystalline silica)	14808-60-7	>1
Native Asphalt Bitumen	8052-42-4	5-7

4. First-aid measures

Inhalation:

Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or if breathing is difficult.

Eyes:

Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Contact a physician if irritation persists or later develops.

Skin:

Clean exposed skin with soap or mild detergent and large amounts of water until all traces are removed from the skin. Do not use solvents or thinners to remove material from skin. Get medical attention if irritation develops or persists.

Ingestion:

If person is conscious, do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.

Most important symptoms/effects, acute and delayed:

Dust from hardened, dry product may irritate the eyes, skin, and respiratory tract. Breathing silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure.

Indication of immediate medical attention and special treatment needed:

Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

For emergencies contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

5. Fire-fighting measures

Suitable extinguishing media:

Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, and steam) and water fog.

Unsuitable extinguishing media:

Avoid use of straight-stream water. Adding water to hot asphalt presents an explosion hazard.

Specific hazards arising from the chemical:

Fumes and vapors can explode when concentrated in an enclosed environment and supplied with an ignition source. Never weld or use a cutting torch or open flame on a full, partially full or empty bin, hopper, or other container that holds or has held asphalt material unless precautions are taken to prevent explosion. **WARNING:** Hydrogen sulfide (H₂S) and other hazardous gases/vapors may evolve and collect in the headspace of storage tanks or other enclosed vessels, and can create an explosive, toxic or oxygen deficient atmosphere. H₂S gas is extremely flammable and can explode if an ignition source is provided. See Section 11 for health effects of H₂S gas.

Special protective equipment and precautions for firefighters:

Avoid breathing irritating and potentially toxic fumes, including hydrogen sulfide gas. Firefighters should wear NIOSH/MSHA approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

Fire-fighting equipment/instructions:

Adding water to hot asphalt presents an explosion hazard.

Specific methods:

Use water spray to keep fire-exposed containers cool.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ventilate area and avoid emission inhalation or skin contact by using appropriate precautions outlined in this SDS (see Section 8). Keep all sources of ignition at least 50 feet away. Prevent materials from entering streams, drainages, or sewers. Spills entering surface waters or sewers entering/leading to surface waters must be reported to the National Response Center 1-800-424-0882. Based on volume and use, components of this product may be subject to reporting requirements of Title III of SARA, 1986, and 40 CFR 372.

For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).

Environmental precautions:

Stop leak and contain spilled material with sand, aggregate fines, or other inert adsorbent. Collect adsorbed product and clean up materials in appropriate container for proper disposal. Notify proper authorities. Prevent from entering into sewers or drainage systems where it can harden and clog flow.

Methods and materials for containment and cleaning up:

Contact the asphalt plant to determine feasibility of recycling material. Dispose of waste materials in accordance with applicable federal, state and local laws and regulations.

7. Handling and storage

Precautions for safe handling:

Follow personal protection and protective controls set forth in Section 8 of this SDS when handling this product. If personnel must enter a tank or other confined space that contained this material, follow the OSHA Confined Space Entry Program as specified in 29 CFR 1910.146. Do not store near food, beverages or smoking materials. Avoid personal contact with heated material. Respirable crystalline silica-containing dust may be generated when hardened asphalt mix is subjected to mechanical forces, such as demolition work, surface treatment (sanding, grooving, chiseling, etc.), and/or recycling of pavement.

Do not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition as they may explode and cause injury or death.

Tripping accidents have occurred because of asphalt buildup on bottoms of shoes and boots; buildup should be removed regularly to prevent such accidents. Do not use solvents or thinners to clean footwear.

Conditions for safe storage, including any incompatibilities:

Store away from all ignition sources and open flames in accordance with applicable laws and regulations.

Vapors containing hydrogen sulfide may accumulate during storage or transport of asphaltic materials. When petroleum asphalt products are heated, potentially irritating emissions (fumes, mists, and vapors) may be released.

8. Exposure controls/personal protection

Legend:

NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Limestone (Calcium Carbonate)	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (total dust as Calcium Carbonate)	10 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)
Asphalt Fumes	NE	0.5 mg/m ³ (as benzene-soluble aerosol)	Ceiling 5 ppm
Particulates not otherwise classified	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction)	NE
Respirable dust containing silica	10 mg/m ³ ÷ (% silica + 2)	Use Respirable Silica TLV	Use Respirable Silica TLV
Total dust containing silica	OSHA: 30 mg/m ³ ÷ (% silica + 2) MSHA: 30 mg/m ³ ÷ (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	NE - Use respirable dust containing silica PEL	0.025 mg/m ³	0.05 mg/m ³
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	½ of OSHA and MSHA respirable dust containing silica PEL	0.025 mg/m ³	0.05 mg/m ³

Exposure Guidelines:

Workers should station themselves on the upwind side of asphalt emissions when possible. It is recommended that asphalt emissions be monitored regularly to determine exposure levels. Respirable dust and quartz levels should be monitored regularly to determine worker exposure levels. Exposure levels in excess of allowable exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee workstations.

Wash hands before eating, drinking, smoking and/or using toilet facilities. A clean water supply for emergency first aid and washing facilities should be readily available. Do not use solvents or thinners to remove material from skin. Laundering clothing between uses is recommended.

Engineering Controls:

General dilution or local exhaust ventilation is required to maintain exposures below appropriate exposure limits. Activities with dried/hardened product that generate dust require the use of general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.

Eye Protection:

Use a full face shield and chemical safety goggles if handling heated material. Safety glasses with side shields should be worn as minimum protection at ambient temperatures. Contact lens should not be worn when eye contact with product is possible.

Skin Protection (Protective Gloves/Clothing):

Avoid skin contact with material by wearing impervious gloves and protective clothing. With product at ambient temperatures, use disposable nitrile, neoprene or butyl rubber material. When handling hot material, use heat-resistant gloves. Use insulated, heat-resistant clothing as necessary.

Respiratory Protection:

Not expected to be necessary under normal use and working conditions.

All respirators must be NIOSH-approved for the exposure levels present. (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. For air-contaminant concentrations which exceed or are likely to exceed applicable exposure limits, use a NIOSH-approved, contaminant-specific, air purifying respirator. If such conditions are sufficiently high that the air-purifying respirator is inadequate, or if oxygen adequate to sustain life is not present, use a positive-pressure, self-contained breathing apparatus. Activities

that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed allowable exposure limits. For respirable silica levels that exceed or are likely to exceed an 8-hour Time Weighted Average (TWA) of 0.5 mg/m³, a high-efficiency particulate filter respirator must be worn at a minimum; however, if respirable silica levels exceed or are likely to exceed an 8-hour TWA of 5.0 mg/m³, a positive-pressure, full-face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134) standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

9. Physical and chemical properties

Appearance:

Gray to black round or angular particles.

Odor: Mild asphaltic odor when fresh or heated.	PH: Not applicable	Decomposition temperature: Not applicable
Melting point/freezing point: 100-135°	Initial boiling point and boiling range: Not applicable	Flash point: Product: Not available
Evaporation rate: Not applicable	Flammability: Not applicable	Upper/lower flammability or explosive limits: Not applicable
Vapor pressure: Not applicable	Relative density: >1 Not applicable	Solubility: Negligible
Partition coefficient: n-octanol/water. Not applicable	Autoignition temperature: Not applicable	Specific Gravity (H2O = 1): 2.2- 2.3 (bulk)

10. Stability and reactivity

Reactivity:

Contact with fluorine may cause burning or explosion. Adding water to hot asphalt presents an explosion hazard.

Chemical stability:

Stable under normal temperatures and pressures.

Possibility of hazardous reactions:

Keep away from direct flame/ignition sources.

Conditions to avoid (e.g., static discharge, shock or vibration):

Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.

Incompatible materials:

Strong oxidizers may react with hydrocarbons. Silica ignites on contact with fluorine and is incompatible with acids, aluminum, ammonium salts and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous decomposition products:

Carbon monoxide and other compounds (such as amines, ammonia, nitrogen dioxide, sulfur dioxide, ozone, hydrogen sulfide, and various hydrocarbons) may be released by thermal decomposition. Hazardous vapors can collect in enclosed vessels or areas if not properly ventilated. If hydrogen sulfide is present, the flammable limits range from 4.3 to 45.5% by volume and its presence may promote the formation of pyrophoric (spontaneously igniting) iron compounds (See 29 CFR 1910.146). Silica-containing respirable dust particles may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580°F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica.

11. Toxicological information

Note: Some potential adverse health effects described in the SDS for this product are based on refined asphalt cement, a similar material to native asphalt bitumen. However, it is expected that the native bitumen is less hazardous because of its composition and physical form. Limestone rock asphalt (LRA) is limestone rock impregnated with native asphalt bitumen; native asphalt bitumen has limited chronic toxicity data.

Primary Routes of Exposure:

Inhalation and contact with the eyes and skin.

Symptoms related to the physical, chemical, toxicological characteristics**Inhalation:**

Dusts may irritate the nose, throat and respiratory tract by mechanical abrasion. Coughing sneezing and shortness of breath may occur. Symptoms of silicosis caused by chronic exposure to dust may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Contains or may release hydrogen sulfide (H₂S) gas when heated. Exposure to H₂S concentrations above the permissible exposure limit causes irritation of the mucous membranes, headache, dizziness, vomiting, coughing, nasal discharge and pulmonary edema. At levels between 500 and 700 ppm, respiratory paralysis, loss of consciousness and possibly death can occur within 30 to 60 minutes. Exposure to higher concentrations can result in immediate death. Repeated exposure to low levels may also cause eye effects including conjunctivitis and corneal injury. There is no evidence that H₂S will accumulate in the body tissue after repeated overexposure.

Eye Contact:

Dust particles can scratch the eye causing tearing, redness, a stinging or burning feeling, or swelling of the eyes with blurred vision.

Skin Contact:

Dust particles can scratch and irritate the skin with redness, an itching or burning feeling, swelling of the skin, and/or rash.

Ingestion:

Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation including nausea, vomiting, diarrhea, and blockage.

Medical Conditions Aggravated by Exposure:

Irritated or broken skin increases chance of contact dermatitis. Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung. Smoking tobacco will impair the ability of the lungs to clear themselves of dust.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Prolonged and repeated exposure to asphalt may cause skin disorders such as dermatitis, folliculitis, and acne-like lesions, or more rarely, pigmentation of the skin. Chronic inhalation of high concentrations of asphalt emissions may cause chronic bronchitis and pneumonitis (inflammation of the lungs). In mice, there was damage to the lungs, including bronchitis, pneumonitis, and abscess formation. Guinea pigs and rats showed pneumonitis, peribronchial adenomatosis, and some squamous cell metaplasia. This material contains heavy vacuum distillates/aromatic extract oils. Repeated dermal application of these oils to experimental animals has been reported to cause skin disorders, effects on the liver, thymus and blood forming organs, as well as fetal death and birth defects.

The following information applies to the dried product if it is subjected to mechanical forces (such as demolition or asphalt recycling work), which may generate crystalline silica-containing dust particles:

Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis.

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of allowable exposure limits may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of exposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased.

Repeated overexposures to very high levels of respirable crystalline silica for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Carcinogenicity:

Skin application of asphalt fume condensate fractions caused skin tumors in laboratory mice. When asphalt was dissolved or mixed with a solvent prior to exposing laboratory animals, the carcinogenicity results were weakly positive. The causal agent is thought to be 4 to 6 ring polycyclic aromatic compounds (PAH). Trace amounts of these materials may be present in asphalts and can be generated upon excessive heating. Some PAHs have been identified as causing carcinogenic and reproductive effects. Currently, epidemiological evidence does not support a link between asphalt exposure and human skin cancer.

Repeated breathing of asphalt emissions has not resulted in a carcinogenic response in laboratory animal testing. Although epidemiological studies on asphalt workers have suggested a possible link between asphalt fumes and certain types of cancer, confounding factors such as smoking and concomitant exposure to other agents in the workplace may have influenced the results of these studies. Asphalt is not listed as a carcinogen by the National Toxicology Program (NTP) or the Occupational Safety and Health Administration (OSHA). In 1985, the International Agency for Research on Cancer (IARC) determined that there is inadequate evidence that asphalt alone is carcinogenic to humans. However, IARC states that there is sufficient evidence that extracts (asphalts dissolved in hydrocarbon solvents) are carcinogenic to laboratory animals. Although epidemiological studies on some petroleum products containing polycyclic aromatics suggest the possibility of skin cancer induction in humans, a link between petroleum asphalt exposure and human skin cancer has not been established.

The following information applies to the dried product if it is subjected to mechanical forces (such as demolition or asphalt recycling work), which may generate crystalline silica-containing dust particles:

Epidemiology studies on the association between crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source and type of crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). In 2012, an IARC Working Group re-affirmed that inhalation of crystalline silica was a known human carcinogen. The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In the year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

Additional information on toxicological-effects:

Note: Because this product is not heated under normal use and working conditions, asphalt emissions (fumes vapors or mists) are expected to be minimal. If product comes in contact with heated surfaces or is heated, emissions may increase. Hazards of dried asphalt products are discussed in Section 11.

Acute toxicity: Not classified

No specific data on product.

Material similar to limestone (calcium carbonate CAS# 471-34-1) has oral LD50 (rats) = 6450 mg/kg.)

Asphalt has oral LD50 (rats) >5g/kg.

Skin corrosion/irritation: Not classified.

Serious eye damage/eye irritation: Not classified.

Respiratory sensitization: Not classified.

Skin sensitization: Not classified.

Germ cell Mutagenicity: Not classified.

Carcinogenicity: May cause cancer (Inhalation).

Reproductive toxicity: Not classified.

Specific target organ toxicity - single exposure: Not classified.

Specific target organ- toxicity – repeated exposure: Causes damage to organs (lung/respiratory system) through prolonged or repeated exposure (inhalation).

Aspiration toxicity: Not classified.

12. Ecological information

Ecotoxicity (aquatic and terrestrial, where available):

No specific data on this product. The asphalt component may cause damage to aquatic organisms.

Persistence and degradability:

Expected to be resistant to biodegradation.

Bioaccumulative potential:

Significant bioaccumulation is unlikely.

Mobility in soil:

Significant migration into the environment is unlikely.

Other adverse effects:

No specific data on this product.

13. Disposal considerations

Safe handling and disposal of waste:

Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste.

Product uses, transformations, mixture and processes, may render the resulting material hazardous.

14. Transport information

UN Number:

Not regulated.

UN Proper shipping name:

Not regulated.

Transport Hazard class:

Not applicable.

Packing group, if applicable: Not applicable.
Marine pollutant (Yes/No): Not applicable.

15. Regulatory information
Toxic Substances Control Act (TSCA): The components in this product are listed on the TSCA Inventory or are exempt.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): Releases of this material to water may be reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act. It is recommended that you contact state and local authorities to determine if there are any local reporting requirements in the event of a spill. (See Section 6)
Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III: <u>Section 302 extremely hazardous substances:</u> None <u>Section 311/312 hazard categories:</u> Delayed Health <u>Section 313 reportable ingredients at or above de minimus concentrations:</u> None
California Proposition 65: This product contains a chemical (crystalline silica, bitumen) known to the State of California to cause cancer and birth defects or other reproductive harm.
State Regulatory Lists: Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list or all state regulations. Therefore, the user should review the components listed in Section 2 and consult state or local authorities for specific regulations that apply.

16. Other information
<u>Disclaimer</u>
NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.
Vulcan Materials Company and its subsidiaries and affiliates (“Vulcan”) believe the information contained herein is accurate; however, Vulcan makes no guarantees with respect to such accuracy and assumes no liability whatsoever in connection with the use of any information contained herein by any party. The provision of the information contained herein is not intended to be, and should not be construed as, legal advice or as ensuring compliance with any federal, state, or local laws, rules or regulations. Any party using any information contained herein should review all applicable laws, rules and regulations prior to use.
Issue date: 06/01/2015
Revision date: 06/01/2015

**Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242**



Dear Customer/Contractor:

Please find attached a safety data sheet (SDS) for the product that you purchased from Vulcan Materials Company or one of its subsidiaries or affiliates ("Vulcan"). This is a revised SDS and replaces any previous versions of the material safety data sheet (MSDS) for this product. This SDS is provided to you as required by the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Mine Safety and Health Administration's (MSHA) Hazard Communication Standard (30 CFR Part 47), and/or any applicable state Right-to-Know laws.

It is the responsibility of your company to communicate this information to your employees, customers, and contractors who may use or come in contact with this product. Further, if you distribute this product, Vulcan requests, and applicable laws may require, that you forward this SDS to your customers.

Please direct this information to the person responsible for safety and health compliance at your company. If you have questions about the SDS, please contact Vulcan at 1200 Urban Center Drive, Birmingham, AL 35242 or 1-866-401-5424.

If you need additional copies of this or any other Vulcan SDS or a Spanish language version, you can obtain them at www.vulcanmaterials.com or by calling 1-866-401-5424.

La MSDS puede obtenerse en www.vulcanmaterials.com o llamando al 1-866-401-5424.

Sincerely,
Occupational Health Office
Vulcan Materials Company

8.) MORTAR MIX

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CEMENT & CONCRETE PRODUCTS™

C4: Portland Cement Based Concrete Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
One Securities Centre
3490 Piedmont Road, Suite 1300
Atlanta, GA 30305

Emergency Telephone Number
(770) 216-9580
Information Telephone Number
(770) 216-9580

Revision: Jun-15
SDS C4

QUIKRETE® Product Name	Item #(s)
MORTAR MIX	1102
VIEUX CARRE MORTAR MIX	1102-86
ALL-STAR MORTAR MIX	1122
MASON MIX	1136
ALL-STAR MASON MIX	1136
QUIKRETE® PRO-FINISH BLENDED MASON MIX	1136-58
ALL-STAR VENEER STONE MORTAR	1137
ROOF TILE MORTAR	1140
VENEER STONE MORTAR	1137
POLYMER MODIFIED VENEER STONE MORTAR	1137-85
CSC-4	1191-84
TUCKPOINTING MORTAR – ZIP AND MIX	1251-15
GLASS BLOCK MORTAR	1610
K-1 Mortar	210280
HANDICRETE MORTAR MIX	
NATURAL STONE MORTAR	
RED-E-CRETE MORTAR	
BULK MASONRY MORTARS: MIX 101M, 102 S, 104 N, 112 M, 112 N, 112 S, 122 M, 122 N, 122 S, 132 S, 142, 201 M, 202 PLN, 202 S, 203 PLS, 203 S, 203 N, 204 N, 205 P/L type O, 203 M, 212 M, 212 N, 212 S, 222 M, 222 S, 253 S, 294 N	

Product Use: Masonry Mortars for construction with block, brick, veneer stones, etc.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Silica, Portland cement

2.1 Classification of the substance or mixture

Carcinogen – Category 1A

Skin Corrosion – Category 1B

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Skin Sensitization – Category 1B

Specific Target Organ Toxicity Repeat Exposure – Category 1

Specific Target Organ Toxicity: Single Exposure – Category 3

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause cancer through chronic inhalation

Causes severe skin burns and serious eye damage

May cause an allergic skin reaction

Causes damage to lungs through prolonged or repeated inhalation

May cause respiratory irritation

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Wear impervious gloves, such as nitrile. Wear eye protection, and protective clothing.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Use only in a well-ventilated area.

Do not breathe dust.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical advice or attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information Precautions must be observed because burns occur with little warning -- little heat is sensed.



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2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None

2.3C WHMIS Classification

Class D2B – Skin/Eye Irritant

Class D2A – Chronic Toxic Effects – Carcinogen

Class E – Corrosive Material

2.3d Label Elements According To WHMIS

Hazard Symbols



Signal Word

DANGER!

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	% by Weight
Sand, Silica, Quartz	14808-60-7	40-70*
Portland Cement	65997 15 1	10-30*
Lime	01305-62-0	5-10%
Pulverized Limestone	01317-65-3	5-10%

*The concentrations ranges are provided due to batch-to-batch variability.
None of the constituents of this material are of unknown toxicity.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures

General information:

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

**CEMENT & CONCRETE PRODUCTS™****4.2 Most important symptoms/effects, acute and delayed**

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated inhalation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes. Precautions must be observed because burns occur with little warning -- little heat is sensed.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

4.3 Indication of immediate medical attention and special treatment needed:

Immediately seek medical advice or attention if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Non-flammable and non-combustible

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE



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7.1 Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended. Wear appropriate PPE (See section 8). Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children. Keep container tightly closed and prevent exposure to humidity. Do not allow water to contact the product until time of use to preserve product utility.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Silica Sand, crystalline	14808-60-7	0.1	0.025 (resp)
Portland Cement	65997-15-1	5 (resp) 15 (total)	10 (resp)
Lime	01305-62-0	5	5
Pulverized Limestone	01317-65-3	5 (resp) 15 (total)	10 (resp)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact. Precautions must be observed because burns occur with little warning -- little heat is sensed.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:



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A NIOSH-approved dust mask or filtering face piece is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information

Appearance	Form: Granular Solid Color: Gray to gray-brown colored Odor: None
pH-value at 20°C (68 °F):	13 (10%)
Boiling point/Boiling range:	Not applicable
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	2.6 to 3.15

Solubility in / Miscibility with

Water:	Insoluble
VOC content:	0 g/L VOC

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

10.6 Hazardous Decomposition or By-products

Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.



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11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: Harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure

Short Term

Skin Corrosion/Irritation: Causes severe skin burns.

Serious Eye Damage/Irritation: Causes severe eye damage.

Respiratory Sensitization: Not available

Skin Sensitization: May cause an allergic skin reaction.

Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation.

Aspiration Hazard: Not available

Long Term

Carcinogenicity: May cause cancer through chronic inhalation.

Germ Cell Mutagenicity: Not available

Reproductive Toxicity: Not available

Specific Target Organ Toxicity- Repeated Exposure: (Category 1) Causes damage to lungs through prolonged/repeated exposure

Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

May cause long-term adverse effects to the aquatic environment. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

12.2 Persistence and degradability

No further relevant information available.



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12.3 Bioaccumulative potential:

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

12.5 Other Adverse Effects

No further relevant information available.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

CEMENT & CONCRETE PRODUCTS™**Canada**

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

15.2 US Federal Information**SARA 302/311/312/313 Components**

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

15.3 State Right to Know Laws**California Prop. 65 Components**

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

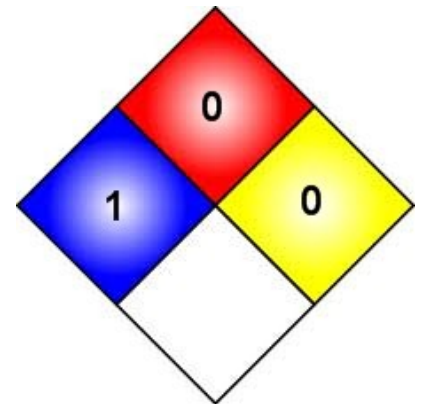
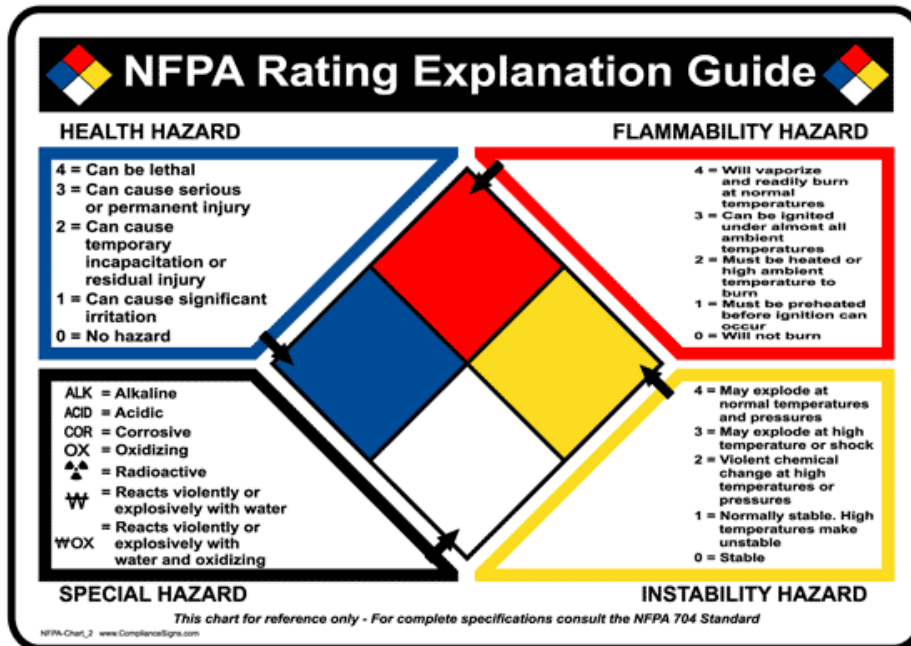
Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list.

TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7. All constituents are listed in the TSCA inventory.

15.5 NFPA Ratings



SECTION XVI – OTHER INFORMATION

Last Updated: June 11, 2015

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by

The QUIKRETE® Companies
 Phone (800) 282-5828
www.QUIKRETE.com

End of SDS



CEMENT & CONCRETE PRODUCTS™

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9.) NON SHRINK GROUT

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CEMENT & CONCRETE PRODUCTS™

C7: Portland Cement Based Concrete Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
5 Concourse Parkway, Suite 1900
Atlanta, GA 30328

Emergency Telephone Number
INFOTRAC (800) 535-5053
Information Telephone Number
(800) 282-5828

SDS C7
Revision: Mar-19

QUIKRETE® Product Name	Item #(s)
Cable Duct Grout	1121-50
NON-SHRINK PRECISION GROUT	1585-00
NON-SHRINK GENERAL PURPOSE GROUT	1585-01
PORTLAND EXPANDING GROUT	1585-22
PACKSETTER GROUT	1585-05
ALL-STAR NON-SHRINK PRECISION GROUT	1585

PRODUCT USE: PORTLAND CEMENT-BASED GROUTING MATERIALS FOR COLUMNS, MACHINERY BASES AND ANY APPLICATION WHERE VOLUME STABILITY IS IMPORTANT

See most current revision of this document at www.QUIKRETE.com.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Silica, Portland cement

2.1 Classification of the substance or mixture

Carcinogen – Category 1A
Skin Corrosion – Category 1B
Skin Sensitization – Category 1B
Specific Target Organ Toxicity Repeat Exposure – Category 1
Specific Target Organ Toxicity: Single Exposure – Category 3

2.2a Signal word DANGER!

2.2b Hazard Statements

SDS C7

QUIKRETE Companies, LLC

3/11/2019

QUIKRETE**CEMENT & CONCRETE PRODUCTS™**

May cause cancer through chronic inhalation
 Causes severe skin burns and serious eye damage
 May cause an allergic skin reaction
 Causes damage to lungs through prolonged or repeated inhalation
 May cause respiratory irritation

2.2c Pictograms**2.2d Precautionary statements**

Do not handle until all safety precautions have been read and understood.
 Wear impervious gloves, such as nitrile. Wear eye protection, protective clothing and rubber boots.
 Do not eat, drink or smoke when using this product.
 Wash thoroughly after handling.
 Use only in a well-ventilated area.
 Do not breathe dust.

If swallowed: Rinse mouth. Do NOT induce vomiting.
 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.
 If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical advice if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed.
 Dispose of contents/containers in accordance with all regulations.

2.3 Additional

The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water.


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If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr(VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS No.</u>	<u>% by Weight</u>
Sand, Silica, Quartz	14808-60-7	40-70*
Portland Cement	65997 15 1	40-70*
Calcium Sulfoaluminate	65997-16-2	1-5*
Amorphous Silica	07631-86-9	1-5*
Calcium Sulfate	10101-41-4	1-5*

*The concentrations ranges are provided due to batch-to-batch variability.
None of the constituents of this material are of unknown toxicity.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures
General information:



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After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated inhalation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water. If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr(VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

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Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

4.3 Indication of immediate medical attention and special treatment needed:
Immediately seek medical advice if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Non-flammable and non-combustible

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended. Wear appropriate PPE (See section 8). Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.



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Further information about storage conditions: Keep out of the reach of children. Keep container tightly closed and prevent exposure to humidity. Do not allow water to contact the product until time of use to preserve product utility.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Silica Sand, crystalline	14808-60-7	0.05	0.025 (resp)
Portland Cement	65997-15-1	5 (resp) 15 (total)	10 (resp)
Calcium Sulfoaluminate	65997-16-2	15	10
Amorphous Silica	07631-86-9	80 / %SiO ₂	6 (TWA)
Calcium Sulfate	10101-41-4	5 (resp) 15 (total)	10 (resp)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands and feet:

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact. Wear rubber boots when stepping in concrete. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:

A NIOSH-approved dust mask or filtering face piece is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS



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General Information

Appearance	Form: Granular Solid Color: Gray to gray-brown colored Odor: None
pH-value at 20°C (68 °F):	13 (10%)
Boiling point/Boiling range:	Not applicable
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	2.6 to 3.15
Solubility in / Miscibility with Water:	Insoluble
VOC content:	0 g/L VOC

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

10.6 Hazardous Decomposition or By-products

Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

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Skin contact: Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: Harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure**Short Term**

Skin Corrosion/Irritation: Causes severe skin burns.

Serious Eye Damage/Irritation: Causes severe eye damage.

Respiratory Sensitization: Not available

Skin Sensitization: May cause an allergic skin reaction.

Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation.

Aspiration Hazard: Not available

Long Term

Carcinogenicity: May cause cancer through chronic inhalation.

Germ Cell Mutagenicity: Not available

Reproductive Toxicity: Not available

Specific Target Organ Toxicity- Repeated Exposure: (Category 1) Causes damage to lungs through prolonged/repeated exposure

Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

May cause long-term adverse effects to the aquatic environment. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential:

No further relevant information available.



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12.4 Mobility in soil

No further relevant information available.

12.5 Other Adverse Effects

No further relevant information available.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

Canada

SDS C7

QUIKRETE Companies, LLC

3/11/2019


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WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.

15.2 US Federal Information

SARA 302/311/312/313 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

15.3 State Right to Know Laws

California Prop. 65 Components



WARNING: This product can expose you to chemicals including crystalline silica which is known to the State of California to cause cancer and Portland cement which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list.

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TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7. All constituents are listed in the TSCA inventory.

SECTION XVI – OTHER INFORMATION

Last Updated: March 11, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by The QUIKRETE Companies, LLC

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10.) SANDSTONE (VULCAN QUARRY)

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Traprock

1. Identification

Product name:

Traprock

Other means of identification/Synonyms/Common Names:

Concrete Aggregate, Coverstone, Flexible Base, Manufactured Sand, Mill Sand, Rockwool Aggregate, Trap Mix Aggregate

Recommended use:

Traprock is used as a construction material.

Recommended restrictions:

None Known

Manufacturer/Contact info:

Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242

General Phone Number:

1.866.401.5424

Emergency Phone Number:

1.866.401.5424 (3E Company, 24hours/day, 7 Days/week)

Website:

www.vulcanmaterials.com

2. Hazard(s) Identification

Physical hazards:

Not Classified

Health hazards:

Carcinogenicity-Category 1A
Specific target organ toxicity, repeated exposure- Category 2



Signal word:

Danger

Hazard statement:

May Cause Cancer (Inhalation).
Causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)

Precautionary statement:

Prevention

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required. Wear protective gloves, protective clothing, eye protection, and face protection.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response

- If exposed or concerned get medical advice/attention.

Disposal

- Dispose of contents/container in accordance with all local, regional, national, and international regulations.

Supplemental information:

Respirable Crystalline Silica (RCS) may cause cancer. Traprock may be subjected to various natural or mechanical forces that produce small particles (dust) which may contain respirable crystalline silica (particles less than 10 micrometers in aerodynamic diameter). Repeated inhalation of respirable crystalline silica (quartz) may cause lung cancer according to

IARC, NTP; ACGIH states that it is a suspected cause of cancer. Other forms of RCS (e.g., tridymite and cristobalite) may also be present or formed under certain industrial processes.

3. Composition/information on ingredients

Chemical name	CAS number	%
Traprock	None	100
Quartz (crystalline silica)	14808-60-7	<1

4. First-aid measures

Inhalation:

Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or if breathing is difficult.

Eyes:

Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Contact a physician if irritation persists or later develops.

Skin:

Wash affected areas thoroughly with mild soap and fresh water. Contact a physician if irritation persists.

Ingestion:

If person is conscious do not induce vomiting. Give large quantity of water and get medical attention. Never attempt to make an unconscious person drink.

Most important symptoms/effects, acute and delayed:

Dust may irritate the eyes, skin, and respiratory tract. Breathing silica-containing dust for prolonged periods in the workplace can cause lung damage and a lung disease called silicosis. Symptoms of silicosis may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure.

Indication of immediate medical attention and special treatment needed:

Not all individuals with silicosis will exhibit symptoms of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposures have ceased. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

For emergencies contact 3E Company at 1.866.401.5424 (24 hours/day, 7 days/week).

5. Fire-fighting measures

Suitable extinguishing media:

This product is not flammable. Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media:

None known.

Specific hazards arising from the chemical:

Contact with powerful oxidizing agents may cause fire and/or explosions (see section 10 of SDS).

Special protective equipment and precautions for firefighters:

Use protective equipment appropriate for surrounding materials.

Fire-fighting equipment/instructions:

No unusual fire or explosion hazards noted. Not a combustible dust.

Specific methods:

The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium for surrounding fire.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Persons involved in cleanup processes should first observe precautions (as appropriate) identified in Section 8 of this SDS. **For emergencies, contact 3E Company at 1-866-401-5424 (24 hours/day, 7 days/week).**

Environmental precautions:

Prevent from entering into sewers or drainage systems where it can harden and clog flow.

Methods and materials for containment and cleaning up:

Spilled material, where dust is generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust. Do not dry sweep or use compressed air for clean-up. Wetting of spilled material and/or use of respiratory protective equipment may be necessary.

7. Handling and storage**Precautions for safe handling:**

Respirable crystalline silica-containing dust may be generated during processing, handling, and storage. Use personal protection and controls identified in Section 8 of this SDS as appropriate.

Conditions for safe storage, including any incompatibilities:

Do not store near food, beverages, or smoking materials.

8. Exposure controls/personal protection**Legend:**

NE = Not Established; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; OSHA = Occupational Safety and Health Administration; MSHA = Mine Safety and Health Administration; NIOSH = National Institute for Occupational Safety and Health; ACGIH = American Conference of Governmental Industrial Hygienists

Component	OSHA/MSHA PEL	ACGIH TLV	NIOSH REL
Particulates not otherwise classified	15 mg/m ³ (total dust) 5 mg/m ³ (respirable fraction)	10 mg/m ³ (inhalable fraction) 3 mg/m ³ (respirable fraction)	NE
Respirable dust containing silica	10 mg/m ³ ÷ (% silica + 2)	Use Respirable Silica TLV	Use Respirable Silica REL
Total dust containing silica	OSHA: 30 mg/m ³ ÷ (% silica + 2) MSHA: 30 mg/m ³ ÷ (% silica + 3)	NE	NE
Respirable Crystalline Silica (quartz)	NE - Use respirable dust PEL	0.025 mg/m ³	0.05 mg/m ³
Respirable Tridymite and Cristobalite (other forms of crystalline silica)	1/2 of OSHA and MSHA respirable dust PEL	0.025 mg/m ³	0.05 mg/m ³

Exposure Guidelines:

Respirable dust and quartz levels should be monitored regularly to determine worker exposure levels. Exposure levels in excess of allowable exposure limits should be reduced by all feasible engineering controls, including (but not limited to) wet suppression, ventilation, process enclosure, and enclosed employee workstations.

Engineering Controls:

Activities that generate dust require the use of general ventilation, local exhaust and/or wet suppression methods to maintain exposures below allowable exposure limits.

Eye Protection:

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated.

Skin Protection (Protective Gloves/Clothing):

Use gloves to provide hand protection from abrasion. In dusty conditions, use long sleeve shirts. Wash work clothes after each use.

Respiratory Protection:

All respirators must be NIOSH-approved for the exposure levels present. (See NIOSH Respirator Selection Guide). The need for respiratory protection should be evaluated by a qualified safety and health professional. Activities that generate dust require the use of an appropriate dust respirator where dust levels exceed or are likely to exceed allowable exposure limits. For respirable silica levels that exceed or are likely to exceed an 8 hr Time Weighted Average (TWA) of 0.5 mg/m³, a high efficiency particulate filter respirator must be worn at a minimum; however, if respirable silica levels exceed or are likely to exceed an 8 hr TWA of 5.0 mg/m³ a positive pressure, full face respirator or equivalent is required. Respirator use must comply with applicable MSHA (42 CFR 84) or OSHA (29 CFR 1910.134)

standards, which include provisions for a user training program, respirator inspection, repair and cleaning, respirator fit testing, medical surveillance and other requirements.

9. Physical and chemical properties

Appearance:

Angular particles ranging in size from sand to boulders.

Odor: No odor.	PH: Not applicable	Decomposition temperature: Not applicable
Melting point/freezing point: Not applicable	Initial boiling point and boiling range: Not applicable	Flash point: Non-combustible
Evaporation rate: Not applicable	Flammability: Not applicable	Upper/lower flammability or explosive limits: Not applicable
Vapor pressure: Not applicable	Relative density: Not applicable	Solubility: 0
Partition coefficient: n-octanol/water. Not applicable	Autoignition temperature: Not applicable	Specific Gravity (H2O = 1): 3.0 - 3.4

10. Stability and reactivity

Reactivity:

Not reactive under normal use.

Chemical stability:

Stable under normal temperatures and pressures.

Possibility of hazardous reactions:

None under normal use.

Conditions to avoid (e.g., static discharge, shock or vibration):

Contact with incompatible materials should be avoided (see below). See Sections 5 and 7 for additional information.

Incompatible materials:

Silica ignites on contact with fluorine and is incompatible with acids, aluminum, ammonium salts and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

Hazardous decomposition products:

Silica-containing respirable dust particles may be generated. When heated, quartz is slowly transformed into tridymite (above 860°C/1580°F) and cristobalite (above 1470°C/2678°F). Both tridymite and cristobalite are other forms of crystalline silica.

11. Toxicological information

Primary Routes of Exposure:

Inhalation and contact with the eyes and skin.

Symptoms related to the physical, chemical, toxicological characteristics

Inhalation:

Dusts may irritate the nose, throat and respiratory tract by mechanical abrasion. Coughing sneezing and shortness of breath may occur.

Symptoms of silicosis caused by chronic exposure to dust may include (but are not limited to) shortness of breath, difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection.

Eye Contact:

Dust particles can scratch the eye causing tearing, redness, a stinging or burning feeling, or swelling of the eyes with blurred vision.

Skin Contact:

Dust particles can scratch and irritate the skin with redness, an itching or burning feeling, swelling of the skin, and/or rash.

Ingestion:

Expected to be practically non-toxic. Ingestion of large amounts may cause gastrointestinal irritation including nausea, vomiting, diarrhea, and blockage.

Medical Conditions Aggravated by Exposure:

Irritated or broken skin increases chance of contact dermatitis. Pre-existing medical conditions that may be aggravated by exposure include disorders of the eye, skin and lung (including asthma and other breathing disorders). Smoking tobacco will impair the ability of the lungs to clear themselves of dust.

Delayed and immediate effects and also chronic effects from short- and long-term exposure:

Prolonged overexposure to respirable dusts in excess of allowable exposure limits can cause inflammation of the lungs leading to possible fibrotic changes, a medical condition known as pneumoconiosis.

Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of allowable exposure limits may cause a chronic form of silicosis, an incurable lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of overexposure; a more accelerated type of silicosis may occur between 5 and 10 years of higher levels of exposure. In early stages of silicosis, not all individuals will exhibit symptoms (signs) of the disease. However, silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased.

Repeated overexposures to very high levels of respirable crystalline silica for periods as short as six months may cause acute silicosis. Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to): shortness of breath, cough, fever, weight loss, and chest pain.

Respirable dust containing newly broken silica particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken particles of silica.

There are reports in the literature suggesting that excessive crystalline silica exposure may be associated with autoimmune disorders and other adverse health effects involving the kidney. In particular, the incidence of scleroderma (thickening of the skin caused by swelling and thickening of fibrous tissue) appears to be higher in silicotic individuals. To date, the evidence does not conclusively determine a causal relationship between silica exposure and these adverse health effects.

Carcinogenicity:

Epidemiology studies on the association between crystalline silica exposure and lung cancer have had both positive and negative results. There is some speculation that the source and type of crystalline silica may play a role. Studies of persons with silicosis indicate an increased risk of developing lung cancer, a risk that increases with the level and duration of exposure. It is not clear whether lung cancer develops in non-silicotic patients. Several studies of silicotics do not account for lung cancer confounders, especially smoking, which have been shown to increase the risk of developing lung disorders, including emphysema and lung cancer.

In October 1996, an IARC Working Group designated respirable crystalline silica as carcinogenic (Group 1). In 2012, an IARC Working Group re-affirmed that inhalation of crystalline silica was a known human carcinogen. The NTP's Report on Carcinogens, 9th edition, lists respirable crystalline silica as a "known human carcinogen." In the year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

Additional information on toxicological-effects:

Acute toxicity: Not classified

Skin corrosion/irritation: Not classified

Serious eye damage/eye irritation: Not classified

Respiratory sensitization: Not classified.

Skin sensitization: Not classified.

Germ cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer (Inhalation).

Reproductive toxicity: Not classified

Specific target organ toxicity - single exposure: Not classified

Specific target organ- toxicity – repeated exposure: Causes damage to organs (lungs, respiratory system) through prolonged or repeated exposure (inhalation)

Aspiration toxicity: Not classified (not applicable- solid material)

12. Ecological information

Ecotoxicity (aquatic and terrestrial, where available):

Not determined

Persistence and degradability:

Not determined

Bioaccumulative potential.

Not determined

Mobility in soil.

Not determined

Other adverse effects.

Not determined

13. Disposal considerations

Safe handling and disposal of waste:

Place contaminated materials in appropriate containers and dispose of in a manner consistent with applicable federal, state, and local regulations. Prevent from entering drainage, sewer systems, and unintended bodies of water. It is the responsibility of the user to determine, at the time of disposal, whether product meets criteria for hazardous waste. Product uses, transformations, mixture and processes, may render the resulting material hazardous.

14. Transport information

UN Number:

Not regulated.

UN Proper shipping name:

Not regulated.

Transport Hazard class:

Not applicable.

Packing group, if applicable:

Not applicable.

Marine pollutant (Yes/No):

Not applicable.

15. Regulatory information

Toxic Substances Control Act (TSCA):

The components in this product are listed on the TSCA Inventory or are exempt.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act.

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III:

Section 302 extremely hazardous substances: None

Section 311/312 hazard categories: Delayed Health

Section 313 reportable ingredients at or above de minimus concentrations: None

California Proposition 65:

This product contains a chemical (crystalline silica) known to the State of California to cause cancer.

State Regulatory Lists:

Each state may promulgate standards more stringent than the federal government. This section cannot encompass an inclusive list or all state regulations. Therefore, the user should review the components listed in Section 2 and consult state or local authorities for specific regulations that apply.

16. Other information

Disclaimer

NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.

Vulcan Materials Company and its subsidiaries and affiliates (“Vulcan”) believe the information contained herein is accurate; however, Vulcan makes no guarantees with respect to such accuracy and assumes no liability whatsoever in connection with the use of any information contained herein by any party. The provision of the information contained herein is not intended to be, and should not be construed as, legal advice or as ensuring compliance with any federal, state, or local laws, rules or regulations. Any party using any information contained herein should review all applicable laws, rules and regulations prior to use.

Issue date:

06/01/2015

Revision date:

06/01/2015

**Vulcan Materials Company and its subsidiaries and affiliates
1200 Urban Center Drive
Birmingham, AL 35242**



Dear Customer/Contractor:

Please find attached a safety data sheet (SDS) for the product that you purchased from Vulcan Materials Company or one of its subsidiaries or affiliates ("Vulcan"). This is a revised SDS and replaces any previous versions of the material safety data sheet (MSDS) for this product. This SDS is provided to you as required by the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (29 CFR 1910.1200), the Mine Safety and Health Administration's (MSHA) Hazard Communication Standard (30 CFR Part 47), and/or any applicable state Right-to-Know laws.

It is the responsibility of your company to communicate this information to your employees, customers, and contractors who may use or come in contact with this product. Further, if you distribute this product, Vulcan requests, and applicable laws may require, that you forward this SDS to your customers.

Please direct this information to the person responsible for safety and health compliance at your company. If you have questions about the SDS, please contact Vulcan at 1200 Urban Center Drive, Birmingham, AL 35242 or 1-866-401-5424.

If you need additional copies of this or any other Vulcan SDS or a Spanish language version, you can obtain them at www.vulcanmaterials.com or by calling 1-866-401-5424.

La MSDS puede obtenerse en www.vulcanmaterials.com o llamando al 1-866-401-5424.

Sincerely,
Occupational Health Office
Vulcan Materials Company

B. FUELS, OILS AND GREASES

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1.) 2-STROKE MIXING OIL

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Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Havoline 2-Cycle Engine Oil TC-W3

Product Use: Outboard Motor Oil & Other Small Engine Oil

Product Number(s): 219021, 221896

Company Identification

Chevron Products Company

a division of Chevron U.S.A. Inc.

6001 Bollinger Canyon Rd.

San Ramon, CA 94583

United States of America

www.chevronlubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency & Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevron.com

Product Information: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Flammable liquid: Category 4.

Signal Word: Warning

Physical Hazards: Combustible liquid.

PRECAUTIONARY STATEMENTS:

Prevention: Keep away from heat/sparks/open flames/hot surfaces. -- No smoking. Wear protective gloves/protective clothing/eye protection/face protection.

Response: In case of fire: Use media specified in the SDS to extinguish.

Storage: Store in a well-ventilated place. Keep cool.

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	60 - 69 %weight
Distillates, hydrotreated light	64742-47-8	15 - 20 %weight

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed Not Applicable

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Unusual Fire Hazards: See Section 7 for proper handling and storage.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in the vicinity of the spill or released vapor. If this material is released into the work area, evacuate the area immediately. Monitor area with combustible gas indicator.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. All equipment used when handling the product must be grounded. A vapor suppressing foam may be used to reduce vapors. Use clean non-sparking tools to collect absorbed material. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive force. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches.

Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient.

Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

General Storage Information: DO NOT USE OR STORE near heat, sparks, flames, or hot surfaces. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil	ACGIH	--	5 mg/m ³	10 mg/m ³	--	--

(C15 - C50)						
Highly refined mineral oil (C15 - C50)	OSHA Z-1	--	5 mg/m3	--	--	--
Distillates, hydrotreated light	ACGIH	--	200 mg/m3	--	--	Skin A3

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Blue

Physical State: Liquid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: No data available

Vapor Density (Air = 1): No data available

Initial Boiling Point: No data available

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: Not Applicable

Melting Point: No data available

Density: 0.8654 kg/l @ 15°C (59°F) (Typical)

Viscosity: 8.30 mm²/s @ 100°C (212°F) (Minimum)

Evaporation Rate: No data available

Decomposition temperature: No data available

Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Pensky-Martens Closed Cup) 79 °C (174 °F) (Minimum)

Autoignition: No data available

Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms.

The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved

disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: UN1268, PETROLEUM PRODUCTS, N.O.S., COMBUSTIBLE LIQUID, III; NON-BULK PACKAGES ARE EXEMPTED FROM THE PROVISIONS OF 49 CFR IN USA JURISDICTIONS

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

Flammable (gases, aerosols, liquids, or solids)

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK
02=NTP Carcinogen	06=NJ RTK
	07=PA RTK

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 2 Reactivity: 0

HMIS RATINGS: Health: 2 Flammability: 2 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *-Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: SECTION 01 - Company MSDS Address information was modified.

SECTION 02 - Hazards Otherwise Not Classified information was modified.
 SECTION 07 - Precautionary Measures information was modified.
 SECTION 08 - General Considerations information was modified.
 SECTION 09 - Physical/Chemical Properties information was modified.
 SECTION 11 - Additional Toxicology Information information was modified.
 SECTION 12 - Ecological Information information was modified.
 SECTION 13 - Disposal Considerations information was modified.
 SECTION 15 - Chemical Inventories information was modified.
 SECTION 15 - New Jersey Right To Know information was modified.

Revision Date: April 30, 2020

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

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2.) DIESEL FUEL (ON & OFF ROAD)

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SAFETY DATA SHEET

1. Identification

Product identifier	DIESEL FUELS
Other means of identification	
SDS number	102-GHS
Synonyms	Diesel Fuels All Grades, Diesel Fuel No.2, Fuel Oil No.2, High Sulfur Diesel Fuel, Low Sulfur Diesel Fuel, Ultra Low Sulfur Diesel Fuel, CARB (California Air Resource Board) Diesel Fuel, Off-Road Diesel Fuel, Dyed Diesel Fuel, X Grade Diesel Fuel, X-1 Diesel Fuel, R5 ULSD, B5 ULS D See section 16 for complete information.
Recommended use	Motor Fuel Refinery feedstock.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000
General Assistance	210-345-4593
E-Mail	CorpHSE@valero.com
Contact Person	Industrial Hygienist
Emergency Telephone	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Carcinogenicity	Category 2
	Reproductive toxicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 2
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Flammable liquid and vapor. Harmful if inhaled. Causes skin irritation. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. May be fatal if swallowed and enters airways.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharges. Do not breathe the mist/vapors/spray. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area.

DIESEL FUELS

913579 Version #: 04 Revision date: 23-May-2014 Print date: 23-May-2014

Prepared by 3E Company

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Response	If skin irritation occurs: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If exposed or concerned: Get medical advice/attention. If swallowed: Immediately call a poison center/doctor. Take off contaminated clothing and wash before reuse. In case of fire: Use foam, carbon dioxide, dry powder or water fog for extinction.
Storage	Store locked up. Store in a well-ventilated place. Keep cool.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Fuels, diesel, no. 2	68476-34-6	85 - 100
Biodiesel - Fatty acid methyl esters	67762-38-3	0 - 10
Fuels, diesel, C9-18-alkane branched and linear	1159170-26-9	0 - 5
n-Nonane	111-84-2	1 - 3
Octane (All isomers)	111-65-9	1 - 2
Hexane (Other isomers)	96-14-0	0 - 1
Naphthalene	91-20-3	0 - 1
n-Heptane	142-82-5	0 - 1
n-Hexane	110-54-3	0 - 1

4. First-aid measures

Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin contact	Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
Ingestion	Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.
Most important symptoms/effects, acute and delayed	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash. The toxicological properties of this product have not been thoroughly investigated. Use appropriate precautions. Hydrogen sulfide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere.
Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. The toxicological properties of this material have not been fully investigated.
General information	If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

5. Fire-fighting measures

Suitable extinguishing media Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. Thermal decomposition or combustion may liberate toxic gases or fumes.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire-fighting equipment/instructions	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.

Methods and materials for containment and cleaning up Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Local authorities should be advised if significant spillages cannot be contained. Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Use non-sparking tools and explosion-proof equipment.

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

Clean up in accordance with all applicable regulations.

Environmental precautions If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

7. Handling and storage

Precautions for safe handling Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Avoid breathing mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value
Naphthalene (CAS 91-20-3)	PEL	50 mg/m ³ 10 ppm
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m ³ 500 ppm
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m ³ 500 ppm
Octane (All isomers) (CAS 111-65-9)	PEL	2350 mg/m ³ 500 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Fuels, diesel, no. 2 (CAS 68476-34-6)	TWA	100 mg/m ³	Inhalable fraction and vapor.
Hexane (Other isomers) (CAS 96-14-0)	STEL	1000 ppm	
Naphthalene (CAS 91-20-3)	TWA	500 ppm	
	STEL	15 ppm	
n-Heptane (CAS 142-82-5)	TWA	10 ppm	
	STEL	500 ppm	
n-Hexane (CAS 110-54-3)	TWA	400 ppm	
	STEL	50 ppm	
n-Nonane (CAS 111-84-2)	TWA	200 ppm	
Octane (All isomers) (CAS 111-65-9)	TWA	300 ppm	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Hexane (Other isomers) (CAS 96-14-0)	Ceiling	1800 mg/m ³
	TWA	510 ppm 350 mg/m ³ 100 ppm
Naphthalene (CAS 91-20-3)	STEL	75 mg/m ³ 15 ppm
	TWA	50 mg/m ³ 10 ppm
n-Heptane (CAS 142-82-5)	Ceiling	1800 mg/m ³ 440 ppm
	TWA	350 mg/m ³ 85 ppm
n-Hexane (CAS 110-54-3)	TWA	180 mg/m ³ 50 ppm
	TWA	1050 mg/m ³ 200 ppm
Octane (All isomers) (CAS 111-65-9)	Ceiling	1800 mg/m ³
	TWA	385 ppm 350 mg/m ³ 75 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
n-Hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedion, without hydrolysis	Urine	*
	0.4 mg/l	2,5-Hexanedion, without hydrolysis		*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

n-Hexane (CAS 110-54-3)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Fuels, diesel, no. 2 (CAS 68476-34-6)

Can be absorbed through the skin.

Naphthalene (CAS 91-20-3)

Can be absorbed through the skin.

n-Hexane (CAS 110-54-3)

Can be absorbed through the skin.

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin protection

Hand protection

Wear chemical-resistant, impervious gloves. Suitable gloves can be recommended by the glove supplier. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

Other

Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Liquid (may be dyed red).

Physical state

Liquid.

Form

Liquid.

Color

Clear. Straw.

Odor

Kerosene (strong).

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

-60.07 °F (-51.15 °C) Estimated

Initial boiling point and boiling range

325 - 700 °F (162.78 - 371.11 °C)

Flash point

> 100.0 °F (> 37.8 °C) Closed Cup

Evaporation rate

0.02

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 0.4 %

Flammability limit - upper (%) 8 %

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure < 1 mm Hg (20°C)

Vapor density 3 (Air = 1)

Relative density 0.82 - 0.87

Relative density temperature 60 °F (15.56 °C)

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature 494.96 °F (257.2 °C)

Decomposition temperature Not available.

Viscosity 2 - 4.5 mm²/s

10. Stability and reactivity

Reactivity Stable at normal conditions.

Chemical stability Stable under normal temperature conditions and recommended use.

Possibility of hazardous reactions Hazardous polymerization does not occur.

Conditions to avoid Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion May be fatal if swallowed and enters airways.

Inhalation Harmful if inhaled. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.

Skin contact Causes skin irritation.

Eye contact May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash. The toxicological properties of this product have not been thoroughly investigated. Use appropriate precautions.

Information on toxicological effects

Acute toxicity Harmful if inhaled. Harmful: may cause lung damage if swallowed. The toxicological properties of this material have not been fully investigated.

Components	Species	Test Results
Fuels, diesel, no. 2 (CAS 68476-34-6)		
Acute Inhalation LC50	Rat	4.1 mg/l, 4 hours

Components	Species	Test Results
Naphthalene (CAS 91-20-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2 g/kg
<i>Oral</i>		
LD50	Rat	490 mg/kg
n-Heptane (CAS 142-82-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	103 mg/l, 4 Hours
n-Hexane (CAS 110-54-3)		
Acute		
<i>Oral</i>		
LD50	Rat	28710 mg/kg
n-Nonane (CAS 111-84-2)		
Acute		
<i>Inhalation</i>		
LC50	Rat	3200 mg/l, 4 Hours
Octane (All isomers) (CAS 111-65-9)		
Acute		
<i>Inhalation</i>		
LC50	Rat	118 mg/l, 4 Hours
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.	
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	Based on available data, the classification criteria are not met.	
Germ cell mutagenicity	Based on available data, the classification criteria are not met.	
Carcinogenicity	Suspected of causing cancer. International Agency for Research on Cancer (IARC): Whole diesel engine exhaust – IARC Group 1. Exposure may cause lung cancer and also noted a positive association with an increased risk of bladder cancer. Diesel exhaust has been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties.	
IARC Monographs. Overall Evaluation of Carcinogenicity		
Fuels, diesel, no. 2 (CAS 68476-34-6)	3 Not classifiable as to carcinogenicity to humans.	
Naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.	
NTP Report on Carcinogens		
Naphthalene (CAS 91-20-3)	Reasonably Anticipated to be a Human Carcinogen.	
Reproductive toxicity	Suspected of damaging fertility or the unborn child. Naphthalene interferes with embryo development in experimental animals at dose levels that cause maternal toxicity. In humans, excessive exposure to this agent may cause hemolytic anemia in the mother and fetus.	
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.	
Specific target organ toxicity - repeated exposure	May cause damage to the following organs through prolonged or repeated exposure: Blood. Liver. Thymus.	
Aspiration hazard	May be fatal if swallowed and enters airways.	
Chronic effects	Contains organic solvents which in case of overexposure may depress the central nervous system causing dizziness and intoxication. Repeated exposure to naphthalene may cause cataracts, allergic skin rashes, destruction of red blood cells, and anemia, jaundice, kidney and liver damage. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.	

Further information

Symptoms may be delayed. Hydrogen sulfide, a highly toxic gas, may be present. Signs and symptoms of overexposure to hydrogen sulfide include respiratory and eye irritation, dizziness, nausea, coughing, a sensation of dryness and pain in the nose, and loss of consciousness. Odor does not provide a reliable indicator of the presence of hazardous levels in the atmosphere. Toxicological properties of this material have not been fully investigated.

12. Ecological information

Ecotoxicity Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Components	Species	Test Results
Fuels, diesel, no. 2 (CAS 68476-34-6)		
Aquatic		
<i>Acute</i>		
Crustacea	EL50	Daphnia magna 68 mg/l, 48 hours
Fish	LL50	Oncorhynchus mykiss 65 mg/l, 96 hours
Naphthalene (CAS 91-20-3)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) 1.09 - 3.4 mg/l, 48 hours
Fish	LC50	Pink salmon (Oncorhynchus gorbuscha) 0.95 - 1.62 mg/l, 96 hours
n-Heptane (CAS 142-82-5)		
Aquatic		
Fish	LC50	Western mosquitofish (Gambusia affinis) 4924 mg/l, 96 hours
n-Hexane (CAS 110-54-3)		
Aquatic		
Fish	LC50	Fathead minnow (Pimephales promelas) 2.101 - 2.981 mg/l, 96 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

Hexane (Other isomers) (CAS 96-14-0)	3.6
Octane (All isomers) (CAS 111-65-9)	5.18
n-Heptane (CAS 142-82-5)	4.66
n-Hexane (CAS 110-54-3)	3.9
n-Nonane (CAS 111-84-2)	5.46

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

Hazardous waste code D001: Waste Flammable material with a flash point <140 °F

US RCRA Hazardous Waste U List: Reference

Naphthalene (CAS 91-20-3) U165

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Offer rinsed packaging material to local recycling facilities.

14. Transport information**DOT**

UN number	UN1202
UN proper shipping name	Diesel fuel
Transport hazard class(es)	
Class	Combustible Liquid
Subsidiary risk	-
Packing group	III

Environmental hazards

Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	144, B1, IB3, T2, TP1
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1202
UN proper shipping name	Diesel fuel
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	III
Environmental hazards	Yes
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1202
UN proper shipping name	DIESEL FUEL
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information**US federal regulations****TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

n-Nonane (CAS 111-84-2) 1.0 % One-Time Export Notification only.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Hexane (Other isomers) (CAS 96-14-0)	LISTED
Naphthalene (CAS 91-20-3)	LISTED
n-Heptane (CAS 142-82-5)	LISTED
n-Hexane (CAS 110-54-3)	LISTED
n-Nonane (CAS 111-84-2)	LISTED
Octane (All isomers) (CAS 111-65-9)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	Yes
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SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Naphthalene	91-20-3	0 - 1

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Naphthalene (CAS 91-20-3)

n-Hexane (CAS 110-54-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Hexane (Other isomers) (CAS 96-14-0)

Naphthalene (CAS 91-20-3)

n-Heptane (CAS 142-82-5)

n-Hexane (CAS 110-54-3)

n-Nonane (CAS 111-84-2)

Octane (All isomers) (CAS 111-65-9)

US. New Jersey Worker and Community Right-to-Know Act

Fuels, diesel, no. 2 (CAS 68476-34-6)

Naphthalene (CAS 91-20-3)

n-Heptane (CAS 142-82-5)

n-Hexane (CAS 110-54-3)

n-Nonane (CAS 111-84-2)

Octane (All isomers) (CAS 111-65-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Fuels, diesel, no. 2 (CAS 68476-34-6)

Hexane (Other isomers) (CAS 96-14-0)

Naphthalene (CAS 91-20-3)

n-Heptane (CAS 142-82-5)

n-Hexane (CAS 110-54-3)

n-Nonane (CAS 111-84-2)

Octane (All isomers) (CAS 111-65-9)

US. Rhode Island RTK

Naphthalene (CAS 91-20-3)

n-Hexane (CAS 110-54-3)

US. California Proposition 65**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Benzene (CAS 71-43-2)

Toluene (CAS 108-88-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No

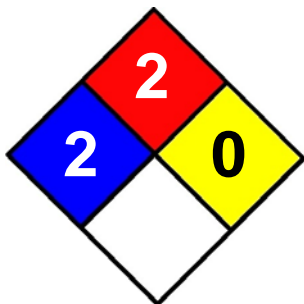
Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	13-May-2013
Revision date	23-May-2014
Version #	04
Further information	HMIS® is a registered trade and service mark of the NPCA.
NFPA Ratings	



Disclaimer

This material Safety Data Sheet (SDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

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3.) GASOLINE

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SAFETY DATA SHEET

1. Identification

Product identifier	UNLEADED GASOLINE
Other means of identification	
SDS number	002-GHS
Synonyms	Regular/Premium/Midgrade - Unleaded Gasoline, RFG - Reformulated Unleaded Gasoline, Conventional Unleaded Gasoline, Oxygenated Unleaded Gasoline, Non-Oxygenated Unleaded Gasoline, CARB (California Air Resource Board) Unleaded Gasoline, RBOB - Reformulated Blendstock for Oxygenate Blending, CBOB - Conventional Blendstock for Oxygenate Blending, Petrol, Motor Fuel. See section 16 for complete information.
Recommended use	Motor Fuel Motor fuels.
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufacturer/Supplier	Valero Marketing & Supply Company and Affiliates One Valero Way San Antonio, TX 78269-6000 210-345-4593
General Assistance	210-345-4593
E-Mail	CorpHSE@valero.com
Contact Person	Industrial Hygienist
Emergency Telephone	24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 1
Health hazards	Skin corrosion/irritation	Category 2
	Germ cell mutagenicity	Category 1B
	Carcinogenicity	Category 1B
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 2
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements

**Signal word**

Danger

Hazard statement

Extremely flammable liquid and vapor. Causes skin irritation. May cause genetic defects. May cause cancer. Suspected of damaging fertility or the unborn child. May cause drowsiness or dizziness. May cause damage to organs (blood, liver, kidney) through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting// equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe gas/mist/vapors/spray. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Avoid release to the environment.

Response

If exposed or concerned: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water fog for extinction. Collect spillage.

Storage

Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

None known.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Gasoline	86290-81-5	80-100
Toluene	108-88-3	0-30
Hexane (Other Isomers)	96-14-0	5-25
Xylene (o, m, p isomers)	1330-20-7	0-25
Octane (All isomers)	111-65-9	0-18.5
Ethanol	64-17-5	0-10
1,2,4, Trimethylbenzene	95-63-6	0-6
n-Heptane	142-82-5	1-5
Pentane	109-66-0	1-5
Cumene	98-82-8	0-5
Ethylbenzene	100-41-4	0-5
Benzene	71-43-2	0-4.9
n-Hexane	110-54-3	0-3
Cyclohexane	110-82-7	0-3

4. First-aid measures

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact

Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes. If high pressure injection under the skin occurs, always seek medical attention.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

Ingestion

Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. Do not give mouth-to-mouth resuscitation. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Never give anything by mouth to a victim who is unconscious or is having convulsions. Get medical attention immediately.

Most important symptoms/effects, acute and delayed

Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

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Indication of immediate medical attention and special treatment needed	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.
5. Fire-fighting measures	
Suitable extinguishing media	Water spray. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.
Special protective equipment and precautions for firefighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Fire-fighting equipment/instructions	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.
Specific methods	Use water spray to cool unopened containers.
General fire hazards	Extremely flammable liquid and vapor. Containers may explode when heated.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the SDS for Personal Protective Equipment.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas. Use non-sparking tools and explosion-proof equipment. Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste. Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.
Environmental precautions	Gasoline may contain oxygenated blend products (Ethanol, etc.) that are soluble in water and therefore precautions should be taken to protect surface and groundwater sources from contamination. If facility or operation has an "oil or hazardous substance contingency plan", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Extremely flammable. Review Firefighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces away from release. Contain spill in smallest possible area. Recover as much product as possible (e.g. by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Use compatible foam to minimize vapor generation as needed. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 1-800-424-8802.

7. Handling and storage

Precautions for safe handling

Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is extremely flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

Conditions for safe storage, including any incompatibilities

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Benzene (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Cumene (CAS 98-82-8)	PEL	245 mg/m ³
		50 ppm
Cyclohexane (CAS 110-82-7)	PEL	1050 mg/m ³
		300 ppm
Ethanol (CAS 64-17-5)	PEL	1900 mg/m ³
		1000 ppm
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m ³
		100 ppm
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m ³
		500 ppm
n-Hexane (CAS 110-54-3)	PEL	1800 mg/m ³
		500 ppm
Octane (All isomers) (CAS 111-65-9)	PEL	2350 mg/m ³
		500 ppm
Pentane (CAS 109-66-0)	PEL	2950 mg/m ³
		1000 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	PEL	435 mg/m ³
		100 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Benzene (CAS 71-43-2)	Ceiling	25 ppm
	TWA	10 ppm
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
1,2,4, Trimethylbenzene (CAS 95-63-6)	TWA	25 ppm
Benzene (CAS 71-43-2)	STEL	2.5 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
	TWA	0.5 ppm
Cumene (CAS 98-82-8)	TWA	50 ppm
Cyclohexane (CAS 110-82-7)	TWA	100 ppm
Ethanol (CAS 64-17-5)	STEL	1000 ppm
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm
Gasoline (CAS 86290-81-5)	STEL	500 ppm
	TWA	300 ppm
Hexane (Other Isomers) (CAS 96-14-0)	STEL	1000 ppm
	TWA	500 ppm
n-Heptane (CAS 142-82-5)	STEL	500 ppm
	TWA	400 ppm
n-Hexane (CAS 110-54-3)	TWA	50 ppm
Octane (All isomers) (CAS 111-65-9)	TWA	300 ppm
Pentane (CAS 109-66-0)	TWA	600 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
1,2,4, Trimethylbenzene (CAS 95-63-6)	TWA	125 mg/m3
		25 ppm
Benzene (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm
Cumene (CAS 98-82-8)	TWA	245 mg/m3
		50 ppm
Cyclohexane (CAS 110-82-7)	TWA	1050 mg/m3
		300 ppm
Ethanol (CAS 64-17-5)	TWA	1900 mg/m3
		1000 ppm
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
		125 ppm
	TWA	435 mg/m3
		100 ppm
Hexane (Other Isomers) (CAS 96-14-0)	Ceiling	1800 mg/m3
		510 ppm
	TWA	350 mg/m3
		100 ppm
n-Heptane (CAS 142-82-5)	Ceiling	1800 mg/m3
		440 ppm
	TWA	350 mg/m3
		85 ppm
n-Hexane (CAS 110-54-3)	TWA	180 mg/m3
		50 ppm
Octane (All isomers) (CAS 111-65-9)	Ceiling	1800 mg/m3
		385 ppm
	TWA	350 mg/m3
		75 ppm
Pentane (CAS 109-66-0)	Ceiling	1800 mg/m3

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Components	Type	Value
Toluene (CAS 108-88-3)	TWA	610 ppm 350 mg/m3 120 ppm
	STEL	560 mg/m3 150 ppm
	TWA	375 mg/m3 100 ppm
Xylene (o, m, p isomers) (CAS 1330-20-7)	STEL	655 mg/m3
	TWA	150 ppm 435 mg/m3 100 ppm

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Benzene (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*
Ethylbenzene (CAS 100-41-4)	0.7 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
n-Hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedion, without hydrolysis		*
	0.4 mg/l	2,5-Hexanedion, without hydrolysis	Urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*
Xylene (o, m, p isomers) (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Cumene (CAS 98-82-8)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.
Toluene (CAS 108-88-3)	Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cumene (CAS 98-82-8)	Skin designation applies.
Toluene (CAS 108-88-3)	Skin designation applies.

US - Tennessee OELs: Skin designation

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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US ACGIH Threshold Limit Values: Skin designation

Benzene (CAS 71-43-2)	Can be absorbed through the skin.
n-Hexane (CAS 110-54-3)	Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Cumene (CAS 98-82-8)	Can be absorbed through the skin.
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Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.
Skin protection	
Hand protection	Avoid exposure - obtain special instructions before use. Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.
Other	Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Consult supervisor for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Light straw to red clear liquid with characteristic strong odor of gasoline.
Physical state	Liquid.
Form	Liquid.
Color	Light straw to red clear.
Odor	Characteristic Gasoline Odor (Strong).
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	44.01 °F (6.67 °C) May start to solidify at this temperature. This is based on data for the following ingredient: Cyclohexane. Weighted average: -91.9 deg C (-133.4 deg F)
Initial boiling point and boiling range	80.06 - 440.06 °F (26.7 - 226.7 °C)
Flash point	-40.0 °F (-40.0 °C) (closed cup)
Evaporation rate	10 - 11 BuAc
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	1.3 %
Flammability limit - upper (%)	7.1 %
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	60.8 - 101.3 kPa (20°C)
Vapor density	3 - 4 (Air=1)
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Very slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	> 500 °F (> 260 °C)
Decomposition temperature	Not available.
Viscosity	Not available.

Other information

Flash point class	Flammable IA
VOC (Weight %)	100 %

10. Stability and reactivity

Reactivity	None known.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Swallowing or vomiting of the liquid may result in aspiration into the lungs.
Inhalation	In high concentrations, mists/vapors may irritate throat and respiratory system and cause coughing. May cause drowsiness or dizziness.
Skin contact	Causes skin irritation. Prolonged contact may cause dryness of the skin.
Eye contact	May cause eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.

Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Components	Species	Test Results
1,2,4, Trimethylbenzene (CAS 95-63-6)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 3160 mg/kg
<i>Inhalation</i>		
LC50	Rat	> 2000 mg/l, 48 Hours
<i>Oral</i>		
LD50	Rat	6 g/kg
Benzene (CAS 71-43-2)		
Acute		
<i>Oral</i>		
LD50	Rat	3306 mg/kg
Cumene (CAS 98-82-8)		
Acute		
<i>Inhalation</i>		
LC50	Mouse	2000 mg/l, 7 Hours
	Rat	8000 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	1400 mg/kg
Cyclohexane (CAS 110-82-7)		
Acute		
<i>Oral</i>		
LD50	Rat	12705 mg/kg

Components	Species	Test Results
Ethanol (CAS 64-17-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	30000 mg/m3
Ethylbenzene (CAS 100-41-4)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg
<i>Oral</i>		
LD50	Rat	5.46 g/kg
n-Heptane (CAS 142-82-5)		
Acute		
<i>Inhalation</i>		
LC50	Rat	103 mg/l, 4 Hours
n-Hexane (CAS 110-54-3)		
Acute		
<i>Oral</i>		
LD50	Rat	28710 mg/kg
Octane (All isomers) (CAS 111-65-9)		
Acute		
<i>Inhalation</i>		
LC50	Rat	118 mg/l, 4 Hours
Pentane (CAS 109-66-0)		
Acute		
<i>Inhalation</i>		
LC50	Rat	364 mg/l, 4 Hours
Toluene (CAS 108-88-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	14.1 ml/kg
<i>Inhalation</i>		
LC50	Rat	8000 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	2.6 g/kg
Xylene (o, m, p isomers) (CAS 1330-20-7)		
Acute		
<i>Oral</i>		
LD50	Rat	4300 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.	
Respiratory or skin sensitization		
Respiratory sensitization	Based on available data, the classification criteria are not met.	
Skin sensitization	Based on available data, the classification criteria are not met. This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.	
Germ cell mutagenicity	May cause genetic defects. In in-vitro experiments, neither benzene, toluene nor xylene changed the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes. However, toluene and xylene caused a significant cell growth inhibition which was not observed with benzene in the same concentrations. In in-vivo experiments, toluene changed the number of sister-chromatid exchanges (SCEs) in human lymphocytes. Toluene may cause heritable genetic damage.	

Carcinogenicity May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Cumene (CAS 98-82-8)	2B Possibly carcinogenic to humans.
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
Gasoline (CAS 86290-81-5)	2B Possibly carcinogenic to humans.
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.
Xylene (o, m, p isomers) (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Benzene (CAS 71-43-2)	Known To Be Human Carcinogen.
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US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer
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Reproductive toxicity Suspected of damaging fertility or the unborn child.
Benzene, xylene and toluene have demonstrated animal effects of reproductive toxicity. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. Ethanol has demonstrated human effects of reproductive toxicity. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid exposure to women during early pregnancy. Avoid contact during pregnancy/while nursing.

Specific target organ toxicity - single exposure May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure May cause damage to the following organs through prolonged or repeated exposure: Blood. Kidneys. Liver.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Repeated exposure of laboratory animals to high concentrations of gasoline vapors has caused kidney damage and cancer in rats and cancer in mice. Gasoline was evaluated for genetic activity in assays using microbial cells, cultured mammalian cells and rat bone marrow cells. The results were all negative so gasoline was considered nonmutagenic under these conditions. Overexposure to this product or its components has been suggested as a cause of liver abnormalities in laboratory animals and humans. Lifetime studies by the American Petroleum Institute have shown that kidney damage and kidney cancer can occur in male rats after prolonged inhalation exposures at elevated concentrations of total gasoline. Kidneys of mice and female rats were unaffected. The U.S. EPA Risk Assessment Forum has concluded that the male rat kidney tumor results are not relevant for humans. Total gasoline exposure also produced liver tumors in female mice only. The implication of these data for humans has not been determined.

Further information Symptoms may be delayed.

12. Ecological information

Ecotoxicity Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Components	Species	Test Results
1,2,4, Trimethylbenzene (CAS 95-63-6)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 7.19 - 8.28 mg/l, 96 hours
Benzene (CAS 71-43-2)		
Aquatic		
Crustacea	EC50	Water flea (<i>Daphnia magna</i>) 8.76 - 15.6 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>) 7.2 - 11.7 mg/l, 96 hours
Cumene (CAS 98-82-8)		
Aquatic		
Crustacea	EC50	Brine shrimp (<i>Artemia sp.</i>) 3.55 - 11.29 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>) 2.7 mg/l, 96 hours
Cyclohexane (CAS 110-82-7)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 3.961 - 5.181 mg/l, 96 hours
		Striped bass (<i>Morone saxatilis</i>) 8.3 mg/l, 96 hours

Components	Species	Test Results	
Ethanol (CAS 64-17-5)			
Aquatic			
Algae	EC50	Freshwater algae	275 mg/l, 72 Hours
		Marine water algae	1970 mg/l
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	> 100 mg/l, 96 hours
		Freshwater fish	11200 mg/l, 96 Hours
Invertebrate	EC50	Freshwater invertebrate	5012 mg/l, 48 Hours
		Marine water invertebrate	857 mg/l, 48 Hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	1 - 4 mg/l, 48 hours
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>)	4 mg/l, 96 hours
n-Heptane (CAS 142-82-5)			
Aquatic			
Fish	LC50	Western mosquitofish (<i>Gambusia affinis</i>)	4924 mg/l, 96 hours
n-Hexane (CAS 110-54-3)			
Aquatic			
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	2.101 - 2.981 mg/l, 96 hours
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	5.46 - 9.83 mg/l, 48 hours
Fish	LC50	Pink salmon (<i>Oncorhynchus gorbuscha</i>)	6.86 - 8.48 mg/l, 96 hours
Xylene (o, m, p isomers) (CAS 1330-20-7)			
Aquatic			
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>)	8 mg/l, 96 Hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

Benzene (CAS 71-43-2)	2.13
Cumene (CAS 98-82-8)	3.66
Cyclohexane (CAS 110-82-7)	3.44
Ethanol (CAS 64-17-5)	-0.31
Ethylbenzene (CAS 100-41-4)	3.15
Hexane (Other Isomers) (CAS 96-14-0)	3.6
Octane (All isomers) (CAS 111-65-9)	5.18
Pentane (CAS 109-66-0)	3.39
Toluene (CAS 108-88-3)	2.73
Xylene (o, m, p isomers) (CAS 1330-20-7)	3.2
n-Heptane (CAS 142-82-5)	4.66
n-Hexane (CAS 110-54-3)	3.9

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. This material and its container must be disposed of as hazardous waste. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

Hazardous waste code D001: Waste Flammable material with a flash point <140 °F
D018: Waste Benzene

US RCRA Hazardous Waste U List: Reference

Benzene (CAS 71-43-2)	U019
Cumene (CAS 98-82-8)	U055
Cyclohexane (CAS 110-82-7)	U056
Toluene (CAS 108-88-3)	U220
Xylene (o, m, p isomers) (CAS 1330-20-7)	U239

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Offer rinsed packaging material to local recycling facilities.

14. Transport information

DOT

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	139, B33, B101, T8
Packaging exceptions	150
Packaging non bulk	202
Packaging bulk	242

IATA

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Environmental hazards	Yes
ERG Code	3H
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1203
UN proper shipping name	Gasoline
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Benzene (CAS 71-43-2)	Cancer
-----------------------	--------

Central nervous system
Blood
Aspiration
Skin
Eye
Respiratory tract irritation
Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Benzene (CAS 71-43-2)	LISTED
Cumene (CAS 98-82-8)	LISTED
Cyclohexane (CAS 110-82-7)	LISTED
Ethanol (CAS 64-17-5)	LISTED
Ethylbenzene (CAS 100-41-4)	LISTED
Gasoline (CAS 86290-81-5)	LISTED
Hexane (Other Isomers) (CAS 96-14-0)	LISTED
n-Heptane (CAS 142-82-5)	LISTED
n-Hexane (CAS 110-54-3)	LISTED
Octane (All isomers) (CAS 111-65-9)	LISTED
Pentane (CAS 109-66-0)	LISTED
Toluene (CAS 108-88-3)	LISTED
Xylene (o, m, p isomers) (CAS 1330-20-7)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Toluene	108-88-3	0-30
Xylene (o, m, p isomers)	1330-20-7	0-25
1,2,4, Trimethylbenzene	95-63-6	0-6
Cumene	98-82-8	0-5
Ethylbenzene	100-41-4	0-5
Benzene	71-43-2	0-4.9
n-Hexane	110-54-3	0-3
Cyclohexane	110-82-7	0-3

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Ethylbenzene (CAS 100-41-4)
n-Hexane (CAS 110-54-3)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Pentane (CAS 109-66-0)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Toluene (CAS 108-88-3) 6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Toluene (CAS 108-88-3) 35 % weight/volumn

DEA Exempt Chemical Mixtures Code Number

Toluene (CAS 108-88-3) 594

US state regulations

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
Hexane (Other Isomers) (CAS 96-14-0)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. New Jersey Worker and Community Right-to-Know Act

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. Pennsylvania Worker and Community Right-to-Know Law

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethanol (CAS 64-17-5)
Ethylbenzene (CAS 100-41-4)
Gasoline (CAS 86290-81-5)
Hexane (Other Isomers) (CAS 96-14-0)
n-Heptane (CAS 142-82-5)
n-Hexane (CAS 110-54-3)
Octane (All isomers) (CAS 111-65-9)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. Rhode Island RTK

1,2,4, Trimethylbenzene (CAS 95-63-6)
Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Cyclohexane (CAS 110-82-7)
Ethylbenzene (CAS 100-41-4)
n-Hexane (CAS 110-54-3)
Pentane (CAS 109-66-0)
Toluene (CAS 108-88-3)
Xylene (o, m, p isomers) (CAS 1330-20-7)

US. California Proposition 65**US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Benzene (CAS 71-43-2)
Cumene (CAS 98-82-8)
Ethylbenzene (CAS 100-41-4)
Toluene (CAS 108-88-3)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

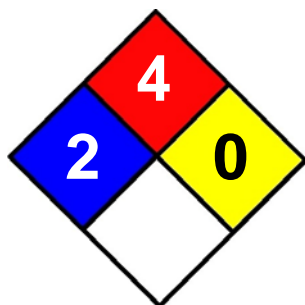
*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	13-May-2013
Revision date	23-May-2014
Version #	03
Further information	HMIS® is a registered trade and service mark of the NPCA.

NFPA Ratings



References

ACGIH
EPA: AQUIRE database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

This material Safety Data Sheet (SDS) was prepared in accordance with 29 CFR 1910.1200 by Valero Marketing & Supply Co., ("VALERO"). VALERO does not assume any liability arising out of product use by others. The information, recommendations, and suggestions presented in this SDS are based upon test results and data believed to be reliable. The end user of the product has the responsibility for evaluating the adequacy of the data under the conditions of use, determining the safety, toxicity and suitability of the product under these conditions, and obtaining additional or clarifying information where uncertainty exists. No guarantee expressed or implied is made as to the effects of such use, the results to be obtained, or the safety and toxicity of the product in any specific application. Furthermore, the information herein is not represented as absolutely complete, since it is not practicable to provide all the scientific and study information in the format of this document, plus additional information may be necessary under exceptional conditions of use, or because of applicable laws or government regulations.

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4.) GEAR OIL

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Product Name: CAT TRANSMISSION AND DRIVE TRAIN OIL (TDTO) 10W

Revision Date: 12 Oct 2012

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MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: CAT TRANSMISSION AND DRIVE TRAIN OIL (TDTO) 10W

Product Description: Base Oil and Additives

Product Code: 20202050B045, 564658-00, 971729

Intended Use: Manual transmission fluid

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION

3225 GALLOWS RD.

FAIRFAX, VA. 22037 USA

24 Hour Health Emergency 609-737-4411

Transportation Emergency Phone 800-424-9300

ExxonMobil Transportation No. 281-834-3296

Product Technical Information 800-662-4525, 800-947-9147

MSDS Internet Address <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*
ZINC ARYLDITHIOPHOSPHATE		1 - 5%

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

SECTION 3 HAZARDS IDENTIFICATION

This material is not considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

POTENTIAL HEALTH EFFECTS

Excessive exposure may result in eye, skin, or respiratory irritation. High-pressure injection under skin may cause serious damage.

NFPA Hazard ID: Health: 0 Flammability: 1 Reactivity: 0

HMIS Hazard ID: Health: 0 Flammability: 1 Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

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SECTION 4 FIRST AID MEASURES

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Hazardous Combustion Products: Smoke, Fume, Aldehydes, Sulfur oxides, Incomplete combustion products, Oxides of carbon

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6 ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable

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regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7

HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

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STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

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Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Amber
Odor: Characteristic
Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.888
Flash Point [Method]: >200°C (392°F) [ASTM D-92]
Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0
Autoignition Temperature: N/D
Boiling Point / Range: > 316°C (600°F)
Vapor Density (Air = 1): > 2 at 101 kPa
Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C
Evaporation Rate (n-butyl acetate = 1): N/D
pH: N/A
Log Pow (n-Octanol/Water Partition Coefficient): > 3.5
Solubility in Water: Negligible
Viscosity: 42 cSt (42 mm²/sec) at 40 °C | 6.3 cSt (6.3 mm²/sec) at 100°C
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/A
Pour Point: -33°C (-27°F)
DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10 STABILITY AND REACTIVITY

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

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HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

<u>Route of Exposure</u>	<u>Conclusion / Remarks</u>
Inhalation	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures. Based on assessment of the components.
Ingestion	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.

CHRONIC/OTHER EFFECTS

For the product itself:

Repeated and/or prolonged exposure may cause irritation to the skin, eyes, or respiratory tract.

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

Additional information is available by request.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC

2 = NTP SUS

3 = IARC 1

4 = IARC 2A

5 = IARC 2B

6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

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MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13

DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

SECTION 14

TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

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SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

AIR (IATA): Not Regulated for Air Transport

SECTION 15	REGULATORY INFORMATION
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OSHA HAZARD COMMUNICATION STANDARD: When used for its intended purposes, this material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

Complies with the following national/regional chemical inventory requirements:: AICS, DSL, ENCS, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY: This material contains no chemicals subject to the supplier notification requirements of the SARA 313 Toxic Release Program.

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ZINC ARYLDITHIOPHOSPHATE		13, 15, 17

--REGULATORY LISTS SEARCHED--

1 = ACGIH ALL	6 = TSCA 5a2	11 = CA P65 REPRO	16 = MN RTK
2 = ACGIH A1	7 = TSCA 5e	12 = CA RTK	17 = NJ RTK
3 = ACGIH A2	8 = TSCA 6	13 = IL RTK	18 = PA RTK
4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
5 = TSCA 4	10 = CA P65 CARC	15 = MI 293	

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Revision Changes:

Section 06: Protective Measures was modified.

Section 13: Disposal Considerations - Disposal Recommendations was modified.

Section 09: Phys/Chem Properties Note was modified.

Section 09: Boiling Point C(F) was modified.

Section 08: Comply with applicable regulations phrase was modified.

Section 09: Vapor Pressure was modified.

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Hazard Identification: Health Hazards was modified.
Section 11: Dermal Lethality Test Data was modified.
Section 11: Dermal Lethality Test Comment was modified.
Section 11: Oral Lethality Test Data was modified.
Section 11: Inhalation Lethality Test Data was modified.
Section 11: Dermal Irritation Test Data was modified.
Section 11: Eye Irritation Test Data was modified.
Section 11: Oral Lethality Test Comment was modified.
Section 11: Inhalation Lethality Test Comment was modified.
Section 11: Dermal Irritation Test Comment was modified.
Section 11: Eye Irritation Test Comment was modified.
Section 11: Inhalation Irritation Test Data was modified.
Section 09: Relative Density - Header was modified.
Section 09: Flash Point C(F) was modified.
Section 09: Viscosity was modified.
Section 09: Viscosity was modified.
Section 14: LAND (TDG) - Header was modified.
Composition: Component table was modified.
Section 15: National Chemical Inventory Listing - Header was modified.
Section 15: National Chemical Inventory Listing was modified.
Section 15: Community RTK - Header was modified.
Section 08: Exposure limits/standards was modified.
Section 08: Exposure Limit Values - Header was deleted.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2006422XUS (548858)

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5.) GREASE

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Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Ultra-Duty Grease EP NLGI 0, 1, 2

Product Use: Industrial Grease
Product Number(s): 238011, 238012, 238013

Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
www.chevronlubricants.com

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency
Chevron Emergency & Information Center: Located in the USA. International collect calls accepted.
(800) 231-0623 or (510) 231-0623

Product Information
email : lubemsds@chevron.com
Product Information: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Acute aquatic toxicant: Category 3. Chronic aquatic toxicant: Category 3.

Environmental Hazards: Harmful to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

Prevention: Avoid release to the environment.

Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 99 %weight
Distillates (petroleum), hydrotreated middle	64742-46-7	0 - 30 %weight
Phosphorodithioic acid, mixed O,O-bis(iso-Bu and pentyl) esters, zinc salts	68457-79-4	1 - < 4 %weight
Hydroxyalkyl carboxylic acid	Confidential	< 1 %weight

Phosphoric acid ester, amine salt	Mixture	< 1 %weight
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SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: Wash skin with water immediately and remove contaminated clothing and shoes. Get medical attention if any symptoms develop. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Skin contact may cause drying or defatting of the skin. Symptoms may include pain, itching, discoloration, swelling, and blistering. High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed

Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Phosphorus, Sulfur, Zinc, Lithium.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Clean up spills immediately, observing precautions in Exposure Controls/Personal Protection section. Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: Wear protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Suggested materials for protective gloves include: Neoprene, Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational

exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	--	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	--	5 mg/m3	--	--	--
Distillates (petroleum), hydrotreated middle	ACGIH	Inhalable fraction	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Red

Physical State: Semi-solid

Odor: Petroleum odor

Odor Threshold: No data available

pH: Not Applicable

Vapor Pressure: No data available

Vapor Density (Air = 1): No data available

Initial Boiling Point: 260°C (500°F) (Minimum)

Solubility: Soluble in hydrocarbons; insoluble in water

Freezing Point: No data available

Melting Point: 165°C (329°F) (Minimum)

Density: No data available

Viscosity: 22 mm²/s @ 100°C (212°F) (Minimum)

Evaporation Rate: No data available

Decomposition temperature: No data available

Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Cleveland Open Cup) 204 °C (399 °F) (Minimum)

Autoignition: No data available

Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: Alkyl Mercaptans (Elevated temperatures), Hydrogen Sulfide (Elevated temperatures)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is expected to be harmful to aquatic organisms and may cause long-term adverse effects in the aquatic environment.

The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

DOT Shipping Description: NOT REGULATED AS HAZARDOUS MATERIAL UNDER 49 CFR

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: Not applicable

REGULATORY LISTS SEARCHED:

- | | |
|----------------------|-----------------|
| 01-1=IARC Group 1 | 05=MA RTK |
| 01-2A=IARC Group 2A | 06=NJ RTK |
| 01-2B=IARC Group 2B | 07=PA RTK |
| 02=NTP Carcinogen | 08-1=TSCA 5(e) |
| 03=EPCRA 313 | 08-2=TSCA 12(b) |
| 04=CA Proposition 65 | |

The following components of this material are found on the regulatory lists indicated.

Distillates (petroleum), hydrotreated middle	01-1, 02, 05, 07
Phosphorodithioic acid, mixed O,O-bis(iso-Bu and pentyl) esters, zinc salts	03, 06, 07

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AIC (Australia), DSL (Canada), IECSC (China), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: ENCS (Japan).

NEW JERSEY RTK CLASSIFICATION:

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Grease)

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 1 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: SECTION 01 - Product Use information was modified.
SECTION 03 - Composition information was modified.
SECTION 04 - First Aid - Skin information was modified.
SECTION 04 - Immediate Health Effects - Skin information was modified.
SECTION 05 - Special hazards arising from the substance or mixture information was modified.
SECTION 07 - Precautionary Measures information was modified.
SECTION 08 - Occupational Exposure Limit Table information was modified.
SECTION 08 - Skin Protection information was modified.
SECTION 09 - Physical/Chemical Properties information was deleted.
SECTION 09 - Physical/Chemical Properties information was modified.
SECTION 15 - Chemical Inventories information was modified.
SECTION 15 - Regulatory Information information was added.
SECTION 15 - Regulatory Information information was modified.
SECTION 16 - HMIS Rating information was modified.

Revision Date: November 15, 2021

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS System - Hazardous Materials Information System	NFPA (USA) - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA Administration - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Section 1. Identification

GHS product identifier	: Mystik® JT-6® Hi-Temp Grease NLGI No. 2
Synonyms	: Lubricating grease; CITGO® Material Code: 665005002
Material uses	: Lubricating grease
Code	: 665005002
MSDS #	: 665005002*

Relevant identified uses of the substance or mixture and uses advised against

Not applicable.

Supplier's details	: CITGO Petroleum Corporation P.O. Box 4689 Houston, TX 77210 sdsvend@citgo.com
---------------------------	--

Emergency telephone number (with hours of operation)	: Technical Contact: (800) 248-4684 Medical Emergency: (832) 486-4700 CHEMTREC Emergency: (800) 424-9300 (United States Only)
---	--

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
------------------------	---

Classification of the substance or mixture	: Not classified.
---	-------------------

GHS label elements

Signal word	: No signal word.
--------------------	-------------------

Hazard statements	: No known significant effects or critical hazards.
--------------------------	---

Precautionary statements

General	: Keep out of reach of children.
----------------	----------------------------------

Prevention	: Do not get in eyes, on skin, or on clothing.
-------------------	--

Response	: Wash with plenty of soap and water or use a recognized skin cleanser.
-----------------	---

Storage	: Store in accordance with all local, regional, national and international regulations. Store in a dry place and a closed container.
----------------	--

Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
-----------------	---

Hazards not otherwise classified	: Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor. Injection of petroleum hydrocarbons requires immediate medical attention.
---	--

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of identification	: Lubricating grease; CITGO® Material Code: 665005002

CAS number/other identifiers

CAS number	: Not applicable.
-------------------	-------------------

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Distillates (petroleum), hydrotreated heavy naphthenic	≥50 - ≤75	64742-52-5
Distillates (petroleum), hydrotreated heavy paraffinic	≥25 - ≤50	64742-54-7
Residual oils (petroleum), solvent-dewaxed	≤10	64742-62-7
Distillates (petroleum), solvent-refined heavy paraffinic	≤3	64741-88-4

Any concentration shown as a range is to protect confidentiality or is due to process variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Ingestion** : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In the event of injection in underlying tissue, immediate treatment should include extensive incision, debridement and saline irrigation. Inadequate treatment can result in ischemia and gangrene. Early symptoms may be minimal.
- Specific treatments** : Treat symptomatically and supportively.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
sulfur oxides
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Bulk Storage Conditions: Do not apply heat or flame to stockpiled material. Rotate stock to reduce the potential for hot spots. Do not store with oxidizers. Minimize dust creation by keeping material moist and/or covered.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Distillates (petroleum), hydrotreated heavy naphthenic

ACGIH TLV (United States, 1/2021).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

Distillates (petroleum), hydrotreated heavy paraffinic

ACGIH TLV (United States, 1/2021).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

Residual oils (petroleum), solvent-dewaxed

ACGIH TLV (United States, 6/2013).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

NIOSH REL (United States, 4/2013).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

OSHA PEL (United States, 2/2013).

TWA: 5 mg/m³ 8 hours.

Distillates (petroleum), solvent-refined heavy paraffinic

ACGIH TLV (United States, 1/2021).

TWA: 5 mg/m³ 8 hours. Form: Inhalable fraction

OSHA PEL (United States, 5/2018).

TWA: 5 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 5 mg/m³ 10 hours. Form: Mist

STEL: 10 mg/m³ 15 minutes. Form: Mist

Appropriate engineering controls

: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, vapor controls, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Section 8. Exposure controls/personal protection

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety glasses equipped with side shields are recommended as minimum protection in industrial settings. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Avoid inhalation of gases, vapors, mists or dusts. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Solid. [Smooth texture]
- Color** : Red.
- Odor** : Mild petroleum odor
- pH** : Not available.
- Boiling point, initial boiling point, and boiling range** : Not available.
- Flash point** : Open cup: >150°C (>302°F) [Estimated]
- Evaporation rate** : <1 (n-butyl acetate. = 1)
- Lower and upper explosive (flammable) limits** : Lower: 1%
Upper: 7%
- Vapor pressure** : <0.0013 kPa (<0.01 mm Hg)
- Relative vapor density** : >10 [Air = 1]
- Relative density** : 0.93
- Density lbs/gal** : 7.7 lbs/gal
- Density gm/cm³** : Not available.
- Gravity, °API** : Estimated 21 @ 60 F
- Solubility** : Insoluble in the following materials: cold water.
- Auto-ignition temperature** : 390.56°C (735°F)
- NLGI Grade** : 2
- Flow time (ISO 2431)** : Not available.
- Particle characteristics**
- Median particle size** : Not available.

Section 10. Stability and reactivity

- Reactivity** : Not expected to be Explosive, Self-Reactive, Self-Heating, or an Organic Peroxide under US GHS Definition(s).
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Distillates (petroleum), hydrotreated heavy naphthenic	LD50 Oral	Rat	>5000 mg/kg	-
Distillates (petroleum), hydrotreated heavy paraffinic	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Dermal	Rat	>5000 mg/kg	-
Distillates (petroleum), solvent-refined heavy paraffinic	LD50 Oral	Rat	>5000 mg/kg	-
	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-

- Conclusion/Summary** : **Distillates (petroleum), hydrotreated heavy naphthenic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.
- Distillates (petroleum), hydrotreated heavy paraffinic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.
- Distillates (petroleum), solvent-refined heavy paraffinic**: Mineral oil mists derived from highly refined oils are reported to have low acute and sub-acute toxicities in animals. Effects from single and short-term repeated exposures to high concentrations of mineral oil mists well above applicable workplace exposure levels include lung inflammatory reaction, lipoid granuloma formation and lipoid pneumonia. In acute and sub-acute studies involving exposures to lower concentrations of mineral oil mists at or near current work place exposure levels produced no significant toxicological effects.

Irritation/Corrosion

Not available.

- Skin** : No additional information.
- Eyes** : No additional information.

Section 11. Toxicological information

Respiratory : No additional information.

Sensitization

Not available.

Skin : No additional information.

Respiratory : No additional information.

Mutagenicity

Not available.

Conclusion/Summary : No additional information.

Carcinogenicity

Not available.

Conclusion/Summary : **Distillates (petroleum), solvent-refined heavy paraffinic**: In long term studies (up to two years) no carcinogenic effects have been reported in any animal species tested.

Classification

Product/ingredient name	OSHA	IARC	NTP
Distillates (petroleum), solvent-refined heavy paraffinic	-	4	-

Reproductive toxicity

Not available.

Conclusion/Summary : No additional information.

Teratogenicity

Not available.

Conclusion/Summary : No additional information.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Dermal.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Skin contact : Injection of pressurized hydrocarbons can cause severe permanent tissue damage. Initial symptoms may be minor.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Section 11. Toxicological information

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Mystik® JT-6® Hi-Temp Grease NLGI No. 2 Distillates (petroleum), solvent-refined heavy paraffinic	461924.7 5000	62008.4 N/A	N/A N/A	N/A N/A	N/A N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Distillates (petroleum), hydrotreated heavy naphthenic	Acute EC50 >10000 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 >100 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute NOEL >100 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Distillates (petroleum), hydrotreated heavy naphthenic	-	-	Inherent

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Distillates (petroleum), hydrotreated heavy naphthenic	>6	-	high
Distillates (petroleum), solvent-refined heavy paraffinic	3.9 to 6	-	high

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

Oil: The product(s) represented by this SDS is (are) regulated as “oil” under 49 CFR Part 130. Shipments by rail or highway in packaging having a capacity of 3500 gallons or more or in a quantity greater 42,000 gallons are subject to these requirements. In addition, mixtures containing 10% or more of this product may be subject to these requirements.

Special precautions for user : **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.
Clean Water Act (CWA) 307: zinc bis(dipentylidithiocarbamate)
Clean Water Act (CWA) 311: xylene
This material is classified as an oil under Section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharges or spills which produce a visible sheen on waters of the United States, their adjoining shorelines, or into conduits leading to surface waters must be reported to the EPA's National Response Center at (800) 424-8802.

SARA 302/304

Composition/information on ingredients

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : HNOC - Injection Hazards

Composition/information on ingredients

No products were found.

State regulations


Massachusetts : None of the components are listed.

New York : None of the components are listed.

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65 Clear and Reasonable Warnings (2018)

 **WARNING**: This product can expose you to cumene, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

International regulations

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

Inventory list

United States : All components are listed or exempted.
Australia : All components are listed or exempted.
Canada : All components are listed or exempted.
China : All components are listed or exempted.
Europe : All components are listed or exempted.
Japan : **Japan inventory (CSCL)**: Not determined.
Japan inventory (ISHL): Not determined.
Malaysia : Not determined
New Zealand : All components are listed or exempted.
Philippines : All components are listed or exempted.
Republic of Korea : All components are listed or exempted.
Taiwan : Not determined.
Thailand : Not determined.
Turkey : Not determined.
Viet Nam : Not determined.

Section 16. Other information

[National Fire Protection Association \(U.S.A.\)](#)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

[Procedure used to derive the classification](#)

Classification	Justification
Not classified.	

[History](#)

Date of printing : 12/10/2021

Date of issue/Date of revision : 12/10/2021

Date of previous issue : 11/17/2021

Version : 6

[Key to abbreviations](#)

: ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

References : Not available.

▣ Indicates information that has changed from previously issued version.

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6.) *HYDRAULIC OIL*

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John Deere Hydrau

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of issue: 12/15/2017 Version: 1.3

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Trade name : John Deere Hydrau
Product code : TY27366, TY27367, TY27368, TY27369

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : VHVI Hydraulic Fluid

1.3. Details of the supplier of the safety data sheet

MANUFACTURER:

Northland Products
1000 Rainbow Drive
Waterloo, IA 50704

Tel: +1-319-234-5585
+1-800-772-1724

SUPPLIER:

Deere & Company
One John Deere Place
Moline, IL 61265
E-mail: ESOC@JohnDeere.com

1.4. Emergency telephone number

Emergency number : Chemtrec 1-800-424-9300
Chemtrec (Outside USA) +1 703-527-3887 (24 hours)
Supplier: +1-309-748-5636 or 1-800-822-8262 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

No labelling applicable

2.3. Other hazards

other hazards which do not result in classification : This product contains a petroleum-based mineral oil. Prolonged or repeated skin contact can cause mild irritation and inflammation characterized by drying, cracking, (dermatitis) or oil acne. Repeated or prolonged inhalation of petroleum-based mineral oil mists at concentrations above applicable workplace exposure levels can cause respiratory irritation or other pulmonary effects. Repeated or prolonged inhalation of petroleum-based mineral oil mists at concentrations above applicable workplace exposure levels can cause respiratory irritation or other pulmonary effects. Spills of this product present a serious slipping hazard. Used oil, may contain harmful impurities. Used motor oil was associated with cancer in lifetime skin painting studies with laboratory animals. When using high-pressure equipment, injection of product can occur. Injection under the skin of pressurized hydrocarbons can cause severe, permanent tissue damage.

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

Full text of H-phrases: see section 16

3.2. Mixture

Name	Product identifier	%
Highly refined mineral oil	various	80 - 90
2,6-Di-tert-butylphenol	128-39-2	0.1 - <1
Zinc alkyl dithiophosphate	Confidential	0.1 - <1

John Deere Hydraul

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Assure fresh air breathing. Allow the victim to rest. In case of breathing difficulties administer oxygen. In all cases of doubt, or when symptoms persist, seek medical advice.
- First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation occurs: Get medical advice/attention.
- First-aid measures after eye contact : In case of contact with eyes, rinse immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist. Obtain medical attention if pain, blinking or redness persist.
- First-aid measures after ingestion : Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : This product contains a petroleum-based mineral oil. Prolonged or repeated skin contact can cause mild irritation and inflammation characterized by drying, cracking, (dermatitis) or oil acne. Repeated or prolonged inhalation of petroleum-based mineral oil mists at concentrations above applicable workplace exposure levels can cause respiratory irritation or other pulmonary effects.
- Symptoms/injuries after inhalation : Excess inhalation might cause risk of chemicals pneumonitis.
- Symptoms/injuries after skin contact : Frequent or prolonged contact with skin may cause dermal irritation.
- Symptoms/injuries after eye contact : Oil Mist. Contact may cause eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Use media as appropriate for surrounding material. Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : When heated above the flash point, releases vapours. Gas/vapours, flammable.

5.3. Advice for firefighters

- Precautionary measures fire : Stop and contain spill/release if it can be done safely. If this cannot be done, allow fire to burn under control. Gases/vapours, toxic.
- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
- Protective equipment for firefighters : Do not enter fire area without proper protective equipment, including respiratory protection. Wear self-contained respiratory apparatus during longer or intensive exposition or spraying processing.
- Other information : Special danger of slipping by leaking/spilling product.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Special danger of slipping by leaking/spilling product. Stop leak if safe to do so. Relevant water authorities should be notified of any large spillage to water course or drain. Take any precaution to avoid mixing with combustibles ...

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel. Avoid breathing mist or vapor. Avoid direct eye contact with product, also via contamination on hands. Avoid contact with skin, eyes and clothes.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : The low volatility of this product does not require ventilation. However depending on the condition an adequate ventilation might be required.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as fabric absorbents, clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. Consult the appropriate authorities about waste disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

John Deere Hydraul

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Special danger of slipping by leaking/spilling product.
- Precautions for safe handling : Provide good ventilation in process area to prevent formation of vapour. Avoid contact with skin, eyes and clothes. Personal protective equipment should be selected based upon the conditions under which this product is handled or used. Avoid breathing dust/fume/gas/mist/vapours/spray. Empty container retains product residue. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
- Hygiene measures : Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Technical ventilation of workplace. Ensure the ventilation system is regularly maintained and tested. Emergency shower installed. A washing facility/water for eye and skin cleaning purposes should be present.
- Storage conditions : Keep container closed when not in use. Keep only in the original container in a cool, well-ventilated place away from highly flammable substances.
- Incompatible materials : sawdust. Strong acid. Base. Oxidizing agents.
- Storage temperature : Store at ambient temperature
- Heat and ignition sources : Remove all sources of ignition.
- Storage area : Protect against direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
OIL MIST (MINERAL) (CAS N/A):	PEL	5 mg/m ³	Mist.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
OIL MIST (MINERAL) (CAS N/A):	TWA	5 mg/m ³	Inhalable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
OIL MIST (MINERAL) (CAS N/A)	STEL	10 mg/m ³	Mist.
	TWA	5 mg/m ³	Mist.

8.2. Exposure controls

- Appropriate engineering controls : A washing facility/water for eye and skin cleaning purposes should be present. Emergency shower installed. Mechanical ventilation should be used in low or enclosed places.
- Personal protective equipment : Personal protective equipment should be selected based upon the conditions under which this product is handled or used. Avoid all unnecessary exposure. Gloves. Protective clothing. Protective goggles.



- Hand protection : Wear protective gloves, rubber gloves.
- Eye protection : Wear chemical splash goggle. Chemical goggles or safety glasses.
- Skin and body protection : Chemical resistant suit. Wear rubber boots.
- Respiratory protection : Wear respiratory protection.
- Thermal hazard protection : Wear a self-contained breathing apparatus and appropriate personal protective equipment (PPE).
- Environmental exposure controls : Do not allow run-off from fire-fighting to enter drains or water courses. Ensure waste is collected and contained. Notify authorities if product enters sewers or public waters.
- Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Colour : Clear to light amber.

John Deere Hydraul

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Odour	: Petroleum. Characteristic.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: 216 °C 420 °F
Self ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: Negligible vapour pressure at ambient conditions
Relative vapour density at 20 °C	: > 10
Relative density	: 0.874 g/cm ³ at 15.6 °C (104 °F)
Solubility	: Water: < 0.1 % insoluble Organic solvent:completely soluble
Log Pow	: No data available
Log Kow	: > 4
Viscosity, kinematic	: 68 cSt at 40 °C (104 °F)
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Hazardous polymerisation does not occur.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose containers to flames, sparks, heat, or other potential ignition sources.

10.5. Incompatible materials

Strong acid. Strong bases. sawdust. Oxidizing agents, strong.

10.6. Hazardous decomposition products

Fume. Carbon monoxide. Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified Based on available data, the classification criteria are not met
Aspiration hazard	: Not an aspiration hazard
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: Excess inhalation might cause risk of chemicals pneumonitis.

John Deere Hydraul

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Symptoms/injuries after skin contact : Frequent or prolonged contact with skin may cause dermal irritation.
Symptoms/injuries after eye contact : Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Exposure may cause temporary irritation, redness, or discomfort.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : May be toxic to aquatic life.

Mineral Oil, Highly Refined	
LC50 fishes 1	> 5000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	> 1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)

2,6-Di-tert-butylphenol (CAS 128-39-2)	
EC50 Daphnia 1	> 1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

John Deere Hydraul	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

John Deere Hydraul	
Log Kow	> 4
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Liquid product may not be disposed of with household waste or landfilled. Do not allow to enter into drains/waters or in the soil.

Ecology - waste materials : Avoid release to the environment. Hazardous waste due to toxicity.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

Not applicable

14.2. UN proper shipping name

Not applicable

14.3. Additional information

Other information : No supplementary information available.

Overland transport

No additional information available

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. Additional information is given in the Safety Data Sheet.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4): Zinc alkyl dithiophosphate (CAS Confidential) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories

John Deere Hydrau

Safety Data Sheet

according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance: Not listed.
SARA 311/312 Hazardous chemical: Yes
SARA 313 (TRI reporting): Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130): Not regulated.

Safe Drinking Water Act (SDWA): Not regulated.

US state regulations: California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US. Massachusetts RTK - Substance List:

Mineral Oil, highly refined (CAS N/A)

US. New Jersey Worker and Community Right-to-Know Act:

Mineral Oil, highly refined (CAS N/A)

Zinc alkyl dithiophosphate (CAS Confidential)

US. Pennsylvania Worker and Community Right-to-Know Law

Zinc alkyl dithiophosphate (CAS Confidential)

US. Rhode Island RTK

Not regulated.

15.2. International regulations

John Deere Hydrau

Listed on the Canadian DSL (Domestic Substances List) inventory.
Listed on the NDSL (the Canadian Non-Domestic Substance List)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

SECTION 16: Other information

Other information : 05/18/2017: Updated Section 3, ingredients table and Section 8,11,12 and 15.
12/15/2017: Updated Section 2, 11, and 16.

Full text of H-phrases: see section 16:

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SDS US (GHS HazCom 2012)

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of Northland Products Company's knowledge; however, Northland Products Company makes no warranty whatsoever, expressed or implied, of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. Northland Products Company assumes no responsibility for the injury to the recipient or to third party persons or for any damage to any property and recipient assumes all such risks

7.) MOTOR OIL

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Safety Data Sheet

SECTION 1 IDENTIFICATION OF THE HAZARDOUS CHEMICAL AND OF THE SUPPLIER

Delo Silver SAE 30, 40, 50, 10W-30, 15W-40, 20W-50

Product Use: Heavy Duty Motor Oil
Product Number(s): 219930, 500548, 500549, 500551, 500587, 500588, 500589
Company Identification
Chevron Malaysia Limited
Level 3, Menara Milenium
8, Jalan Damanlela, Bukit Damansara
Kuala Lumpur 50490
Malaysia

Transportation Emergency Response

Malaysia: 1800-88-3188

Health Emergency

Chevron Emergency & Information Center: Located in the USA. International collect calls accepted.
(800) 231-0623 or (510) 231-0623

Product Information

Product Information: 1800-88-3188

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to Malaysian regulatory guidelines.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS OF HAZARDOUS CHEMICAL

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 99 %weight
Zinc dialkyldithiophosphate	68649-42-3	0 - < 2.5 %weight
Branched alkylphenol	74499-35-7	0 - < 0.3 %weight

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs. If exposure to hydrogen sulfide (H₂S) gas is possible during an emergency, wear an approved,

positive pressure air-supplying respirator. Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms may include runny nose, sore throat, sneezing, coughing, chest tightness, and difficulty breathing. Symptoms of respiratory irritation may include coughing and difficulty breathing. Hydrogen sulfide has a strong rotten-egg odor. However, with continued exposure and at high levels, H₂S may deaden a person's sense of smell. If the rotten egg odor is no longer noticeable, it may not necessarily mean that exposure has stopped. At low levels, hydrogen sulfide causes irritation of the eyes, nose, and throat. Moderate levels can cause headache, dizziness, nausea, and vomiting, as well as coughing and difficulty breathing. Higher levels can cause shock, convulsions, coma, and death. After a serious exposure, symptoms usually begin immediately.

The U.S. National Institute for Occupational Safety and Health (NIOSH) considers air concentrations of hydrogen sulfide gas greater than 100 ppm to be Immediately Dangerous to Life and Health (IDLH).

Indication of any immediate medical attention and special treatment needed

Note to Physicians:

Administration of 100% oxygen and supportive care is the preferred treatment for poisoning by hydrogen sulfide gas. For additional information on H₂S, see Chevron SDS No. 301.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion. Combustion may form oxides of: Magnesium, Nitrogen, Phosphorus, Sulfur, Zinc .

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Eliminate all sources of ignition in vicinity of spilled material.

Environmental Precautions: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater.

Methods and Material For Containment and Cleaning Up: Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as

applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil and dispose of in a manner consistent with applicable requirements. Place other contaminated materials in disposable containers and dispose of in a manner consistent with applicable requirements. Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Do not breathe gas. Wash thoroughly after handling. Keep out of the reach of children.

Unusual Handling Hazards: Toxic quantities of hydrogen sulfide (H₂S) may be present in storage tanks and bulk transport vessels which contain or have contained this material. Persons opening or entering these compartments should first determine if H₂S is present. See Exposure Controls/Personal Protection -Section 8. Do not attempt rescue of a person over exposed to H₂S without wearing approved supplied-air or self-contained breathing equipment. If there is a potential for exceeding one-half the occupational exposure standard, monitoring of hydrogen sulfide levels is required. Since the sense of smell cannot be relied upon to detect the presence of H₂S, the concentration should be measured by the use of fixed or portable devices.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required. If material is heated and emits hydrogen sulfide, determine if airborne concentrations are below the occupational exposure limit for hydrogen sulfide. If not, wear an approved positive pressure air-supplying respirator. For more information on hydrogen sulfide, see Chevron SDS No. 301. If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Agency	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	Malaysia	--	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Amber
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: No data available
Vapor Pressure: No data available
Vapor Density (Air = 1): No data available
Boiling Point: No data available
Boiling Range: No data available
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: No data available
Melting Point: No data available
Density: 0.871 kg/l - 0.901 kg/l @ 15°C (59°F)
Viscosity: 11.20 mm²/s - 20.10 mm²/s @ 100°C (212°F)
Coefficient of Therm. Expansion / °F: No data available
Evaporation Rate: No data available
Decomposition temperature: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:

Flashpoint: (Cleveland Open Cup) 200 °C (392 °F) (Minimum)
Autoignition: No data available
Flammability (Explosive) Limits (% by volume in air): Lower: No data available Upper: No data available

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: Alkyl Mercaptans (Elevated temperatures), Hydrogen Sulfide

(Elevated temperatures)

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS

Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

Tetrapropenyl phenol (TPP), also known as dodecyl phenol, was tested in a rat oral gavage one-generation reproductive toxicity study (doses of 0, 5, 25, or 125 mg/kg/day) and a rat dietary two-generation reproductive toxicity study (doses of 0, 1.5, 15, or 75 mg/kg/day). Results from the one-generation study demonstrated reduced ovary weights and changes in male reproductive accessory organs (decreased organ weights, decreased secretions, and decreased epididymal sperm concentrations) at 25 mg/kg/day; 5 mg/kg/day was identified as the No Observed Adverse Effect Level

(NOAEL). Results from the two-generation study demonstrated prolonged estrous cyclicity, reduced ovary weights, accelerated sexual maturation, decreased mean live litter size, decreased fertility rates, hypospermia, and reduced weights in male reproductive accessory organs at 75 mg/kg/day; 15 mg/kg/day was identified as the NOAEL.

Evaluation of these two primary studies of TPP (one- & two-generation reproductive toxicity studies), as well as supporting data from additional in-vivo & in-vitro studies of both TPP and substances containing TPP & TPP/calcium salts as an impurity resulted in a classification of TPP as a Category 1B under the criteria of the Globally Harmonized System and Regulation (EC) No 1907/2006 (presumed reproductive hazard to humans).

The studies were also evaluated to identify a valid & reliable specific concentration limit (SCL) for reproductive effects, below which reproductive toxicity would not be expected to occur. An SCL of 1.5 wt% TPP & TPP/calcium salts was derived based on the identified NOAEL from the rat dietary two-generation reproductive toxicity study, and confirmed by supporting studies of substances containing TPP as an impurity.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms.

The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL INFORMATION

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

SECTION 14 TRANSPORTATION INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

UN Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE UNITED NATIONS MODEL REGULATIONS/RECOMMENDATIONS

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

SECTION 15 REGULATORY INFORMATION

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1
01-2A=IARC Group 2A
01-2B=IARC Group 2B

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AIIIC (Australia), DSL (Canada), ENCS (Japan), IECSC (China), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States).

One or more components is listed on ELINCS (European Union). All other components are listed or exempted from listing on EINECS.

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: SECTION 03 - Composition information was modified.
SECTION 09 - Physical/Chemical Properties information was modified.
SECTION 11 - Additional Toxicology Information information was modified.
SECTION 11 - Toxicological Information information was modified.
SECTION 14 - ICAO Classification information was modified.
SECTION 14 - IMO Classification information was modified.
SECTION 14 - UN Classification information was modified.
SECTION 15 - Chemical Inventories information was modified.

Revision Date: August 27, 2021

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the Malaysia Industry Code of Practice on Chemicals Classification and Hazard Communication 2019 by the Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San

Ramon, California 94583.

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

8.) PROPANE

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SAFETY DATA SHEET

Propane

Section 1. Identification

GHS product identifier	: Propane
Chemical name	: propane
Other means of identification	: Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
Product type	: Liquefied gas
Product use	: Synthetic/Analytical chemistry.
Synonym	: Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
SDS #	: 001045
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General

: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response

: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage

: Protect from sunlight. Store in a well-ventilated place.

Section 2. Hazards identification

- Disposal** : Not applicable.
- Hazards not otherwise classified** : Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

- Substance/mixture** : Substance
- Chemical name** : propane
- Other means of identification** : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
- Product code** : 001045

CAS number/other identifiers

- CAS number** : 74-98-6

Ingredient name	%	CAS number
Propane	100	74-98-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Liquid can cause burns similar to frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Section 4. First aid measures

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Propane	<p>NIOSH REL (United States, 10/2016). TWA: 1800 mg/m³ 10 hours. TWA: 1000 ppm 10 hours.</p> <p>OSHA PEL (United States, 5/2018). TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.</p> <p>ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.</p>

Section 8. Exposure controls/personal protection

- Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
- Thermal hazards** : If there is a risk of contact with the liquid, all protective equipment worn should be suitable for use with extremely low temperature materials.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas.
- Color** : Colorless.
- Odor** : Odorless.BUT MAY HAVE SKUNK ODOR ADDED.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : -187.6°C (-305.7°F)
- Boiling point** : -42.1°C (-43.8°F)

Section 9. Physical and chemical properties

Critical temperature	: 96.55°C (205.8°F)
Flash point	: Closed cup: -104°C (-155.2°F) Open cup: -104°C (-155.2°F)
Evaporation rate	: Not available.
Flammability (solid, gas)	: Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Lower and upper explosive (flammable) limits	: Lower: 1.8% Upper: 8.4%
Vapor pressure	: 109 (psig)
Vapor density	: 1.6 (Air = 1)
Specific Volume (ft³/lb)	: 8.6206
Gas Density (lb/ft³)	: 0.116 (25°C / 77 to °F)
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: 0.0244 g/l
Partition coefficient: n-octanol/water	: 1.09
Auto-ignition temperature	: 287°C (548.6°F)
Decomposition temperature	: Not available.
Viscosity	: Not applicable.
Flow time (ISO 2431)	: Not available.
Molecular weight	: 44.11 g/mole
<u>Aerosol product</u>	
Heat of combustion	: -46012932 J/kg

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow gas to accumulate in low or confined areas.
Incompatible materials	: Oxidizers
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Liquid can cause burns similar to frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Ingestion** : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:, frostbite
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:, frostbite
- Ingestion** : Adverse symptoms may include the following:, frostbite

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Section 11. Toxicological information

Potential chronic health effects

Not available.

General	: No known significant effects or critical hazards.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Teratogenicity	: No known significant effects or critical hazards.
Developmental effects	: No known significant effects or critical hazards.
Fertility effects	: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Propane	1.09	-	low

Mobility in soil






Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1978	UN1978	UN1978	UN1978	UN1978
UN proper shipping name	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED	PROPANE	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED (propane)	PROPANE	PROPANE
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Additional information

DOT Classification

: **Limited quantity**
Yes.

Packaging instruction

Passenger aircraft

Quantity limitation: Forbidden.

Cargo aircraft

Quantity limitation: 150 kg

Special provisions

19, T50

For domestic transportation only, UN1075 may be substituted for the UN number shown as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.

Containers of NON-ODORIZED liquefied petroleum gas must be marked either NON-ODORIZED or NOT ODORIZED as of September 30, 2006. [49 CFR 172.301(f), 326(d), 330(c) and 338(e)]

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index 0.125

ERAP Index 3000

Passenger Carrying Vessel Index 65

Passenger Carrying Road or Rail Index Forbidden

Special provisions 29, 42

IATA

: **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 150 kg.

Special precautions for user

: **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
Clean Air Act (CAA) 112 regulated flammable substances: propane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Section 15. Regulatory information

Japan	: Japan inventory (ENCS): This material is listed or exempted. Japan inventory (ISHL): This material is listed or exempted.
New Zealand	: This material is listed or exempted.
Philippines	: This material is listed or exempted.
Republic of Korea	: This material is listed or exempted.
Taiwan	: This material is listed or exempted.
Thailand	: Not determined.
Turkey	: This material is listed or exempted.
United States	: This material is active or exempted.
Viet Nam	: This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	2
Flammability		4
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1	Expert judgment
GASES UNDER PRESSURE - Liquefied gas	Expert judgment

History

Date of printing	: 11/15/2020
Date of issue/Date of revision	: 11/15/2020
Date of previous issue	: 10/5/2020
Version	: 1.02

Section 16. Other information

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

References

- : Not available.

Other special considerations

- : The information below is given to call attention to the issue of "Naturally occurring radioactive materials". Although Radon-222 levels in the product represented by this MSDS do not present any direct Radon exposure hazard, customers should be aware of the potential for Radon daughter build up within their processing systems, whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During subsequent processing, Radon tends to be concentrated in Liquefied Petroleum Gas streams and in product streams having a similar boiling point range. Industry experience has shown that this product may contain small amounts of Radon-222 and its radioactive decay products, called Radon "daughters". The actual concentration of Radon-222 and radioactive daughters in the delivered product is dependent on the geographical source of the natural gas and storage time prior to delivery. Process equipment (i.e. lines, filters, pumps and reaction units) may accumulate significant levels of radioactive daughters and show a gamma radiation reading during operation. A potential external radiation hazard exists at or near any pipe valve or vessel containing a Radon enriched stream, or containing internal deposits of radioactive material due to the transmission of gamma radiation through its wall. Field studies reported in the literature have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha emitting decay products which may be a hazard if inhaled or ingested. Protective equipment such as coveralls, gloves, and respirator (NIOSH/MHSA approved for high efficiency particulates and radionuclides, or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination, ingestion, or inhalation of any residues containing alpha radiation. Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

9.) DIESEL EXHAUST FLUID (DEF)

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BlueDEF Diesel Exhaust Fluid

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 10/01/2019

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product name : BlueDEF Diesel Exhaust Fluid

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Solution for NOx reduction in SCR systems

1.3. Details of the supplier of the safety data sheet

Old World Industries, LLC
3100 Sanders Road
Northbrook, IL 60062 - USA
T (847) 559-2000
www.oldworldind.com

1.4. Emergency telephone number

Emergency number : 800 424 9300 (United States); 00 1 703 527 3887 (International)
Chemtrec

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :
Signal word (GHS-US) : None
Hazard statements (GHS-US) : None
Precautionary statements (GHS-US) : None

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	% by wt	GHS-US classification
water	(CAS-No.) 7732-18-5	67.5	Not classified
urea	(CAS-No.) 57-13-6	32.5	Not classified

Full text of hazard classes and H-statements : see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation : Assure fresh air breathing. Allow the victim to rest.
First-aid measures after skin contact : Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.

BlueDEF Diesel Exhaust Fluid

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

- First-aid measures after eye contact : Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Reactivity : No dangerous reactions known under normal conditions of use.

5.3. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : The EPA has no established reportable quantity for spills for this material, secondary containment is not specified.

6.1.1. For non-emergency personnel

- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. For minor spillages wash down with excess of water. Mop up small spills.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Direct sunlight, Heat sources. Keep container closed when not in use.
- Incompatible materials : Strong acids. Strong bases.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

BlueDEF Diesel Exhaust Fluid

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urea (57-13-6)

Not applicable

water (7732-18-5)

Not applicable

8.2. Appropriate engineering controls

No additional information available

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Avoid all unnecessary exposure. Gloves. Protective goggles.

Hand protection:

Wear protective gloves.

Eye protection:

Chemical goggles or safety glasses

Respiratory protection:

Wear appropriate mask



Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Colorless
Odor	: characteristic ammonia odor
Odor threshold	: No data available
pH	: 9 - 10
Relative evaporation rate (butylacetate=1)	: < 1
Freezing point	: -11 °C (12 °F)
Boiling point	: > 100 °C (212 °F)
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not Applicable
Relative vapor density at 20 °C	: 0.6 H ₂ O, >1
Specific Gravity	: 1.09
Solubility	: Soluble in water. Water: 100 %
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

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9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Not established.

10.5. Incompatible materials

Strong acids. Strong bases. oxidizing agents (peroxides, chromates, dichromates).

10.6. Hazardous decomposition products

Carbon monoxide. Carbon dioxide. Fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

urea (57-13-6)	
LD50 oral rat	14300 mg/kg bodyweight (OECD 401: Acute Oral Toxicity, Rat, Male, Experimental value)
ATE US (oral)	14300 mg/kg bodyweight

Skin corrosion/irritation : Not classified
pH: 9 - 10

Serious eye damage/irritation : Not classified
pH: 9 - 10

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Potential adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects : Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 12: Ecological information

12.1. Toxicity

urea (57-13-6)	
LC50 fish 1	> 6,810.00 mg/l (96 h, Leuciscus idus, Experimental value, Nominal concentration)
EC50 Daphnia 1	> 10,000.00 mg/l (DIN 38412-11, 24 h, Daphnia magna, Static system, Fresh water, Experimental value, Nominal concentration)

12.2. Persistence and degradability

urea (57-13-6)	
Persistence and degradability	Readily biodegradable in water.
ThOD	0.27 g O ₂ /g substance

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12.3. Bioaccumulative potential

urea (57-13-6)	
BCF fish 1	1.00 (72 h, Brachydanio rerio, Fresh water, Literature study)
Log Pow	< -1.73 (Experimental value, EU Method A.8: Partition Coefficient)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

urea (57-13-6)	
Mobility in soil	Not applicable
Log Koc	-1.43 - -1.19 (log Koc, Calculated value)
Ecology - soil	Highly mobile in soil.

12.5. Other adverse effects

Effect on the ozone layer : No additional information available

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : As a non-hazardous liquid waste, it should be solidified with stabilizing agents such as sand, fly ash, or clay absorbent, so that no free liquid remains before disposal to an industrial waste landfill.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Refer to current TDG Canada for further Canadian regulations

ADR

Not regulated

Transport by sea

In accordance with IMDG / IMO

Not regulated

Air transport

In accordance with IATA / ICAO

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

BlueDEF Diesel Exhaust Fluid

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according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

BlueDEF Diesel Exhaust Fluid	
EPA TSCA Regulatory Flag	Toxic Substances Control Act (TSCA): The intentional ingredients of this product are listed
CERCLA RQ	None. This material is not classified as hazardous under U.S. EPA regulations.
SARA Section 302 Threshold Planning Quantity (TPQ)	No extremely hazardous substances are in this product.
SARA Section 311/312 Hazard Classes	Urea. No hazards resulting from the material as supplied.

urea (57-13-6)

EPA TSCA Regulatory Flag Toxic Substances Control Act (TSCA): The intentional ingredients of this product are listed

water (7732-18-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

BlueDEF Diesel Exhaust Fluid

WHMIS Classification This SDS has been prepared according to the criteria of the Hazardous Products Regulations (HPR) (WHMIS 2015) and the SDS contains all of the information required by the HPR. Applicable GHS information is listed in section 2.2 of this SDS.

15.3. US State regulations

California Proposition 65 - This product does not contain any substance(s) known to the state of California to cause cancer, developmental toxicity and/or reproductive toxicity

SECTION 16: Other information

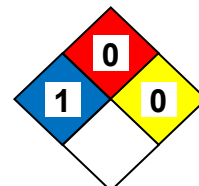
Revision date : 10/01/2019

Full text of H-statements:

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



SDS GHS US (GHS HazCom 2012) OWI

Old World Industries, LLC makes no warranty, representation or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of this product. Since actual use by others is beyond our control, no warranty, expressed or implied, is made by Old World Industries, LLC as to the effects of such use, the results to be obtained or the safety and toxicity of this product, nor does Old World Industries, LLC assume liability arising out of the use by others of this product referred to herein. The data in this SDS relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.

C. GENERAL JOBSITE SUPPLIES

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1.) BATTERY ACID

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Safety Data Sheet

Lead-Acid Battery, Wet Electrolyte (Sulfuric Acid)

Section 1 – Identification

Product Identifier: Lead-Acid Battery, Wet Electrolyte (Sulfuric Acid) Product Use: Rechargeable Electrical Storage	Manufacturer: <i>U.S. Battery Manufacturing Company</i> Primary Addresses: 1675 Sampson Ave. Corona, CA 92879 1895 Tobacco Rd. Augusta, GA 30906
General Info: 951-371-8090 (M-F, 9AM-5PM EST) Contact: Health & Safety Department	Emergency: US & Canada: 800-535-5053 (INFOTRAC) International: +1-352-323-3500

Section 2 – Hazards Identification

2.1 - Classification

Physical	Health	Environmental
Explosive: Division 1.3	Acute Toxicity: Category 4 ¹	Aquatic Hazard: Acute 1
	Skin Corrosion: Category 1A	Aquatic Hazard: Chronic 1
	Eye Damage: Category 1	
	Carcinogenicity: Category 1	
	Infertility: Category 1	
	STOT ² : Category 2	

Notes: 1. Hazard Category 4 in **oral, dermal, & inhalation**.
 2. Specific Target Organ Toxicity following repeated exposure.

2.2 – Label Elements



Signal Word: DANGER

Hazard Statements

H203	Explosive; fire, blast, or projection hazard
H302/312/332	Harmful if swallowed, inhaled, or in contact with skin
H314	Causes severe skin burns and eye damage
H350	May cause cancer if ingested or inhaled
H360	May damage fertility or unborn children if ingested or inhaled
H370	Damages organs (blood, central nervous system, kidneys) through prolonged/repeated exposure
H410	Very toxic to aquatic life with long lasting effects
N/A	May form explosive gas (hydrogen) during charging

Precautionary Statements

P210	Keep away from heat, hot surfaces, sparks, open flames & other ignition sources. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P262	Do not get contents in eyes, on skin, or on clothing.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using (handling) this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301/330/331	IF SWALLOWED: Do NOT induce vomiting. Rinse mouth.
P303/361/353	IF ON SKIN (or hair): Immediately take off all contaminated clothing. Rinse skin with water.
P304/340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305/351/338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses (if present & easy to do). Continue rinsing.
P310	Immediately call a POISON CENTER (in US: 800-222-1222) or doctor.
P391	Collect spillage.
P403	Store in a well-ventilated place.
P405	Store locked up.
P502	Refer to supplier for information on recovery or recycling.

Section 3 – Composition / Information on Ingredients

Ingredients	CASRN ¹	% by Weight
Elemental Lead (Pb); and the following inorganic compounds: Lead(IV) oxide (PbO ₂), also known as <i>lead dioxide</i> Lead(II) sulfate (PbSO ₄)	7439-92-1 1309-60-0 7446-14-2	43-70 ²
Sulfuric Acid	7664-93-9	20-44
Antimony	7440-36-0	0.4-1.25

Notes: 1. Chemical Abstracts Service Registry Number (i.e., CAS#)

2. Varies according to state of charge/discharge.

Section 4 – First-Aid Measures

Following inhalation	<p>Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult physician.</p> <p>Lead: Remove from exposure, gargle, wash nose & lips. Consult physician.</p>
Following skin contact	<p>Sulfuric Acid: Immediately rinse with a large amount of cool water. Rinsing within 1 minute of the burn can reduce risk of complications. Flush area for at least 20 minutes. Do not use a hard spray of water, because it can damage burned area. As you flush the area, take off any clothing or jewelry that has the chemical on it. Consult physician.</p> <p>Lead: Avoid inhalation/ingestion. Wash affected area with soap & water for at least 60 seconds.</p>
Following eye contact	<p>Sulfuric Acid: Flush immediately with large amounts of water for at least 15 minutes while lifting eyelids. Seek immediate medical attention if eyes have been directly exposed to acid.</p>
Following ingestion	<p>Sulfuric Acid: Do NOT induce vomiting. Give large quantities of water. Consult physician.</p> <p>Lead: Consult physician.</p>

Section 5 – Firefighting Measures

Suitable extinguishing media	CO ₂ ; foam; dry chemical. Do not use carbon dioxide directly on cells. Use appropriate media for surrounding fire.
Specific hazards	Hydrogen gas is generated during battery charging & operation. If ignited, batteries may explode dispersing casing fragments & acid.
Special protective equipment & precautions	Avoid breathing vapors. Use positive pressure self-contained breathing apparatus (SCBA). Beware of acid splatter during water application; wear acid-resistant clothing, gloves, face & eye protection. Avoid all ignition sources. Do not allow metallic articles to simultaneously contact negative & positive terminals of a battery. If batteries are on charge, shut off power to charging equipment; but note that series-connected batteries may still pose risk of electric shock even when charging equipment is shut down.

Section 6 – Accidental Release Measures

Personal precautions & protective equipment	Wear acid-resistant clothing, boots, gloves, & face shield.
Emergency procedure, containment, & cleanup	Stop flow of electrolyte, contain/absorb small spills with dry sand, earth, or vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc.
Environmental precautions	Dispose of as a hazardous waste in accordance with applicable regulations. Do not discharge un-neutralized acid to sewer; acid must be managed in accordance with applicable regulations.

Section 7 – Handling & Storage

Precautions for safe handling	Except during recycling operations, do not breach casing or empty contents of battery. Avoid tipping, which may allow acid leakage. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Keep vent caps on and cover terminals to prevent short circuits. Place cardboard between layers of stacked batteries to avoid damage & short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers & water. Use banding or stretch wrap to secure items for shipping. There is risk of electric shock from charging equipment & strings of series-connected batteries, whether or not being charged. Shut off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate & release flammable hydrogen gas. Ventilate charging space. Prohibit smoking and avoid creation of flames & sparks nearby. Wear face & eye protection when near charging batteries. Follow recommended maximum charging currents & operating temperature range. Do not overcharge beyond recommended upper charging voltage limit.
Conditions for safe storage	Store batteries under roof in cool, dry, well-ventilated areas away from incompatible materials & activities that may create flames, spark, or heat. Store on smooth, impervious surfaces provided with measures for liquid containment in the event of electrolyte spill. Keep away from metallic objects that could bridge battery terminals creating short-circuits. Never recharge batteries in an unventilated, enclosed space.

Section 8 – Exposure Control / Personal Protection

	Ingredient	CASRN	Limit	Value
Control parameters	Lead (Pb)	7439-92-1	TWA	0.05 mg/m ³
	Lead(IV) oxide (PbO ₂)	1309-60-0	TWA	0.05 mg/m ³
	Lead(II) sulfate (PbSO ₄)	7446-14-2	TWA	0.05 mg/m ³
	Sulfuric Acid (H ₂ SO ₄)	7664-93-9	PEL	1 mg/m ³
Engineering controls	<p>Store, handle, & charge in well-ventilated area. Ensure vent caps are secured. If battery case is damaged, avoid contact with internal components. Do not allow metal to simultaneously contact both positive & negative terminals of batteries.</p> <p>Where sulfuric acid solutions are handled in concentrations > 1%, provide emergency eyewash stations & showers with unlimited water supply. Chemically impervious apron & face shield are recommended when adding water or electrolyte to batteries.</p>			
Individual protection measures	<p>Wear protective clothing, including eye protection, when filling, charging, or handling batteries. If battery case is damaged, use acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing & boots. If necessary to handle damaged product (where exposure to electrolyte is a possibility), chemical splash goggles & face shield are recommended.</p>			

Section 9 – Physical & Chemical Properties

(a) Appearance	Plastic encasement
(b) Odor	Electrolyte is pungent (i.e., has a sharp odor).
(c) Odor threshold	Electrolyte (sulfuric acid): ~ 1 mg/m ³ in air
(d) pH	Electrolyte (sulfuric acid): ~ 1
(e) Melting point (lead plates) Freezing point (electrolyte)	Lead: ~ 620°F Electrolyte (approx.): -90°F (fully charged) 30°F (discharged)
(f) Initial boiling point & boiling range	Electrolyte (approx.): 203°F
(g) Flash point	Not applicable
(h) Evaporation rate	< 1
(i) Flammability (solid, gas)	Flammable gas
(j) Upper/lower flammability/explosive limits	Hydrogen in air: LFL/LEL = 4%; UFL/UEL = 75%
(k) Vapor pressure (mm Hg @ 20°C)	Partial pressure of sulfuric acid: 0.001
(l) Vapor density	3.4
(m) Relative density (i.e., specific gravity)	1.145 - 1.345
(n) Solubility	Electrolyte/Acid (100%); Lead (0%)
(o) Partition coefficient:	Not applicable
(p) Auto-ignition temperature	Not applicable
(q) Decomposition temperature	Not applicable
(r) Viscosity	Not applicable

Section 10 – Stability & Reactivity

Reactivity/Stability	Stable under normal conditions at ambient temperature.
Conditions to avoid	Ignition sources; high temperature; overcharging.
Incompatible materials	Electrolyte (sulfuric acid): Contact with combustibles or organic material may cause fire/explosion. May react violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, & water.
Hazardous decomposition products	Electrolyte (sulfuric acid): Contact with metal may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. Lead compounds: Temperatures above the melting point may produce toxic fumes.

Section 11– Toxicological Information

Under normal conditions/use, exposure to toxic material is not expected. The following information is provided for acid or lead exposure that may occur due to container breakage or under extreme conditions such as fire.

<u>Exposure Routes</u>	<u>Information</u>
1. Inhalation	1. Sulfuric Acid: breathing vapors or mists may cause severe respiratory irritation. Lead Compounds: inhalation of dust/fumes may irritate respiratory tract & lungs.
2. Ingestion	2. Sulfuric Acid: severe irritation of mouth, throat, esophagus and stomach. Lead Compounds: acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea & severe cramping. A physician must treat this.
3. Skin	3. Sulfuric Acid: severe irritation, burns, & ulceration. Lead Compounds: not absorbed through skin.
4. Eye	4. Sulfuric Acid: severe irritation, burns, cornea damage, & blindness. Lead Compounds: may cause eye irritation.
Symptoms of overexposure: Acute/Chronic effects	<u>Acute effects</u> Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation. Lead Compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability <u>Chronic effects</u> Sulfuric Acid: inflammation of nose, throat & bronchial tubes. Lead Compounds: anemia; damage to blood-forming tissues; neuropathy (particularly of motor nerves); kidney damage; reproductive changes (males & females). Heavy exposure may result in central nervous system damage.
Carcinogenicity	Sulfuric Acid: The International Agency for Research on Cancer classified <i>strong inorganic acid mist containing sulfuric acid</i> as a Category I carcinogen. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Acid mist is not generated under normal use; however, misuse, such as overcharging, may result in generation of sulfuric acid mist. Lead Compounds: IARC lists lead as Group 2A - likely in animals at extreme doses. Per OSHA 29 CFR 1910.1200 App F, this is approximately equivalent to GHS Category 1B.
Toxicity	Sulfuric acid: LD ₅₀ = 2140 mg/kg (Rat); LC ₅₀ = 375 mg/m ³ (Rat) Lead: Acute Toxicity Estimate (ATE) = 500 mg/kg Antimony: LD ₅₀ = 100 mg/kg (Rat)

Section 12 – *Ecological Information*

Ecotoxicity	Sulfuric acid: 24-hr LC ₅₀ (freshwater fish): 82 mg/L Lead: 48-hr LC ₅₀ (aquatic invertebrates): < 1 mg/L
Persistence & Degradability	Lead is very persistent in soil & sediments. No data on environmental degradation.
Bioaccumulative Potential	Bioaccumulation of lead occurs in aquatic & terrestrial animals & plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds rather than elemental lead.
Mobility in Soil	Mobility of elemental lead between ecological compartments is slow.
Other adverse effects	No known effects on atmospheric ozone.

Section 13- *Disposal Considerations*

Reclamation / Recycle	Spent lead-acid batteries are completely recyclable (99% of all lead-acid batteries are recycled) and should be reclaimed rather than disposed of as waste. Most retailers that sell lead-acid batteries collect used batteries for recycling, as required by state laws. Reclaimed lead-acid batteries are exempt from hazardous waste management requirements in accordance with 40 CFR 266 Subpart G – <i>Spent Lead-Acid Batteries Being Reclaimed</i> . Otherwise, spent lead-acid batteries fall under Universal Waste Regulations of 40 CFR 273 – <i>Standards for Universal Waste Management</i> .
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Section 14 – *Transport Information*

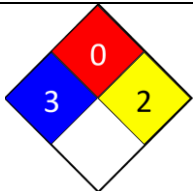

UN number	UN2794
Proper shipping name	Batteries, wet, filled with acid, electric storage
Transport hazard class	Class 8, Corrosive hazardous materials
Packing group	PGIII
Environmental hazards	No
Special precautions	The following DOT transportation requirements do not apply to <i>installed</i> batteries. 49 CFR 173.159 regulates transport of wet spillable batteries: When transported by highway or rail, electric storage batteries containing electrolyte, acid, or alkaline corrosive battery fluid and electric storage batteries packed with electrolyte, acid, or alkaline corrosive battery fluid, are not subject to any other requirements of this subchapter, if all of the following are met: <ol style="list-style-type: none"> (1) No other hazardous materials are transported in the same vehicle; (2) Batteries are loaded/braced so as to prevent damage & short circuits in transit; (3) Any other material loaded in the same vehicle is blocked, braced, or otherwise secured to prevent contact with (or damage to) batteries In addition, batteries on pallets must be stacked to not cause damage to another pallet in transportation; (4) Except for the purpose of consolidating shipments of batteries for recycling, the transport vehicle may not carry material shipped by any person other than the shipper of the batteries; and (5) Shipments made under this paragraph are subject to the incident reporting requirements in §171.15.

Section 15 - Regulatory Information

US Federal	<p>RCRA: Spent batteries are subject to reduced requirements when managed in compliance with 40 CFR 266.80 or 40 CFR 273. If applicable; EPA hazardous waste numbers are D002 (corrosivity) and D008 (lead).</p> <p>EPA SARA Title III:</p> <p>Section 302 EPCRA <i>Extremely Hazardous Substances</i> (EHS): Sulfuric acid is a listed EHS under EPCRA, with a Threshold Planning Quantity (TPQ) of 1000 lbs. EPCRA Section 302 notification is required if 500 lbs. or more of sulfuric acid is present at one site (40 CFR 370.10). For more information consult 40 CFR Part 355.</p> <p>Section 304 CERCLA Hazardous Substances: Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning & Community Right-to-Know Act) is 1000 lbs. State & local reportable quantities for spills may vary.</p> <p>Section 311/312 Hazard Categorization: EPCRA Section 312 Tier II reporting is required for non-automotive batteries if sulfuric acid is present in quantities of 500 lbs. or more or lead is present in quantities of 10,000 lbs. or more. For more information consult 40 CFR 370.10 and 40 CFR 370.40.</p> <p>Section 313 EPCRA <i>Toxic Substances</i>: 40 CFR Section 372.38(b) states: If toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under 40 CFR's 372.25, 372.27, or 372.28 or determining the amount of release to be reported under 40 CFR 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.</p> <p>The reporting of lead and sulfuric acid (and their releases) in lead-acid batteries used in cars, trucks, most cranes, forklifts, locomotive engines, and aircraft for the purposes of EPCRA Section 313 is not required. Lead acid batteries used for these purposes are exempt for Section 313 reporting per the "Motor Vehicle Exemption." See EPA's <i>Guidance Document for Lead & Lead Compound Reporting under EPCRA Section 313</i> for additional information.</p>
California	<p>Proposition 65 Warning: Battery posts, terminals, & related accessories contain lead & lead compounds, chemicals known to California to cause cancer & reproductive harm. Batteries also contain <i>other</i> chemicals known to California to cause cancer. Wash hands after handling.</p>

Section 16 - Other Information

SDS originally prepared: 10 September 2013.
 SDS last revised (entire document): 09 Jan 2020.

NFPA Rating:	DOT Rating:
	
Sulfuric Acid	

Disclaimer

This Safety Data Sheet is based upon information available at the time of preparation. Information was obtained from sources that we believe are reliable, but are beyond our purview; we make no warranty with respect to such information. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding handling, storage, use and disposal of this product; *U.S. Battery Manufacturing Company* assumes no responsibility (and disclaims liability) in any way connected with improper use.

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2.) BRAKE FLUID

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SAFETY DATA SHEET

1. Product And Company Identification

SDS ID: SDS 042
 PRODUCT NAME: Prestone® Hi-Temp Brake Fluid DOT 3
 PRODUCT NUMBER: AS400, AS400Y, AS401, AS401Y, AS402Y, AS402, AS402-6, AS403, AS405, AS455, BF5000M3, BF5000MQ, 77405PDQ-6
 FORMULA NUMBER: 470-27, 2075-28, 2075-36, 2276-69, 2396-88, 2482-138, 2488-67, 310, 345, 360, 436, 470-27; 5000027

MANUFACTURER: Prestone Products Corporation 69 Eagle Rd. Danbury, CT 06810	CANADIAN OFFICE: Prestone Canada 33 MacIntosh Blvd. Concord, ON L4K 4L5	MEXICO OFFICE: ASG Operations Mexico S. de R.L. de C.V. Carretera Mexico Cuautitlan, Kilometro 31.5, Nave Industrial 5, Loma Bonita, Cuautitlan, Mexico, 54800
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MEDICAL EMERGENCIES AND ALL OTHER INFORMATION PHONE NUMBER:

(888)269-0750 (in the US and Canada)
 01-800-715-4135 (in Mexico)

TRANSPORTATION EMERGENCY PHONE NUMBER (Chemical Spills and Transport Accidents only):

CHEMTREC 1-800-424-9300 (in the US and Canada) +1 703 741-5970 (outside the US and Canada)

PRODUCT USE: Automobile brake fluid – consumer product
 RESTRICTIONS ON USE: None identified

2. Hazards Identification

GHS/HAZCOM 2012 Classification:

Health	Physical
Acute Toxicity Category 4 Eye Damage Category 1 Specific Target Organ Toxicity – Repeated Exposure Category 2 Toxic to Reproduction Category 2	Not Hazardous

Label Elements



DANGER!

H302 Harmful if swallowed.
 H318 Causes serious eye damage.
 H361 Suspected of damaging the unborn child.
 H373 May cause damage to kidneys through prolonged or repeated exposure by ingestion.

Prevention:

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P260 Do not breathe mist, vapors or spray.
 P264 Wash exposed skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves and eye protection.

Response:

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.

P330 Rinse mouth.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor.

P308 + P313 IF exposed or concerned: Get medical attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents and container in accordance with local and national regulations.

The exact concentrations are a trade secret.

3. Composition/Information On Ingredients

Component	CAS No.	Amount
Triethylene glycol monomethyl ether	112-35-6	0-85%
Triethylene glycol monobutyl ether	143-22-6	0-70%
Diethylene glycol	111-46-6	1-60%
2-(2-propoxyethoxy)ethanol	6881-94-3	0-60%
Polyethylene glycol monomethyl ether	9004-74-4	0-50%
Triethylene glycol monoethyl ether	112-50-5	0-40%
Polyalkylene glycol monomethyl ether	23783-42-8	0-30%
Diethylene glycol monobutyl ether	112-34-5	1-30%
Pentaethylene glycol	4792-15-8	0-30%
Tetraethylene glycol	112-60-7	0-25%
Triethylene glycol	112-27-6	0-20%
Triethylene glycol monobutyl ether	1559-34-8	0-20%
Polyethylene glycol monobutyl ether	9004-77-7	0-9%
Polyethylene glycol	25322-68-3	0-5%
Diethylene glycol monomethyl ether	111-77-3	0-5%
Tetraethylene glycol monoethyl ether	5650-20-4	0-5%
Diisopropanolamine	110-97-4	0-5%

The exact concentrations are a trade secret.

4. First Aid Measures

INHALATION: Remove to fresh air if effects occur and seek medical attention.

SKIN CONTACT: Remove contaminated clothing. Wash all affected and exposed areas with soap and water. If skin irritation or redness develops or persists, seek medical attention.

EYE CONTACT: Exposed eyes should be immediately flushed with copious amounts of water using a steady stream for a minimum of 20 minutes. Seek immediate medical attention.

INGESTION: If swallowed, get immediate medical advice by calling a Poison Control Center or hospital emergency room. If advice is not available, take victim and product container to the nearest emergency treatment center or hospital. Do not attempt to give anything by mouth to an unconscious person.

MOST IMPORTANT SYMPTOMS: Eye contact causes severe irritation with possible corneal injury. May cause skin irritation. Breathing high concentrations of vapors or mists may cause irritation, headache, dizziness, drowsiness, nausea, loss

of sense of balance and visual disturbances. Swallowing may cause gastrointestinal disturbances including irritation, abdominal pain, back pain, nausea, vomiting, diarrhea, headache, dizziness, drowsiness, nausea, visual disturbances, decreased urine production, malaise, unconsciousness and liver or kidney damage. Prolonged overexposure may cause damage to the kidneys. May cause developmental

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT, IF NEEDED: Seek immediate medical attention for eye contact, or large ingestions.

NOTES TO PHYSICIAN: It is estimated that the lethal oral dose of diethylene glycol in adults is 1.0-1.2 ml/kg. Diethylene glycol may cause an elevated anion-gap metabolic acidosis and renal tubular injury. Liver injury may occur, but not as severe as kidney injury. The signs and symptoms in diethylene glycol poisoning are those of metabolic acidosis, CNS depression and kidney injury. Urinalysis may show albuminuria, hematuria and oxaluria. The current medical management of diethylene glycol poisoning includes elimination of diethylene glycol, correction of metabolic acidosis and prevention of kidney injury. It is essential to have immediate and follow-up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance, and liver and kidney function tests. For severe and/or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who have severe metabolic acidosis, or compromise of renal function. There is no conclusive evidence that ethanol treatment will be beneficial. 4-Methyl pyrazole (Fomepizole®) shows some promise as treatment because of its apparent lack of toxicity. Consult your poison control center.

5. Firefighting Measures

SUITABLE EXTINGUISHING MEDIA: Use water spray or fog, foam, carbon dioxide or dry chemical. Cool fire exposed containers with water.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: A solid stream of water or foam directed into hot, burning liquid can cause frothing. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Burning may produce carbon monoxide, carbon dioxide, and nitrogen oxides.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHERS: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for fires in areas where chemicals are used or stored.

6: Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Wear appropriate protective clothing and equipment (See Section 8).

METHODS AND MATERIALS FOR CONTAINMENT/CLEANUP: Collect with absorbent material and place in appropriate, labeled container for disposal.

7. Handling and Storage

PRECAUTIONS FOR SAFE HANDLING: Avoid eye contact. Avoid prolonged skin contact. Avoid breathing vapors and mists. Use with adequate ventilation. Wash exposed skin thoroughly with soap and water after use.

Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without any obvious ignition sources. Spills of this product on hot, fibrous insulation may result in spontaneous combustion.

Empty containers retain product residue and may be hazardous. Do not cut, weld, drill, etc. containers, even empty. Do not reuse empty containers unless properly cleaned.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Keep away from excessive heat and open flames. Do not add nitrites or other nitro sating agents. Nitrosamine, which may cause cancer, may be formed. Keep containers closed when not in use. Store in a cool, dry area.

NFPA CLASSIFICATION: Not Applicable

8. Exposure Controls / Personal Protection

EXPOSURE GUIDELINES

Triethylene glycol monomethyl ether	None Established
Triethylene glycol monobutyl ether	None Established
Diethylene glycol	25 mg/m ³ TWA AIHA WEEL
2-(2-propoxyethoxy)ethanol	None Established
Polyethylene glycol monomethyl ether	None Established
Triethylene glycol monoethyl ether	None Established
Polyalkylene glycol monomethyl ether	None Established
Diethylene glycol monobutyl ether	35 ppm TWA Manufacturer 10 ppm TWA ACGIH TLV (Inhalable fraction and vapor)
Pentaethylene glycol	10 mg/m ³ TWA Manufacturer
Tetraethylene glycol	None Established
Triethylene glycol	None Established
Triethylene glycol monobutyl ether	None Established
Polyethylene glycol monobutyl ether	None Established
Polyethylene glycol	10 mg/m ³ TWA AIHA WEEL
Diethylene glycol monomethyl ether	None Established
Tetraethylene glycol monoethyl ether	None Established
Diisopropanolamine	10 ppm Manufacturer

APPROPRIATE ENGINEERING CONTROLS: General ventilation should be adequate for normal use. For operations where the product is heated or misted and exposures may be excessive, mechanical ventilation such as local exhaust may be needed to minimize exposure.

PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION: None under normal use conditions. For operations where exposures may be excessive, a NIOSH approved respirator with an organic vapor cartridge and a dust/mist prefilter or supplied air respirator is recommended. Equipment selection depends on contaminant type and concentration. Select in accordance with 29 CFR 1910.134 and good industrial hygiene practice. For firefighting, use self-contained breathing apparatus.

GLOVES: Chemical resistant gloves such as PVC coated gloves are recommended to prevent prolonged/repeated skin contact.

EYE PROTECTION: Splash proof goggles are recommended to prevent eye contact.

OTHER PROTECTIVE EQUIPMENT/CLOTHING: Protective clothing if needed to avoid prolonged/repeated skin contact. Suitable washing and eye flushing facilities should be available in the work area. Contaminated clothing should be removed and laundered or dry cleaned before re-use.

9. Physical and Chemical Properties
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APPEARANCE:	Clear amber or yellow liquid	ODOR:	Mild odor
ODOR THRESHOLD:	Not determined	pH:	Not determined
MELTING/FREEZING POINT:	<-60°F (<-51°C)	BOILING POINT/RANGE:	>401°F (>205°C)
FLASH POINT:	> 203°F (>118.3°C) PMCC	EVAPORATION RATE:	Not determined
FLAMMABILITY (SOLID, GAS)	Not Applicable	FLAMMABILITY LIMITS:	LEL: Not determined UEL: Not determined

VAPOR PRESSURE:	< 0.01 mmHg @20°F	VAPOR DENSITY:	>1
RELATIVE DENSITY:	1.00 – 1.07	SOLUBILITIES	Water: 100%
PARTITION COEFFICIENT (n-octanol/water)	Not determined	AUTOIGNITION TEMPERATURE:	Not determined
DECOMPOSITION TEMPERATURE:	Not determined	VISCOSITY:	Not determined

10. Stability and Reactivity

REACTIVITY: Normally unreactive.

CHEMICAL STABILITY: Stable

POSSIBILITY OF HAZARDOUS REACTIONS: Reaction with strong oxidizers will generate heat.

CONDITIONS TO AVOID: Product may oxidize at elevated temperatures. Generation of gas during composition can cause pressure in closed systems.

INCOMPATIBLE MATERIALS: Strong oxidizing agents, acids and strong alkalis.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition will product carbon monoxide, carbon dioxide, nitrogen oxides, aldehydes, ketones, organic acids.

11. Toxicological Information

POTENTIAL HEALTH EFFECTS:

ACUTE HAZARDS:

INHALATION: None expected from short term exposures at ambient temperatures. At elevated temperatures, product may cause respiratory irritation, headache, dizziness, drowsiness, nausea, loss of sense of balance and visual disturbances. High concentrations of vapors at ambient temperatures may cause lung injury, liver dysfunction or kidney damage.

SKIN CONTACT: Prolonged or repeated exposure may cause mild irritation with redness and discomfort. Prolonged contact may cause defatting or drying of the skin.

EYE CONTACT: May cause irritation with tearing, blurred vision and possible corneal damage.

INGESTION: Ingestion may cause abdominal pain, back pain, nausea, vomiting, diarrhea, headache, dizziness, drowsiness, nausea, visual disturbances, decreased urine production, malaise, cardiopulmonary effects (metabolic acidosis), unconsciousness and liver or kidney damage.

CHRONIC EFFECTS: Prolonged or repeated skin contact with this product may possibly lead to irritation and dermatitis. Prolonged or repeated exposures may cause damage to the central nervous system, blood, lung, liver or kidneys. Adverse reproductive effects may also occur. Prolonged or widespread contact may result in the absorption of potentially harmful amounts resulting in effects similar to those listed under ingestion. Massive contact with damaged skin or with material sufficiently hot to burn the skin may result in absorption of potentially lethal amounts.

CARCINOGENICITY LISTING: None of the components is listed as a carcinogen or potential carcinogen by IARC, NTP, ACGIH, or OSHA.

ACUTE TOXICITY VALUES:

Calculated ATE for product: LD50: Oral 833 mg/kg

Triethylene glycol monobutyl ether

LD50: Oral Rat 5,300 mg/kg

LD50: Skin Rabbit 3,540 mg/kg

Polyethylene glycol monomethyl ether	LD50: Oral Rat 22 mL/kg LD50: Skin Rabbit: >20 mL/kg
Tetraethylene glycol monoethyl ether	LD50: Oral Rat 10,610 mg/L LD50: Skin Rabbit 3,540 mg/kg
Triethylene glycol monomethyl ether	LD50: Oral Rat >10,500 mg/kg LD50: Skin Rabbit: 2,700 mg/kg
Triethylene glycol monomethyl ether borate ester	LD50: Oral Rat >2,000 mg/kg LD50: Skin Rabbit: 2,000 mg/kg
Pentaethylene glycol	LD50: Oral Guinea pig: 22,500 mg/kg
Tetraethylene glycol	LD50: Oral Rat >18,000 mg/kg LD50: Skin Rabbit: 20,000 mg/kg
Polyethylene glycol monobutyl ether	LD50: Oral Rat >2,000 mg/kg LD50: Skin Rabbit: 3,540 mg/kg
Triethylene glycol	LD50: Oral Rat >2,000 mg/kg LD50: Skin Rabbit: 16,000 mg/kg
Polyethylene glycol monobutyl ether	LD50: Oral Rat >2,000 mg/kg LD50: Skin Rabbit: 3,540 mg/kg
Triethylene glycol	LD50: Oral Rat >2,000 mg/kg LD50: Skin Rabbit: 16,000 mg/kg
Polyethylene glycol	LD50: Oral Rat >4,000 mg/kg LD50: Skin Rabbit: >20,000 mg
Triethylene glycol monobutyl ether	LD50: Oral Rat >5170 mg/kg LD50: Skin Rabbit: 3540 mg
Diethylene glycol	LD50: Oral Rat 5,660 mg/kg LD50: Skin Rabbit: 2,700 mg/kg
Diethylene glycol monobutyl ether	LD50: Oral Rat 5,660 mg/kg LD50: Skin Rabbit: 2,700 mg/kg
Tetraethylene glycol monoethyl ether	No toxicity data available
Diethylene glycol monomethyl ether	LD50: Oral Rat >7128 mg/kg LC0 Inhalation rat >12 mg/L/6 hr (maximum vapor concentration) LD50: Skin Rabbit 9404 mg/kg
Triethylene glycol monoethyl ether	LD50: Oral Rat 10,610 mg/kg LD50: Skin Rabbit: 3,540 mg/kg
Diisopropanolamine	LD50: Oral Rat >4,000 mg/kg LD50: Skin Rabbit: >20,000 mg/kg

12. Ecological Information

ECOTOXICITY:

Triethylene glycol monobutyl ether	LC50: Pimephales promelas (Fathead minnow) 2400 mg/L/96 hr. LC50: Daphnia magna 2210 mg/L /48 hr.
Polyethylene glycol monomethyl ether	No data available
Triethylene glycol monoethyl ether	LC50: Pimephales promelas (Fathead minnow) >10,000 mg/L/96 hr. EC50 Daphnia magna (Water flea) >10,000 mg/L
Triethylene glycol monomethyl ether	LC0 Brachydanio rerio >5000 mg/L/96 hr. LC50 Daphnia magna (Water flea, neonate) >10,000 mg /L/48 hr.
Triethylene glycol monomethyl ether borate ester	LC50: Oncorhynchus mykiss >2222 mg/L/96 hr\ EC50 Daphnia magna (Water flea) >500 mg/L EC50: Pseudokirchneriella subcapitata 731 mg/L/96 hr
Pentaethylene glycol	No data available
Tetraethylene glycol	LC50 Pimephales promelas (fathead minnow) >10,000 mg/L/96 hr. LC50 Daphnia magna (Water flea, neonate) 7746 mg /L/48 hr.
Polyethylene glycol monobutyl ether	LC50: Scophthalmus maximus >1800 mg/L/96 hr EC50 Daphnia magna (Water flea) >3200 mg/L/48 hr EC50: Scenedesmus capricornutum 1075 mg/L/72 hr

Triethylene glycol	LC50 Lepomis macrochirus >10,000 mg/L/96 hr. EC50 Daphnia magna (Water flea, neonate) >10,000 mg /L/48 hr
Polyethylene glycol	LC50 Poecilia reticulata>100 mg/L /96 hr.
Tetraethylene glycol monobutyl ether	No data available
Diethylene glycol	LC50 Western mosquitofish >32,000 mg/L/96 hr
Tetraethylene glycol monoethyl ether	No data available
Diethylene glycol monomethyl ether	LC50: Pimephales promelas (Fathead minnow) 5741 mg/L/ 96 hr EC50 Daphnia magna 1192 mg/L/ 48 hr
Triethylene glycol monoethyl ether	LC50: Pimephales promelas (Fathead minnow) >10,000 mg/L/96 hr. LC50: Daphnia magna 10,000 mg/L /48 hr.
Diisopropanolamine	LC50 Brachydanio rerio (Zebra Fish) >1000 -2200 mg/L/ 96 hr

PERSISTENCE AND DEGRADABILITY: Triethylene glycol monobutyl ether: The theoretical BODs for triethylene glycol monobutyl ether are 0, 5, and 24% for 5 days, 10 days, and 20 days, respectively. Diethylene glycol, triethylene glycol monoethyl ether, diethylene glycol monobutyl ether, triethylene glycol monomethyl ether, tetraethylene glycol, triethylene glycol, polypropylene glycol and polyethylene glycol are readily biodegradable. Diisopropanolamine: Achieved 39% of its theoretical oxygen demand using a sewage sludge following a 20 day incubation period.

BIOACCUMULATIVE POTENTIAL:

Triethylene glycol monobutyl ether: An estimated BCF of 3 was calculated in fish for triethylene glycol monobutyl ether. This BCF suggests the potential for bio concentration in aquatic organisms is low.

Diethylene glycol: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Triethylene glycol monoethyl ether: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Diethylene glycol monobutyl ether: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Triethylene glycol monomethyl ether: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Tetraethylene glycol: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Triethylene glycol: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

Diisopropanolamine: An estimated BCF of 3 suggests the potential for bio concentration in aquatic organisms is low.

MOBILITY IN SOIL: Triethylene glycol monobutyl ether, diethylene glycol, triethylene glycol monoethyl ether, diethylene glycol monobutyl ether, triethylene glycol monomethyl ether, tetraethylene glycol, triethylene glycol and diisopropanolamine are expected to be high mobile in soil.

OTHER ADVERSE EFFECTS: None known

13. Disposal Considerations

Dispose of product in accordance with all local, state/provincial and federal regulations.

14. Transport Information

U.S. DOT HAZARD CLASSIFICATION: Not Regulated

DOT MARINE POLLUTANTS: This product does not contain Marine Pollutants as defined in 49 CFR 171.8.

IMDG CODE SHIPPING CLASSIFICATION: Not Regulated

CANADIAN TDG CLASSIFICATION: Not Regulated

15. Regulatory Information

EPA SARA 311/312 HAZARD CLASSIFICATION: Refer to Section 2 for OSHA GHS Classification.



EPA SARA 313: This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372):

Glycol Ethers	NA	<100%
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PROTECTION OF STRATOSPHERIC OZONE: This product is not known to contain or to have been manufactured with ozone depleting substances as defined in 40 CFR Part 82, Appendix A to Subpart A.

CERCLA SECTION 103: This product is not subject to CERCLA reporting requirements, however, many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

CALIFORNIA PROPOSITION 65: This product contains chemicals known to the State of California to cause reproductive toxicity.

EPA TSCA INVENTORY: All of the components of this material are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.

CANADIAN ENVIRONMENTAL PROTECTION ACT: All of the ingredients are listed on the Canadian Domestic Substances List.

AUSTRALIA: All of the ingredients of this product are listed on the Australian Inventory of Chemical Substances.

CHINA: All of the ingredients of this product are listed on the Inventory of Existing Chemical Substance in China (IECSC).

16. Other Information

NFPA Rating: Fire: 1 Health: 3 Instability: 0

REVISION SUMMARY: Section 3, 8, 11, 12: Ingredients; Section 16: CALIFORNIA PROPOSITION 65

SDS Date of Preparation/Revision: August 17, 2020

This SDS is directed to professional users and bulk handlers of the product. Consumer products are labeled in accordance with Federal Hazardous Substances Act regulations.

While Prestone Products Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of tests conducted, the data are not to be taken as a warranty or representation for which Prestone Products Corporation assumes legal responsibility. They are offered for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state and local laws and regulations.

3.) CALIBRATION KIT FOR AIR MONITOR

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Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

Safety Data Sheet 50018

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 03/12/2015

Revision date: 12/19/2017

Supersedes: 07/20/2016

Version: 1.4

SECTION 1: Identification

1.1. Identification

Product form : Mixtures
Product name : Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Test gas/Calibration gas.

1.3. Supplier

Calgaz, division of Airgas USA LLC
821 Chesapeake Drive
Cambridge, 21613 - USA
T 1-410-228-6400 - F 1-410-228-4251
info@Calgaz.com - www.Calgaz.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300
Internationally: 1-703-527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Gases under pressure H280 Contains gas under pressure; may explode if heated
Compressed gas

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US) :

Warning

Hazard statements (GHS-US) :

H280 - Contains gas under pressure; may explode if heated
OSHA-H01 - May displace oxygen and cause rapid suffocation
CGA-HG16 - Extended exposure to gas reduces the ability to smell sulfides.

Precautionary statements (GHS-US) :

P202 - Do not handle until all safety precautions have been read and understood.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear eye protection, face protection, protective gloves, protective clothing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P403 - Store in a well-ventilated place.
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C/125 °F
CGA-PG05 - Use a back flow preventive device in the piping
CGA-PG06 - Close valve after each use and when empty
CGA-PG10 - Use only with equipment rated for cylinder pressure
CGA-PG14 - Approach suspected leak area with caution
CGA-PG21 - Open valve slowly
CGA-PG29 - Do not depend on odor to detect presence of gas

2.3. Other hazards which do not result in classification

No additional information available

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Nitrogen	(CAS-No.) 7727-37-9	77.895 - 99.9965	Press. Gas (Comp.), H280
Oxygen	(CAS-No.) 7782-44-7	0.0015 - 19.49	Ox. Gas 1, H270 Press. Gas (Comp.), H280
Methane	(CAS-No.) 74-82-8	0.0005 - 2.5	Flam. Gas 1, H220 Press. Gas (Comp.), H280
Carbon monoxide	(CAS-No.) 630-08-0	0.0005 - 0.09	Flam. Gas 1, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360 STOT RE 1, H372
Hydrogen Sulfide	(CAS-No.) 7783-06-4	0.001 - 0.025	Flam. Gas 1, H220 Press. Gas (Liq.), H280 Acute Tox. 2 (Inhalation:gas), H330 STOT SE 3, H335 Aquatic Acute 1, H400

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Adverse effects not expected from this product.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects after inhalation : May displace oxygen and cause rapid suffocation.
- Symptoms/effects after skin contact : Adverse effects not expected from this product.
- Symptoms/effects after eye contact : Adverse effects not expected from this product.
- Symptoms/effects after ingestion : Ingestion is not considered a potential route of exposure.
- Symptoms/effects upon intravenous administration : Not known.
- Chronic symptoms : Adverse effects not expected from this product.
- Most important symptoms and effects, both acute and delayed : No effect on living tissue. Refer to section 11.

4.3. Immediate medical attention and special treatment, if necessary

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Specific hazards arising from the chemical

- Fire hazard : The product is not flammable.
- Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
- Reactivity : None known.
- Hazardous combustion products : Carbon monoxide. Sulphur dioxide.

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.
Protection during firefighting	: Standard protective clothing and equipment (e.g. Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.
Specific methods	: Exposure to fire may cause containers to rupture/explode. If possible, stop flow of product. Continue water spray from protected position until container stays cool. Move containers away from the fire area if this can be done without risk.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

6.1.1. For non-emergency personnel

Protective equipment	: Wear protective equipment consistent with the site emergency plan.
Emergency procedures	: Evacuate personnel to a safe area. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

6.1.2. For emergency responders

Protective equipment	: Standard protective clothing and equipment (e.g. Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.
Emergency procedures	: Evacuate and limit access. Ventilate area.

6.2. Environmental precautions

Try to stop release if without risk.

6.3. Methods and material for containment and cleaning up

For containment	: Try to stop release if without risk.
Methods for cleaning up	: Dispose of contents/container in accordance with local/regional/national/international regulations.
Methods and material for containment and cleaning up	: None.

6.4. Reference to other sections

See also Sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Pressurized container: Do not pierce or burn, even after use. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty.
Precautions for safe handling	: Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.
Safe handling of the gas receptacle	: Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
Safe use of the product	: The product must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Hygiene measures	: Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Comply with applicable regulations.
Storage conditions	: Do not expose to temperatures exceeding 52 °C/ 125 °F. Keep container closed when not in use. Protect cylinders from physical damage; do not drag, roll, slide or drop. Store in well ventilated area.
Incompatible products	: None known.
Incompatible materials	: None known.

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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Conditions for safe storage, including any incompatibilities	: Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage. Keep container below 50°C in a well ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.
Storage area	: Store away from heat. Store in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Nitrogen (7727-37-9)		
Not applicable		
Methane (74-82-8)		
Not applicable		
Hydrogen Sulfide (7783-06-4)		
ACGIH	ACGIH TWA (ppm)	1 ppm
ACGIH	ACGIH STEL (ppm)	5 ppm
OSHA	OSHA PEL (Ceiling) (ppm)	20 ppm
OSHA	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift	50 ppm Peak (10 minutes once, only if no other measurable exposure occurs)
IDLH	US IDLH (ppm)	100 ppm
NIOSH	NIOSH REL (ceiling) (mg/m ³)	15 mg/m ³
NIOSH	NIOSH REL (ceiling) (ppm)	10 ppm
Oxygen (7782-44-7)		
Not applicable		
Carbon monoxide (630-08-0)		
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	55 mg/m ³
OSHA	OSHA PEL (TWA) (ppm)	50 ppm
IDLH	US IDLH (ppm)	1200 ppm
NIOSH	NIOSH REL (TWA) (mg/m ³)	40 mg/m ³
NIOSH	NIOSH REL (TWA) (ppm)	35 ppm
NIOSH	NIOSH REL (ceiling) (mg/m ³)	229 mg/m ³
NIOSH	NIOSH REL (ceiling) (ppm)	200 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure exposure is below occupational exposure limits (where available). Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Oxygen detectors should be used when asphyxiating gases may be released. Consider the use of a work permit system e.g. for maintenance activities.
Environmental exposure controls	: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand protection

Eye protection:

Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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Skin and body protection:

Wear suitable protective clothing, e.g. lab coats, coveralls or flame resistant clothing.

Respiratory protection:

None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection:

None necessary during normal and routine operations.

Other information:

Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Clear, colorless gas.
Color	: Colorless
Odor	: Rotten eggs
Odor threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Relative gas density	: Similar to air
Solubility	: Water: No data available
Log Pow	: Not applicable for gas-mixtures. Not applicable for gas-mixtures.
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: Not applicable (non-flammable gas).
Oxidizing properties	: None.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None known.

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Nitrogen (7727-37-9)	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h
Methane (74-82-8)	
LC50 inhalation rat (ppm)	820000 ppm/4h
ATE US (gases)	820000.000 ppmV/4h
Hydrogen Sulfide (7783-06-4)	
LC50 inhalation rat (mg/l)	700 mg/m ³ (Exposure time: 4 h)
LC50 inhalation rat (ppm)	356 ppm/4h
ATE US (gases)	356.000 ppmV/4h
ATE US (vapors)	0.990 mg/l/4h
ATE US (dust, mist)	0.990 mg/l/4h
Oxygen (7782-44-7)	
LC50 inhalation rat (ppm)	800000 ppm/4h
ATE US (gases)	800000.000 ppmV/4h
Carbon monoxide (630-08-0)	
LC50 inhalation rat (ppm)	1880 ppm/4h
ATE US (gases)	1880.000 ppmV/4h

Skin corrosion/irritation : Not classified
 Serious eye damage/irritation : Not classified
 Respiratory or skin sensitization : Not classified
 Germ cell mutagenicity : Not classified
 Carcinogenicity : Not classified

Reproductive toxicity : Not classified
 Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Symptoms/effects after inhalation : May displace oxygen and cause rapid suffocation.
 Symptoms/effects after skin contact : Adverse effects not expected from this product.
 Symptoms/effects after eye contact : Adverse effects not expected from this product.
 Symptoms/effects after ingestion : Ingestion is not considered a potential route of exposure.
 Symptoms/effects upon intravenous administration : Not known.
 Chronic symptoms : Adverse effects not expected from this product.

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

Methane (74-82-8)	
LC50-96 h - fish [mg/l]	147.5 mg/l
EC50 48h - Daphnia magna [mg/l]	69.4 mg/l
EC50 72h Algae [mg/l]	19.4 mg/l
Hydrogen Sulfide (7783-06-4)	
LC50 fish 1	0.0448 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
LC50 fish 2	0.016 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50-96 h - fish [mg/l]	0.007 - 0.019 mg/l
EC50 48h - Daphnia magna [mg/l]	0.12 mg/l
EC50 72h Algae [mg/l]	1.87 mg/l
Carbon monoxide (630-08-0)	
LC50-96 h - fish [mg/l]	Study scientifically unjustified.
EC50 48h - Daphnia magna [mg/l]	Study scientifically unjustified.
EC50 72h Algae [mg/l]	Study scientifically unjustified.

12.2. Persistence and degradability

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance	
Persistence and degradability	No data available.
Nitrogen (7727-37-9)	
Persistence and degradability	No ecological damage caused by this product.
Methane (74-82-8)	
Persistence and degradability	The substance is readily biodegradable. Unlikely to persist.
Hydrogen Sulfide (7783-06-4)	
Persistence and degradability	Not applicable for inorganic gases.
Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.
Carbon monoxide (630-08-0)	
Persistence and degradability	Will not undergo hydrolysis. Not readily biodegradable. Not applicable for inorganic gases.

12.3. Bioaccumulative potential

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance	
Log Pow	Not applicable for gas-mixtures.
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	No data available.
Nitrogen (7727-37-9)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.
Methane (74-82-8)	
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Hydrogen Sulfide (7783-06-4)	
BCF fish 1	(no bioaccumulation expected)
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No data available.
Oxygen (7782-44-7)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.
Carbon monoxide (630-08-0)	
Log Pow	1.78

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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Carbon monoxide (630-08-0)	
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

12.4. Mobility in soil

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance	
Mobility in soil	No data available
Nitrogen (7727-37-9)	
Ecology - soil	No ecological damage caused by this product.
Methane (74-82-8)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Hydrogen Sulfide (7783-06-4)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.
Oxygen (7782-44-7)	
Ecology - soil	No ecological damage caused by this product.
Carbon monoxide (630-08-0)	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Other adverse effects

Effect on ozone layer : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into any place where its accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded.

Product/Packaging disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1956 Compressed gas, n.o.s. (Nitrogen, Oxygen), 2.2

UN-No.(DOT) : UN1956

Proper Shipping Name (DOT) : Compressed gas, n.o.s.

Class (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115

Hazard labels (DOT) : 2.2 - Non-flammable gas



DOT Packaging Non Bulk (49 CFR 173.xxx) : 302;305

DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx) : 306;307

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 75 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

Other information : No supplementary information available.

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

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Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers:
- Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transportation of Dangerous Goods

Transport document description : UN1956 Compressed gas, n.o.s., 2.2
UN-No. (TDG) : UN1956
Proper Shipping Name : Compressed gas, n.o.s.
TDG Primary Hazard Classes : 2.2 - Class 2.2 - Non-Flammable, Non-Toxic Gas.
TDG Special Provisions : 16 - (1) The technical name of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods must be shown, in parentheses, on the shipping document following the shipping name in accordance with clause 3.5(1)(c)(ii)(A) of Part 3 (Documentation). The technical name must also be shown, in parentheses, on a small means of containment or on a tag following the shipping name in accordance with subsections 4.11(2) and (3) of Part 4 (Dangerous Goods Safety Marks). (2) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a shipping document or on a small means of containment when Canadian law for domestic transport or an international convention for international transport prohibits the disclosure of the technical name: (a)UN1544, ALKALOID SALTS, SOLID, N.O.S. or ALKALOIDS, SOLID, N.O.S.; (b)UN1851, MEDICINE, LIQUID, TOXIC, N.O.S.; (c)UN3140, ALKALOID SALTS, LIQUID, N.O.S. or ALKALOIDS, LIQUID, N.O.S.; (d)UN3248, MEDICINE, LIQUID, FLAMMABLE, TOXIC, N.O.S.; or (e)UN3249, MEDICINE, SOLID, TOXIC, N.O.S. An example in Canada is the "Food and Drugs Act". (3) Despite subsection (1), the technical name for the following dangerous goods is not required to be shown on a small means of containment: (a)UN2814, INFECTIOUS SUBSTANCE, AFFECTING HUMANS; or (b)UN2900, INFECTIOUS SUBSTANCE, AFFECTING ANIMALS. SOR/2014-306,148 - (1) Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles if (a)the working pressure in each receptacle is less than 5 000 KPa; (b)the capacity of each receptacle is less than 12 L; (c)each receptacle has a minimum burst pressure of (i)at least 3 times the working pressure, when the receptacle is fitted with a relief device; or (ii)at least 4 times the working pressure, when the receptacle is not fitted with a relief device; (d)each receptacle is manufactured from material that will not fragment upon rupture; (e)each detector is manufactured under a quality assurance program; ISO 9001:2008 is an example of a quality assurance program. (f)the detectors are transported in strong outer means of containment; and (g)a detector in its outer means of containment is capable of withstanding a 1.2 m drop test without breakage of the detector or rupture of the outer means of containment. (2)Part 5 (Means of Containment) does not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles and that are included in equipment, if (a)the conditions set out in paragraphs (1)(a) to (e) are met; and (b)the equipment is contained in a strong outer means of containment or the equipment affords the detectors with protection that is equivalent to that provided by a strong outer means of containment. (3)These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2 (Classification), do not apply to radiation detectors that contain these dangerous goods in non-refillable pressure receptacles, including detectors in radiation detection systems, if the detectors meet the requirements of subsection (1) or (2), as applicable, and the capacity of the receptacles that contain the detectors is less than 50 mL. SOR/2014-306

Explosive Limit and Limited Quantity Index : 0.125 L
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : 75 L

Transport by sea

Transport document description (IMDG) : UN 1956 COMPRESSED GAS, N.O.S., 2
UN-No. (IMDG) : 1956
Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.
Class (IMDG) : 2 - Gases
Limited quantities (IMDG) : 120 ml

Air transport

Transport document description (IATA) : UN 1956 COMPRESSED GAS, N.O.S., 2.2

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

Safety Data Sheet

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UN-No. (IATA)	: 1956
Proper Shipping Name (IATA)	: COMPRESSED GAS, N.O.S.
Class (IATA)	: 2

SECTION 15: Regulatory information

15.1. US Federal regulations

Nitrogen (7727-37-9)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Methane (74-82-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Hydrogen Sulfide (7783-06-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on the United States SARA Section 302	
Subject to reporting requirements of United States SARA Section 313	
CERCLA RQ	100 lb
Section 302 EPCRA Reportable Quantity (RQ)	100 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb
SARA Section 313 - Emission Reporting	1 %
Oxygen (7782-44-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Carbon monoxide (630-08-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

15.2. International regulations

CANADA

Nitrogen (7727-37-9)	
Listed on the Canadian DSL (Domestic Substances List)	
Methane (74-82-8)	
Listed on the Canadian DSL (Domestic Substances List)	
Hydrogen Sulfide (7783-06-4)	
Listed on the Canadian DSL (Domestic Substances List)	
Oxygen (7782-44-7)	
Listed on the Canadian DSL (Domestic Substances List)	
Carbon monoxide (630-08-0)	
Listed on the Canadian DSL (Domestic Substances List)	

EU-Regulations

Nitrogen (7727-37-9)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
Methane (74-82-8)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
Hydrogen Sulfide (7783-06-4)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
Oxygen (7782-44-7)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	
Carbon monoxide (630-08-0)	
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)	

National regulations

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Nitrogen (7727-37-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

Methane (74-82-8)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Japanese ISHL (Industrial Safety and Health Law)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on CICR (Turkish Inventory and Control of Chemicals)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

Hydrogen Sulfide (7783-06-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Japanese ISHL (Industrial Safety and Health Law)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on the Canadian IDL (Ingredient Disclosure List)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

Oxygen (7782-44-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

Carbon monoxide (630-08-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
 Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
 Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
 Listed on the Japanese ISHL (Industrial Safety and Health Law)
 Listed on the Korean ECL (Existing Chemicals List)
 Listed on NZIoC (New Zealand Inventory of Chemicals)
 Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
 Listed on the Canadian IDL (Ingredient Disclosure List)
 Listed on INSQ (Mexican National Inventory of Chemical Substances)
 Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

Carbon monoxide (630-08-0)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	Yes	No	No	

Nitrogen (7727-37-9)

U.S. - Massachusetts - Right To Know List
 U.S. - New Jersey - Right to Know Hazardous Substance List
 U.S. - Pennsylvania - RTK (Right to Know) List

Oxygen (0.0015-19.49%), Methane (0.0005-2.5%), Carbon Monoxide (0.001-0.09%), Hydrogen Sulfide (0.001-0.025%) in Nitrogen Balance

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Methane (74-82-8)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Hydrogen Sulfide (7783-06-4)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

Oxygen (7782-44-7)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Carbon monoxide (630-08-0)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Revision date : 12/19/2017
Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

H220	Extremely flammable gas
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated
H330	Fatal if inhaled
H331	Toxic if inhaled
H335	May cause respiratory irritation
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life

SDS US (GHS HazCom 2012)

This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of Calgaz's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

4.) CHLORINE (GRANULAR)

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SAFETY DATA SHEET

Revision Date 18-Mar-2016

Version 9

1. IDENTIFICATION

Product identifier

Product Name CLOROX POOL&SPA XTRA BLUE ALL-IN-ONE CHLORINATING GRANULES

Other means of identification

Product Code 23040CLX

Recommended use of the chemical and restrictions on use

Recommended Use Swimming Pool Product.

Uses advised against Do not mix with other chemicals

Details of the supplier of the safety data sheet

Supplier Address

Easy 123 Pool Care LLC
1725 N. Brown Road
Lawrenceville, GA 30043
Telephone: 800-767-7665

Emergency telephone number

Emergency Telephone Chemtrec (Transportation) 1-800-424-9300, 703-527-3887
Poison Control Center (Medical) : (877) 800-5553

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3

Label elements

Emergency Overview

Danger

Hazard statements

Harmful if swallowed
Causes skin irritation
Causes serious eye damage
Suspected of damaging fertility or the unborn child
May cause respiratory irritation
Fatal if inhaled **



Color white **Physical state** Solid **Odor** Chlorine

**** Product as sold is not expected to produce respiratory effects. See Section 11 (Toxicological Information) for additional details on inhalation.**

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Do not breathe dust/fume/gas/mist/vapors/spray
 Use only outdoors or in a well-ventilated area
 Wear respiratory protection

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Immediately call a POISON CENTER or doctor/physician
 IF ON SKIN: Wash with plenty of soap and water
 If skin irritation occurs: Get medical advice/attention
 Take off contaminated clothing and wash before reuse
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
 Immediately call a POISON CENTER or doctor/physician
 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 Rinse mouth

Precautionary Statements - Storage

Store locked up
 Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

11.61375% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical Name	CAS No.	Weight-%
Trichloro-s-triazinetrione	87-90-1	71.8
Boron sodium oxide (B4Na2O7), pentahydrate	12179-04-3	5-10
Clarifier	Proprietary	5-10

4. FIRST AID MEASURES

Description of first aid measures

General advice

Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. If symptoms persist, call a physician.

Eye contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Call a physician immediately.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Inhalation	Remove to fresh air. Artificial respiration and/or oxygen may be necessary. If symptoms persist, call a physician.
Ingestion	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Have person sip a glass of water if able to swallow. Call a physician immediately.
Self-protection of the first aider	Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Flood fire area with water from a distance.

Unsuitable extinguishing media Do not use dry chemicals, carbon dioxide, or halogenated extinguishing agents.

Specific hazards arising from the chemical
Do not let the fire burn. Thermal decomposition can lead to release of toxic/corrosive gases and vapors. Wet material may generate nitrogen trichloride, an explosion hazard.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Do not add water to spilled material. Using clean dedicated equipment, sweep and scoop all spilled material, contaminated soil, and other contaminated material and place into clean dry containers for disposal. Do not

close containers containing wet or damp material. They should be left open to disperse any hazardous gases that may form.

Methods for cleaning up

Use personal protective equipment as required. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically, placing in appropriate containers for disposal. Avoid creating dust. Clean contaminated surface thoroughly. Pick up and transfer to properly labeled containers. Sweep up and shovel into suitable containers for disposal. After cleaning, flush away traces with water. Do not use floor sweeping compounds to clean up spills. Do not transport wet or damp material. Contact supplier in Section 1 for instructions, especially for damp or contaminated material.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Use with local exhaust ventilation. Do not mix with other chemicals. Keep/Store away from clothing/ combustible materials. Wash thoroughly after handling. Use only in well-ventilated areas.

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers.

Incompatible materials

Incompatible with strong acids and bases. Ammonia. Calcium hypochlorite. Combustible material. Do not mix with other swimming pool/spa chemicals in their concentrated forms. Reducing agent.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Boron sodium oxide (B ₄ Na ₂ O ₇), pentahydrate 12179-04-3	STEL: 6 mg/m ³ inhalable fraction TWA: 2 mg/m ³ inhalable fraction	(vacated) TWA: 10 mg/m ³	TWA: 1 mg/m ³
Clarifier	-	(vacated) TWA: 2 mg/m ³ Al Aluminum	TWA: 2 mg/m ³ Al

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls

Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles). Tight sealing safety goggles. Face protection shield.

Skin and body protection

Wear protective gloves and protective clothing.

Respiratory protection

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved

respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Wash hands thoroughly after handling. Keep away from food, drink and animal feeding stuffs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Solid	Odor	Chlorine
Appearance	granules	Odor threshold	No information available
Color	white		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	3.9	in 1% Solution
Melting point/freezing point	No information available	
Boiling point / boiling range	No information available	
Flash point	No information available	
Evaporation rate	No information available	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	No information available	
Specific Gravity	No information available	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Density	No information available	g/cm3
Bulk density	1.0	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Extremes of temperature and direct sunlight. Protect from moisture. Do not mix with other chemicals.

Incompatible materials

Incompatible with strong acids and bases. Ammonia. Calcium hypochlorite. Combustible material. Do not mix with other swimming pool/spa chemicals in their concentrated forms. Reducing agent.

Hazardous Decomposition Products

Chlorine gas. Nitrogen oxides (NOx). Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

- Inhalation** Irritating to respiratory system. This material in the form as sold is not expected to produce respiratory effects. Particles of respirable size are generally not encountered. The respirable fraction is typically less than 0.1% by weight. If ground or otherwise in a powdered form, effects similar to a corrosive substance may occur. Exposure to the solid product or to free chlorine evolving from the product may cause irritation, redness of upper and lower airways, coughing, laryngospasm and edema, shortness of breath, bronchoconstriction, and possible pulmonary edema. The pulmonary edema may develop several hours after a severe acute exposure.
- Eye contact** Severely irritating to eyes. Risk of serious damage to eyes. Causes burns.
- Skin contact** Irritating to skin. Contact with moist skin may cause skin burns. May cause burns.
- Ingestion** Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Trichloro-s-triazinetrione 87-90-1	= 406 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	>50 mg/L (Rat) 4 h
Boron sodium oxide (B4Na2O7), pentahydrate 12179-04-3	= 2403 mg/kg (Rat)	-	-
Clarifier	= 1930 mg/kg (Rat)	-	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.

Reproductive toxicity This product contains a boron compound. This boron compound when fed to test animals at very high doses has shown reproductive and developmental toxicity. When this product is used according to label directions, the boron compound in this product does not represent a practical risk to humans.

STOT - single exposure No information available.
STOT - repeated exposure No information available.
Chronic toxicity No information available.
Target Organ Effects Eyes, Respiratory system, Skin.
Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document .

Oral LD50 817 mg/kg (rat)
Dermal LD50 > 5000 mg/kg (rat)

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects

19.61375% of the mixture consists of component(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Trichloro-s-triazinetrione 87-90-1	-	0.13 - 0.5: 96 h Lepomis macrochirus mg/L LC50 static 0.06 - 0.11: 96 h Oncorhynchus mykiss mg/L LC50 static	0.21: 48 h Daphnia magna mg/L EC50 0.16 - 0.18: 48 h Daphnia magna mg/L EC50 Static
Clarifier	-	100: 96 h Carassius auratus mg/L LC50 37: 96 h Gambusia affinis mg/L LC50 static	136: 15 min Daphnia magna mg/L EC50

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging

Do not reuse container. Refer to all federal, state and local regulations prior to disposal of container and unused contents by reuse, recycle or disposal.

14. TRANSPORT INFORMATION

Note:

Product classified as UN 3077 or UN 3082 that are shipped in containers not exceeding 5 kg or 5 L may ship as Not Subject to the provisions of the IMDG Code and Not Restricted under IATA. Refer to IMDG Ch 2.10 and IATA SP-197.

DOT

Not regulated

IATA

UN/ID no. UN3077
Proper shipping name Environmentally hazardous substance, solid, n.o.s. (Trichloro-s-triazinetrione)
Hazard Class 9
Packing Group III
Description UN3077 Environmentally hazardous substances, solid, n.o.s. (Trichloro-s-triazinetrione), 9, III

IMDG

UN/ID no. UN3077
Proper shipping name Environmentally hazardous substance, solid, n.o.s. (Trichloro-s-triazinetrione)
Hazard Class 9
Packing Group III
EmS-No. F-A, S-F
Description UN3077 Environmentally hazardous substances, solid, n.o.s. (Trichloro-s-triazinetrione), 9, III
Marine pollutant This material meets the definition of a marine pollutant

15. REGULATORY INFORMATION

International Inventories

TSCA Complies
 DSL/NDSL Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard Yes
 Chronic Health Hazard Yes
 Fire hazard No
 Sudden release of pressure hazard No
 Reactive Hazard No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Clarifier	5000 lb	-	-	X

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Clarifier	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Trichloro-s-triazinetrione 87-90-1	X	X	X
Boron sodium oxide (B4Na2O7), pentahydrate 12179-04-3	-	X	-
Clarifier	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number 67262-29-90106

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required

for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Difference between SDS and EPA Pesticide label

DANGER: Corrosive. Causes irreversible eye damage. Causes skin burns. Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Wear protective eyewear (safety glasses), protective clothing and rubber gloves. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

<u>NFPA</u>	Health hazards 3	Flammability 0	Instability 1	Physical and Chemical Properties OX
<u>HMIS</u>	Health hazards 3*	Flammability 0	Physical hazards 1	Personal protection X

<u>Prepared By</u>	Regulatory Affairs
<u>Revision Date</u>	18-Mar-2016
<u>Revision Note</u>	No information available

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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5.) COAL TAR EPOXY

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Safety Data Sheet



1. Identification

Product Name:	EPOXY 1-GL 2PK COLTR COAL TAR EPOXY	Revision Date:	3/14/2018
Product Identifier:	C9578402	Supersedes Date:	9/19/2014
Product Use/Class:	Heavy Duty Topcoat/Epoxy Coal Tar Base		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
	Rust-Oleum Consumer Brands Canada (RCBC) 200 Confederation Parkway Concord, ON L4K 4T8 Canada		
Preparer:	Regulatory Department		
Emergency Telephone:	24 Hour Hotline: 847-367-7700		

2. Hazard Identification

Classification

Symbol(s) of Product



Signal Word

Danger

Possible Hazards

47% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Germ Cell Mutagenicity, category 1B	H340	May cause genetic defects.
Carcinogenicity, category 1A	H350	May cause cancer.
Reproductive Toxicity, category 1A	H360	May damage fertility or the unborn child.
STOT, repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.

Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Skin Irritation, category 2	H315	Causes skin irritation.
Eye Irritation, category 2	H319	Causes serious eye irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P370+P378	In case of fire: Use alcohol film forming foam, carbon dioxide, dry chemical, dry sand to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container in accordance with local, regional and national regulations.
P201	Obtain special instructions before use.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P271	Use only outdoors or in a well-ventilated area.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P264	Wash hands thoroughly after handling.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P321	For specific treatment see label
P332+P313	If skin irritation occurs: Get medical advice/attention.

P362+P364	Take off contaminated clothing and wash it before reuse.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.
P272	Contaminated work clothing should not be allowed out of the workplace.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.

GHS SDS PRECAUTIONARY STATEMENTS

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P363	Wash contaminated clothing before reuse.

3. Composition / Information On Ingredients

HAZARDOUS SUBSTANCES

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Coal Tar Pitch	65996-93-2	33	GHS08	H340-350-360
Hydrous Magnesium Silicate	14807-96-6	26	Not Available	Not Available
Xylenes (o-, m-, p- isomers)	1330-20-7	16	GHS02-GHS07	H226-315-319-332
Fatty Acids, C18-Unsatd., Dimers, Polymers With Tall-Oil Fatty Acids And Triethy	68082-29-1	11	GHS07	H317
Ethylbenzene	100-41-4	3.8	GHS02-GHS07-GHS08	H225-304-332-351-373
Propylene Glycol Monopropyl Ether	1569-01-3	3.0	Not Available	Not Available
Acenaphthylene	208-96-8	2.1	Not Available	Not Available
Crystalline Silica / Quartz	14808-60-7	2.0	Not Available	Not Available
Tris-2,4,6-(Dimethylaminomethyl)Phenol	90-72-2	1.0	GHS07	H302-312-315-319
Toluene	108-88-3	0.2	GHS02-GHS07-GHS08	H225-304-315-332-336-361-373

4. First-Aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-Fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: No unusual fire or explosion hazards noted. Closed containers may explode when exposed to extreme heat due to buildup of steam. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame.

SPECIAL FIREFIGHTING PROCEDURES: Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Evacuate area and fight fire from a safe distance. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Special Fire and Explosion Hazard (Combustible Dust): No Information

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Follow all SDS and label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Avoid contact with eyes, skin and clothing.

STORAGE: Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of NFPA Class II combustible liquids.

Advice on Safe Handling of Combustible Dust: No Information

8. Exposure Controls / Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV- TWA	ACGIH TLV- STEL	OSHA PEL-TWA	OSHA PEL- CEILING
Coal Tar Pitch	65996-93-2	35.0	0.2 mg/m3	N.E.	0.2 mg/m3	N.E.
Hydrous Magnesium Silicate	14807-96-6	30.0	2 mg/m3	N.E.	N.E.	N.E.
Xylenes (o-, m-, p- isomers)	1330-20-7	20.0	100 ppm	150 ppm	100 ppm	N.E.
Fatty Acids, C18-Unsatd., Dimers, Polymers With Tall-Oil Fatty Acids And Triethy	68082-29-1	15.0	N.E.	N.E.	N.E.	N.E.
Ethylbenzene	100-41-4	5.0	20 ppm	N.E.	100 ppm	N.E.
Propylene Glycol Monopropyl Ether	1569-01-3	5.0	N.E.	N.E.	N.E.	N.E.
Acenaphthylene	208-96-8	5.0	N.E.	N.E.	N.E.	N.E.
Crystalline Silica / Quartz	14808-60-7	5.0	0.025 mg/m3	N.E.	50 µg/m3	N.E.
Tris-2,4,6- (Dimethylaminomethyl)Phenol	90-72-2	1.0	N.E.	N.E.	N.E.	N.E.
Toluene	108-88-3	1.0	20 ppm	N.E.	200 ppm	300 ppm

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or in any other circumstances where air purifying respirators may not provide adequate protection.

SKIN PROTECTION: Use gloves to prevent prolonged skin contact. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

Engineering Measures for Combustible Dust: No Information

9. Physical and Chemical Properties

Appearance:	Liquid	Physical State:	Liquid
Odor:	Solvent Like	Odor Threshold:	N.E.
Relative Density:	1.268	pH:	N.D.
Freeze Point, °C:	N.D.	Viscosity:	N.D.
Solubility in Water:	Miscible	Partition Coefficient, n-octanol/ water:	N.D.
Decomposition Temp., °C:	N.D.	Explosive Limits, vol%:	0.8 - 7.1
Boiling Range, °C:	-18 - 537	Flash Point, °C:	30
Flammability:	Supports Combustion	Auto-ignition Temp., °C:	N.D.
Evaporation Rate:	Slower than Ether	Vapor Pressure:	N.D.
Vapor Density:	Heavier than Air		

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: May be absorbed through the skin in harmful amounts. Causes skin irritation. Allergic reactions are possible.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Contains: Coal Tar. Coal tar is rated as a NTP 1 carcinogen. Risk of cancer depends on duration and level of exposure. Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
65996-93-2	Coal Tar Pitch	3300 mg/kg Rat	>5000 mg/kg Rat	N.E.
14807-96-6	Hydrous Magnesium Silicate	6000	N.E.	30
1330-20-7	Xylenes (o-, m-, p- isomers)	3500 mg/kg Rat	>4350 mg/kg Rabbit	29.08 mg/L Rat
100-41-4	Ethylbenzene	3500 mg/kg Rat	15400 mg/kg Rabbit	17.4 mg/L Rat
1569-01-3	Propylene Glycol Monopropyl Ether	2490 mg/kg Rat	3550 mg/kg Rabbit	N.E.
14808-60-7	Crystalline Silica / Quartz	5500 mg/kg Rat	5500	100 mg/L
108-88-3	Toluene	2600 mg/kg Rat	12000 mg/kg Rabbit	12.5 mg/L Rat

N.E. - Not Established

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Do not incinerate closed containers. Dispose of material in accordance to local, state, and federal regulations and ordinances. Do not allow to enter waterways, wastewater, soil, storm drains or sewer systems.

14. Transport Information

	<u>Domestic (USDOT)</u>	<u>International (IMDG)</u>	<u>Air (IATA)</u>	<u>TDG (Canada)</u>
UN Number:	N.A.	1263	1263	N.A.
Proper Shipping Name:	Paint Products in Limited Quantities	Paint	Paint	Paint Products in Limited Quantities
Hazard Class:	N.A.	3	3	N.A.
Packing Group:	N.A.	III	III	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

No Information

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
Xylenes (o-, m-, p- isomers)	1330-20-7
Ethylbenzene	100-41-4
Toluene	108-88-3

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

No TSCA 12(b) components exist in this product.

16. Other Information**HMIS RATINGS**

Health: 2* Flammability: 3 Physical Hazard: 0 Personal Protection: X

NFPA RATINGS

Health: 2 Flammability: 3 Instability: 0

VOLATILE ORGANIC COMPOUNDS, g/L: 304

SDS REVISION DATE: 3/14/2018

REASON FOR REVISION: Product Composition Changed
Substance and/or Product Properties Changed in Section(s):
01 - Identification
02 - Hazard Identification
05 - Fire-fighting Measures
09 - Physical & Chemical Properties
15 - Regulatory Information
16 - Other Information
Statement(s) Changed

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The manufacturer believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. The manufacturer makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

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6.) EPOXY (ANCHORING)

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CEMENT & CONCRETE PRODUCTS™

F3: Epoxies

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
5 Concourse Parkway, Suite 1900
Atlanta, GA 30328

Emergency Telephone Number
INFOTRAC (800) 535-5053
Information Telephone Number
(800) 282-5828

SDS F3A
Revision: Jan-19

NOTE: TWO SDS ARE REQUIRED FOR THESE PRODUCTS

QUIKRETE® Product Name	Item #(s)
ANCHORING EPOXY – FASTSET (PART A)	8620-30
ANCHORING EPOXY – HIGH STRENGTH (PART A)	8620-31
ANCHORING EPOXY – FASTSET™ FAST-SETTING (PART A)	8620-34
ANCHORING EPOXY – FASTSET™ HIGH STRENGTH (PART A)	8620-35

Product Use: Epoxies for anchoring objects to concrete.

See most current revision of this document at www.QUIKRETE.com.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:

2.1 Classification of the substance or mixture

Skin Corrosion– Category 1C

Eye Damage – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 1A

Toxic to Reproduction (Fertility) – Category 1B

Toxic to Reproduction (Unborn Child) – Category 1B

Specific Target Organ Toxicity (Repeated Exposure) – Category 1 (lungs/respiratory tract)

Aquatic Hazard (Long Term) – Category 2

2.2a Signal word Danger

2.2b Hazard Statements

Causes severe skin burns and eye damage

SDS F3A

QUIKRETE Companies, LLC

1/3/2019

CEMENT & CONCRETE PRODUCTS™

May cause an allergic skin reaction
May cause cancer
May damage fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure (lungs, respiratory tract)
Toxic to aquatic life with long lasting effects.

2.2c Pictograms**2.2d Precautionary statements**

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid contact with the skin and eyes
Avoid breathing fumes
Avoid exposure during pregnancy.
Wear protective gloves, eye protection and clothing.
Do not eat, drink or smoke when using this product.

If on skin (or hair): Remove material immediately! Cured material can be removed only mechanically with damage to skin. Immediately wash all contaminated body and clothing thoroughly.
If in eyes: Immediately rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing and seek immediate medical attention.
If inhaled: remove person to fresh air and keep comfortable for breathing.
If swallowed: immediately call a poison control center or physician. Rinse mouth. Do NOT induce vomiting.
If you experience a burn, rash or skin irritation: immediately seek medical attention.

Immediately seek medical attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information**Carcinogenicity**

This product contains titanium dioxide which IARC has classified as a Group 2B carcinogen (possibly carcinogenic to humans). Evidence is based on sufficient animal testing as a result of long-term inhalation at high concentrations of respirable amounts of titanium dioxide. Because this


CEMENT & CONCRETE PRODUCTS™

product is in liquid or paste form, it does not pose a dust hazard; therefore, this classification is not relevant. Note: sanding of this product will create a possible dust hazard.

This product contains crystalline silica (quartz sand). IARC has classified crystalline silica as a Group 1 carcinogen. Both IARC and NTP consider silica as a known human carcinogen. Evidence is based on the chronic and long-term exposure workers have had to respirable sized crystalline silica dust particles. Because this product is in liquid or paste form, it does not pose a dust hazard; therefore, this classification is not relevant. Note: sanding of this product will create a possible silica dust hazard

This product contains ethylene glycol which is not classified by IARC but is listed by the State of California for reproductive toxicity. California reports from an NTP report that ethylene glycol causes reproductive toxicity (developmental endpoint) at high oral doses.

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None known

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS No.</u>	<u>% by Weight</u>
Diglycidyl Ether of Bisphenol A	25085-99-8	30 - 60
Quartz Silica Sand (Crystalline Silica)	14808-60-7	40 - 70
Trimethylolpropane triglycidyl ether	30499-70-8	7 - 15
Ethylene Glycol	107-21-1	1-5
Titanium Dioxide	13463-67-7	1-5

*The concentrations ranges are provided due to batch-to-batch variability.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures
General information:

Inhalation: Move to fresh air; give oxygen if breathing is difficult. Call a physician if symptoms persist.

Eyes: **Immediately rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing and seek immediate medical attention.**

Skin: **Remove material immediately! Cured material can be removed only mechanically with damage to skin. Immediately wash all contaminated body and clothing thoroughly.**

Remove contaminated clothing. Wash with mild soap and water. Get medical attention if skin irritation or dermatitis persists.

Ingestion: Give plenty of water. DO NOT induce vomiting. Call a physician immediately.

Other: Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure. If sensitization occurs, future contact with the material should be avoided.

**CEMENT & CONCRETE PRODUCTS™****4.2 Most important symptoms/effects, acute and delayed**

Inhalation: Prolonged or repeated inhalation of fumes or dust may cause lung damage or cancer

Skin contact: Causes severe burns. May cause an allergic skin reaction.

Eye Contact: Causes serious eye damage.

Ingestion: May damage fertility or the unborn child.

4.3 Indication of immediate medical attention and special treatment needed:

Treat symptomatically. Contact poison treatment specialist immediately if ingested or inhaled.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Combustible

5.2 Suitable extinguishing agents: Firefighters must wear self-contained breathing apparatus and full protective clothing to prevent contact with toxic and/or irritating fumes.

5.3 Special hazards arising from the substance or mixture: This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer, or drain.

5.3a Products of Combustion: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, halogenated compounds, metal oxide/oxides.

5.3b Explosion Hazards in Presence of Various Substances: None known

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Cover spills with sawdust, vermiculite, or other absorbent material to minimize spreading of the material before collecting. Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Avoid contact with eyes, skin and clothing. Avoid inhalation of vapors. Use with adequate ventilation. Use appropriate personal protection equipment (Section 8). Wash thoroughly after handling.

7.2 Storage

Requirements to be met by storerooms and receptacles: Store in a cool dry place away from direct sunlight. Keep from freezing. Recommended storage temperature range in between 4 °C and 32 °C (40°F and 90° F).



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Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³
Diglycidyl Ether of Bisphenol A	25085-99-8	None
Quartz Silica Sand (Crystalline Silica)	14808-60-7	10/(%SiO ₂)
Trimethylolpropane triglycidyl ether	30499-70-8	None
Ethylene Glycol	107-21-1	10
Titanium Dioxide	13463-67-7	15 (total dust)

8.2 Exposure Controls

Use local and general exhaust ventilation to maintain airborne concentrations below TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. Avoid exposure during pregnancy. Persons with a history of skin sensitization problems should not be exposed to this product for inhalation or skin contact. Once sensitized to this product, a severe allergic reaction may occur when subsequently exposed to even very low levels.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection. Neoprene, nitrile rubber, or PVC gloves have been found to offer adequate protection for incidental contact.

Eye protection:

Wear approved eye protection properly fitted dust- or splash-proof chemical safety glasses.

Respiratory protection:

A S-Series half mask respirator with organic vapor cartridges (black) will reduce exposure, especially in poorly ventilated areas, when use is frequent, or when permissible exposure limits may be exceeded.



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SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance:	White Paste
Evaporation Rate:	Not applicable
Odor:	Slight Odor
Solubility in Water:	Not available
Specific Gravity (H₂O=1):	Not available
Vapor Density (Air = 1):	Not available
Vapor Pressure:	Not available
VOC Content:	See section 9 of part B for VOC content.
pH:	Not available
Boiling Point:	Not available

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No specific data.

10.5 Incompatible materials Oxidizing agents

10.6 Hazardous Decomposition or By-products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION XI – TOXICOLOGICAL INFORMATION

11. Toxicological Information (Part A)

Acute Oral Toxicity: Ethylene Glycol – LD₅₀ (Rat) 4700 mg/kg

Skin Irritation: Irritating to skin. The product has not been tested. The statement has been derived from the properties of the individual components.

Eye Irritation: Irritating to eyes. The product has not been tested. The statement has been derived from the properties of the individual components.

Respiratory Irritation: Inhalation of vapors or mists may cause irritation to the respiratory system.



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Sensitization: May cause allergic skin reaction and irritation to the respiratory system. The product has not been tested. The statement has been derived from the properties of the individual components.

Carcinogenicity Classification:

Quartz Silica Sand (Crystalline Silica) - See Part A Section 2.

IARC Group1: Known human carcinogen based on human evidence.

NTP (National Toxicology Program) has classified Crystalline Silica as a known human carcinogen.

Potential acute health effects

Eye Contact Causes serious eye damage.

Inhalation None known

Skin Contact Causes severe burns. May cause an allergic skin reaction.

Potential chronic health effects

General: Causes damage to lungs/respiratory tract through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: May cause cancer. Risk of cancer depends on duration and level of exposure.

Teratogenicity: May damage the unborn child.

Fertility Effects: May damage fertility.

SECTION XII – ECOLOGICAL INFORMATION

Toxicity

Ingredient	Result	Species	Exposure
Titanium dioxide	Acute LC50 >1000000 µg/L Marine water	Fish - Fundulus heteroclitus	96 hours
Ethanediol	Acute LC50 6900000 µg/L Fresh water	Crustaceans - Ceriodaphnia dubia –Neonate	48 hours
	Acute LC50 41000000 µg/L Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 8050000 µg/L Fresh water	Fish - Pimephales promelas	96 hours

Bioaccumulative potential

Ingredient	LogPow	BCF	Potential
Ethanediol	-1.36	-	low

Mobility: Soil/water partition coefficient (K_{OC}) – Not available.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Avoid dispersal of spilled material



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and runoff and contact with soil, waterways, drains and sewers. If the material as supplied becomes a waste, dispose in accordance with federal, state and local regulations.

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

Federal Regulations:

TSCA	Listed	
CERCLA RQ	CAS #	Chemical Name
5000 lbs	107-21-1	Ethylene Glycol

SARA Title 311/312

Skin Corrosion– Category 1C

Eye Damage – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 1A

Toxic to Reproduction (Fertility) – Category 1B

Toxic to Reproduction (Unborn Child) – Category 1B

Specific Target Organ Toxicity (Repeated Exposure) – Category 1 (lungs/respiratory tract)

Sara Title 313

Form R Reporting Requirements: Ethylene Glycol (CAS 107-21-1)

Supplier Notification: Ethylene Glycol (CAS 107-21-1)

State Regulations:

State RTK	CAS #	Chemical Name
NJ, MA, PA	25085-99-8	Diglycidyl Ether of Bisphenol A

SDS F3A

QUIKRETE Companies, LLC

1/3/2019

QUIKRETE**CEMENT & CONCRETE PRODUCTS™**107-21-1
14808-60-7
13463-67-7Ethylene Glycol
Quartz Silica Sand (Crystalline Silica)
Titanium Dioxide**State Right to Know Laws
California Prop. 65 Components**

WARNING: This product can expose you to chemicals including crystalline silica which is known to the State of California to cause cancer, and Ethylene Glycol which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION XVI – OTHER INFORMATION

Last Updated: January 3, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by The QUIKRETE Companies, LLC

End of SDS



CEMENT & CONCRETE PRODUCTS™

F3: Epoxies

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE® Companies
5 Concourse Parkway, Suite 1900
Atlanta, GA 30328

Emergency Telephone Number
INFOTRAC (800) 535-5053
Information Telephone Number
(800) 282-5828

SDS F3B
Revision: Jan-19

NOTE: TWO SDS ARE REQUIRED FOR THESE PRODUCTS

QUIKRETE® Product Name	Item #(s)
ANCHORING EPOXY – FASTSET (PART B)	8620-30
ANCHORING EPOXY – HIGH STRENGTH (PART B)	8620-31
ANCHORING EPOXY – FASTSET™ FAST-SETTING (PART B)	8620-34
ANCHORING EPOXY – FASTSET™ HIGH STRENGTH (PART B)	8620-35

Product Use: Epoxies for anchoring objects to concrete.

See most current revision of this document at www.QUIKRETE.com.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:

2.1 Classification of the substance or mixture

Skin Corrosion– Category 1B

Eye Damage – Category 1

Skin Sensitization – Category 1

Carcinogenicity – Category 1A

Toxic to Reproduction (Fertility) – Category 1B

Toxic to Reproduction (Unborn Child) – Category 1B

Specific Target Organ Toxicity (Repeated Exposure) – Category 1 (lungs/respiratory tract)

Aquatic Hazard (Acute) – Category 1

Aquatic Hazard (Long Term) – Category 1

2.2a Signal word Danger

SDS F3B

QUIKRETE Companies, LLC

1/7/2019

QUIKRETE**CEMENT & CONCRETE PRODUCTS™****2.2b Hazard Statements**

Causes severe skin burns and eye damage

May cause an allergic skin reaction

May cause cancer

May damage fertility or the unborn child

Causes damage to organs through prolonged or repeated exposure (lungs, respiratory tract)

Very toxic to aquatic life with long lasting effects.

2.2c Pictograms**2.2d Precautionary statements**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Avoid contact with the skin and eyes

Avoid breathing fumes

Avoid exposure during pregnancy.

Wear protective gloves, eye protection and clothing.

Do not eat, drink or smoke when using this product.

If on skin (or hair): Remove material immediately! Cured material can be removed only mechanically with damage to skin. Immediately wash all contaminated body and clothing thoroughly.

If in eyes: Immediately rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing and seek medical immediate attention.

If inhaled: remove person to fresh air and keep comfortable for breathing.

If swallowed: immediately call a poison control center or physician. Rinse mouth. Do NOT induce vomiting.

If you experience a burn, rash or skin irritation: immediately seek medical attention.

Immediately seek medical attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/containers in accordance with all regulations.



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2.3 Additional Information

Carcinogenicity & Teratogenicity

This product contains titanium dioxide which IARC has classified as a Group 2B carcinogen (possibly carcinogenic to humans). Evidence is based on sufficient animal testing as a result of long-term inhalation at high concentrations of respirable amounts of titanium dioxide. Because this product is in liquid or paste form, it does not pose a dust hazard; therefore, this classification is not relevant. Note: sanding of this product will create a possible dust hazard.

This product contains crystalline silica (quartz sand). IARC has classified crystalline silica as a Group 1 carcinogen. Both IARC and NTP consider silica as a known human carcinogen. Evidence is based on the chronic and long-term exposure workers have had to respirable sized crystalline silica dust particles. Because this product is in liquid or paste form, it does not pose a dust hazard; therefore, this classification is not relevant. Note: sanding of this product will create a possible silica dust hazard

This product contains 2-(2-Aminoethylamino) ethanol which is not listed by the State of California for reproductive toxicity. The US National Institute of Health identifies this constituent as it may damage fertility or the unborn child.

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None known

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Hazardous Components</u>	<u>CAS No.</u>	<u>% by Weight*</u>
Quartz Silica Sand (Crystalline Silica)	14808-60-7	40 – 70
4-Nonylphenol, Branched	84852-15-3	10 – 30
2-Piperazin-1-Ylethylamine	104-31-8	10 – 30
2,4,6-tris(Dimethylaminomethyl) phenol	90-72-2	3 – 7
Benzyl alcohol	100-51-8	1 – 5
Diaminopolypropylene glycol	9046-10-0	1 – 5
Bis[(Dimethylamino)methyl]phenol	71074-89-0	1 – 5
2-(2-Aminoethylamino) ethanol	111-41-1	0.1 – 1

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

*The concentrations ranges are provided due to batch-to-batch variability.



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SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures**General information:**

Inhalation: Move to fresh air; give oxygen if breathing is difficult. Call a physician if symptoms persist.

Eyes: Immediately rinse cautiously with water for several minutes. Remove contact lenses if present, and easy to do. Continue rinsing and seek immediate medical attention.

Skin: Remove material immediately! Cured material can be removed only mechanically with damage to skin. Immediately wash contaminated body and clothing thoroughly. Wash with mild soap and water. Get medical attention if skin irritation or dermatitis persists.

Ingestion: Give plenty of water. DO NOT induce vomiting. Call a physician immediately.

Other: Referral to a physician is recommended if there is any question about the seriousness of the injury/exposure. If sensitization occurs, future contact with the material should be avoided.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: Causes damage to organs through prolonged or repeated exposure (lungs, respiratory tract)

Skin contact: Causes severe burns. May cause an allergic skin reaction.

Eye Contact: Causes serious eye damage.

Ingestion: May damage fertility or the unborn child.

4.3 Indication of immediate medical attention and special treatment needed:

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: Combustible

5.2 Suitable extinguishing agents: Firefighters must wear self-contained breathing apparatus and full protective clothing to prevent contact with toxic and/or irritating fumes.

5.3 Special hazards arising from the substance or mixture: This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged into any waterway, sewer or drain.

5.3a Products of Combustion: Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides, metal oxide/oxides.

5.3b Explosion Hazards in Presence of Various Substances: None known

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.



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6.2 Methods and material for containment and cleaning up:

Cover spills with sawdust, vermiculite, or other absorbent material to minimize spreading of the material before collecting. Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Avoid contact with eyes, skin and clothing. Avoid inhalation of vapors. Use with adequate ventilation. Use appropriate personal protection equipment (Section 8). Wash thoroughly after handling.

7.2 Storage

Requirements to be met by storerooms and receptacles: Store in a cool dry place away from direct sunlight. Keep from freezing. Recommended storage temperature range in between 4 °C and 32 °C (40°F and 90° F).

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA) mg/M ³
Quartz Silica Sand (Crystalline Silica)	14808-60-7	10/(%SiO ₂)
Benzyl alcohol	100-51-8	10

8.2 Exposure Controls

Use local and general exhaust ventilation to maintain airborne concentrations below TLV. Suitable respiratory equipment should be used in cases of insufficient ventilation or where operational procedures demand it. **Avoid exposure during pregnancy. Persons with a history of skin sensitization problems should not be exposed to this product for inhalation or skin contact. Once sensitized to this product, a severe allergic reaction may occur when subsequently exposed to even very low levels.**

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.



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8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection. Neoprene, nitrile rubber, or PVC gloves have been found to offer adequate protection for incidental contact.

Eye protection:

Wear approved eye protection properly fitted dust- or splash-proof chemical safety glasses.

Respiratory Protection:

An S-Series half mask respirator with organic vapor cartridges (black) will reduce exposure, especially in poorly ventilated areas, when use is frequent, or when permissible exposure limits may be exceeded.

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance:	Black Paste
Odor:	Slight Odor
Evaporation Rate:	Not applicable
Solubility in Water:	Not available
Specific Gravity (H₂O=1):	Not available
Vapor Density (Air = 1):	Not available
Vapor Pressure:	Not available
pH:	Not available
Boiling Point:	Not available
VOC Content:	VOC < 20 g/L per EPA Method 24; Meets VOC requirements in all locations.

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No specific data.

10.5 Incompatible materials Oxidizing agents

10.6 Hazardous Decomposition or By-products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION XI – TOXICOLOGICAL INFORMATION**11. Toxicological Information (Part B)****Acute Oral Toxicity:**

4-Nonylphenol, Branched	LD ₅₀ Oral – Rat – 1300 mg/kg
2,4,6-tris(Dimethylaminomethyl) phenol:	LD ₅₀ Dermal – Rat – 1280 mg/kg
	LD ₅₀ Oral – Rat – 1200 mg/kg
Benzyl alcohol:	LD ₅₀ Dermal – Rabbit – 2000 mg/kg
	LD ₅₀ Oral – Rat – 1230 mg/kg
2-(2-Aminoethylamino)Ethanol	LD ₅₀ Dermal – Rat – 2250 mg/kg
	LD ₅₀ Oral – Rat – 3 g/kg

Irritation/Corrosion:

4-Nonylphenol, Branched	Eyes – Severe irritant – Rabbit – 100 mg
	Skin– Severe irritant – Rabbit – 500 mg (24 h)
2,4,6-tris(Dimethylaminomethyl) phenol:	Eyes – Severe irritant – Rabbit – 50 µg (24 h)
	Skin– Mild irritant – Rat – 0.025 ml
	Skin– Severe irritant – Rat – 0.25 ml
	Skin– Severe irritant – Rabbit – 2 mg (24 h)
2-Piperazin-1-Ylethamine	Eyes – Moderate irritant – Rabbit – 20 mg (24 h)
	Skin– Severe irritant – Rabbit – 5 mg (24 h)
2-(2-Aminoethylamino)Ethanol	Eyes – Severe irritant – Rabbit – 50 mg
	Skin– Mild irritant – Rabbit – 445 mg

Respiratory Irritation: Inhalation of vapors or mists may cause irritation to the respiratory system. The product has not been tested. The statement has been derived from the properties of the individual components.

Sensitization: May cause allergic skin reaction and irritation to the respiratory system. The product has not been tested. The statement has been derived from the properties of the individual components.

Carcinogenicity Classification:

Quartz Silica Sand (Crystalline Silica) - See Part A Section 2.

IARC Group1: Known human carcinogen based on human evidence.

NTP (National Toxicology Program) has classified Crystalline Silica as a known human carcinogen.

Potential acute health effects

Eye Contact	Causes serious eye damage.
Inhalation	None known
Skin Contact	Causes severe burns. May cause an allergic skin reaction.



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Potential chronic health effects

General: Causes damage to lungs/respiratory tract through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity: May cause cancer. Risk of cancer depends on duration and level of exposure.

Teratogenicity: May damage the unborn child.

Fertility Effects: May damage fertility.

SECTION XII – ECOLOGICAL INFORMATION

Toxicity

Product/ingredient name	Result	Species	Exposure
4-Nonylphenol, Branched	Acute EC50 0.03 mg/L Marine water	Algae - Skeletonema costatum	72 hours
	Acute EC50 0.027 mg/L Marine water	Algae - Skeletonema costatum	96 hours
	Acute EC50 137 µg/L Marine water	Crustaceans - Eohaustorius estuarius –Adult	48 hours
	Acute LC50 17 µg/L Marine water	Fish - Pleuronectes americanus - Larvae	96 hours
	Chronic EC10 0.012 mg/L Marine water	Algae - Skeletonema costatum	96 hours
	Chronic NOEC 5 µg/L Fresh water	Crustaceans - Gammarus fossarum - Adult	21 days
2-Piperazin-1-Ylethylamine	Chronic NOEC 7.4 µg/L Fresh water	Fish - Pimephales promelas - Embryo	33 days
	Acute LC50 2190000 µg/L Fresh water	Fish - Pimephales promelas	96 hours
Benzyl alcohol	Acute LC50 460000 µg/L Fresh water	Fish - Pimephales promelas – Juvenile (Fledgling, Hatchling, Weanling)	96 hours

Bioaccumulative potential

Ingredient	LogPow	BCF	Potential
4-Nonylphenol, Branched	5.4	740	high
2-Piperazin-1-Ylethylamine	-1.48	-	low
2,4,6-tris(Dimethylaminomethyl) phenol	0.219	-	low
Benzyl alcohol	0.87	-	low
Poly[oxy(Methyl-1,2-Ethanediy)], α-(2-Aminomethylethyl)-ω-(2-Aminomethylethoxy)-	1.34	-	low
2-(2-Aminoethylamino)Ethanol	-1.46	<0.2	low

Persistence and degradability: Not available.

Mobility: Not available.

Other adverse effects : No known significant effects or critical hazards.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If the material as supplied becomes a waste, dispose in accordance with federal, state and local regulations.

SECTION XIV – TRANSPORT INFORMATION

DOT Classification

SDS F3B

QUIKRETE Companies, LLC

1/7/2019



CEMENT & CONCRETE PRODUCTS™

UN-Number	UN2735
UN proper shipping name	AMINES, LIQUID, CORROSIVE, N.O.S. (2-Piperazin-1-Ylethamine,4-Nonylphenol,Branched)
Transport Hazard Class(es)	8
Packing Group (if applicable)	III

14.1 Environmental hazards:
Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code
Not available

14.3 Special precautions for user
Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

Federal Regulations:

TSCA

5(a)2:	4-Nonylphenol, Branched
8(a) PAIR:	4-Nonylphenol, Branched
8(b):	All components are listed or exempt.
12(b) one Time Export:	4-Nonylphenol, Branched

SARA Title 311/312

Skin Corrosion– Category 1B
 Eye Damage – Category 1
 Skin Sensitization – Category 1
 Carcinogenicity – Category 1A
 Toxic to Reproduction (Fertility) – Category 1B
 Toxic to Reproduction (Unborn Child) – Category 1B
 Specific Target Organ Toxicity (Repeated Exposure) – Category 1 (lungs/respiratory tract)

Sara Title 313

Form R Reporting Requirements: 4-Nonylphenol, Branched (CAS 84852-15-3)
Supplier Notification: 4-Nonylphenol, Branched (CAS 84852-15-3)

State Regulations:

State RTK
NJ, MA, PA

Chemical Name
 2-Piperazin-1-Ylethamine
 Quartz Silica Sand (Crystalline Silica)
 Benzyl alcohol



CEMENT & CONCRETE PRODUCTS™

State Right to Know Laws

California Prop. 65 Components



WARNING: This product can expose you to chemicals including crystalline silica which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

This product contains 2-(2-Aminoethylamino) ethanol which is not listed by the State of California for reproductive toxicity. The US National Institute of Health identifies this constituent as it may damage fertility or the unborn child.

SECTION XVI – OTHER INFORMATION

Last Updated: January 7, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by

The QUIKRETE Companies, LLC

End of SDS

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7.) FERTILIZER

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Section 1. Identification

GHS product identifier : International Plant Food 13-13-13
Other means of identification : Product code: 1374-32016; 1375-32016; 1648-32016
Product type : Granular solid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	
Fertilizer.	
Uses advised against	Reason
Not applicable.	Non-hazardous product.

Supplier's details : Agrium Canada Partnership (A Subsidiary of Nutrien Ltd.)
 13131 Lake Fraser Drive, S.E.
 Calgary, Alberta, Canada, T2J 7E8

 Agrium U.S. Inc. (A Subsidiary of Nutrien Ltd.)
 5296 Harvest Lake Drive
 Loveland, CO 80538

 Company phone number (North America):
 1-800-403-2861 (Customer Service)

Emergency telephone number (with hours of operation) : 24 HOUR EMERGENCY TELEPHONE NUMBERS:

 English:
 Transportation Emergencies: 1-800-792-8311
 Medical Emergencies: 1-303-389-1653

 French or Spanish:
 Transportation or Medical Emergencies:
 1-303-389-1654

Section 2. Hazards identification

OSHA/HCS status : While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture : Not classified. Non-hazardous product.

GHS label elements

Hazard pictograms : **Not Applicable.**
No Applicable.
Non applicable.

Signal word : No signal word.

Hazard statements : Not applicable.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Not applicable.

Section 2. Hazards identification

Response	: Not applicable.
Storage	: Not applicable.
Disposal	: Not applicable.
Hazards not otherwise classified	: Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

Section 3. Composition/information on ingredients

Substance/mixture : Multi-constituent substance

CAS number/other identifiers ▼

CAS number : Not available.

Ingredient name	%	CAS number
Ammonium sulfate	29	7783-20-2
Ammonium dihydrogen orthophosphate	0 - 2	7722-76-1
Potassium chloride	22	7447-40-7
Diammonium hydrogenorthophosphate	26 - 29	7783-28-0
Ammonium nitrate	1 - 2	6484-52-2
Calcium sulfate, dihydrate	5	10101-41-4
Manganous oxide	1 - 2	1344-43-0
Iron oxide	1	1309-37-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: No known significant effects or critical hazards. May cause irritation due to mechanical action. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. If irritation persists, get medical attention.
Inhalation	: Non-hazardous in case of inhalation. No known significant effects or critical hazards. Get medical attention if symptoms occur. In a fire, hazardous decomposition products may be produced. If any ill effects are felt, proceed as follows. If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. For additional advice call the medical emergency number on this SDS or your poison center or doctor.
Skin contact	: No known effect after skin contact. Rinse with water for a few minutes.
Ingestion	: Ingestion may cause gastrointestinal irritation and diarrhea. Wash out mouth with water. Never give anything by mouth to an unconscious person. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. For additional advice call the medical emergency number on this SDS or your poison center or doctor.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: May cause irritation due to mechanical action.
Inhalation	: Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
Skin contact	: No known significant effects or critical hazards.
Ingestion	: May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

Over-exposure signs/symptoms

Section 4. First aid measures

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Contact Nutrien's 24 Hr Medical Emergency telephone number for professional support: English: 1-303-389-1653; French or Spanish: 1-303-389-1654
- Specific treatments** : No specific treatment. Treat symptomatically.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. Depending on the situation, the rescuer should wear an appropriate mask, gloves, protective clothing and a respirator or self-contained breathing apparatus. Mouth-to-mouth resuscitation of oral exposure patients is not recommended. First-aiders with contaminated clothing should be properly decontaminated.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard. The substance will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and flammable gases.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
nitrogen oxides
sulfur oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Contain and collect the water used to fight the fire for later treatment and disposal.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Will dissolve and disperse in water. Reclaiming material may not be possible. If possible, recover spilled product and place in suitable containers for recycle, reuse, or disposal. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Inform the relevant authorities if the product has caused adverse impacts (sewers, waterways, soil or air).

Section 6. Accidental release measures

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Avoid dust generation. Recycle, if possible.
or
Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Avoid creating dusty conditions and prevent wind dispersal. Recycle to process, if possible.
or
Place spilled material in an appropriate container for disposal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing dust.

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. May form steep piles that can collapse without warning when stored in bulk. Avoid forming steep slopes when removing product. Ensure that bulk bags or smaller packaged products stored in tiers are stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, rolling, or collapse. Use caution when opening truck or railcar doors as product may have shifted during transport.

Must be stored in a dry location. Absorbs moisture on long-term storage under high humidity conditions. Store away from incompatible materials (see Section 10). When product is stored in sealable containers, keep container tightly closed and sealed until ready for use. Sealable containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Ammonium sulfate	OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ .
Potassium chloride	OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ .
Diammonium phosphate	OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ .
Monoammonium phosphate	OSHA (United States): Particulates not otherwise regulated (PNOR) TWA (8 hours), Total dust: 15 mg/m ³ ; Respirable fraction: 5 mg/m ³ .
Calcium sulfate, dihydrate	ACGIH TLV-TWA: 10 mg/m ³ as the inhalable fraction; OSHA (United States): Particulates not otherwise regulated (PNOR)

Section 8. Exposure controls/personal protection

Ammonium nitrate

TWA (8 hours), Total dust: 15 mg/m³;
Respirable fraction: 5 mg/m³.**OSHA (United States):**Particulates not otherwise regulated (PNOR)
TWA (8 hours), Total dust: 15 mg/m³;
Respirable fraction: 5 mg/m³.

- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.
- Skin protection**
- Hand protection** : The personal protective equipment required varies, depending upon your risk assessment. No special protection is required. For prolonged or repeated handling, use the following type of gloves: leather work gloves
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Cotton or cotton/synthetic overalls or coveralls are normally suitable.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. No special measures are typically indicated.
- Respiratory protection** : A respirator is not needed under normal and intended conditions of product use. Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Contact your personal protective equipment manufacturer to verify the compatibility of the equipment for the intended purpose. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection program meeting 29 CFR 1910.134 requirements is in place.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Granular solid.
- Color** : Gray.
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH** : 6 [Conc. (% w/w): 10%]
- Melting point** : Not available.
- Boiling point** : Decomposes.
- Flash point** : [Product does not sustain combustion.]
- Evaporation rate** : Not applicable.
- Flammability (solid, gas)** : Not applicable. The substance will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and flammable gases.
- Lower and upper explosive (flammable) limits** : Not applicable.
- Vapor pressure** : Not applicable.

Section 9. Physical and chemical properties

Vapor density	: Not applicable.
Relative density	: Not available.
Solubility	: Easily soluble in the following materials: hot water. Soluble in the following materials: cold water.
Solubility in water	: Water soluble.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not available.
Viscosity	: Not applicable.

Aerosol product

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Absorbs moisture on long-term storage under high humidity conditions. Store in a well-ventilated, dry place. Protect from moisture.
Incompatible materials	: Incompatible with halogens. Incompatible with oxidizers
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium sulfate	LD50 Oral	Mouse - Male, Female	3040 mg/kg	-
	LD50 Oral	Rat	2840 mg/kg	-
	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5 mg/l	4 hours
	LD50 Dermal	Rat - Male, Female	>5000 mg/kg	-
Diammonium hydrogenorthophosphate	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5 mg/l	4 hours
	LD50 Oral	Rat - Male, Female	>2000 mg/kg	-
Ammonium dihydrogen orthophosphate	LD50 Oral	Rat	2217 mg/kg	-
	LD50 Oral	Rat - Male, Female	2950 mg/kg	-

Conclusion/Summary : Very low toxicity to humans or animals. No known significant effects or critical hazards.

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ammonium sulfate	Skin	Rabbit	0	20 hours	24 hours
	Eyes	Rabbit	0	-	72 hours
Diammonium hydrogenorthophosphate	Skin	Rabbit	0	72 hours	-
	Eyes	Rabbit	0	72 hours	-
Ammonium dihydrogen orthophosphate	Skin	Rabbit	0	-	-
	Eyes	Rabbit	0	-	-
Ammonium nitrate	Skin	Rabbit	0	-	72 hours
	Eyes - Edema of the conjunctivae	Rabbit	3	-	3 days

Conclusion/Summary

- Skin** : No known significant effects or critical hazards.
Eyes : No known significant effects or critical hazards.
Respiratory : No known significant effects or critical hazards.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
Ammonium sulfate	Skin	Guinea pig	Not sensitizing

Conclusion/Summary

- Skin** : Non-sensitizer.
Respiratory : No known significant effects or critical hazards.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
Ammonium sulfate	OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Somatic	Negative
	OECD 473	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative
Potassium chloride	-	Experiment: In vivo Subject: Mammalian-Animal Cell: Somatic	Negative
Diammonium hydrogenorthophosphate	471 Bacterial Reverse Mutation Test	Subject: Bacteria	Negative
Ammonium dihydrogen orthophosphate	OECD 471 Bacterial Reverse Mutation Test	Subject: Bacteria	Negative
Ammonium nitrate	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative
	OECD 476 <i>In vitro</i> Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative

- Conclusion/Summary** : No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium sulfate	Negative - Oral - TCLo	Rat - Male, Female	1288 mg/kg	2 years; 7 days per week

- Conclusion/Summary** : No known significant effects or critical hazards. Potential for nitrosamine formation if ingested. Do not ingest.

Classification

Product/ingredient name	OSHA	IARC	NTP
Ammonium sulfate	None.	-	-

Reproductive toxicity

Section 11. Toxicological information

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
Ammonium sulfate	Negative	Negative	-	Mouse - Male, Female	Oral: 5000 mg/kg	-
Diammonium hydrogenorthophosphate	Negative	Negative	Negative	Rat - Male, Female	Oral: 1500 mg/kg	-
Ammonium dihydrogen orthophosphate	Negative	Negative	Negative	Rat - Male, Female	Oral: >1500 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium sulfate	Negative - Oral	Rat - Male, Female	1500 mg/kg	-
Ammonium dihydrogen orthophosphate	Negative - Oral	Rat - Male, Female	>1500 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Inhalation.

Potential acute health effects

- Eye contact** : May cause irritation due to mechanical action.
- Inhalation** : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : May cause irritation of the digestive tract with accompanying nausea, vomiting and diarrhea.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Section 11. Toxicological information

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
Ammonium sulfate	Chronic NOAEL Oral	Rat - Male, Female	256 mg/kg	52 weeks; 7 days per week
Potassium chloride	Chronic NOAEL Oral	Rat - Male	1820 mg/kg	-
Diammonium hydrogenorthophosphate	Chronic NOAEL Oral	Rat - Male, Female	250 mg/kg	-
Ammonium dihydrogen orthophosphate	Chronic NOAEL Oral	Rat - Male, Female	250 mg/kg	-
Ammonium nitrate	Chronic NOAEL Oral	Rat - Male, Female	256 mg/kg	-

Conclusion/Summary : No known significant effects or critical hazards.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards. Potential for nitrosamine formation if ingested. Do not ingest.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	4570.3 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Ammonium sulfate	Acute LC50 2.6 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Young	48 hours
	Acute LC50 14000 µg/l Fresh water	Daphnia - Daphnia magna - Young	48 hours
Potassium chloride	Acute LC50 53 mg/l	Fish - Oncorhynchus mykiss	96 hours
	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 83000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
Diammonium hydrogenorthophosphate	Acute LC50 9.68 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 435000 µg/l Fresh water	Fish - Gambusia affinis - Adult	96 hours
	Acute LC50 1700 mg/l Fresh water	Fish - Cirrhinus mrigala/L. Rohita - Fry	96 hours
	LC50 >85.9 mg/l Fresh water	Fish	96 hours
Ammonium dihydrogen orthophosphate	LC50 >85.9 mg/l Fresh water	Fish	96 hours
Ammonium nitrate	Chronic NOEC 6 to 12 mg/l Fresh water	Crustaceans - Cladocera	21 days

Conclusion/Summary : Practically non-toxic to aquatic organisms.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.
Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste packaging should be recycled. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-	-
Packing group	-	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal Regulations: : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
TSCA 8(b) Active inventory: All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 304 RQ : Not applicable.

SARA 311/312

Section 15. Regulatory information

Classification : Not applicable.

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard.
Ammonium nitrate	1-2	Yes.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Ammonium sulfate	7783-20-2	29
	Ammonium dihydrogen orthophosphate	7722-76-1	0 - 2
	Diammonium hydrogenorthophosphate	7783-28-0	26 - 29
	Ammonium nitrate	6484-52-2	1 - 2
	Manganous oxide	1344-43-0	1 - 2
Supplier notification	Ammonium sulfate	7783-20-2	29
	Ammonium dihydrogen orthophosphate	7722-76-1	0 - 2
	Diammonium hydrogenorthophosphate	7783-28-0	26 - 29
	Ammonium nitrate	6484-52-2	1 - 2
	Manganous oxide	1344-43-0	1 - 2

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- Massachusetts** : The following components are listed: Ammonium sulfate; Ammonium nitrate
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: Ammonium nitrate; Nitric acid, ammonium salt
- Pennsylvania** : The following components are listed: Sulfuric acid diammonium salt; Nitric acid, ammonium salt

California Prop. 65

Not applicable - This product is not registered for sale into California and has not been evaluated for Proposition 65 notification requirements.

International regulations

International lists

National inventory

- Canada** : All components are listed or exempted.
- Europe** : Not determined.

Section 16. Other information

History

Date of issue/Date of revision : 2/2/2021

Date of previous issue : 5/2/2019

Version : 1.9

Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

Section 16. Other information

References

: Transportation of Dangerous Goods Act and Clear Language Regulations, current edition at time of SDS preparation, Transport Canada;
 Hazardous Products Act and Regulations, current revision at time of SDS preparation, Health Canada;
 Domestic Substances List, current revision at time of SDS preparation, Environment Canada;
 29 CFR Part 1910, current revision at time of SDS preparation, U.S. Occupational Safety and Health Administration;
 40 CFR Parts 1-799, current revision at time of SDS preparation, U.S. Environmental Protection Agency;
 49 CFR Parts 1-199, current revision at time of SDS preparation, U.S. Department of Transport;
 Mexican Official Standard NOM-018-STPS-2015, Harmonised System for the Identification and Communication of Hazards and Risks by Hazardous Chemicals in the Workplace;
 NORMA Oficial Mexicana NOM-010-STPS-2014, Agentes químicos contaminantes del ambiente laboral-Reconocimiento, evaluación y control.
 Mexican Official Standard NOM-002-SCT / 2011, List of the most commonly transported hazardous substances and materials;
 Threshold Limit Values for Chemical Substances, current edition at time of SDS preparation, American Conference of Governmental Industrial Hygienists;
 NFPA 400, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
 NFPA 704, National Fire Codes, National Fire Protection Association, current edition at time of SDS preparation;
 Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers;
 ERG 2016, Emergency Response Guidebook, U.S. Department of Transport, Transport Canada, and the Secretariat of Transportation and Communications of Mexico
 Hazardous Substances Data Bank, current revision at time of SDS preparation, National Library of Medicine, Bethesda, Maryland
 Integrated Risk Information System, current revision at time of SDS preparation, U.S. Environmental Protection Agency, Washington, D.C.
 Pocket Guide to Chemical Hazards, current revision at time of SDS preparation, National Institute for Occupational Safety and Health, Cincinnati, Ohio ;
 Agency for Toxic Substances and Disease Registry Databank, current revision at time of SDS preparation, U.S. Department of Health and Human Services, Atlanta, Georgia
 National Toxicology Program, Report on Carcinogens, Division of the National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina.
 Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio
 California Code of Regulations, Title 27, Div 4, Chapter 1, Proposition 65 Aug 30, 2018 rev and current updates

▣ Indicates information that has changed from previously issued version.

Notice to reader

The information and recommendations contained in this Safety Data Sheet ("SDS") relate only to the specific material referred to herein (the "Material") and do not relate to the use of such Material in combination with any other material or process. The information and recommendations contained herein are believed to be current and correct as of the date of this SDS. **HOWEVER, THE INFORMATION AND RECOMMENDATIONS ARE PRESENTED WITHOUT WARRANTY, REPRESENTATION OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THEIR ACCURACY, CORRECTNESS OR COMPLETENESS, AND THE SELLER, SUPPLIER AND MANUFACTURER OF THE MATERIAL AND THEIR RESPECTIVE AFFILIATES (COLLECTIVELY, THE "SUPPLIER") DISCLAIM ALL LIABILITY FOR RELIANCE ON SUCH INFORMATION AND RECOMMENDATIONS.** This SDS is not a guarantee of safety. A buyer or user of the Material (a "Recipient") is responsible for ensuring that it has all current information necessary to safely use the Material for its specific purpose. **FURTHERMORE, THE RECIPIENT ASSUMES ALL RISK IN CONNECTION WITH THE USE OF THE MATERIAL. THE RECIPIENT ASSUMES ALL RESPONSIBILITY FOR ENSURING THE MATERIAL IS USED IN A SAFE MANNER IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL, HEALTH, SAFETY AND SECURITY LAWS, POLICIES AND GUIDELINES. THE SUPPLIER DOES NOT WARRANT THE MERCHANTABILITY OF THE MATERIAL OR THE FITNESS OF THE MATERIAL FOR ANY PARTICULAR USE AND ASSUMES NO RESPONSIBILITY FOR INJURY OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY OR RELATED TO THE USE OF THE MATERIAL.**

8.) GALVANIZE COATING

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Safety Data Sheet



1. Identification

Product Name:	HIPERF QT 2PK ZINC COLD GALV COMPOUND	Revision Date:	11/1/2021
Product Identifier:	206194T	Supersedes Date:	8/15/2018
Recommended Use:	Cold Galvanizing Compound/High Performance Epoxy Ester		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
	Rust-Oleum Canada (ROCA) 200 Confederation Parkway Concord, ON L4K 4T8 Canada Emergency Phone: 800-387-3625		
Preparer:	Regulatory Department		
Emergency Telephone:	24 Hour Hotline: 847-367-7700		

2. Hazards Identification

Classification

Symbol(s) of Product



Signal Word

Danger

GHS HAZARD STATEMENTS

Acute Toxicity, Oral, category 4	H302	Harmful if swallowed.
Carcinogenicity, category 1B	H350	May cause cancer.
Flammable Liquid, category 3	H226	Flammable liquid and vapor.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

GHS LABEL PRECAUTIONARY STATEMENTS

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. NO SMOKING.
P233	Keep container tightly closed.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

Not Yet Specified

P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P308+P313	If exposed or concerned: Get medical advice/attention.
P321	For specific treatment see label.
P330	Rinse mouth.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P370+P378	In case of fire: Use alcohol film forming foam, carbon dioxide, dry chemical, dry sand to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local, regional and national regulations.

GHS SDS PRECAUTIONARY STATEMENTS

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.
P363	Wash contaminated clothing before reuse.

3. Composition / Information on Ingredients**HAZARDOUS SUBSTANCES**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Zinc	7440-66-6	83	GHS02-GHS07	H250-260-302
Hydrotreated Light Distillate	64742-47-8	9.3	GHS08	H304
Zinc Oxide	1314-13-2	2.7	Not Available	Not Available
Zeolite	1318-02-1	0.4	GHS07	H332
Methyl Ethyl Ketoxime	96-29-7	0.1	GHS05-GHS06-GHS07-GHS08	H302-312-315-317-318-331-336-350-370-373

4. First-Aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation. If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately.

FIRST AID - INGESTION: If swallowed, get medical attention.

5. Fire-Fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: Closed containers may explode when exposed to extreme heat due to buildup of steam. Keep containers tightly closed. Combustible liquid and vapor. No unusual fire or explosion hazards noted.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Special Fire and Explosion Hazard (Combustible Dust): No Information

Not Yet Specified

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Follow all SDS and label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Avoid contact with eyes, skin and clothing.

STORAGE: Store in a dry, well ventilated place. Keep container tightly closed when not in use. Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Avoid excess heat.

Advice on Safe Handling of Combustible Dust: No Information

8. Exposure Controls / Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV- TWA	ACGIH TLV- STEL	OSHA PEL-TWA	OSHA PEL- CEILING
Zinc	7440-66-6	85.0	N.E.	N.E.	N.E.	N.E.
Hydrotreated Light Distillate	64742-47-8	10.0	N.E.	N.E.	N.E.	N.E.
Zinc Oxide	1314-13-2	5.0	2 mg/m3	10 mg/m3	5 mg/m3	N.E.
Zeolite	1318-02-1	1.0	N.E.	N.E.	N.E.	N.E.
Methyl Ethyl Ketoxime	96-29-7	1.0	10 ppm	N.E.	N.E.	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

SKIN PROTECTION: Use gloves to prevent prolonged skin contact. Nitrile or Neoprene gloves may afford adequate skin protection.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

Engineering Measures for Combustible Dust: No Information

9. Physical and Chemical Properties

Appearance:	Liquid	Physical State:	Liquid
Odor:	Solvent Like	Odor Threshold:	N.E.
Specific Gravity:	3.518	pH:	N.A.
Freeze Point, °C:	N.D.	Viscosity:	N.D.
Solubility in Water:	Negligible	Partition Coefficient, n-octanol/ water:	N.D.
Decomposition Temp., °C:	N.D.	Explosive Limits, vol%:	0.8 - 6.0
Boiling Range, °C:	149 - 537	Flash Point, °C:	38
Flammability:	Supports Combustion	Auto-Ignition Temp., °C:	N.D.
Evaporation Rate:	Slower than Ether	Vapor Pressure:	N.D.
Vapor Density:	Heavier than Air		

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

Conditions to Avoid: No Information

Incompatibility: Incompatible with strong oxidizing agents, strong acids and strong alkalis.

Hazardous Decomposition: When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

Not Yet Specified

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

11. Toxicological Information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Substance causes moderate eye irritation.

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Irritating to the nose, throat and respiratory tract. Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
7440-66-6	Zinc	630 mg/kg Rat	N.E.	N.E.
64742-47-8	Hydrotreated Light Distillate	>5000 mg/kg Rat	>2000 mg/kg Rabbit	>5000 mg/L Rat
1314-13-2	Zinc Oxide	>5000 mg/kg Rat	>2000 mg/kg Rat	N.E.
1318-02-1	Zeolite	>5110 mg/kg Rat	>2000 mg/kg Rabbit	N.E.
96-29-7	Methyl Ethyl Ketoxime	930 mg/kg Rat	1100 mg/kg Rabbit	>4.83 mg/L Rat

N.E. - Not Established

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Do not incinerate closed containers. Dispose of material in accordance to local, state, and federal regulations and ordinances.

14. Transport Information

	<u>Domestic (USDOT)</u>	<u>International (IMDG)</u>	<u>Air (IATA)</u>	<u>TDG (Canada)</u>
UN Number:	N.A.	1263	1263	N.A.
Proper Shipping Name:	Not Regulated	Paint	Paint	Not Regulated
Hazard Class:	N.A.	3	3	N.A.
Packing Group:	N.A.	III	III	N.A.
Limited Quantity:	No	Yes	Yes	No

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Flammable (gases, aerosols, liquids, or solids), Carcinogenicity, Acute Toxicity (any route of exposure), Respiratory or Skin Sensitization

SARA Section 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
Zinc	7440-66-6
Zinc Oxide	1314-13-2

Toxic Substances Control Act

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

<u>Chemical Name</u>	<u>CAS-No.</u>
Zinc	7440-66-6

U.S. State Regulations:

California Proposition 65

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

16. Other Information

HMIS RATINGS

Health: 3* Flammability: 2 Physical Hazard: 0 Personal Protection: X

NFPA RATINGS

Health: 3 Flammability: 2 Instability: 0

Volatile Organic Compounds: 340 g/L

SDS REVISION DATE: 11/1/2021

REASON FOR REVISION: Product Composition Changed
Substance and/or Product Properties Changed in Section(s):
02 - Hazard Identification
09 - Physical & Chemical Properties
15 - Regulatory Information
Revision Statement(s) Changed

Legend: N.A. - Not Applicable, N.D. - Not Determined, N.E. - Not Established

The manufacturer believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. The manufacturer makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

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9.) GLUE (PVC)

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SAFETY DATA SHEET

1. Identification

Product identifier	PVC Regular Clear Cement
Other means of identification	
Product code	1100E
Synonyms	Part Numbers: 31012, 31013, 31014, 31015, 31016, 31958, 31959, 31960, 31961
Recommended use	Joining PVC Pipes
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Company Name	Oatey Co.
Address	4700 West 160th St. Cleveland, OH 44135
Telephone	216-267-7100
E-mail	info@oatey.com
Transport Emergency	Chemtrec 1-800-424-9300 (Outside the US 1-703-527-3887)
Emergency First Aid	1-877-740-5015
Contact person	MSDS Coordinator

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 2
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Highly flammable liquid and vapor. Harmful if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. Rinse mouth. Do NOT induce vomiting. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media to extinguish.

Storage	Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May form explosive peroxides. Contains a chemical classified by the US EPA as a suspected possible carcinogen.
Supplemental information	Not applicable.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Methyl ethyl ketone	78-93-3	25-40
Cyclohexanone	108-94-1	10-25
Furan, Tetrahydro-	109-99-9	10-25
Acetone	67-64-1	5-15
Polyvinyl chloride	9002-86-2	5-15

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Call a physician or poison control center immediately. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Aspiration may cause pulmonary edema and pneumonitis.
Most important symptoms/effects, acute and delayed	Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor. This product contains tetrahydrofuran that may form explosive organic peroxide when exposed to air or light or with age.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS. Avoid discharge into drains, water courses or onto the ground.

Environmental precautions

7. Handling and storage

Precautions for safe handling

Vapors may form explosive mixtures with air. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Components	Type	Value
Polyvinyl chloride (CAS 9002-86-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Acetone (CAS 67-64-1)	PEL	2400 mg/m3	
		1000 ppm	
Cyclohexanone (CAS 108-94-1)	PEL	200 mg/m3	
		50 ppm	
Furan, Tetrahydro- (CAS 109-99-9)	PEL	590 mg/m3	
		200 ppm	
Methyl ethyl ketone (CAS 78-93-3)	PEL	590 mg/m3	
		200 ppm	
Polyvinyl chloride (CAS 9002-86-2)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Acetone (CAS 67-64-1)	STEL	750 ppm	
	TWA	500 ppm	
Cyclohexanone (CAS 108-94-1)	STEL	50 ppm	
	TWA	20 ppm	
Furan, Tetrahydro- (CAS 109-99-9)	STEL	100 ppm	
	TWA	50 ppm	
Methyl ethyl ketone (CAS 78-93-3)	STEL	300 ppm	
	TWA	200 ppm	
Polyvinyl chloride (CAS 9002-86-2)	TWA	1 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Acetone (CAS 67-64-1)	TWA	590 mg/m3 250 ppm
	TWA	100 mg/m3
Cyclohexanone (CAS 108-94-1)	STEL	25 ppm
	TWA	735 mg/m3
Furan, Tetrahydro- (CAS 109-99-9)	TWA	250 ppm 590 mg/m3
	STEL	200 ppm 885 mg/m3
Methyl ethyl ketone (CAS 78-93-3)	TWA	300 ppm 590 mg/m3
		200 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	50 mg/l	Acetone	Urine	*
Cyclohexanone (CAS 108-94-1)	80 mg/l	1,2-Cyclohexanediol, with hydrolysis	Urine	*
		Cyclohexanol, with hydrolysis	Urine	*
Furan, Tetrahydro- (CAS 109-99-9)	2 mg/l	Tetrahydrofuran	Urine	*
Methyl ethyl ketone (CAS 78-93-3)	2 mg/l	MEK	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines**US - California OELs: Skin designation**

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cyclohexanone (CAS 108-94-1)

Skin designation applies.

US - Tennessee OELs: Skin designation

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

Furan, Tetrahydro- (CAS 109-99-9)

Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

Appropriate engineering controls	Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Face shield is recommended. Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Form	Translucent liquid.
Color	Clear.
Odor	Solvent.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	151 °F (66.11 °C)
Flash point	-4.0 °F (-20.0 °C)
Evaporation rate	5.5 - 8
Flammability (solid, gas)	Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	1.8
Flammability limit - upper (%)	11.8
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	145 mm Hg @ 20 C
Vapor density	2.5
Relative density	0.9 +/- 0.02
Solubility(ies)	
Solubility (water)	Negligible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	80 - 500 cP
Other information	
VOC (Weight %)	<510 g/l SCAQMD 1168/M316A

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
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Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Acids. Strong oxidizing agents. Ammonia. Amines. Isocyanates. Caustics.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May be fatal if swallowed and enters airways. Headache. Nausea, vomiting. May cause irritation to the respiratory system. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	May be fatal if swallowed and enters airways. Harmful if swallowed. Harmful if swallowed. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological characteristics Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects. May cause respiratory irritation.

Components	Species	Test Results
Acetone (CAS 67-64-1)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	20 ml/kg
<i>Inhalation</i>		
LC50	Rat	50 mg/l, 8 Hours
<i>Oral</i>		
LD50	Rat	5800 mg/kg
Cyclohexanone (CAS 108-94-1)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	948 mg/kg
<i>Inhalation</i>		
LC50	Rat	8000 ppm, 4 hours
<i>Oral</i>		
LD50	Rat	1540 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

In 2012 USEPA Integrated Risk Information System (IRIS) reviewed a two species inhalation lifetime study on THF conducted by NTP (1998). Male rats developed renal tumors and female mice developed liver tumors while neither the female rats nor the male mice showed similar results. Because the carcinogenic mechanisms could not be identified clearly in either species for either tumor, the EPA determined that the male rat and female mouse findings are relevant to the assessment of carcinogenic potential in humans. Therefore, the IRIS review concludes that these data in aggregate indicate that there is "suggestive evidence of carcinogenic potential" following exposure to THF by all routes of exposure.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cyclohexanone (CAS 108-94-1)

3 Not classifiable as to carcinogenicity to humans.

Polyvinyl chloride (CAS 9002-86-2)

3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Polyvinyl chloride (CAS 9002-86-2)

Cancer

Reproductive toxicity

This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure

Narcotic effects. May cause drowsiness and dizziness. Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Not classified.

Aspiration hazard

May be fatal if swallowed and enters airways.

Chronic effects

Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Acetone (CAS 67-64-1)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) > 100 mg/l, 96 hours
Cyclohexanone (CAS 108-94-1)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) 481 - 578 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

No data is available on the degradability of this product.

Bioaccumulative potential

No data available.

Partition coefficient n-octanol / water (log Kow)

Acetone (CAS 67-64-1)

-0.24

Cyclohexanone (CAS 108-94-1)

0.81

Furan, Tetrahydro- (CAS 109-99-9)

0.46

Methyl ethyl ketone (CAS 78-93-3)

0.29

Mobility in soil

No data available.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations

Dispose in accordance with all applicable regulations.

Hazardous waste code

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number	UN1133
UN proper shipping name	Adhesives
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
Packing group	II
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	T11, TP1, TP8, TP27
Packaging exceptions	150
Packaging non bulk	201
Packaging bulk	243

IATA

UN number	UN1133
UN proper shipping name	Adhesives
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	No.
ERG Code	3L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1133
UN proper shipping name	ADHESIVES
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-E, S-D
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Polyvinyl chloride (CAS 9002-86-2)	Cancer
	Central nervous system
	Liver
	Blood
	Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)	LISTED
Cyclohexanone (CAS 108-94-1)	LISTED
Furan, Tetrahydro- (CAS 109-99-9)	LISTED
Methyl ethyl ketone (CAS 78-93-3)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Acetone (CAS 67-64-1)	6532
Methyl ethyl ketone (CAS 78-93-3)	6714

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1)	35 %WV
Methyl ethyl ketone (CAS 78-93-3)	35 %WV

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1)	6532
Methyl ethyl ketone (CAS 78-93-3)	6714

US state regulations

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)
Furan, Tetrahydro- (CAS 109-99-9)
Methyl ethyl ketone (CAS 78-93-3)

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)
Furan, Tetrahydro- (CAS 109-99-9)
Methyl ethyl ketone (CAS 78-93-3)
Polyvinyl chloride (CAS 9002-86-2)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)
Furan, Tetrahydro- (CAS 109-99-9)
Methyl ethyl ketone (CAS 78-93-3)

US. Rhode Island RTK

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)
Furan, Tetrahydro- (CAS 109-99-9)
Methyl ethyl ketone (CAS 78-93-3)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	05-27-2015
Revision date	-
Version #	01
HMIS® ratings	Health: 2 Flammability: 3 Physical hazard: 0

NFPA ratings




Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. Oatey Co. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use.

***10.) INJECTAFLEX RESIN (FOR ACTIVE WATER
LEAKS)***

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29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Aquaflex™ FX-64 polymer
™ Trademark, Ashland or its subsidiaries, registered in various countries

Relevant identified uses of the substance or mixture and uses advised against

Recommended use : Personal care


<p>Details of the supplier of the safety data sheet Ashland P.O. Box 2219 Columbus, OH 43216 United States of America (USA) +1-614-790-3333 EHSProductSafety@ashland.com</p>	<p>Emergency telephone number 1-800-ASHLAND (1-800-274-5263)</p> <p>Regulatory Information Number 1-800-325-3751</p> <p>Product Information +1-614-790-3333</p>
--	--

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 3
Eye irritation : Category 2B
Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

GHS label elements

Hazard pictograms :  

Signal Word : Warning



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Hazard Statements : Flammable liquid and vapor.
Causes eye irritation.
May cause respiratory irritation.

Precautionary Statements : **Prevention:**
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

Response:
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture
Chemical nature : Defatter



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Hazardous components

Chemical name	CAS-No.	Classification	Concentration (%)
ETHANOL	64-17-5	Flam. Liq. 2; H225 Eye Irrit. 2A; H319 STOT SE 3; H336	42.00

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Call a POISON CENTRE or doctor/physician if exposed or you feel unwell.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : Move to fresh air.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Protect unharmed eye.
- If swallowed : Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Inhalation of high concentrations of this material, as could occur in enclosed spaces or during deliberate abuse, may be associated with cardiac arrhythmias. Sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to this material.
Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
stomach or intestinal upset (nausea, vomiting, diarrhea)



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irritation (nose, throat, airways)
Cough
confusion
irregular heartbeat
respiratory failure
Causes eye irritation.
May cause respiratory irritation.

Notes to physician : No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray
Foam
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : carbon dioxide and carbon monoxide
formaldehyde-like
Hydrocarbons
- Specific extinguishing methods :

Product is compatible with standard fire-fighting agents.
- Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Use a water spray to cool fully closed containers.
- Special protective equipment : In the event of fire, wear self-contained breathing apparatus.



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for firefighters

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.
Remove all sources of ignition.
Use personal protective equipment.
Ensure adequate ventilation.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- Other information : Comply with all applicable federal, state, and local regulations.
Suppress (knock down) gases/vapours/mists with a water spray jet.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Open drum carefully as content may be under pressure.
Avoid formation of aerosol.
Provide sufficient air exchange and/or exhaust in work rooms.
Do not breathe vapours/dust.
Do not smoke.
Container hazardous when empty.
Take precautionary measures against static discharges.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.



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Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
No smoking.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ETHANOL	64-17-5	STEL	1,000 ppm	ACGIH
		TWA	1,000 ppm 1,900 mg/m ³	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m ³	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m ³	OSHA P0
		PEL	1,000 ppm 1,900 mg/m ³	CAL PEL

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection : Wear resistant gloves (consult your safety equipment supplier).
Wear as appropriate:
Impervious clothing
Safety shoes
Flame-resistant clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.



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Discard gloves that show tears, pinholes, or signs of wear.

Hygiene measures : Wash hands before breaks and at the end of workday.
When using do not eat or drink.
When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : viscous

Physical state : liquid

Colour : yellow

Odour : No data available

Odour Threshold : No data available

pH : 5.0 - 7.0
Concentration: 50

Melting point/freezing point : No data available

Boiling point/boiling range : No data available

Flash point : 40.5 °C

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : No data available

Relative vapour density : No data available

Relative density : No data available

Density : 0.9 g/cm³

Solubility(ies)
Water solubility : No data available



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Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Thermal decomposition	: No data available
Viscosity	
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available
Oxidizing properties	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Vapours may form explosive mixture with air.
Conditions to avoid	: excessive heat Heat, flames and sparks.
Incompatible materials	: Acids Alkali metals Ammonia Bases halogens inorganic materials Oxidizing agents sodium
Hazardous decomposition products	carbon dioxide and carbon monoxide formaldehyde-like Hydrocarbons

SECTION 11. TOXICOLOGICAL INFORMATION



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Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
GLP: yes

Acute inhalation toxicity : LC50 (Rat): > 1.95 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
GLP: yes
Assessment: No adverse effect has been observed in acute inhalation toxicity tests.

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
GLP: yes

Components:

ETHANOL:

Acute oral toxicity : LD50 (Rat): 7,060 mg/kg

Acute inhalation toxicity : LC50 (Rat): 117 - 125 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LDLo (Rabbit): 20 g/kg

Skin corrosion/irritation

Not classified based on available information.

Product:

Remarks: May cause skin irritation in susceptible persons.

Species: Rabbit

Result: No skin irritation

Result: Repeated exposure may cause skin dryness or cracking.

Components:

ETHANOL:

Result: Slight, transient irritation



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Serious eye damage/eye irritation

Causes eye irritation.

Product:

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

Species: Rabbit

Result: Irritation to eyes, reversing within 7 days

GLP: yes

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes eye irritation.

Components:

ETHANOL:

Result: Irritating to eyes.

Respiratory or skin sensitisation

Skin sensitisation: Not classified based on available information.

Respiratory sensitisation: Not classified based on available information.

Product:

Test Type: Human Repeat Insult Patch Testing (HRIPT)

Exposure routes: Dermal

Assessment: Does not cause skin sensitisation.

Germ cell mutagenicity

Not classified based on available information.

Product:

Genotoxicity in vitro

: Test Type: Ames test

Test species: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

GLP: yes

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

May cause respiratory irritation.

Product:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.



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Components:

ETHANOL:

Assessment: May cause drowsiness or dizziness.

STOT - repeated exposure

Not classified based on available information.

Aspiration toxicity

Not classified based on available information.

Further information**Product:**

Remarks: Solvents may degrease the skin.

Carcinogenicity:**IARC**

Group 1: Carcinogenic to humans

ETHANOL

64-17-5

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Ecotoxicology Assessment

Acute aquatic toxicity : Not classified based on available information.


Chronic aquatic toxicity : Not classified based on available information.

Components:

ETHANOL:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 12,000 - 16,000 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 48 h
Test Type: static test

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Persistence and degradability

Components:

No data available

Bioaccumulative potential

Components:

ETHANOL:

Partition coefficient: n- : log Pow: -0.31
 octanol/water

No data available

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological : No data available
 information

Components:

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

- General advice : Do not dispose of waste into sewer.
 Do not contaminate ponds, waterways or ditches with
 chemical or used container.
 Send to a licensed waste management company.
- Dispose of in accordance with all applicable local, state and
 federal regulations.
- Contaminated packaging : Empty remaining contents.
 Dispose of as unused product.
 Empty containers should be taken to an approved waste
 handling site for recycling or disposal.
 Do not re-use empty containers.
 Do not burn, or use a cutting torch on, the empty drum.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

REGULATION

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ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
-----------	----------------------	---------------	--------------------	---------------	------------------------------

MX_DG

UN 1866	RESINA, SOLUCIONES DE	3		III	
---------	-----------------------	---	--	-----	--

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

INTERNATIONAL MARITIME DANGEROUS GOODS

UN 1866	RESIN SOLUTION	3		III	
---------	----------------	---	--	-----	--

TDG_INWT_C

UN 1866	RESIN SOLUTION	3		III	
---------	----------------	---	--	-----	--

TDG_RAIL_C

UN 1866	RESIN SOLUTION	3		III	
---------	----------------	---	--	-----	--

TDG_ROAD_C

UN 1866	RESIN SOLUTION	3		III	
---------	----------------	---	--	-----	--

U.S. DOT - INLAND WATERWAYS

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

CFR_RAIL_C

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

U.S. DOT - ROAD

UN 1866	Resin solution	3		III	
---------	----------------	---	--	-----	--

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID



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Marine pollutant	no
------------------	----

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

SECTION 15. REGULATORY INFORMATION

**EPCRA - Emergency Planning and Community Right-to-Know Act
CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

California Prop 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : This product is regulated under the United States Food and Drug Act (FDA).

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

ENCS : Personal care

KECI : Personal care

IECSC : q (quantity restricted)

PICCS : Not in compliance with the inventory

Inventories

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 in various countries
 826232

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION**Further information**

Revision Date: 02/24/2018

NFPA:	HMIS III:						
<p style="text-align: center;">Flammability</p> <p style="text-align: center;">Special hazard.</p>	<table border="1" style="width: 100%;"> <tr> <td style="background-color: blue; color: white;">HEALTH</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="background-color: red; color: white;">FLAMMABILITY</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="background-color: yellow;">PHYSICAL HAZARD</td> <td style="text-align: center;">0</td> </tr> </table> <p>0 = not significant, 1 =Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic</p>	HEALTH	2	FLAMMABILITY	2	PHYSICAL HAZARD	0
HEALTH	2						
FLAMMABILITY	2						
PHYSICAL HAZARD	0						

NFPA Flammable and Combustible Liquids Classification


Combustible Liquid Class II

Full text of H-Statements

H225 Highly flammable liquid and vapor.
 H319 Causes serious eye irritation.
 H336 May cause drowsiness or dizziness.

Sources of key data used to compile the Safety Data Sheet
 Ashland internal data including own and sponsored test reports
 The UNECE administers regional agreements implementing harmonised classification for
 labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether
 originating with the company or not. Recipients are advised to confirm in advance of need that the

	Page: 16
SAFETY DATA SHEET	Revision Date: 02/24/2018
	Print Date: 4/10/2018
	SDS Number: R0718336
Aquaflex™ FX-64 polymer ™ Trademark, Ashland or its subsidiaries, registered in various countries 826232	Version: 1.2

information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); EC_x - Concentration associated with x% response; EHS - Extremely Hazardous Substance; EL_x - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErC_x - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC₅₀ - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC₅₀ - Lethal Concentration to 50 % of a test population; LD₅₀ - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

11.) MARKING PAINT

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Safety Data Sheet



1. Identification

Product Name:	PRO LSPR 6PK MARK FLUORESCENT ORANGE	Revision Date:	4/2/2020
Product Identifier:	2554838	Supersedes Date:	5/12/2017
Recommended Use:	Marking Paint/Aerosols		
Supplier:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA	Manufacturer:	Rust-Oleum Corporation 11 Hawthorn Parkway Vernon Hills, IL 60061 USA
Preparer:	Regulatory Department		
Emergency Telephone:	24 Hour Hotline: 847-367-7700		

2. Hazard Identification

Classification

Symbol(s) of Product



Signal Word

Danger

Possible Hazards

27% of the mixture consists of ingredient(s) of unknown acute toxicity.

GHS HAZARD STATEMENTS

Flammable Aerosol, category 1	H222	Extremely flammable aerosol.
Compressed Gas	H280	Contains gas under pressure; may explode if heated.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
STOT, repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.

GHS LABEL PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. NO SMOKING.
P211	Do not spray on an open flame or other ignition source.
P251	Do not pierce or burn, even after use.
P410+P412	Protect from sunlight. Do not expose to temperatures exceeding 50°C / 122°F.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P201	Obtain special instructions before use.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local, regional and national regulations.

P260
P314Do not breathe dust/fume/gas/mist/vapors/spray.
Get medical advice/attention if you feel unwell.

3. Composition / Information On Ingredients

HAZARDOUS SUBSTANCES

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt.% Range</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
Propane	74-98-6	10-25	GHS04	H280
n-Butane	106-97-8	2.5-10	GHS04	H280
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	2.5-10	GHS08	H304
Hydrotreated Light Distillate	64742-47-8	2.5-10	GHS08	H304
Xylenes (o-, m-, p- Isomers)	1330-20-7	2.5-10	GHS02-GHS07	H226-315-319-332
Barium Sulfate	7727-43-7	2.5-10	GHS07	H332
Ethylbenzene	100-41-4	1.0-2.5	GHS02-GHS07-GHS08	H225-304-332-351-373
Stoddard Solvent	8052-41-3	0.1-1.0	GHS08	H304-372
Octane	111-65-9	0.1-1.0	GHS02-GHS07-GHS08	H225-304-315-336
Pigment Orange 13	3520-72-7	0.1-1.0	Not Available	Not Available
Crystalline Silica / Quartz	14808-60-7	0.1-1.0	Not Available	Not Available

4. First-Aid Measures

FIRST AID - EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 minutes holding eyelids open. Get medical attention. Do NOT allow rubbing of eyes or keeping eyes closed.

FIRST AID - SKIN CONTACT: Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

FIRST AID - INHALATION: If you experience difficulty in breathing, leave the area to obtain fresh air. If continued difficulty is experienced, get medical assistance immediately. Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention. Do NOT use mouth-to-mouth resuscitation.

FIRST AID - INGESTION: Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. Get immediate medical attention. If swallowed, get medical attention.

5. Fire-Fighting Measures

EXTINGUISHING MEDIA: Alcohol Film Forming Foam, Carbon Dioxide, Dry Chemical, Dry Sand, Water Fog

UNUSUAL FIRE AND EXPLOSION HAZARDS: FLASH POINT IS LESS THAN 20°F. EXTREMELY FLAMMABLE LIQUID AND VAPOR! Water spray may be ineffective. Closed containers may explode when exposed to extreme heat. Vapors may form explosive mixtures with air. Vapors can travel to a source of ignition and flash back. Isolate from heat, electrical equipment, sparks and open flame. Perforation of the pressurized container may cause bursting of the can. Closed containers may explode when exposed to extreme heat due to buildup of steam.

SPECIAL FIREFIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance. Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.

Special Fire and Explosion Hazard (Combustible Dust): No Information

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Contain spilled liquid with sand or earth. DO NOT use combustible materials such as sawdust. Remove all sources of ignition, ventilate area and remove with inert absorbent and non-sparking tools. Dispose of according to local, state (provincial) and federal regulations. Do not incinerate closed containers. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Ventilate area, isolate spilled material, and remove with inert absorbent. Dispose of contaminated absorbent, container, and unused contents in accordance with local, state, and federal regulations.

7. Handling and Storage

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use only in a well-ventilated area. Follow all SDS and label precautions even after container is emptied because it may retain product residues. Avoid breathing fumes, vapors, or mist. Remove contaminated clothing and launder before reuse. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing.

STORAGE: Keep containers tightly closed. Isolate from heat, electrical equipment, sparks and open flame. Contents under pressure. Do not store above 120 ° F. Store large quantities in buildings designed and protected for storage of flammable aerosols. Contents under pressure. Do not expose to heat or store above 120 ° F. Product should be stored in tightly sealed containers and protected from heat, moisture, and foreign materials. Keep away from heat, sparks, flame and sources of ignition. Avoid excess heat.

Advice on Safe Handling of Combustible Dust: No Information

8. Exposure Controls / Personal Protection

Chemical Name	CAS-No.	Weight % Less Than	ACGIH TLV- TWA	ACGIH TLV- STEL	OSHA PEL-TWA	OSHA PEL- CEILING
Propane	74-98-6	20.0	N.E.	N.E.	1000 ppm	N.E.
n-Butane	106-97-8	10.0	N.E.	1000 ppm	N.E.	N.E.
Naphtha, Petroleum, Hydrotreated Light	64742-49-0	10.0	N.E.	N.E.	N.E.	N.E.
Hydrotreated Light Distillate	64742-47-8	10.0	N.E.	N.E.	N.E.	N.E.
Xylenes (o-, m-, p- Isomers)	1330-20-7	5.0	100 ppm	150 ppm	100 ppm	N.E.
Barium Sulfate	7727-43-7	5.0	5 mg/m3	N.E.	15 mg/m3	N.E.
Ethylbenzene	100-41-4	5.0	20 ppm	N.E.	100 ppm	N.E.
Stoddard Solvent	8052-41-3	1.0	100 ppm	N.E.	500 ppm	N.E.
Octane	111-65-9	1.0	300 ppm	N.E.	500 ppm	N.E.
Pigment Orange 13	3520-72-7	1.0	N.E.	N.E.	N.E.	N.E.
Crystalline Silica / Quartz	14808-60-7	1.0	0.025 mg/m3	N.E.	50 µg/m3	N.E.

PERSONAL PROTECTION

ENGINEERING CONTROLS: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof ventilation equipment. Prevent build-up of vapors by opening all doors and windows to achieve cross-ventilation. Provide general dilution of local exhaust ventilation in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.

RESPIRATORY PROTECTION: A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits.

SKIN PROTECTION: Use impervious gloves to prevent skin contact and absorption of this material through the skin.

EYE PROTECTION: Use safety eyewear designed to protect against splash of liquids.

OTHER PROTECTIVE EQUIPMENT: Refer to safety supervisor or industrial hygienist for further information regarding personal protective equipment and its application. Refer to safety supervisor or industrial hygienist for further guidance regarding types of personal protective equipment and their applications.

HYGIENIC PRACTICES: Wash thoroughly with soap and water before eating, drinking or smoking. Remove contaminated clothing immediately and launder before reuse.

Engineering Measures for Combustible Dust: No Information

9. Physical and Chemical Properties

Appearance:	Aerosolized Mist	Physical State:	Liquid
Odor:	Solvent Like	Odor Threshold:	N.E.
Specific Gravity:	0.857	pH:	N.A.
Freeze Point, °C:	N.D.	Viscosity:	N.D.
Solubility in Water:	Slight	Partition Coefficient, n-octanol/ water:	N.D.
Decomposition Temp., °C:	N.D.	Explosive Limits, vol%:	0.9 - 12.6
Boiling Range, °C:	-37 - 537	Flash Point, °C:	-96
Flammability:	Supports Combustion	Auto-ignition Temp., °C:	N.D.
Evaporation Rate:	Faster than Ether	Vapor Pressure:	N.D.
Vapor Density:	Heavier than Air		

(See "Other information" Section for abbreviation legend)

10. Stability and Reactivity

CONDITIONS TO AVOID: Avoid temperatures above 120°F (49°C). Avoid all possible sources of ignition.

INCOMPATIBILITY: Incompatible with strong oxidizing agents, strong acids and strong alkalies.

HAZARDOUS DECOMPOSITION: By open flame, carbon monoxide and carbon dioxide. When heated to decomposition, it emits acrid smoke and irritating fumes. Contains solvents which may form carbon monoxide, carbon dioxide, and formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur under normal conditions.

STABILITY: This product is stable under normal storage conditions.

11. Toxicological Information

EFFECTS OF OVEREXPOSURE - EYE CONTACT: Causes Serious Eye Irritation

EFFECTS OF OVEREXPOSURE - SKIN CONTACT: Substance may cause slight skin irritation. Prolonged or repeated contact may cause skin irritation.

EFFECTS OF OVEREXPOSURE - INHALATION: Harmful if inhaled. High gas, vapor, mist or dust concentrations may be harmful if inhaled. Avoid breathing fumes, spray, vapors, or mist. High vapor concentrations are irritating to the eyes, nose, throat and lungs. Prolonged or excessive inhalation may cause respiratory tract irritation.

EFFECTS OF OVEREXPOSURE - INGESTION: Harmful if swallowed.

EFFECTS OF OVEREXPOSURE - CHRONIC HAZARDS: Overexposure to xylene in laboratory animals has been associated with liver abnormalities, kidney, lung, spleen, eye and blood damage as well as reproductive disorders. Effects in humans, due to chronic overexposure, have included liver, cardiac abnormalities and nervous system damage. IARC lists Ethylbenzene as a possible human carcinogen (group 2B). Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. High concentrations may lead to central nervous system effects (drowsiness, dizziness, nausea, headaches, paralysis, and blurred vision) and/or damage.

PRIMARY ROUTE(S) OF ENTRY: Eye Contact, Ingestion, Inhalation, Skin Absorption, Skin Contact

ACUTE TOXICITY VALUES

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Chemical Name</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
106-97-8	n-Butane	N.E.	N.E.	658 mg/L Rat
64742-49-0	Naphtha, Petroleum, Hydrotreated Light	>5000 mg/kg Rat	>3160 mg/kg Rabbit	>4951 mg/L Rat
64742-47-8	Hydrotreated Light Distillate	>5000 mg/kg Rat	>2000 mg/kg Rabbit	>5000 mg/L Rat
1330-20-7	Xylenes (o-, m-, p- Isomers)	3500 mg/kg Rat	>4350 mg/kg Rabbit	29.08 mg/L Rat
7727-43-7	Barium Sulfate	307000 mg/kg Rat	N.E.	N.E.
100-41-4	Ethylbenzene	3500 mg/kg Rat	15400 mg/kg Rabbit	17.4 mg/L Rat
111-65-9	Octane	N.E.	N.E.	>23.36 mg/L Rat
3520-72-7	Pigment Orange 13	>5000 mg/kg Rat	N.E.	N.E.
14808-60-7	Crystalline Silica / Quartz	5500 mg/kg Rat	5500	100 mg/L

N.E. - Not Established

12. Ecological Information

ECOLOGICAL INFORMATION: Product is a mixture of listed components. Product is a mixture of listed components.

13. Disposal Information

DISPOSAL INFORMATION: Dispose of material in accordance to local, state, and federal regulations and ordinances. This product as supplied is a USEPA defined ignitable hazardous waste. Dispose of unusable product as a hazardous waste (D001) in accordance with local, state, and federal regulation. Do not incinerate closed containers.

14. Transport Information

	<u>Domestic (USDOT)</u>	<u>International (IMDG)</u>	<u>Air (IATA)</u>	<u>TDG (Canada)</u>
UN Number:	N.A.	1950	1950	N.A.
Proper Shipping Name:	Paint and Related Spray Products in Ltd Qty	Aerosols	Aerosols, flammable	Aerosols
Hazard Class:	N.A.	2	2.1	N.A.
Packing Group:	N.A.	N.A.	N.A.	N.A.
Limited Quantity:	Yes	Yes	Yes	Yes

15. Regulatory Information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Gas under pressure, Carcinogenicity, Specific target organ toxicity (single or repeated exposure)

Sara Section 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
Xylenes (o-, m-, p- Isomers)	1330-20-7
Ethylbenzene	100-41-4

Toxic Substances Control Act:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(b) if exported from the United States:

<u>Chemical Name</u>	<u>CAS-No.</u>
Castor oil, sulfated, sodium salt	68187-76-8

U.S. State Regulations:

California Proposition 65:

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

16. Other Information**HMIS RATINGS**

Health: 2* Flammability: 4 Physical Hazard: 0 Personal Protection: X

NFPA RATINGS

Health: 2 Flammability: 4 Instability: 0

Maximum Incremental Reactivity 0.82

SDS REVISION DATE: 4/2/2020

REASON FOR REVISION: Revision Description Changed
Product Composition Changed
Substance and/or Product Properties Changed in Section(s):
09 - Physical & Chemical Properties
14 - Transport Information
15 - Regulatory Information
16 - Other Information
Revision Statement(s) Changed

Legend: N.A. - Not Applicable, N.D. - Not Determined, N.E. - Not Established

Rust-Oleum Corporation believes, to the best of its knowledge, information and belief, the information contained herein to be accurate and reliable as of the date of this safety data sheet. However, because the conditions of handling, use, and storage of these materials are beyond our control, we assume no responsibility or liability for personal injury or property damage incurred by the use of these materials. Rust-Oleum Corporation makes no warranty, expressed or implied, regarding the accuracy or reliability of the data or results obtained from their use. All materials may present unknown hazards and should be used with caution. The information and recommendations in this material safety data sheet are offered for the users' consideration and examination. It is the responsibility of the user to determine the final suitability of this information and to comply with all applicable international, federal, state, and local laws and regulations.

12.) PIPE LUBE

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SAFETY DATA SHEET

Issue Date 18-Feb-2014

Revision Date: 2-Aug-2017

Version 3

1. IDENTIFICATION

GHS Product Identifier

Product Name American Fastite Pipe Joint Lubricant

Other Means of Identification

SDS #

Chemical Formula 11-4 or 11-4R1

Other Information

Recommended Use of the Chemical and Restrictions on Use

Recommended Use Lubricant

Details of the Supplier of the Safety Data Sheet

Supplier Address

JTM Products, Inc.
31025 Carter Street
Solon, OH 44139
Tel. 440-287-2302
800-229-6744
Fax. 440-287-3095

Emergency Telephone Number

Emergency Telephone Chemtel 1-800-255-3924

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200)

GHS classification

Hazard categories:
Skin Irritant 3
Eye irritation: Eye Irritant 2B

Label elements

Signal word: Warning

Hazard statements

H316 Causes mild skin irritation.
 H320 Causes eye irritation.

Precautionary statements

P264 Wash skin thoroughly after handling.
 P332+P313 If skin irritation occurs: Get medical advice/attention.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337+P313 If eye irritation persists: Get medical advice/attention.

3. COMPOSITION/INFORMATION ON INGREDIENTS

The product contains no substances which at their given concentration, are considered to be hazardous to health.

Components

CAS No.	Chemical Name	Quantity
TSRN 0210	Proprietary Lubricity Enhancers	40 -50%
7732-18-5	Water	20-35%
68606-06-4 EINECS 271-723-9	Mixed sodium and potassium salts of tall oil (soap)	15-25%

Where range is displayed, the exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

Inhalation Move to fresh air. If symptoms persist, call a physician

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Drink plenty of water. Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately

Skin Contact Wash off immediately with soap and water. If skin irritation persists, call a physician.

Most Important Symptoms and Effects, Both Acute and Delayed**Symptoms**

Direct contact with eyes may cause temporary irritation. Prolonged or repeated skin contact may cause irritation.

Indication of any Immediate Medical Attention and Special Treatment Needed

Note to Physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Water. Water spray (fog). Alcohol resistant foam. Carbon dioxide (CO₂). Dry chemical.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical

No information available.

Hazardous Combustion Products

Sensitivity to Mechanical Impact None

Sensitivity to Static Discharge None

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions, Protective Equipment and Emergency Procedures****Personal Precautions**

Avoid contact with the skin and the eyes. Evacuate personnel to safe areas. Use personal protective equipment. Keep people away from and upwind of spill/leak.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional Ecological information

Methods and Material for Containment and Cleaning Up**Methods for Containment**

Dike to collect large liquid spills. Prevent leakage or spillage if safe to do so.

Methods for Cleaning Up

Dam up. Soak up with inert absorbent material. Place the bulk of any spilled material into properly labeled containers. Rinse any remaining material to sewage treatment facility. Clean up in accordance with all applicable regulations.

7. HANDLING AND STORAGE**Precautions for Safe Handling****Handling**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Ensure adequate ventilation. Use only in area provided with appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Do not take internally.

Conditions for Safe Storage, Including any Incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep out of the reach of children.

Incompatible Materials Strong oxidizing agents. Strong bases

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Appropriate Engineering Controls

Engineering Controls Eyewash stations Showers Ventilation systems.

Individual Protection Measures, such as Personal Protective Equipment

Eye/Face Protection Wear approved safety goggles.

Skin and Body Protection Lightweight protective clothing. Chemical resistant gloves, if needed, to avoid prolonged or repeated skin contact.

Respiratory Protection No special protective equipment required. If respirators are used, OSHA requires a written respiratory program that includes at least: medical certification training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

General Hygiene Considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Do not eat, drink or smoke when using this product. Regular cleaning of equipment, work area and clothing is recommended.

Control Parameters N.A.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	Paste	Odor	Bland
Appearance	Off-White Paste	Odor threshold	Not determined
Color	Off-white		

<u>Property</u>	<u>Values</u>	<u>Remarks – Method</u>
pH	≈9	5% solution
Melting point/freezing point	< 0° C / < 32° F	
Boiling point/boiling range	> 104° C / > 220° F	
Flash point	> 104° C / > 220° F	
Evaporation rate	Not applicable	
Flammability (solid, gas)	Not determined	

Flammability Limits in Air

Upper Flammability Limits	Not applicable
Lower Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Specific Gravity	1.2
Water Solubility	Completely soluble
Solubility in other Solvents	Not determined
Partition Coefficient	Not determined
Autoignition Temperature	Not determined
Decomposition Temperature	Not determined
Kinematic Viscosity	Not determined
Dynamic Viscosity	Not determined
Explosive Properties	None
Oxidizing Properties	None

Other Information

VOC Content (%) <5%

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions

Chemical Stability

Stable under recommended storage conditions

Possibility of Hazardous Reactions

None under normal processing

Conditions to Avoid

Contact with incompatible material

Incompatible Materials

Strong oxidizing agents

Hazardous Decomposition Products

Carbon oxides

11. TOXICOLOGICAL INFORMATION

Information on Likely Route of Exposure**Product Information**

Inhalation	Not a likely route of exposure
Eye Contact	Causes eye irritation
Skin Contact	May cause mild skin irritation
Ingestion	Do not taste or swallow
Symptoms	Direct contact with eyes may cause temporary irritation. Prolonged or repeated contact may dry skin and cause irritation

Delayed and Immediate Effects as well as Chronic Effects from Short and Long-Term Exposure

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP

Numerical Measures of Toxicity – Product

The following values are calculated based on chapter 3.1 of the GHS document:

LD50 Oral 22665 mg/kg; Acute toxicity estimate mg/kg mg/L

12. ECOLOGICAL INFORMATION**Ecotoxicity**

The environmental impact of this product has not been fully investigated.

Persistence and Degradability

No information available.

Mobility

Not Determined.

Other Adverse Effects

Not Determined.

13. DISPOSAL CONSIDERATIONS**Waste Treatment Methods****Disposal of Wastes**

Disposal should be in accordance with applicable regional, national and local laws and regulations. Contact your supplier or a licensed contractor for detailed recommendations.

Contaminated Packaging

Do not re-use empty containers. Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG Not regulated

15. REGULATORY INFORMATION**International Inventories**

TSCA All ingredients appear on inventory

DSL/NDSL All components of this product are listed or are exempt

EINECS/ELINCS - *European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*
/ not available (N.A.)

ENCS - *Japan Existing and New Chemical Substances/not available (N.A.)*

IECSC - *China Inventory of Existing Chemical Substances/not available (N.A.)*

KECL - *Korean Existing and Evaluated Chemical Substances/not available (N.A.)*

PICCS - *Philippines Inventory of Chemicals and Chemical Substances/not available (N.A.)*

Legend:

- TSCA - *United States Toxic Substances Control Act Section 8(b) Inventory*
- DSL/NDSL - *Canadian Domestic Substances List/Non-Domestic Substances List*
- EINECS/ELINCS - *European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*
- ENCS - *Japan Existing and New Chemical Substances*
- IECSC - *China Inventory of Existing Chemical Substances*
- KECL - *Korean Existing and Evaluated Chemical Substances*
- PICCS - *Philippines Inventory of Chemicals and Chemical Substances*

US Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42): None known

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302): None Known

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations: Not applicable

U.S. EPA Label Information

EPA Pesticide Registration Number: Not Applicable

16. OTHER INFORMATION

NFPA	Health Hazards	Flammability	Instability	Special Hazards
	1	0	0	Not determined
HMIS	Health Hazards	Flammability	Physical Hazards	Personal Protection
	1	0	0	Not determined

Issuance Date 18-Feb-2014
Revision Date 2-Aug-2017
Revision Note Section 2: Reclassified as hazardous, Section 3: CAS# for water corrected.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

13.) POLYETHYLENE VAPOR BARRIER

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SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product: PERMINATOR® **Part Number:** 5242100
Manufacturer: W. R. MEADOWS®, INC. **Address:** 300 Industrial Drive
 Hampshire, Illinois 60140
Telephone: (847) 214-2100 **In case of emergency, dial (800) 424-9300 (CHEMTREC)**
Revision Date: 10/10/2019
Product Use: Vapor Retarder

SECTION 2: HAZARDS IDENTIFICATION/EXPOSURE LIMITS

HMIS
| Health | | 0 | Product is classified as non-hazardous per OSHA 1910.1200. Perminator is defined by OSHA as an "article." A manufactured item that is formed to a specific shape or design during manufacture that does not release or result in exposure to a hazardous chemical under normal use conditions.
| Flammability | | 0 |
| Reactivity | | 0 |
| Personal Protection | | |

SECTION 3: HAZARDS COMPONENTS

<u>Chemical Name:</u>	<u>CAS Number</u>	<u>% by Weight</u>	<u>SARA 313</u>	<u>Vapor Pressure (mm Hg@20°C)</u>	<u>LEL (@24°C)</u>
1. Blown Polyethylene Film	Proprietary	100	No	N/A	N/A

Under the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1966 (SARA) and 40 CFR Part 372, chemicals listed on the 313 List (40 CFR Part 373.65) are identified under the heading "SARA 313."

SECTION 4: EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Not expected to be an exposure route.
SKIN CONTACT: Not Expected to be an exposure route.
INHALATION: Not expected to be an exposure route.
INGESTION: Not expected to be an exposure source.
MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND CHRONIC: See Section Eleven for Symptoms/Effects.

SECTION 5: FIRE AND EXPLOSIVES HAZARDS

FLASHPOINT: Not applicable; product is a solid.
EXTINGUISHING MEDIA: Water fog, foam, dry chemical.
CHEMICAL/COMBUSTION HAZARDS: Carbon monoxide, carbon dioxide, and incomplete combustion products.
PRECAUTIONS/PERSONAL PROTECTIVE EQUIPMENT: Avoid smoke inhalation. Use appropriate respiratory protection.

SECTION 6: ACCIDENTAL RELEASE MEASURES

SPILL OR LEAK PROCEDURES: Not applicable. Product is a solid.

SECTION 7: HANDLING AND STORAGE

SAFE HANDLING PROCEDURES: None.
SAFE STORAGE: Prevent job-site damage.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Chemical Name:</u>	<u>OSHA</u>					<u>ACGIH</u>		
	<u>PEL</u>	<u>PEL/CEILING</u>	<u>PEL/STEL</u>	<u>SKIN</u>	<u>TLV</u>	<u>TLV/CEILING</u>	<u>TLV/STEL</u>	<u>SKIN</u>
1. Blown Polyethylene	N/E	N/E	N/E	No	N/E	N/E	N/E	N/E

ENGINEERING CONTROLS: None required under normal use conditions.
PERSONAL PROTECTIVE EQUIPMENT: None required under normal use conditions. *N/E = Not Established*

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: N/A	VAPOR DENSITY: N/A	% VOLATILE BY VOLUME: N/A
EVAPORATION RATE: N/A	pH LEVEL: N/A	% VOLATILE BY WEIGHT: N/A
WEIGHT PER GALLON: N/A	PRODUCT APPEARANCE: Green Film	VOC CONTENT: N/A
ODOR: None	ODOR THRESHOLD: N/D	MELTING/FREEZING POINT: N/D
FLASH POINT: See Section 5	FLAMMABILITY: See Section 5	UEL/LEL: N/D
VAPOR PRESSURE: N/D	RELATIVE DENSITY: N/D	SOLUBILITY: N/D
PARTITION COEFFICIENT: N/D	AUTOIGNITION TEMPERATURE: N/D	DECOMPOSITION TEMPERATURE: N/D
VISCOSITY: N/D		<i>N/D: Not Determined</i>

SAFETY DATA SHEET

Date of Preparation: 10/10/19	Page 2 of 2	5242100
SECTION 10: STABILITY/REACTIVITY		
STABILITY: Stable. HAZARDOUS POLYMERIZATION: Will not occur.		
CONDITIONS AND MATERIALS TO AVOID: None recognized.		
HAZARDOUS DECOMPOSITION PRODUCTS: None recognized.		
SECTION 11: TOXICOLOGICAL INFORMATION		
EYE CONTACT: Not anticipated to be an exposure route.		
SKIN CONTACT: Direct contact may cause slight skin irritation.		
INHALATION: Not anticipated to be an exposure route.		
INGESTION: Not anticipated to be an exposure route.		
SIGNS AND SYMPTOMS: None recognized.		
AGGRAVATED MEDICAL CONDITIONS: None recognized.		
OTHER HEALTH EFFECTS: None recognized		
SECTION 12: ECOLOGICAL INFORMATION		
ECOTOXICITY: N/E	DEGRADABILITY: N/E	BIOACCUMULATIVE POTENTIAL: N/E
SOIL MOBILITY: N/E	OTHER ADVERSE EFFECTS: None Recognized	
SECTION 13: WASTE DISPOSAL INFORMATION		
WASTE DISPOSAL INFORMATION: Product is classified as a non-hazardous waste.		
SECTION 14: TRANSPORTATION INFORMATION		
HAZARDOUS/NON-HAZARDOUS MATERIAL: Not regulated by DOT.		
UN NUMBER: None	HAZARD CLASS: N/A	PACKING GROUP: N/A
UN PROPER SHIPPING NAME: N/A		
ENVIRONMENTAL HAZARDS: None recognized.		
BULK TRANSPORTATION INFORMATION: None.		
SPECIAL PRECAUTIONS: None.		
SECTION 15: REGULATORY INFORMATION		
OTHER REGULATORY CONSIDERATIONS: None recognized.		
SECTION 16: OTHER INFORMATION		
PREPARATION DATE:	10/10/2019	
PREPARED BY:	Dave Carey	

The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for injury from the use of this product described herein.

14.) PURPLE PRIMER

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1. Identification

Product identifier	Oatey Clear or Purple Primer Cleaner	
Other means of identification		
SDS number	1401E	
Synonyms	Part Numbers: 30780, 30783, 30796, 30806, 30768	
Recommended use	Joining PVC Pipes	
Recommended restrictions	None known.	
Manufacturer/Importer/Supplier/Distributor information		
Company name	Oatey Co.	
Address	4700 West 160th Street	
Telephone	216-267-7100	Outside US 703-527-3887
E-mail	info@oatey.com	
Contact person	MSDS Coordinator	
Emergency phone number	First Aid 877-740-5015	Chemtrec 800-424-9300

2. Hazard(s) identification

Physical hazards	Flammable Liquids	Category 2
Health Hazards	Serious eye damage/eye irritation	Category 2A
	Specific Target Organ Toxicity, Single Exposure	Category 3 respiratory tract irritation
	Specific Target Organ Toxicity, Single Exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements



Signal word	Danger
Hazard statement	Highly flammable liquid and vapor. May be fatal if swallowed and enters airways. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a poison center/doctor if you feel unwell. Do NOT induce vomiting. If eye irritation persists: Get medical advice/attention. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Acetone	67-64-1	60-100
Cyclohexanone	108-94-1	1-5

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Take off all contaminated clothing immediately. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	Highly flammable liquid and vapor.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Take precautionary measures against static discharge. Use only non-sparking tools. Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage**Precautions for safe handling**

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. When using do not smoke. Explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value
Acetone (CAS 67-64-1)	PEL	2400 mg/m ³ 1000 ppm
Cyclohexanone (CAS 108-94-1)	PEL	200 mg/m ³ 50 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Acetone (CAS 67-64-1)	STEL	750 ppm
	TWA	500 ppm
Cyclohexanone (CAS 108-94-1)	STEL	50 ppm
	TWA	20 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Acetone (CAS 67-64-1)	TWA	590 mg/m ³ 250 ppm
Cyclohexanone (CAS 108-94-1)	TWA	100 mg/m ³ 25 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	50 mg/l	Acetone	Urine	*
Cyclohexanone (CAS 108-94-1)	80 mg/l	1,2-Cyclohexanediol, with hydrolysis	Urine	*

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
	8 mg/l	Cyclohexanol, with hydrolysis	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Cyclohexanone (CAS 108-94-1)

Skin designation applies.

US - Tennessee OELs: Skin designation

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards

Cyclohexanone (CAS 108-94-1)

Can be absorbed through the skin.

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Wear suitable protective clothing.

Respiratory protection

Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Translucent.

Physical state

Liquid.

Form

Liquid.

Color

Clear. Purple

Odor

Solvent.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

Not available.

Initial boiling point and boiling range

133 °F (56.11 °C)

Flash point

-4.0 °F (-20.0 °C)

Evaporation rate

Not available.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)

Not available.

Flammability limit - upper (%)

Not available.

Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	145 mm Hg @ 20 C
Vapor density	2.5
Relative density	0.79
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	< 10 cP
Other information	
VOC (Weight %)	< 25 g/l SQACMD Method 24

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Acids.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May be fatal if swallowed and enters airways. Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. May cause drowsiness and dizziness. May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes serious eye irritation.
Ingestion	May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics May cause drowsiness and dizziness. Headache. Nausea, vomiting. Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects. May cause respiratory irritation.

Components	Species	Test Results
Acetone (CAS 67-64-1)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	20 ml/kg
<i>Inhalation</i>		
LC50	Rat	50 mg/l, 8 Hours
<i>Oral</i>		
LD50	Rat	5800 mg/kg
Cyclohexanone (CAS 108-94-1)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	948 mg/kg

Components	Species	Test Results
<i>Inhalation</i> LC50	Rat	8000 ppm, 4 hours > 6.2 mg/l, 4 Hours
<i>Oral</i> LD50	Rat	1620 mg/kg 1540 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Serious eye damage/eye irritation	Causes serious eye irritation.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Cyclohexanone (CAS 108-94-1)	3 Not classifiable as to carcinogenicity to humans.
OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
Not listed.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause respiratory irritation. May cause drowsiness and dizziness.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	May be fatal if swallowed and enters airways.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Acetone (CAS 67-64-1)		
Aquatic		
Fish	LC50	Fathead minnow (Pimephales promelas) > 100 mg/l, 96 hours
Cyclohexanone (CAS 108-94-1)		
Aquatic		
Fish	LC50	Fathead minnow (Pimephales promelas) 481 - 578 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Partition coefficient n-octanol / water (log Kow)	
Acetone (CAS 67-64-1)	-0.24
Cyclohexanone (CAS 108-94-1)	0.81
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.
Hazardous waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

US RCRA Hazardous Waste U List: Reference

Acetone (CAS 67-64-1) U002
Cyclohexanone (CAS 108-94-1) U057

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN1993
UN proper shipping name Flammable liquids, n.o.s. (Acetone RQ = 5128 LBS)
Transport hazard class(es)
Class 3
Subsidiary risk -
Label(s) 3
Packing group II
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions IB2, T7, TP1, TP8, TP28
Packaging exceptions 150
Packaging non bulk 202
Packaging bulk 242

IATA

UN number UN1993
UN proper shipping name Flammable liquid, n.o.s (Acetone)
Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II
Environmental hazards No.
ERG Code 3H
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number UN1993
UN proper shipping name FLAMMABLE LIQUID, N.O.S (Acetone)
Transport hazard class(es)
Class 3
Subsidiary risk -
Packing group II
Environmental hazards
Marine pollutant No.
EmS F-E, S-E
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)	LISTED
Cyclohexanone (CAS 108-94-1)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes
	Delayed Hazard - No
	Fire Hazard - Yes
	Pressure Hazard - No
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical	No
--	----

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)	Not regulated.
---------------------------------------	----------------

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Acetone (CAS 67-64-1)	6532
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Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1)	35 %WV
-----------------------	--------

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1)	6532
-----------------------	------

US state regulations**US. Massachusetts RTK - Substance List**

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)

US. New Jersey Worker and Community Right-to-Know Act

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)

US. Rhode Island RTK

Acetone (CAS 67-64-1)
Cyclohexanone (CAS 108-94-1)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 22-September-2014

Revision date -

Version # 01

HMIS® ratings
 Health: 2
 Flammability: 3
 Physical hazard: 0

Disclaimer Oatey Co. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

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SAFETY DATA SHEET

DEXPAN (Expansive Cement)



Section 1. Identification

GHS product identifier : DEXPAN (Expansive Cement)
Product code : Not available.
Other means of identification : Expanding Cement.
Product type : Powder.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : For controlled demolition, reinforced concrete cutting, rock breaking, quarrying, stone dimension, mining, excavating...

Manufacturer : Archer Company USA, Inc.
2031 Appaloosa Dr.
Sunland Park, NM 88063
Tel: 575-528-5454
Fax: 575-528-5458
Toll Free: 866-272-4378

Distributor/Canada :

Emergency telephone number (with hours of operation) : +1-575-528-5454
(24/7)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Section 2. Hazards identification

Hazard statements	: H318 - Causes serious eye damage. H315 - Causes skin irritation. H335 - May cause respiratory irritation.
Precautionary statements	
Prevention	: P280 - Wear protective gloves. Wear eye or face protection. P271 - Use only outdoors or in a well-ventilated area. P261 - Avoid breathing dust. P264 - Wash hands thoroughly after handling.
Response	: P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. P332 + P313 - If skin irritation occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: P405 - Store locked up.
Disposal	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	: Not applicable.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Other means of identification	: Expanding Cement.

Ingredient name	%	CAS number
Calcium dihydroxide	≥75 - ≤90	1305-62-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician.
Inhalation	: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Section 4. First aid measures

- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May cause respiratory irritation.
- Skin contact** : Causes skin irritation.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
Calcium dihydroxide	ACGIH TLV (United States, 3/2017). TWA: 5 mg/m ³ 8 hours. NIOSH REL (United States, 10/2016). TWA: 5 mg/m ³ 10 hours. OSHA PEL (United States, 6/2016). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust

Canada

Occupational exposure limits

Ingredient name	Exposure limits
Calcium dihydroxide	CA Alberta Provincial (Canada, 4/2009). 8 hrs OEL: 5 mg/m ³ 8 hours. CA British Columbia Provincial (Canada, 7/2016). TWA: 5 mg/m ³ 8 hours. CA Ontario Provincial (Canada, 7/2015). TWA: 5 mg/m ³ 8 hours. CA Quebec Provincial (Canada, 1/2014). TWA _{AEV} : 5 mg/m ³ 8 hours. CA Saskatchewan Provincial (Canada, 7/2013). STEL: 10 mg/m ³ 15 minutes. TWA: 5 mg/m ³ 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : In some cases, dust collection, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Solid. [Powder.]
- Color** : Gray.
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : 1000°C (1832°F)
- Boiling point** : Not available.
- Flash point** : Not available.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Relative density** : 3.2
- Solubility** : Very slightly soluble in the following materials: cold water.
- Partition coefficient: n-octanol/water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not available.
- Flow time (ISO 2431)** : Not available.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : Reactive or incompatible with the following materials: moisture.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Calcium dihydroxide	LD50 Oral	Rat	7340 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Calcium dihydroxide	Eyes - Severe irritant	Rabbit	-	10 mg	-

Sensitization

There is no data available.

Mutagenicity

There is no data available.

Carcinogenicity

There is no data available.

Reproductive toxicity

There is no data available.

Teratogenicity

There is no data available.

Specific target organ toxicity (single exposure)

Name	Category	Target organs
Calcium dihydroxide	Category 3	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

There is no data available.

Aspiration hazard

There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

Section 11. Toxicological information

- Eye contact** : Causes serious eye damage.
Inhalation : May cause respiratory irritation.
Skin contact : Causes skin irritation.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
Potential delayed effects : No known significant effects or critical hazards.

Long term exposure

- Potential immediate effects** : No known significant effects or critical hazards.
Potential delayed effects : No known significant effects or critical hazards.

Potential chronic health effects

- General** : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

There is no data available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Calcium dihydroxide	Acute LC50 33884.4 µg/L Fresh water	Fish - Clarias gariepinus - Fingerling	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

There is no data available.

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

AERG : Not applicable.

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

Composition/information on ingredients

Name	Classification
Calcium dihydroxide	SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

SARA 313

There is no data available.

State regulations

Massachusetts : The following components are listed: Calcium dihydroxide; Silica, vitreous; Diiron trioxide; Aluminium oxide

New York : None of the components are listed.

New Jersey : The following components are listed: Calcium dihydroxide; Silica, vitreous; Diiron trioxide; Aluminium oxide

Pennsylvania : The following components are listed: Calcium dihydroxide; Diiron trioxide; Aluminium oxide

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

Section 15. Regulatory information

Canada

Canadian lists

- Canadian NPRI** : None of the components are listed.
CEPA Toxic substances : None of the components are listed.
Canada inventory (DSL NDSL) : All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
SKIN CORROSION/IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method

History

- Date of issue mm/dd/yyyy** : 04/30/2019
Date of previous issue : 04/15/2015
Version : 7
Prepared by : KMK Regulatory Services Inc.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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SAFETY DATA SHEET

RECTORSEAL® TRU-BLU™
Vibration resistant pipe thread sealant

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Product Name
Rectorseal® Tru-Blue™
Product Codes
31300, 31431, 31551, 31552, 31631, 31780, 31782, 31785
Chemical Family
Organic
Use
Pipe thread sealant
Manufacturer's Name
The RectorSeal Corporation
2601 Spenwick Drive
Houston, Texas 77055 USA
Date of Validation
June 14, 2016
Date of Preparation
June 14, 2016

HMIS Codes
Health 1
Flammability 2
Reactivity 0
PPI B

Emergency Telephone No.
Chemtrec 24 Hours
(800)-424-9300 USA
(703)-527-3887 International

Technical Service Telephone No.
(800)-231-3345 or (713)-263-8001

SECTION 2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

OSHA Hazards
Combustable

Target Organs
Not Classified

GHS CLASSIFICATION

Physical Hazards
Combustable liquid (Category 4)

Health Hazards

Acute Toxicity:
Oral: Not Classified
Dermal: Not Classified
Inhalation: Not Classified

Skin Corrosion/Irritation: Not Classified
Serious Eye Damage/Eye Irritation: Not Classified
Skin Sensitization: Not Classified
Respiratory Sensitization: Not Classified
Germ Cell Mutagenicity: Not Classified
Carcinogenicity: See Section 11
Reproductive Toxicology: Not Classified
Target Organ Systemic Toxicity - Single Exposure: Not Classified
Target Organ Systemic Toxicity - Repeated Exposure: Not Classified

Aspiration Toxicity: Not Classified

GHS Label elements, including precautionary statements



GHS07: Exclamation Mark

Signal Word: **Warning**

Hazard Statements

H303 - May be harmful if swallowed.

H313 - May be harmful in contact with skin.

H335 + H336 - May cause respiratory irritation, and drowsiness or dizziness.

Precautionary Statements

P102 - Keep out of reach of children.

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P240 - Ground/Bond container and receiving equipment

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P262 - Do not get in eyes, on skin, or on clothing.

P264 - Wash hands thoroughly after handling.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P362 - Take off contaminated clothing and wash before reuse.

EUH066 - Repeated exposure may cause skin dryness or cracking

Precautionary Statements - EU No. 1272/2008

Summary Of Acute Hazards

Irritation to eyes, nose and throat; drowsiness, narcosis, tremors and other CNS effects at high concentration.

Route Of Exposure, Signs And Symptoms

INHALATION

Nasal and respiratory irritation, dizziness, narcosis, headache, nausea, CNS depression and unconsciousness.

EYE CONTACT

Watering, blurred vision, inflammation and irritation which can result in corneal injury.

SKIN CONTACT

Irritation, dermatitis.

INGESTION

Nausea, vomiting; CNS depression; irritation of gastrointestinal tract, liver and peritoneal wall; lung congestion.

SUMMARY OF CHRONIC HAZARDS

Skin irritation and dermatitis. Possible liver and kidney damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Individuals with pre-existing or chronic diseases of the eyes, skin, respiratory system, cardiovascular system, gastrointestinal system, liver or kidneys may have increased susceptibility to excessive exposures.

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient:	Diacetone Alcohol
Percentage By Weight:	20-30
CAS Number:	123-42-2
EC#:	204-626-7

SECTION 4 – FIRST AID MEASURES

If inhaled:	If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.
If on skin:	Wash with soap and water. If irritation occurs, seek medical attention
If in eyes:	Flush eyes with large amounts of water for 15 minutes. Get medical attention.
If swallowed:	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

SECTION 5 – FIRE FIGHTING MEASURES

Flash point:	150°F (65°C)
LEL:	N/D
UEL:	N/D

Extinguishing Media

Foam, dry chemical, carbon dioxide or water fog.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and other protective clothing. Hazardous decomposition products possible (see Section 10).

Unusual Fire And Explosion Hazards: Combustible – moderate flash point. Vapors heavier than air and may travel along the ground or to low spots at considerable distances to a source of ignition resulting in potential flashback. Burning liquid may float on water. Heat may build up pressure and rupture containers.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Steps To Be Taken In Case Material Is Released Or Spilled: Remove all sources of ignition. Use absorbent materials to prevent footing hazard and to contain. Ventilate area with natural or explosion-proof, forced air ventilation. Avoid flushing into sewers, drains, waterways, and soil. Wear protective clothing and respiratory protection during cleanup.

SECTION 7 – HANDLING AND STORAGE

Precautions To Be Taken In Handling And Storing: Keep container closed and upright when not in use. Do not store near heat, sparks, or open flames.

Other Precautions: Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues; treat as if full and observe all products precautions. Do not reuse empty containers.

KEEP OUT OF REACH OF CHILDREN.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredient	Units
------------	-------

Diacetone Alcohol

ACGIH TLV:	50 ppm
------------	--------

OSHA PEL:	50 ppm
-----------	--------

Respiratory Protection (Specify Type): In confined poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air purifying or supplied air respirators.

Ventilation – Local Exhaust: Acceptable

Special: Explosion-proof equipment.

Mechanical (General): Preferable

Other: N/A

Protective Gloves: Wear rubber gloves.

Eye Protection: Chemical splash goggles (ANSI Z-87.1 or equivalent)

Other Protective Clothing Or Equipment: Coveralls recommended.

Work/Hygienic Practices: Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area. Launder contaminated clothing before reuse.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling point:	322°F (161°C) @ 760 mmHg
Specific gravity (H2O = 1):	1.38
Vapor pressure (mmHg):	0.3 @ 68°F (20°C)
Melting point:	N/A
Vapor Density (Air = 1):	1.1
Evaporation rate (Ethyl Acetate = 1):	0.14
Appearance/Odor:	Blue paste/Mild odor
Solubility in water:	23%
Volatile Organic Compounds (VOC) Content (theoretical percentage by weight):	23% or (317 g/L)

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable

Conditions To Avoid: Heat, sparks, open flames, and strong oxidizing. Temperatures above 500°F (260°C).

Incompatibility (Materials To Avoid): Gaseous oxygen, strong oxidizing materials, molten alkali metals.

Hazardous Decomposition Products: CO, CO₂ and fragmented hydrocarbons.

Hazardous Polymerization: Will not occur.

SECTION 11 – TOXICOLOGY INFORMATION

Chronic Health Hazards

No ingredient in this product is an IARC, NTP or OSHA Lister carcinogen.

Toxicology Data

Ingredient Name

Diacetone Alcohol	
Oral-Rat LD50:	4000 mg/kg
Inhalation-Human TClO:	100 ppm

SECTION 12 – ECOLOGICAL INFORMATION

Ecological Data

Ingredient Name:	Diacetone Alcohol
Food Chain Concentration Potential	N/A
Waterfowl Toxicity	N/A
BOD	N/A
Aquatic Toxicity	N/A

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Classification: Non-regulated solid waste

Disposal Method: Approved landfill

Waste from this product is not considered hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Dispose of in accordance with Federal, State, and Local regulation regarding pollution.

SECTION 14 – TRANSPORTATION INFORMATION

DOT:	Non-regulated
Ocean (IMDG):	Non-regulated
Air (IATA):	Non-regulated
WHMIS (Canada):	Non-regulated

SECTION 15 – REGULATORY INFORMATION

Regulatory Data

Ingredient Name:	Diacetone Alcohol
SARA 313	N/A
TSCA Inventory	Yes
CERCLA RQ	N/A
RCRA Code	N/A

SECTION 16 – OTHER INFORMATION

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). The information herein is given in good faith, but no warranty, expressed or implied is made.

Consult RectorSeal for further information: (713) 263-8001

17.) WD-40

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Safety Data Sheet California CARB Compliant

1 - Identification

<p>Product Name: WD-40 Multi-Use Product Aerosol</p> <p>Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion</p> <p>Restrictions on Use: None identified</p> <p>SDS Date Of Preparation: August 2, 2021</p>	<p>Manufacturer: WD-40 Company</p> <p>Address: 9715 Businesspark Avenue San Diego, California, USA 92131</p> <p>Telephone:</p> <p>Emergency: 1-888-324-7596</p> <p>Information: 1-888-324-7596</p> <p>Chemical Spills: 1-800-424-9300 (Chemtrec) 1-703-527-3887 (International Calls)</p>
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2 – Hazards Identification

Hazcom 2012/GHS Classification:

Flammable Aerosol Category 1

Gas Under Pressure: Compressed Gas

Aspiration Toxicity Category 1

Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)

Note: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:



DANGER!

Extremely Flammable Aerosol.

Contains gas under pressure; may explode if heated.

May be fatal if swallowed and enters airways.

May cause drowsiness or dizziness.

Prevention

Keep away from heat, sparks, open flames, hot surfaces. – No smoking.

Do not spray on an open flame or other ignition source.

Pressurized container: Do not pierce or burn, even after use.

Avoid breathing vapors or mists.

Use only outdoors or in a well-ventilated area.

Response

IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

Storage

Store locked up.

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place.

Disposal

Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	US Hazcom 2012/ GHS Classification
LVP Aliphatic Hydrocarbon	64742-47-8	45-50%	Aspiration Toxicity Category 1
Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	<35%	Not Hazardous
Aliphatic Hydrocarbon	64742-47-8	<25%	Flammable Liquid Category 3 Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)
Carbon Dioxide	124-38-9	2-3%	Simple Asphyxiant Gas Under Pressure, Compressed Gas

Note: The specific chemical identity and exact percentages are a trade secret.

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

Signs and Symptoms of Exposure: Harmful or fatal if swallowed. Aspiration of liquid into the lungs during swallowing or vomiting may cause lung damage. May cause eye and respiratory irritation. Inhalation of mists or vapors may cause drowsiness, dizziness and other nervous system effects. Skin contact may cause drying of the skin.

Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.

Specific Hazards Arising from the Chemical: Extremely flammable aerosol. Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.

Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.

Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.

Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials. Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure Limits
LVP Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m ³ TWA (Inhalable) ACGIH TLV (as Mineral oil) 5 mg/m ³ TWA OSHA PEL (as Oil mist, mineral)
Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Carbon Dioxide	5000 ppm TWA, 30,000 ppm STEL ACGIH TLV 5000 ppm TWA OSHA PEL

The Following Controls are Recommended for Normal Consumer Use of this Product

Appropriate Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Always spray away from your face.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, ANSI Z88.2 and good Industrial Hygiene practice.

Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Appearance:	Light green to amber liquid	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Odor:	Mild petroleum odor	Vapor Pressure:	95-115 PSI @ 70°F
Odor Threshold:	Not established	Vapor Density:	Greater than 1 (air=1)
pH:	Not Applicable	Relative Density:	0.8 – 0.82 @ 60°F
Melting/Freezing Point:	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	138°F (59°C) Tag Closed Cup (liquid)	Autoignition Temperature:	Not established
Evaporation Rate:	Not established	Decomposition Temperature:	Not established
Flammability (solid, gas):	Flammable Aerosol	Viscosity:	2.79-2.96 cSt @ 100°F
VOC:	24.1%	Pour Point:	-63°C (-81.4°F) ASTM

10 – Stability and Reactivity**Reactivity:** Not reactive under normal conditions**Chemical Stability:** Stable**Possibility of Hazardous Reactions:** May react with strong oxidizers generating heat.**Conditions to Avoid:** Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.**Incompatible Materials:** Strong oxidizing agents.**Hazardous Decomposition Products:** Carbon monoxide and carbon dioxide.**11 – Toxicological Information****Symptoms of Overexposure:****Inhalation:** High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.**Skin Contact:** Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.**Eye Contact:** Contact may be irritating to eyes. May cause redness and tearing.**Ingestion:** This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.**Chronic Effects:** None expected.**Carcinogen Status:** None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.**Reproductive Toxicity:** None of the components is considered a reproductive hazard.**Numerical Measures of Toxicity:**

Acute Toxicity Estimates: Oral > 5,000 mg/kg; Dermal >2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information**Ecotoxicity:** No specific aquatic toxicity data is currently available; however components of this product are not expected to be harmful to aquatic organisms**Persistence and Degradability:** Components are readily biodegradable.**Bioaccumulative Potential:** Bioaccumulation is not expected based on an assessment of the ingredients.**Mobility in Soil:** No data available**Other Adverse Effects:** None known**13 - Disposal Considerations**

If this product becomes a waste, it would be expected to meet the criteria of a RCRA ignitable hazardous waste (D001). However, it is the responsibility of the generator to determine at the time of disposal the proper classification and method of disposal. Do not puncture or incinerate containers, even empty. Dispose in accordance with federal, state, and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: UN1950, Aerosols, 2.1 Ltd. Qty

(Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)

IMDG Shipping Description: UN1950, Aerosols, 2.1, LTD QTY

ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1

NOTE: WD-40 Company does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

U.S. Federal Regulations:

CERCLA 103 Reportable Quantity: This product is not subject to CERCLA reporting requirements, however, oil spills are reportable to the National Response Center under the Clean Water Act and many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA TITLE III:

Hazard Category For Section 311/312: Refer to Section 2 for the OSHA Hazard Classification.

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements: None

Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this product are listed on the TSCA inventory.

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65): This product does not require a California Proposition 65 warning.

VOC Regulations: This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List or exempt from notification

16 – Other Information

HMIS Hazard Rating:

Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Physical Hazard – 0 (minimal hazard)

Revision Date: August 2, 2021

Supersedes: March 5, 2019

Revision Summary: Section 9: Appearance

Prepared by: Industrial Health & Safety Consultants, Inc. Shelton, CT, USA

Reviewed by: I. Kowalski

Regulatory Affairs Dept.

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18.) ANTI-SEIZE

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SAFETY DATA SHEET

Revision Date 11-May-2020

Version 8

1. IDENTIFICATION

Product identifier

Product Name 133K ANTI-SEIZE LUBRICANT 8OZ

Other means of identification

Product Code 80078

Recommended use of the chemical and restrictions on use

Recommended Use Lubricant

Uses advised against No information available

Details of the supplier of the safety data sheet

Manufacturer Address

ITW Permatex
6875 Parkland Blvd.
Solon, Ohio 44139 USA
Telephone: 1-87-Permatex
(866) 732-9502

24-hour emergency phone number

Chem-Tel: 800-255-3924
International Emergency:
00+1+ 813-248-0585
Contract Number: MIS0003453

May Also Be Distributed by:

ITW Permatex Canada
101-2360 Bristol Circle
Oakville, ON Canada L6H 6M5
Telephone: (800) 924-6994

E-mail address: mail@permatex.com

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Carcinogenicity	Category 1B

Label elements

Emergency Overview

Signal word

Danger

Harmful if swallowed
May cause cancer

**Appearance** Silver**Physical state** Paste Liquid**Odor** Petroleum**Precautionary Statements - Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 Rinse mouth

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

May be harmful in contact with skin.

Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
CALCIUM OXIDE	1305-78-8	10 - 30
GRAPHITE	7782-42-5	10 - 30
ALUMINIUM POWDER	7429-90-5	5 - 10
PARAFFIN OILS (PETROLEUM), CATALYTIC DEWAXED LIGHT	64742-71-8	3 - 7

4. FIRST AID MEASURES

Description of first aid measures**General advice**

If symptoms persist, call a physician.

Eye contact

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. If symptoms persist, call a physician.

Skin contact

Immediate medical attention is not required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation persists, call a

physician.

Inhalation Immediate medical attention is not required. If symptoms persist, call a physician. Move to fresh air in case of accidental inhalation of vapors or decomposition products.

Ingestion IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician. Do NOT induce vomiting.

Self-protection of the first aider Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms See section 2 for more information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use, Use dry chemical, Carbon dioxide (CO₂), Water spray (fog), Alcohol resistant foam

Unsuitable extinguishing media

Water

Specific hazards arising from the chemical

Keep product and empty container away from heat and sources of ignition. Risk of ignition.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes and skin. Wash thoroughly after handling. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges.

Environmental precautions

Environmental precautions See section 12 for additional ecological information. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Use personal protective equipment as required. Dam up. Cover liquid spill with sand, earth or other non-combustible absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Take precautionary measures against static discharges.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling

Use with local exhaust ventilation. All equipment used when handling the product must be grounded. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Use personal protective equipment as required. Do not breathe dust/fume/gas/mist/vapors/spray. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).

Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat. Keep in properly labeled containers.

Incompatible materials

Strong oxidizing agents, Acids, Alkalis, Amines

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
CALCIUM OXIDE 1305-78-8	TWA: 2 mg/m ³	TWA: 5 mg/m ³ (vacated) TWA: 5 mg/m ³ not in effect as a result of reconsideration	IDLH: 25 mg/m ³ TWA: 2 mg/m ³
GRAPHITE 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ natural respirable dust
ALUMINIUM POWDER 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ Al Aluminum	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 5 mg/m ³ Al

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls

Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection

Tight sealing safety goggles.

Skin and body protection

Wear protective natural rubber, nitrile rubber, Neoprene™ or PVC gloves.

Respiratory protection

Use NIOSH-approved air-purifying respirator with organic vapor cartridge or canister, as

appropriate.

General Hygiene Considerations When using do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Paste Liquid
Appearance	Silver
Odor	Petroleum
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No information available	
Melting point / freezing point	No information available	
Boiling point / boiling range	No information available	
Flash point	> 95 °C / > 203 °F	Tag Closed Cup
Evaporation rate	< 1	Butyl acetate = 1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	<5 mm Hg	
Vapor density	>1	Air = 1
Relative density	1.17	
Water solubility	Negligible	
Solubility(ies)	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	
 Other Information		
Softening point	No information available	
Molecular weight	No information available	
VOC Content (%)	0	
Density	No information available	
Bulk density	No information available	
SADT (self-accelerating decomposition temperature)	No information available	

10. STABILITY AND REACTIVITY

Reactivity
No information available

Chemical stability
Stable under normal conditions

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Heat, flames and sparks.

Incompatible materials
Strong oxidizing agents, Acids, Alkalis, Amines

Hazardous Decomposition Products

Carbon oxides

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Inhalation	May cause irritation of respiratory tract.
Eye contact	Contact with eyes may cause irritation. May cause redness and tearing of the eyes.
Skin contact	May cause skin irritation and/or dermatitis.
Ingestion	Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
CALCIUM OXIDE 1305-78-8	= 500 mg/kg (Rat)	-	-
GRAPHITE 7782-42-5	-	-	> 2000 mg/m ³ (Rat) 4 h

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Irritating to skin.
Serious eye damage/eye irritation Irritating to eyes.
Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
PARAFFIN OILS (PETROLEUM), CATALYTIC DEWAXED LIGHT 64742-71-8	A2	Group 1	Known	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A2 - *Suspected Human Carcinogen*

IARC (International Agency for Research on Cancer)

Group 1 - *Carcinogenic to Humans**Not classifiable as a human carcinogen*

NTP (National Toxicology Program)

Known - *Known Carcinogen*

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - *Present*

Target Organ Effects Central Vascular System (CVS), Eyes, Respiratory system, Skin.

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 1624 mg/kg

ATEmix (dermal) 3946 mg/kg

ATEmix (inhalation-vapor) 32255 mg/l

12. ECOLOGICAL INFORMATION**Ecotoxicity**

0.10105 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS**Waste treatment methods**

Disposal of wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging	Do not reuse container.
US EPA Waste Number	Not applicable

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
CALCIUM OXIDE 1305-78-8	Corrosive
ALUMINIUM POWDER 7429-90-5	Ignitable powder

14. TRANSPORT INFORMATION**DOT**

Proper shipping name: Not regulated

IATA

Proper shipping name: Not regulated

IMDG

Proper shipping name: Not regulated

15. REGULATORY INFORMATION**International Inventories**

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances
 PICCS - Philippines Inventory of Chemicals and Chemical Substances
 AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
ALUMINIUM POWDER - 7429-90-5	1.0

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
CALCIUM OXIDE 1305-78-8	X	X	X
GRAPHITE 7782-42-5	X	X	X
ALUMINIUM POWDER 7429-90-5	X	X	X
PARAFFIN OILS (PETROLEUM), CATALYTIC DEWAXED LIGHT 64742-71-8	-	X	-
COPPER 7440-50-8	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

WHMIS Hazard Class

D2A - Very toxic materials

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

<u>NFPA</u>	Health hazards 2	Flammability 1	Instability 0	-
<u>HMIS</u>	Health hazards 2	Flammability 1	Physical hazards 0	Personal protection B

NFPA (National Fire Protection Association)
 HMIS (Hazardous Material Information System)

Revision Date 11-May-2020

Disclaimer

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End of Safety Data Sheet

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D. OFFICE SUPPLIES

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1.) AIR DUSTER

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MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product Name	OfficeMax® Compressed Gas Duster
Synonym(s)	Model # OM96090 Model #: OM96091 Model #: OM96092 Model #: OM04736, OM04737
CAS #	75-37-6
Product use	Dust control
Manufacturer	Falcon Safety Products, Inc. 25 Imclone Drive Branchburg, NJ 08876 US Phone: 1-908-707-4900
Supplier	OfficeMax 263 Shuman Blvd Naperville, IL 60563 US Phone 1-630-438-7800

2. Hazards Identification

Emergency overview	DANGER FLAMMABLE GAS. MAY CAUSE FLASH FIRE. Contents under pressure. Containers may explode when heated.
Potential short term health effects	
Routes of exposure	Eye, Skin contact, Inhalation.
Eyes	Contact with liquid may cause frostbite.
Skin	Contact with liquid may cause frostbite.
Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.
Ingestion	Not a normal route of exposure.
Target organs	Eyes. Skin. Respiratory system.
Chronic effects	Prolonged or repeated exposure can cause drying, defatting and dermatitis.
Signs and symptoms	Symptoms may include redness, edema, drying, defatting and cracking of the skin.
OSHA Regulatory Status	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Potential environmental effects	Not available

3. Composition / Information on Ingredients

Ingredient(s)	CAS #	Percent
1,1-Difluoroethane	75-37-6	60 - 100

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush with cool water. Remove contact lenses, if applicable, and continue flushing for 15 minutes. Obtain medical attention immediately.
Skin contact	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
Inhalation	If symptoms develop, move victim to fresh air. If symptoms persist, obtain medical attention. If breathing has stopped, trained personnel should administer CPR immediately.
Ingestion	Do not induce vomiting. Never give anything by mouth if victim is unconscious, or is convulsing. Obtain medical attention.
General advice	Do not puncture or incinerate container. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

5. Fire Fighting Measures

Flammable properties	Flammable by WHMIS/OSHA criteria. Containers may explode when heated.
Extinguishing media	
Suitable extinguishing media	Do not extinguish burning gas if flow cannot be shut off immediately. Use water spray or fog nozzle to keep cylinder cool Small Fires: Dry chemical. Carbon dioxide. Large Fires: Water spray. Fog.
Unsuitable extinguishing media	Not available
Protection of firefighters	
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Cool containers with flooding quantities of water until well after fire is out.
Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus.
Hazardous combustion products	May include and are not limited to: Oxides of carbon. Fluoride gases.
Explosion data	
Sensitivity to mechanical impact	Not available
Sensitivity to static discharge	Not available

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep people away from and upwind of spill/leak.
Environmental precautions	Prevent further leakage or spillage if safe to do so.
Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Before attempting clean up, refer to hazard data given above. Remove sources of ignition. Although the chance of a significant spill or leak is unlikely in aerosol containers, in the event of such an occurrence, absorb spilled material with a non-flammable absorbent such as sand or vermiculite.

7. Handling and Storage

Handling	Use good industrial hygiene practices in handling this material. Avoid contact with eyes and skin. Avoid breathing mists or aerosols of this product. Use only with adequate ventilation.
Storage	Keep away from heat, open flames or other sources of ignition. Do not store at temperatures above 49 °C (120.2°F). Keep out of reach of children.

8. Exposure Controls / Personal Protection

Exposure limits	
Ingredient(s)	Exposure Limits
1,1-Difluoroethane	ACGIH-TLV Not established OSHA-PEL Not established
Engineering controls	Use only under good ventilation conditions or with respiratory protection.
Personal protective equipment	
Eye / face protection	Wear safety glasses with side shields.

Hand protection	If there is constant skin contact, rubber gloves are recommended.
Skin and body protection	As required by employer code.
Respiratory protection	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. Wash hands and face before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Appearance	Clear
Color	Colorless
Form	Liquefied gas
Odor	Slight ethereal.
Odor threshold	Not available
Physical state	Gas
pH	Not applicable
Melting point	Not available
Freezing point	Not available
Boiling point	-13.00 °F (-25 °C)
Pour point	Not available
Evaporation rate	Not available
Flash point	-58.00 °F (-50 °C)
Auto-ignition temperature	849.20 °F (454 °C)
Flammability limits in air, lower, % by volume	3.9
Flammability limits in air, upper, % by volume	16.9
Vapor pressure	599.43 KPa @25°C
Vapor density	2.4 @25°C (air=1)
Specific gravity	0.91
Relative density	0.9 g/cc @25°C
Octanol/water coefficient	Not available
Solubility (H2O)	Slightly
Viscosity	Not available
Percent volatile	100

10. Stability and Reactivity

Reactivity	None known.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Chemical stability	Stable under recommended storage conditions.
Conditions to avoid	Aerosol containers are unstable at temperatures above 49°C (120.2°F).
Incompatible materials	Alkaline materials. Alkaline earth metals.
Hazardous decomposition products	May include and are not limited to: Oxides of carbon. Fluoride gases.

11. Toxicological Information

Component analysis - LC50

Ingredient(s)	LC50
1,1-Difluoroethane	> 64000 ppm rat

Component analysis - Oral LD50

Ingredient(s)	LD50
1,1-Difluoroethane	1500 mg/kg rat

Effects of acute exposure

Eye	Contact with liquid may cause frostbite.
------------	--

Skin	Contact with liquid may cause frostbite.
Inhalation	Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation.
Ingestion	Not a normal route of exposure.
Sensitization	Non-hazardous by WHMIS/OSHA criteria.
Chronic effects	Non-hazardous by WHMIS/OSHA criteria.
Carcinogenicity	Non-hazardous by WHMIS/OSHA criteria.
Mutagenicity	Non-hazardous by WHMIS/OSHA criteria.
Reproductive effects	Non-hazardous by WHMIS/OSHA criteria.
Teratogenicity	Non-hazardous by WHMIS/OSHA criteria.
Name of Toxicologically Synergistic Products	Not available

12. Ecological Information

Ecotoxicity	Not available
Persistence / degradability	Not available
Bioaccumulation / accumulation	Not available
Mobility in environmental media	Not available
Environmental effects	Not available
Aquatic toxicity	Not available
Partition coefficient	Not available
Chemical fate information	Not available
Other adverse effects	Not available

13. Disposal Considerations

Disposal instructions	Review federal, state/provincial, and local government requirements prior to disposal. Do not puncture or incinerate container.
Waste from residues / unused products	Not available
Contaminated packaging	Not available

14. Transport Information

U.S. Department of Transportation (DOT)

Basic shipping requirements:

Proper shipping name	1,1-Difluoroethane
Hazard class	2.1
UN number	1030

Additional information:

Packaging exceptions

NOTE: Falcon Safety Products has been granted a DOT exemption that allows this product to be shipped similar to a Consumer Commodity (ORM-D). A copy of the DOT exemption can be obtained by calling Falcon Safety Products, Inc at 908-707-4900.



Transportation of Dangerous Goods (TDG - Canada)

Basic shipping requirements:

Proper shipping name 1,1-Difluoroethane
Hazard class 2.1
UN number 1030

Additional information:

Packaging exceptions Limited quantity (containers up to 125mL)

NOTE: Falcon Safety Products has been granted Equivalency Certificate SU 9211 (Ren.1) by the TCSS, TDGD to offer for transport by road, rail, and marine.



IATA/ICAO (Air)

Basic shipping requirements:

Proper shipping name 1,1-Difluoroethane
Hazard class 2.1
UN number 1030

Additional information:

Maximum net quantity packaging Cargo aircraft only – 150 kg maximum
(Forbidden on passenger aircraft)

Maximum net quantity packaging cargo only 150 kg



IMDG (Marine Transport)

Basic shipping requirements:

Proper shipping name 1,1-DIFLUOROETHANE
Hazard class 2.1
UN number 1030



15. Regulatory Information

Canadian federal regulations

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS status

Controlled

WHMIS classification

Class A - Compressed Gas, Class B - Division 1 - Flammable Gas

WHMIS labeling



Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical Yes

US Federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - No
 Fire Hazard - Yes
 Pressure Hazard - Yes
 Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Clean Air Act (CAA) Not available

Clean Water Act (CWA) Not available

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

U.S. - Massachusetts - Right To Know List

1,1-Difluoroethane 75-37-6 Present

U.S. - New Jersey - Right to Know Hazardous Substance List

1,1-Difluoroethane 75-37-6 sn 0715

Inventory name

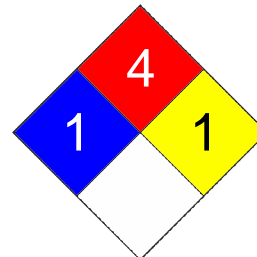
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other Information

LEGEND HMIS/NFPA	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

Health	/ 1
Flammability	4
Physical Hazard	1
Personal Protection	X

**Disclaimer**

Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

Issue date

05-Apr-2013

Effective date

05-Apr-2013

Expiry date

05-Apr-2016

Prepared by

Falcon Safety Products, Inc.

Other information

For an updated MSDS, please contact the supplier/manufacturer listed on the first page of the document.

This MSDS conforms to the ANSI Z400.1/Z129.1-2010 Standard.

2.) CLOROX CLEANER

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SAFETY DATA SHEET

Issuing Date July 16, 2018

Revision Date New

Revision Number 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Clorox® Scentiva™ Multi-Surface Cleaner

Other means of identification

EPA Registration Number 5813-73

Recommended use of the chemical and restrictions on use

Recommended Use Multi-purpose spray cleaner and disinfectant

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address

The Clorox Company
1221 Broadway
Oakland, CA 94612

Phone: 1-510-271-7000

Emergency telephone number

Emergency Phone Numbers For Medical Emergencies call: 1-800-446-1014
For Transportation Emergencies, call Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Label elements, including precautionary statements

Emergency Overview

This product is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Appearance Clear, colorless **Physical State** Thin liquid **Odor** Fragranced

Precautionary Statements - Prevention

None

Precautionary Statements - Response

None

Precautionary Statements - Storage

None

Precautionary Statements - Disposal

None

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

0.2% of the mixture consists of ingredient(s) of unknown toxicity

Interactions with Other Chemicals

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product contains no substances that at their given concentrations are considered to be hazardous to health.

4. FIRST AID MEASURES**First aid measures****General Advice**

Show this safety data sheet to the doctor in attendance.

Eye Contact

Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice if irritation develops and persists.

Skin Contact

Rinse skin with plenty of water. If irritation develops and persists, call a doctor.

Inhalation

Move to fresh air. If breathing is affected, call a doctor.

Ingestion

Drink a glassful of water. Call a doctor or poison control center for advice.

Most important symptoms and effects, both acute and delayed**Most Important Symptoms/Effects** None known.**Indication of any immediate medical attention and special treatment needed****Notes to Physician** Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical

No information available

Explosion Data

Sensitivity to Mechanical Impact None

Sensitivity to Static Discharge None

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Avoid contact with eyes.

Other Information Refer to protective measures listed in Sections 7 and 8.

Environmental precautions

Environmental Precautions See Section 12 for additional ecological information

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning Up Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool, and well-ventilated place.

Incompatible Products None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product does not contain any ingredients with occupational exposure limits that are at concentrations below their cut-off values/concentrations and that contribute to the hazard classification of the product.

Appropriate engineering controls

Engineering Measures None required under normal conditions of use.

Individual protection measures, such as personal protective equipment

Eye/Face Protection No special protective equipment required.

Skin and Body Protection No special protective equipment required.

Respiratory Protection No protective equipment is needed under normal use conditions. If irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES**Physical and Chemical Properties**

Physical State	Thin liquid		
Appearance	Clear	Odor	Fragranced
Color	Colorless	Odor Threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks/ Method</u>
pH	9 - 11.5	None known
Melting/freezing point	No data available	None known
Boiling Point/Range	No data available	None known
Flash Point	No data available	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limits in Air		
Upper flammability limit	No data available	None known
Lower flammability limit	No data available	None known
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	~1.0	None known
Water Solubility	Soluble in water.	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive Properties	Not explosive	
Oxidizing Properties	No data available	

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	No data available

10. STABILITY AND REACTIVITY**Reactivity**

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

None known.

Incompatible materials

None known.

Hazardous Decomposition Products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure****Product Information****Inhalation**

Exposure to vapor or mist may irritate respiratory tract.

Eye Contact

May cause slight irritation.

Skin Contact

May cause slight irritation.

Ingestion

Ingestion of liquid may cause slight irritation to mucous membranes and gastrointestinal tract.

Information on toxicological effects**Symptoms**

None known.

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Sensitization**

No information available.

Mutagenic Effects

No information available.

Carcinogenicity

Contains no ingredient listed as a carcinogen.

Reproductive Toxicity

No information available

STOT - single exposure

No information available.

STOT - repeated exposure

No information available.

Chronic Toxicity

No information available.

Target Organ Effects

No information available.

Aspiration Hazard

No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document

Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other Adverse Effects

No information available.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Dispose of in accordance with all applicable federal, state, and local regulations.

Contaminated Packaging

Do not reuse empty containers. Dispose of in accordance with all applicable federal, state, and local regulations.

14. TRANSPORT INFORMATION

<u>DOT</u>	Not regulated
<u>TDG</u>	Not regulated
<u>ICAO</u>	Not regulated
<u>IATA</u>	Not regulated
<u>IMDG/IMO</u>	Not regulated

15. REGULATORY INFORMATION

Chemical Inventories

TSCA	All components of this product are either on the TSCA 8(b) Inventory or otherwise exempt from listing.
DSL/NDSL	All components are on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION: Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Avoid contact with foods.

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product may contain ingredients regulated by state right-to-know regulations.

International Regulations**Canada****WHMIS Hazard Class**

Not controlled.

16. OTHER INFORMATION

<u>NFPA</u>	Health Hazard 0	Flammability 0	Instability 0	Physical and Chemical Hazards -
<u>HMIS</u>	Health Hazard 0	Flammability 0	Physical Hazard 0	Personal Protection B

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date New

Revision Note New

Reference No information available.

General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet

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3.) DIAL LIQUID SOAP

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Revision Number: 001.2

Issue date: 11/10/2017

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

Product identifier used on the label: DMD Dial Antimicrobial Liquid Hand Soap – Gold

Recommended use of the chemical and restrictions on use: Soap, liquid

Name, address and telephone number of the chemical manufacturer:

Henkel Corporation
One Henkel Way
Rocky Hill CT 06067

CHEMTREC: 1-800-424-9300 (24 hours daily)

Internet: www.henkel-northamerica.com

Emergency telephone number: Medical Emergencies:1-800-258-3425

2. HAZARDS IDENTIFICATION

The hazards described in this Globally Harmonized System Safety Data Sheet (SDS) are not intended for consumers, and does not address consumer use of the product. For information regarding consumer applications of this product, refer to the product label.

Classification of the substance or mixture in accordance with paragraph (d) of §1910.1200

HAZARD CLASS	HAZARD CATEGORY
EYE IRRITATION	2A

Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

Signal word: WARNING

Hazard Statement(s):
Causes serious eye irritation.

Symbol(s):



Precautionary Statements:

Prevention: Wash affected area thoroughly after handling.
Wear eye and face protection.

Response: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical attention.

Storage: Not prescribed

Disposal: Not prescribed

Hazards not otherwise classified: Not available.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

The following chemicals are classified as health hazards in accordance with paragraph (d) of § 1910.1200.

Chemical Name*	CAS Number (Unique Identifier)	Concentration
N-[3-(dimethylamino)propyl]dodecanamide N-oxide	61792-31-2	1 - 5 %
Glycerol	56-81-5	1 - 5 %
Amines, C10-16-alkyldimethyl, N-oxides	70592-80-2	1 - 5 %
Cetrimonium chloride	112-02-7	1 - 5 %
Sodium chloride	7647-14-5	1 - 5 %
Quaternary ammonium compounds, alkylbenzyl dimethyl, chlorides	8001-54-5	0.1 - 1 %

*The specific chemical identity and/or exact percentage (concentration) of composition has been withheld because a trade secret is claimed in accordance with paragraph (i) of §1910.1200.

4. FIRST AID MEASURES

Description of necessary measures

Inhalation: First aid measures not required.
Skin contact: First aid measures not required. Cosmetic product and therefore not necessary.
Eye contact: Rinse eyes immediately with plenty of water, occasionally lifting upper and lower lids, until no evidence of product remains. Get medical attention if pain or irritation develops.
Ingestion: Dilution by rinsing the mouth and giving water or milk to drink is generally recommended. Contact physician or local poison control center.

Most important symptoms and effects, both acute and delayed

After eye contact: May cause moderate to severe irritation. After skin contact: Repeated or prolonged excessive exposure may cause irritation. After inhalation: Unlikely to occur due to the physical properties of the product. At elevated temperatures, vapors or mists may cause irritation. After ingestion: Ingestion may cause irritation of mouth, throat, digestive tract, diarrhea and vomiting.

Indication of any immediate medical attention and special treatment needed

After eye contact: Rinse eyes with plenty of water until no evidence of product remains. After skin contact: Rinse affected area with large amounts of water until no evidence of product remains. After inhalation: Remove from exposure area to fresh air. After ingestion: Administer immediately plenty of water. With ingestion of larger quantities (in adults one tablespoon) or in the case of discomfort or pain seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Dry chemical, carbon dioxide, water spray or regular foam.

Unsuitable extinguishing media: None known

Specific hazards arising from the chemical

carbon oxides. nitrogen oxides Sulphur dioxide

Special protective equipment and precautions for fire-fighters

In case of fire, wear a full-face positive-pressure self-contained breathing apparatus and protective suit. Avoid breathing vapors, keep upwind. Isolate area. Keep unnecessary personnel away.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear skin, eye and respiratory protection as recommended in Section 8. Stop leak if you can do it without risk. Spills present a slipping hazard. Keep unnecessary personnel away. Ventilate spill area if possible. Make sure area is slip-free before re-opening to traffic.

Environmental precautions

Small or household quantities may be disposed in regular domestic trash. For larger quantities check with your local disposal authorities.

Methods and materials for containment and cleaning up

SMALL SPILLS: Contain and absorb with sand or other absorbent material and place into clean, dry containers for later disposal. Wash site of spillage thoroughly with water. LARGE SPILLS: Dike far ahead of spill to prevent further movement. Recover by pumping or by using a suitable absorbent material and place into containers for later disposal. Dispose in suitable waste container.

7. HANDLING AND STORAGE

Precautions for safe handling

Do not get in eyes. Do not take internally.

Conditions for safe storage, including any incompatibilities

Store in original containers in a cool dry area. Storage areas for large quantities (warehouse) should be well ventilated. Keep the containers tightly closed when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Glycerol	None	5 mg/m ³ PEL Respirable fraction. 15 mg/m ³ PEL Total dust.	None	None
Cetrimonium chloride	None	None	None	None
Sodium chloride	None	None	None	None

Appropriate engineering controls

Provide local exhaust or general dilution ventilation to keep exposure to airborne contaminants below the permissible exposure limits where mists or vapors may be generated.

Individual protection measures

- Respiratory:** Air contamination monitoring should be carried out where mists or vapors are likely to be generated, to assure that the employees are not exposed to airborne contaminants above the permissible exposure limits.
- Eye:** Safety glasses are required to prevent eye contact where dusty conditions may occur.
- Hand/Body:** Protective gloves are required where repeated or prolonged skin contact may occur. Protective clothing is required where repeated or prolonged skin contact may occur.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	liquid orange
Odor:	floral, citric, spicy
Odor threshold:	Not available.
pH:	4.30 - 5.30 (25 °C)
Melting point/ range:	Not available.
Boiling point/range:	Not available.
Flash point:	> 93.3 °C (> 199.94 °F)
Evaporation rate:	Not available.
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Vapor pressure:	Not available.
Vapor density:	Not available.
Solubility in water:	Miscible
Partition coefficient (n-octanol/water):	Not available.
Autoignition temperature:	Not available.
Decomposition temperature:	Not available.
Viscosity:	3,000 - 6,000 mPa.s
VOC content:	Not available.

10. STABILITY AND REACTIVITY

Reactivity:	This product may react with strong alkalis.
Chemical stability:	Stable under normal ambient temperature (70°F, 21°C) and pressure (1 atm).
Possibility of hazardous reactions:	Hazardous polymerization has not been reported to occur under normal temperatures and pressures.
Conditions to avoid:	Avoid storing in direct sunlight and avoid extremes of temperature.
Incompatible materials:	Strong oxidizers and alkalis.
Hazardous decomposition products:	Thermal decomposition may release toxic and/or hazardous gases, including ammonia.

11. TOXICOLOGICAL INFORMATION

Likely routes of exposure including symptoms related to characteristics

Inhalation:	Unlikely to occur due to the physical properties of the product. At elevated temperatures, vapors or mists may cause irritation.
Skin contact:	Repeated or prolonged excessive exposure may cause irritation.
Eye contact:	May cause moderate to severe irritation.
Ingestion:	May cause mild gastrointestinal irritation with nausea, vomiting, diarrhea and abdominal pain.
Physical/Chemical:	No physical/chemical hazards are anticipated for this product.
Other relevant toxicity information:	This product is a personal care or cosmetic product. The use of this product by consumers is safe under normal and reasonable foreseen use.

Numerical measures of toxicity, including delayed and immediate effect

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
N-[3-(dimethylamino)propyl]dodecanamide N-oxide	None	No Data
Glycerol	None	Irritant, Nuisance dust
Amines, C10-16-alkyldimethyl, N-oxides	None	No Data
Cetrimonium chloride	None	No Data
Sodium chloride	Oral LD50 (RAT) = 3,000 mg/kg	Irritant
Quaternary ammonium compounds, alkylbenzyl dimethyl, chlorides	Oral LD50 (RAT) = 240 mg/kg Oral LD50 (RAT) = 300 mg/kg Dermal LD50 (RAT) = 1,420 mg/kg	No Data

Carcinogenicity information

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen
N-[3-(dimethylamino)propyl]dodecanamide N-oxide	No	No	No
Glycerol	No	No	No
Amines, C10-16-alkyldimethyl, N-oxides	No	No	No
Cetrimonium chloride	No	No	No
Sodium chloride	No	No	No
Quaternary ammonium compounds, alkylbenzyl dimethyl, chlorides	No	No	No

Carcinogenicity	None of the ingredients in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the Occupational Safety and Health Administration (OSHA).
Mutagenicity	None of the ingredients in this product are known to cause mutagenicity.
Toxicity for reproduction	None of the ingredients in this product are known as reproductive, fetal, or developmental hazards.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

This product is anticipated to be safe for the environment at concentrations predicted in household settings under normal use conditions. The following toxicity information is available for the hazardous ingredient(s) when used as technical grade and is provided as reference for the occupational settings.

Toxicity to fish:

The aquatic toxicity profile of this product has not been determined.

Toxicity to aquatic invertebrates:

The aquatic toxicity profile of this product has not been determined.

Toxicity to algae:

The aquatic toxicity profile of this product has not been determined.

Persistence and degradability

Hazardous substances CAS-No.	Result value	Route of application	Species	Method
Glycerol 56-81-5	readily biodegradable	aerobic	90 - 94 %	EU Method C.4-E (Determination of the "Ready" Biodegradability Closed Bottle Test)
Amines, C10-16- alkyldimethyl, N-oxides 70592-80-2	readily biodegradable	aerobic	90 %	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
Cetrimonium chloride 112-02-7	readily biodegradable		95 %	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)
			75 %	OECD Guideline 302 B (Inherent biodegradability: Zahn-Wellens/EMPA Test)
Quaternary ammonium compounds, alkylbenzyl dimethyl, chlorides 8001-54-5	inherently biodegradable	aerobic	98 %	EU Method C.9 (Biodegradation: Zahn-Wellens Test)
	readily biodegradable	aerobic	> 60 %	OECD Guideline 301 D (Ready Biodegradability: Closed Bottle Test)

Bioaccumulative potential

The bioaccumulation potential of this product has not been determined.

Mobility in soil

The mobility of this product (in soil and water) has not been determined.

13. DISPOSAL CONSIDERATIONS

Description of waste residues:

Hazardous waste number: Not regulated

Safe handling and disposal methods:

Recommended method of disposal: This product is not a RCRA hazardous waste and can be disposed of in accordance with federal, state and local regulations.

Disposal of uncleaned packages: Place in trash.

14. TRANSPORT INFORMATION

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper shipping classification may vary by packaging, properties, and mode of transportation.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

Occupational safety and health act: Hazard Communication Standard, 29 CFR 1910.1200(g) Appendix D: The Occupational Safety and Health Administration (OSHA) require that the Safety Data Sheets (SDSs) are readily accessible to employees for all hazardous chemicals in the workplace. Since the use pattern and exposure in the workplace are generally not consistent with those experienced by consumers, this SDS may contain health hazard information not relevant to consumer use.

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act inventory.

TSCA 12 (b) Export Notification:

CERCLA/SARA Section 302 EHS: None above reporting de minimis.
CERCLA/SARA Section 311/312: Not available.
CERCLA/SARA Section 313: None above reporting de minimis.

California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status: One or more components are not listed on, and are not exempt from listing on either the Domestic Substances List or the Non-Domestic Substances List.

16. OTHER INFORMATION

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: R&D Support Services

Issue date: 11/10/2017

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4.) *GLASS PLUS*

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GLASS PLUS® Glass & Window Cleaner

Revision: 2020-02-10

Version: 03.0

1. IDENTIFICATION

Product name: GLASS PLUS® Glass & Window Cleaner
Product Code: 94378, 94379
SDS #: MS0801117
Recommended use:

- Industrial/Institutional
- Glass Cleaner
- This product is intended to be used neat.

Uses advised against: Uses other than those identified are not recommended

Manufacturer, importer, supplier:
 US Headquarters
 Diversey, Inc.
 1300 Altura Rd., Suite 125
 Fort Mill, SC 29708
 Phone: 1-888-352-2249
 SDS Internet Address: <https://sds.diversey.com>

Emergency telephone number: 1-800-851-7145; 1-651-917-6133 (Int'l)

2. HAZARDS IDENTIFICATION

Classification for the undiluted product

This product is not classified as hazardous according to OSHA 29CFR 1910.1200 (HazCom 2012-GHS) and Canadian Hazardous Products Regulations (HPR) (WHMIS 2015-GHS).

Hazard Statements

None required.

Precautionary Statements

None required.

Health hazards not otherwise classified (HHNOC) - Not applicable

Physical hazards not otherwise classified (PHNOC) - Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Classified Ingredients

Ingredient(s)	CAS #	Weight %
Sodium xylene sulfonate	1300-72-7	1 - 5%
Diethylene glycol butyl ether	112-34-5	> 0.1 - < 1%
Monoethanolamine	141-43-5	> 0.1 - < 1%

*Exact percentages are being withheld as trade secret information

4. FIRST AID MEASURES

Undiluted Product:

Eyes: Rinse with plenty of water. If irritation occurs and persists, get medical attention.

Skin: No specific first aid measures are required.

Inhalation: No specific first aid measures are required.

Ingestion: Rinse mouth with water.

Most Important Symptoms/Effects: No information available.

Immediate medical attention and special treatment needed: Not applicable.

Aggravated Medical Conditions: None known.

5. FIRE-FIGHTING MEASURES

Specific methods: No special methods required
Suitable extinguishing media: The product is not flammable. Extinguish fire using agent suitable for surrounding fire.
Specific hazards: None known.

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Extinguishing media which must not be used for safety reasons: No information available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Put on appropriate personal protective equipment (see Section 8.).
Environmental precautions and clean-up methods: Clean-up methods - large spillage. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Use a water rinse for final clean-up.

7. HANDLING AND STORAGE

Handling: Avoid contact with skin and eyes. FOR COMMERCIAL AND INDUSTRIAL USE ONLY.

Storage: Keep tightly closed in a dry, cool and well-ventilated place.

Aerosol Level (if applicable): Not applicable.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

Ingredient(s)	CAS #	ACGIH	OSHA
Diethylene glycol butyl ether	112-34-5	10 ppm (TWA)	
Monoethanolamine	141-43-5	6 ppm (STEL) 3 ppm (TWA)	3 ppm (TWA) 6 mg/m ³ (TWA)

Undiluted Product:

Engineering measures to reduce exposure:

No special ventilation requirements. General room ventilation is adequate.

Personal Protective Equipment

It is the responsibility of the employer to determine the potential risk of exposure to hazardous chemicals for employees in the workplace in order to determine the necessity, selection, and use of personal protective equipment.

Eye protection: No personal protective equipment required under normal use conditions.
Hand protection: No personal protective equipment required under normal use conditions.
Skin and body protection: No personal protective equipment required under normal use conditions.
Respiratory protection: No personal protective equipment required under normal use conditions.
Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid

Evaporation Rate: No information available

Odor threshold: No information available.

Melting point/range: Not determined

Autoignition temperature: No information available

Solubility in other solvents: No information available

Density: 1 Kg/L

Color: Clear, Blue

Odor: Floral Slightly perfumed

Boiling point/range: Not determined

Decomposition temperature: Not determined

Solubility: Completely Soluble

Relative Density (relative to water): 1.0

Vapor density: No information available

Bulk density: No information available

Flash point (°F): > 93 °C

Viscosity: 5

VOC: 0.8 % *

Flammability (Solid or Gas): Not applicable

Sustained combustion: Not applicable

Explosion limits: - upper: Not determined - lower: Not determined

Vapor pressure: No information available.

Partition coefficient (n-octanol/water): No information available

Elemental Phosphorus: 0.00 % by wt.

pH: 10.9

Corrosion to metals: Not corrosive to metals

* - Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Consumer Products, Sections 94508

10. STABILITY AND REACTIVITY

Reactivity:

Not Applicable

Stability:

The product is stable

Hazardous decomposition products:

None reasonably foreseeable.

Materials to avoid:

Do not mix with any other product or chemical unless specified in the use directions.

Conditions to avoid:

No information available.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Skin contact, Inhalation, Eye contact

Delayed, immediate, or chronic effects and symptoms from short and long-term exposure

Skin contact: Unlikely to be irritant in normal use.

Eye contact: May be mildly irritating to eyes.

Ingestion: No information available.

Inhalation: No information available.

Sensitization: No known effects.

Target Organs (SE): None known

Target Organs (RE): None known

Numerical measures of toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity: No information available.

Persistence and Degradability: No information available.

Bioaccumulation: No information available.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products (undiluted product): This product, as sold, if discarded or disposed, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the waste solution meets RCRA criteria for hazardous waste. Dispose in compliance with all Federal, state, provincial, and local laws and regulations.

RCRA Hazard Class (undiluted product): Not Regulated

Contaminated Packaging: Do not re-use empty containers.

14. TRANSPORT INFORMATION

DOT/TDGM/IMDG: The information provided below is the full transportation classification for this product. This description does not account for the package size(s) of this product, that may fall under a quantity exception, according to the applicable transportation regulations. When shipping dangerous goods, please consult with your internal, certified hazardous materials specialist to determine if any exceptions can be applied to your shipment.

DOT (Ground) Bill of Lading Description: NOT REGULATED

IMDG (Ocean) Bill of Lading Description: NOT REGULATED

15. REGULATORY INFORMATION

International Inventories at CAS# Level

All components of this product are listed on the following inventories: U.S.A. (TSCA), Canada (DSL/NDSL).

RIGHT TO KNOW (RTK)

Ingredient(s)	CAS #	MARTK:	NJRTK:	PARTK:	RIRTK:
Water	7732-18-5	-	-	-	-
Sodium xylene sulfonate	1300-72-7	-	-	-	-
Diethylene glycol butyl ether	112-34-5	-	X	-	-
Propylene glycol methyl ether	107-98-2	X	X	X	-
Propylene glycol	57-55-6	-	X	X	-
Monoethanolamine	141-43-5	X	X	X	-

CERCLA/ SARA

Ingredient(s)	CAS #	Weight %	CERCLA/SARA RQ (lbs)	Section 302 TPQ (lbs)	Section 313
Diethylene glycol butyl ether	112-34-5	> 0.1 - < 1%			X

Ingredient(s)	CAA HAP	CAA ODS	CWA Priority Pollutants
Diethylene glycol butyl ether	X		

Canadian Regulations

Ingredient(s)	CAS #	NPRI
Diethylene glycol butyl ether	112-34-5	X

16. OTHER INFORMATION

NFPA (National Fire Protection Association)

Rating Scale: (Low Hazard) 0 - 4 (Extreme Hazard)

Health 0

Flammability 0

Instability 0

Special Hazards -

Revision: 2020-02-10

Version: 03.0

Reason for revision:

Not applicable

Prepared by:

North American Regulatory Affairs

Additional advice:

• Contains an added fragrance, see "Odor" heading in section 9 for specific description

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5.) LYSOL DISINFECTANT SPRAY

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SAFETY DATA SHEET

Lysol® Brand Disinfectant Spray, All Scents (Aerosol)
Professional Lysol® Brand Disinfectant Spray, All Scents (Aerosol)



HEALTH • HYGIENE • HOME

1. Product and company identification

Product name	: Lysol® Brand Disinfectant Spray, All Scents (Aerosol) Professional Lysol® Brand Disinfectant Spray, All Scents (Aerosol)
Distributed by	: Reckitt Benckiser (Canada) Inc. 1680 Tech Avenue, Unit #2 Mississauga, Ontario L4W 5S9 CANADA Telephone: +1 905 283 7000
	Reckitt Benckiser LLC. Morris Corporate Center IV 399 Interpace Parkway (P.O. Box 225) Parsippany, New Jersey 07054-0225 +1 973 404 2600
Emergency telephone number (Medical)	: 1-800-338-6167
Emergency telephone number (Transport)	: 1-800-424-9300 (U.S. & Canada) CHEMTREC Outside U.S. and Canada (North America), call Chemtrec:703-527-3887
Website:	: http://www.rbnainfo.com

Product use : Disinfectant.

This SDS is designed for workplace employees, emergency personnel and for other conditions and situations where there is greater potential for large-scale or prolonged exposure, in accordance with the requirements of USDOL Occupational Safety and Health Administration.

This SDS is not applicable for consumer use of our products. For consumer use, all precautionary and first aid language is provided on the product label in accordance with the applicable government regulations, and shown in Section 15 of this SDS.

SDS #	: D0224478 v15.0
Formulation #	: 1178-172 (0175917 v1.0 & 0242193 v2.0) Crisp Linen 1338-015 (0175918 v1.0 & 0258756 v1.0) Spring Waterfall 1338-018 (0175934 v1.0) Green Apple / Green Apple Breeze 1338-021 (0175938 v1.0) Crisp Berry 1338-019 (0175919 v1.0) Country 1338-026 (0175929 v1.0) Country Morning Breeze 1338-017 (0172927 v1.0) Lemon Breeze 0175940 v2.0 0175933 v1.0
EPA ID No.	: 777-99 (Retail), 777-99-675 (Professional)
DIN #	: 02395614
UPC Code / Sizes	: Tin plate steel cans.

Relevant identified uses of the substance or mixture and uses advised against

D0224478 v15.0

1. Product and company identification

Identified uses

Disinfectant. Consumer uses

2. Hazards identification

Classification of the substance or mixture : FLAMMABLE AEROSOLS - Category 2
GASES UNDER PRESSURE - Compressed gas
EYE IRRITATION - Category 2B

GHS label elements

Hazard pictograms



Signal word : Warning

Hazard statements : Flammable aerosol.
Contains gas under pressure; may explode if heated.
Causes eye irritation.

Precautionary statements

General : Not applicable.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Wash thoroughly after handling. Pressurized container: Do not pierce or burn, even after use.

Response : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.

Storage : Protect from sunlight. Store in a well-ventilated place. Do not expose to temperatures exceeding 50 °C/122 °F.

Disposal : Not applicable.

Supplemental label elements : None known.

Hazards not otherwise classified : None known.

3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
ethanol	30 - 60	64-17-5
butane	5 - 10	106-97-8
propane	1 - 5	74-98-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
irritation
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

D0224478 v15.0

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Flammable aerosol. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion. Bursting aerosol containers may be propelled from a fire at high speed.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. In the case of aerosols being ruptured, care should be taken due to the rapid escape of the pressurized contents and propellant. If a large number of containers are ruptured, treat as a bulk material spillage according to the instructions in the clean-up section. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

D0224478 v15.0

6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous.

- Conditions for safe storage, including any incompatibilities** : Do not store above the following temperature: 50°C (122°F). Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Protect from sunlight. Eliminate all ignition sources. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

8. Exposure controls/personal protection

Control

Occupational exposure limits

Ingredient name	Exposure limits
ethanol	<p>ACGIH TLV (United States, 3/2018). STEL: 1000 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 10/2016). TWA: 1000 ppm 10 hours. TWA: 1900 mg/m³ 10 hours.</p> <p>OSHA PEL (United States, 5/2018). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p>
butane	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 800 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 10/2013). TWA: 800 ppm 10 hours. TWA: 1900 mg/m³ 10 hours.</p> <p>ACGIH TLV (United States, 6/2013). STEL: 1000 ppm 15 minutes.</p>

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8. Exposure controls/personal protection

<p>propane</p>	<p>OSHA PEL 1989 (United States, 3/1989). TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. NIOSH REL (United States, 10/2016). TWA: 1000 ppm 10 hours. TWA: 1800 mg/m³ 10 hours. OSHA PEL (United States, 5/2018). TWA: 1000 ppm 8 hours. TWA: 1800 mg/m³ 8 hours. ACGIH TLV (United States, 3/2018). Oxygen Depletion [Asphyxiant].</p>
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Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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9. Physical and chemical properties

Appearance

Physical state	: Liquid. [Aerosol.]
Color	: Clear.
Odor	: Fragrant.
Odor threshold	: Not available.
pH	: 10.5 to 11.8 [Conc. (% w/w): 100%]
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: 18.6°C (65.5°F)
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 0.8667 to 0.8967
Density	: 0.8667 to 0.8967 g/cm ³ [25°C (77°F)]
Solubility	: Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.

Aerosol product

Type of aerosol	: Spray
Heat of combustion	: 17.99 kJ/g
Ignition distance	: <45.72 cm

10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame).
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ethanol	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
butane	LC50 Inhalation Vapor	Rat	658000 mg/m ³	4 hours
Lysol® Brand Disinfectant Spray, All Scents (Aerosol)_D0224478_NA	LC50 Inhalation Vapor	Rat	>2.12 mg/l	4 hours
				Maximum attainable concentration
	LD50 Dermal	Rat	>5050 mg/kg	-
	LD50 Oral	Rat	>5050 mg/kg	-

Conclusion/Summary : Not classified. Harmful. * Information is based on toxicity test result of a similar product.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
ethanol	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100 microliters	-
	Skin - Moderate irritant	Rabbit	-	400 milligrams	-
Lysol® Brand Disinfectant Spray, All Scents (Aerosol)_D0224478_NA	Eyes - Cornea opacity	Rabbit	0	24 hours 20 milligrams	-
	Skin - Primary dermal irritation index (PDII)	Rabbit	0	72 hours	4 days
				4 hours	72 hours

Conclusion/Summary

Skin : Non-irritant to skin. * Information is based on toxicity test result of a similar product.

Eyes : Moderately irritating to eyes. * Information is based on toxicity test result of a similar product.

Respiratory : Based on available data, the classification criteria are not met.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
Lysol® Brand Disinfectant Spray, All Scents (Aerosol)_D0224478_NA	skin	Guinea pig	Not sensitizing

Conclusion/Summary

Skin : Non-sensitizer to skin. * Information is based on toxicity test result of a similar product.

Respiratory : Based on available data, the classification criteria are not met.

Mutagenicity

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.

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11. Toxicological information

Carcinogenicity

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.

Classification

Product/ingredient name	OSHA	IARC	NTP
ethanol	-	1	-

Reproductive toxicity

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes eye irritation.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 irritation
 watering
 redness

Inhalation : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing

Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

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11. Toxicological information

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
ethanol	7000	N/A	N/A	124.7	N/A
butane	N/A	N/A	N/A	658	N/A

12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 11000000 µg/l Marine water	Fish - Alburnus alburnus	96 hours
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days

Conclusion/Summary : Based on available data, the classification criteria are not met.

Persistence and degradability

Conclusion/Summary : Based on available data, the classification criteria are not met.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
ethanol	-0.35	-	low
butane	2.89	-	low
propane	1.09	-	low

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12. Ecological information

Mobility in soil





Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1950	UN1950	UN1950	UN1950
UN proper shipping name	Aerosols	AEROSOLS	AEROSOLS	Aerosols, flammable
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Additional information

DOT Classification : **Limited Quantity**

TDG Classification : **Limited Quantity**

IMDG : **Limited Quantity**

IATA : **See DG List**

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

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15. Regulatory information

U.S. Federal regulations : **Clean Water Act (CWA) 311**: ammonia, anhydrous
Clean Air Act (CAA) 112 regulated flammable substances: butane; propane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Ammonia	<0.1	Yes.	500	-	100	-

SARA 304 RQ : 343360.5 lbs / 155885.7 kg [46706 gal / 176801.3 L]

SARA 311/312

Classification : FLAMMABLE AEROSOLS - Category 2
 GASES UNDER PRESSURE - Compressed gas
 EYE IRRITATION - Category 2B

Composition/information on ingredients

Name	%	Classification
ethanol	30 - 60	FLAMMABLE LIQUIDS - Category 2 EYE IRRITATION - Category 2A
butane	5 - 10	FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas
propane	1 - 5	FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas

State regulations

Massachusetts : The following components are listed: ETHYL ALCOHOL; DENATURED ALCOHOL; BUTANE; PROPANE

New York : None of the components are listed.

New Jersey : The following components are listed: ETHYL ALCOHOL; ALCOHOL; BUTANE; PROPANE

Pennsylvania : The following components are listed: DENATURED ALCOHOL; ETHANOL; BUTANE; PROPANE

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

Label elements

CCCR

Signal word : DANGER

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15. Regulatory information

- Hazard statements** : EXTREMELY FLAMMABLE.
CONTAINER MAY EXPLODE IF HEATED.
CONTENTS UNDER PRESSURE.
CONTAINER MAY EXPLODE IF HEATED CONTENTS MAY CATCH FIRE CAUSES
BURNS DANGEROUS FUMES FORM WHEN MIXED WITH OTHER PRODUCTS
- Precautionary measures** : Keep out of reach of children. DO NOT use in presence of open flame or spark. Do not
puncture or incinerate container. Do not store
above the following temperature: 50C
Use only in a well-ventilated area. Keep away from flames, such as a pilot light, and any
object that sparks, such as an electric motor. Store away from heat. Handle with care.
Keep out of reach of children. Wear protective gloves and eye/face protection:
Chemical splash goggles or face shield. Use chemical-resistant, impervious gloves.
Wear appropriate respirator when ventilation is inadequate.

EPA

- Signal word:** : CAUTION
- Hazard statements** : FLAMMABLE: Contents under pressure.
Causes moderate eye irritation.

- Special Inert substance.** : No known significant effects or critical hazards.
- Precautionary measures** :

Keep out of the reach of children. Do not spray in eyes, on skin or on clothing. Wash
thoroughly with soap and water after handling and before eating, drinking, chewing gum,
using tobacco or using the toilet.
Keep away from heat, sparks and open flame. Do not puncture or incinerate container.
Exposure to temperatures above 130°F may cause bursting.

- Skin sensitizer** : No known significant effects or critical hazards.

Additional information / Recommendations

- Additional information** : Not applicable
- Recommendations** : No known significant effects or critical hazards.
- Recommendations** : No known significant effects or critical hazards.

16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	1
Flammability		4
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

D0224478 v15.0

16. Other information

National Fire Protection Association (U.S.A.)



NFPA (30B) aerosol Flammability 1

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

Date of issue : 9/21/2020

Date of previous issue : 23/01/2020

Version : 15

Prepared by : Reckitt Benckiser LLC.
Product Safety Department
1 Philips Parkway
Montvale, New Jersey 07646-1810 USA.
FAX: 201-476-7770

Revision comments : Addition of Professional products with EPA code.

✔ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



RB is a member of the CSPA Product Care Product Stewardship Program.

6.) *LYSOL WIPES*

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SAFETY DATA SHEET

Lysol Brand II Kills 99.9% of Viruses & Bacteria** Disinfecting Wipes, Lemon & Lime Blossom Scent



HEALTH • HYGIENE • HOME

1. Product and company identification

Product name : Lysol Brand II Kills 99.9% of Viruses & Bacteria** Disinfecting Wipes, Lemon & Lime Blossom Scent

Distributed by : Reckitt Benckiser LLC.
Morris Corporate Center IV
399 Interpace Parkway (P.O. Box 225)
Parsippany, New Jersey 07054-0225
+1 973 404 2600

Reckitt Benckiser (Canada) Inc.
1680 Tech Avenue, Unit #2
Mississauga, Ontario L4W 5S9
CANADA
Telephone: +1 905 283 7000

Emergency telephone number (Medical) : 1-800-338-6167

Emergency telephone number (Transport) : 1-800-424-9300 (U.S. & Canada) CHEMTREC
Outside U.S. and Canada (North America), call Chemtrec:703-527-3887

Website: : <http://www.rbnainfo.com>

Product use : Surface Disinfectant.
Consumer use

This SDS is designed for workplace employees, emergency personnel and for other conditions and situations where there is greater potential for large-scale or prolonged exposure, in accordance with the requirements of USDOL Occupational Safety and Health Administration.

This SDS is not applicable for consumer use of our products. For consumer use, all precautionary and first aid language is provided on the product label in accordance with the applicable government regulations, and shown in Section 15 of this SDS.

SDS # : D8377466 v1.0

Formulation # : 3154080 v1.0, #e0069-120B, Premix Formula #3154062 v1.0, e0069-120A

EPA ID No. : 777-114

DIN # : 02359014

UPC Code / Sizes : Wipe in Canisters and Flat Packs

Relevant identified uses of the substance or mixture and uses advised against

Identified uses

Consumer use

D8377466 v1.0

2. Hazards identification

Classification of the substance or mixture : EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Causes serious eye irritation.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention : Wear eye or face protection. Wash hands thoroughly after handling.

Response : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Not applicable.

Supplemental label elements : None known.

Hazards not otherwise classified : None known.

3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
ethanol	>1 - ≤5	64-17-5
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	0.1 - 1	68424-85-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

D8377466 v1.0

4. First aid measures

- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : No known significant effects or critical hazards.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

D8377466 v1.0

5. Fire-fighting measures

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

- Conditions for safe storage, including any incompatibilities** : Store between the following temperatures: 5 to 30°C (41 to 86°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

D8377466 v1.0

8. Exposure controls/personal protection

Control

Occupational exposure limits

Ingredient name	Exposure limits
ethanol	<p>ACGIH TLV (United States, 3/2018). STEL: 1000 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 10/2016). TWA: 1000 ppm 10 hours. TWA: 1900 mg/m³ 10 hours.</p> <p>OSHA PEL (United States, 5/2018). TWA: 1000 ppm 8 hours. TWA: 1900 mg/m³ 8 hours.</p>

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
- Skin protection**
 - Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
 - Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
 - Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

D8377466 v1.0

9. Physical and chemical properties

Appearance

Physical state	: Solid. [Presaturated Wipes]
Color	: White.
Odor	: Fragrant.
Odor threshold	: Not available.
pH	: 9.9 to 11 [Conc. (% w/w): 100%] (Liquid concentrate)
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.3°C (>199.9°F) (Liquid concentrate)
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 0.97 to 0.996 (Liquid concentrate)
Solubility	: Easily soluble in the following materials: cold water and hot water. (Liquid concentrate)
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.

Aerosol product

10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Information on toxicological effects

Acute toxicity

D8377466 v1.0

11. Toxicological information

Product/ingredient name	Result	Species	Dose	Exposure
ethanol quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides Lysol Disinfecting Wipes_FF3154080 (D8377466)_NA	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
	LD50 Dermal	Rabbit	2848 mg/kg	-
	LD50 Dermal	Rabbit	3413 mg/kg	-
	LD50 Oral	Rat	344 mg/kg	-
	LD50 Oral	Rat	398 mg/kg	-
	LC50 Inhalation Vapor	Rat	>2.04 mg/l	24 hours
	LD50 Dermal	Rat	>5000 mg/kg	-
LD50 Oral	Rat	>5000 mg/kg	-	

Conclusion/Summary : Not harmful. Information is based on toxicity test result of the concentrate of a similar product.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
ethanol quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides Lysol Disinfecting Wipes_FF3154080 (D8377466)_NA	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	100 microliters	-
	Skin - Mild irritant	Rabbit	-	400 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Severe irritant	Rabbit	-	25 milligrams	-
	Skin - Slight irritant	Rabbit	1.5	-	21 days
	Eyes - Moderate irritant	Rabbit	-	-	21 days

Conclusion/Summary

Skin : Non-irritant to skin. Information is based on toxicity test result of the concentrate of a similar product.

Eyes : Causes serious eye irritation. Information is based on toxicity test result of the concentrate of a similar product.

Respiratory : Based on available data, the classification criteria are not met.

Sensitization

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11. Toxicological information

Product/ingredient name	Route of exposure	Species	Result
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	skin	Guinea pig	Not sensitizing
Lysol Disinfecting Wipes_FF3154080 (D8377466)_NA	skin	Guinea pig	Not sensitizing

Conclusion/Summary

- Skin** : Non-sensitizer to skin. Information is based on toxicity test result of the concentrate of a similar product.
- Respiratory** : Based on available data, the classification criteria are not met.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	OECD 471 - Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Negative
	OECD 473 - Mammalian Chromosomal Aberration Test	Experiment: In vitro Subject: Mammalian-Animal	Negative
	OECD 476 - Mammalian Cell Gene Mutation Test	Experiment: In vitro Subject: Mammalian-Animal	Negative

- Conclusion/Summary** : Based on available data, the classification criteria are not met.

Carcinogenicity

Not available.

- Conclusion/Summary** : Based on available data, the classification criteria are not met.

Classification

Product/ingredient name	OSHA	IARC	NTP
ethanol	-	1	-

Reproductive toxicity

Not available.

- Conclusion/Summary** : Based on available data, the classification criteria are not met.

Teratogenicity

Not available.

- Conclusion/Summary** : Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

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11. Toxicological information

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : No known significant effects or critical hazards.
Skin contact : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

Conclusion/Summary : Based on available data, the classification criteria are not met.
General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

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11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
ethanol	7000	N/A	N/A	124.7	N/A
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	344	2848	N/A	N/A	N/A

12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ethanol	Acute EC50 17.921 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute EC50 2000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 25500 µg/l Marine water	Crustaceans - Artemia franciscana - Larvae	48 hours
	Acute LC50 11000000 µg/l Marine water	Fish - Alburnus alburnus	96 hours
	Chronic NOEC 4.995 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 100 µl/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	Acute EC50 0.016 mg/l	Daphnia	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic EC10 0.009 mg/l	Algae	72 hours

Conclusion/Summary : Based on available data, the classification criteria are not met.

Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	-	-	Readily

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
ethanol	-0.35	-	low

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

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13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

	TDG Classification	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Additional information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

15. Regulatory information

U.S. Federal regulations :

- Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed
- Clean Air Act Section 602 Class I Substances** : Not listed
- Clean Air Act Section 602 Class II Substances** : Not listed
- DEA List I Chemicals (Precursor Chemicals)** : Not listed

Code # : FF3154080
(D8377466)_NA

SDS # : D8377466 v1.0

Date of issue : 10/06/2020

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15. Regulatory information

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : EYE IRRITATION - Category 2A

Composition/information on ingredients

Name	%	Classification
ethanol	>1 - ≤5	FLAMMABLE LIQUIDS - Category 2 EYE IRRITATION - Category 2A
quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	0.1 - <1	ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A

State regulations

Massachusetts : The following components are listed: ETHYL ALCOHOL; DENATURED ALCOHOL

New York : None of the components are listed.

New Jersey : The following components are listed: ETHYL ALCOHOL; ALCOHOL

Pennsylvania : The following components are listed: DENATURED ALCOHOL; ETHANOL

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

Label elements

CCCR

Signal word : CAUTION

Hazard statements : May cause eye irritation.

Precautionary measures : KEEP OUT OF REACH OF CHILDREN
Avoid contact with eyes. Wash hands after use.

EPA

Signal word: : CAUTION

Hazard statements : May cause eye irritation

Special Inert substance. : No known significant effects or critical hazards.

Precautionary measures : KEEP OUT OF REACH OF CHILDREN
Avoid contact with eyes. Wash hands after use.

Skin sensitizer : No known significant effects or critical hazards.

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15. Regulatory information

Additional information / Recommendations

- Additional information** : No known significant effects or critical hazards.
Recommendations : No known significant effects or critical hazards.
Recommendations : No known significant effects or critical hazards.

16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	1
Flammability		0
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



NFPA (30B) aerosol Flammability Not applicable

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

- Key to abbreviations**
- : ATE = Acute Toxicity Estimate
 - : BCF = Bioconcentration Factor
 - : GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 - : IATA = International Air Transport Association
 - : IBC = Intermediate Bulk Container
 - : IMDG = International Maritime Dangerous Goods
 - : LogPow = logarithm of the octanol/water partition coefficient
 - : MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 - : UN = United Nations

Date of issue : 10/06/2020

Date of previous issue : No previous validation

Code # : FF3154080
(D8377466)_NA

SDS # : D8377466 v1.0

Date of issue : 10/06/2020

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D8377466 v1.0

16. Other information

Version : 1
Prepared by : Reckitt Benckiser LLC.
Consumer Safety Department
1 Philips Parkway
Montvale, New Jersey 07646-1810 USA.
FAX: 201-476-7770

✔ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.



RB is a member of the CSPA Product Care Product Stewardship Program.

7.) PLEDGE

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Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



PLEDGE® FURNITURE SPRAY ENHANCING POLISH - LEMON

Version 1.8

Print Date 06/01/2018

Revision Date 10/25/2017

SDS Number 350000032815

GEN_SOF Number 58820

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

- Product name** : PLEDGE® FURNITURE SPRAY ENHANCING POLISH - LEMON
- Recommended use** : Furniture Polish/Cleaner
- Restrictions on use** : Use only as directed on label
- Manufacturer, importer, supplier** : S.C. Johnson & Son, Inc.
1525 Howe Street
Racine WI 53403-2236
- Telephone** : +1-800-558-5252
- Emergency telephone number** : 24 Hour Medical Emergency Phone: (866)231-5406
24 Hour International Emergency Phone: (703)527-3887
24 Hour Transport Emergency Phone: (800)424-9300

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Globally Harmonized System (GHS) Classification

Hazard classification	Hazard category	Hazards identification
Gases under pressure	Compressed gas	Contains gas under pressure; may explode if heated.

Labelling

Hazard symbols

Gas cylinder

Signal word

Warning

Hazard statements

Contains gas under pressure; may explode if heated.

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Precautionary statements

Protect from sunlight. Store in a well-ventilated place.

Other hazards

: Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.
Excessive exposure to spray mist, fog or vapour may cause respiratory irritation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No.	Weight percent
Hydrocarbons, C7-C9, isoalkanes	64741-66-8	10.00 - 30.00

The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Description of first aid measures

Eye contact : No special requirements

Skin contact : No special requirements

Inhalation : No special requirements.

Ingestion : No special requirements

Most important symptoms and effects, both acute and delayed

Eyes : May irritate eyes.

Skin effect : No adverse effects expected when used as directed.

Inhalation : Intentional misuse by deliberately concentrating and inhaling contents can be harmful or fatal.
Excessive exposure to spray mist, fog or vapour may cause

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respiratory irritation.

Ingestion : No adverse effects expected when used as directed.

Indication of any immediate medical attention and special treatment needed

See Description of first aid measures unless otherwise stated.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards during firefighting : Aerosol Product - Containers may rocket or explode in heat of fire.

Further information : Fight fire from maximum distance or protected area. Although this product has a flash point below 200 Deg F, it is an aqueous solution containing an alcohol and does not sustain combustion. Cool and use caution when approaching or handling fire-exposed containers. Fight fire with normal precautions from a reasonable distance. Standard procedure for chemical fires. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Remove all sources of ignition.
Wash thoroughly after handling.

Environmental precautions : Outside of normal use, avoid release to the environment.

Methods and materials for containment and cleaning up : Sweep up and shovel into suitable containers for disposal.
Clean residue from spill site.

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7. HANDLING AND STORAGE

Handling

Precautions for safe handling : Avoid contact with skin, eyes and clothing.
For personal protection see section 8.
KEEP OUT OF REACH OF CHILDREN AND PETS.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Storage

Requirements for storage areas and containers : Protect from sunlight.
Store in a well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

ACGIH or OSHA exposure limits have not been established for this product or reportable ingredients unless noted in the table above.

Personal protective equipment

Respiratory protection : No special requirements.

Hand protection : No special requirements.

Eye protection : No special requirements.

Skin and body protection : No special requirements.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form : aerosol

Color : white

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Odour	: Citrus
Odour Threshold	: Test not applicable for this product type
pH	: 7 at (20 °C) (not an aqueous solution)
Melting point/freezing point	: Test not applicable for this product type
Initial boiling point and boiling range	: 100 °C
Flash point	: -1 °C 30.2 °F Method: Tag Closed Cup (TCC) liquid
Evaporation rate	: Test not applicable for this product type
Flammability (solid, gas)	: Does not sustain combustion.
Upper/lower flammability or explosive limits	: Test not applicable for this product type
Vapour pressure	: Test not applicable for this product type
Vapour density	: Test not applicable for this product type
Relative density	: 0.95 g/cm ³ at 20 °C
Solubility(ies)	: immiscible

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Partition coefficient: n-octanol/water	:	Test not applicable for this product type	:
Auto-ignition temperature	:	The substance or mixture is not classified as self heating.	:
Decomposition temperature	:		:
Viscosity, dynamic	:	Test not applicable for this product type	:
Viscosity, kinematic	:	Test not applicable for this product type	:
Oxidizing properties	:	Test not applicable for this product type	:
Volatile Organic Compounds Total VOC (wt. %)*	:	11.2 % - additional exemptions may apply *as defined by US Federal and State Consumer Product Regulations	:
Other information	:	None identified	:

10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.	:
Chemical stability	:	Stable under recommended storage conditions.	:
Possibility of hazardous reactions	:	Stable under recommended storage conditions.	:
Conditions to avoid	:	Direct sources of heat.	:
Incompatible materials	:	Strong oxidizing agents Do not mix with bleach or any other household cleaners. Strong bases	:

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Hazardous decomposition products : Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50 > 5000 mg/kg

Acute inhalation toxicity : LC50 > 10 mg/L

Acute dermal toxicity : LD50 > 5000 mg/kg

GHS Properties	Classification	Routes of entry
Acute toxicity	No classification proposed	Oral
Acute toxicity	No classification proposed	Dermal
Acute toxicity	No classification proposed	Inhalation - Dust and Mist
Acute toxicity	No classification proposed	Inhalation - Vapour
Acute toxicity	No classification proposed	Inhalation - Gas
Skin corrosion/irritation	No classification proposed	-
Serious eye damage/eye irritation	No classification proposed	-
Skin sensitisation	No classification proposed	-
Respiratory sensitisation	No classification proposed	-
Germ cell mutagenicity	No classification proposed	-
Carcinogenicity	No classification proposed	-
Reproductive toxicity	No classification proposed	-
Specific target organ toxicity - single	No classification proposed	-

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exposure		
Specific target organ toxicity - repeated exposure	No classification proposed	-
Aspiration hazard	No classification proposed	-

Aggravated Medical Condition : None known.

12. ECOLOGICAL INFORMATION

Product : The product itself has not been tested.

Toxicity

The ingredients in this formula have been reviewed and no adverse impact to the environment is expected when used according to label directions.

Toxicity to fish

Components	End point	Species	Value	Exposure time
Hydrocarbons, C7-C9, isoalkanes	No data available			

Toxicity to aquatic invertebrates

Components	End point	Species	Value	Exposure time
Hydrocarbons, C7-C9, isoalkanes	EC50	Daphnia magna (Water flea)	2.4 mg/l	48 h

Toxicity to aquatic plants

Components	End point	Species	Value	Exposure time
Hydrocarbons, C7-C9, isoalkanes	EC50	Pseudokirchneriella subcapitata	29 mg/l	96 h

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Persistence and degradability

Component	Biodegradation	Exposure time	Summary
Hydrocarbons, C7-C9, isoalkanes	22 %	28 d	Not readily biodegradable.

Bioaccumulative potential

Component	Bioconcentration factor (BCF)	Partition Coefficient n-Octanol/water (log)
Hydrocarbons, C7-C9, isoalkanes	No data available	No data available

Mobility

Component	End point	Value
Hydrocarbons, C7-C9, isoalkanes	log Koc	> 1.783 - < 2.36

PBT and vPvB assessment

Component	Results
Hydrocarbons, C7-C9, isoalkanes	Not fulfilling PBT and vPvB criteria

Other adverse effects : None known.

13. DISPOSAL CONSIDERATIONS

Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Please refer to the Bill of Lading/receiving documents for up-to-date shipping information.

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	Land transport	Sea transport	Air transport
UN number	1950	1950	1950
UN proper shipping name	UN 1950 AEROSOLS, non-flammable, 2.2	UN 1950 AEROSOLS, non-flammable, 2.2	UN 1950 AEROSOLS, non-flammable, 2.2
Transport hazard class(es)	2.2	2	2.2
Packing group	-	-	-
Environmental hazards	-	-	-
Special precautions for user	Limited quantities derogation may be applicable to this product, please check transport documents.	Limited quantities derogation may be applicable to this product, please check transport documents.	Limited quantities derogation may be applicable to this product, please check transport documents.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Product not transported as bulk.	Product not transported as bulk.	Product not transported as bulk.

15. REGULATORY INFORMATION

Notification status : All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Notification status : All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).

California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.

State Right To Know

Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



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No components are subject to the Massachusetts Right to Know Act.		
No components are subject to the Minnesota "Right To Know" Act		
No components are subject to the New Jersey "Right To Know" Act		
Pennsylvania RTKL	Water	7732-18-5
	Hydrocarbons, C7-C9, isoalkanes	64741-66-8
	Proprietary Lubricant Blend	

16. OTHER INFORMATION

HMIS Ratings

Health	0
Flammability	2
Reactivity	0

NFPA Ratings

Health	0
Fire	3
Reactivity	0
Special	-

This information is being provided in accordance with the Occupational Safety and Health Administration (OSHA) regulation (29 CFR 1910.1200). The information supplied is designed for workplaces where product use and frequency of exposure exceeds that established for the labeled consumer use.

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by	SC Johnson Global Safety Assessment & Regulatory Affairs (GSARA)
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Safety Data Sheet

according to Hazard Communication Standard; 29 CFR 1910.1200



PLEDGE® FURNITURE SPRAY ENHANCING POLISH - LEMON

Version 1.8

Print Date 06/01/2018

Revision Date 10/25/2017

SDS Number 350000032815

GEN_SOF Number 58820

8.) TONER (KYOCERA)

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Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

used for: bizhub C554/C454/C364/C284/C224, C554e/C454e/C364e/C284e/C224e, 554e/454e/364e/284e/224e, C281/C221/C221s

Supplier Identification:

Konica Minolta Business Solutions (Canada), Ltd.
5875 Explorer Drive Mississauga, Ontario L4W 0E1
Telephone: (905)890-6600 Facsimile: (905)283-2511

Emergency Telephone No.

CHEMTREC
Telephone: 1-800-424-9300

WHMIS: This product is NOT subject to the controlled products regulations

2. HAZARDS IDENTIFICATION

Regulation (EC) No 1272/2008

Classification: Not classified as dangerous.

Hazard Communication Standard (USA)

Classification: Not classified as dangerous.

LABEL ELEMENTS

Precautionary pictograms: -
Signal word: -
Hazard Statement: -
Precautionary Statements: -

Other Hazards

None



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

3. COMPOSITION / INFORMATION ON INGREDIENTS

Major Ingredients:

[Generic Name]	[CAS No.]	[%]
Substrate		?>95
Aluminium drum	7429-90-5	
Coating layer		less than 5
Polycarbonate	+++	
OPC compound	+++	
Organic pigment	+++	

+++ : Supplier's confidential information

Hazardous Ingredients:

None present

4. FIRST-AID MEASURES

Symptoms of Overexposure: No symptoms expected with intended use.

Routes of Entry: None

Information

Inhalation: No treatment is required.

Skin Contact: No treatment is required.

Eye Contact: No treatment is required.

Ingestion: No treatment is required.

Note to Physician: None

5. FIRE-FIGHTING MEASURESSuitable Extinguishing Media: CO₂, water, foam and dry chemical

Extinguishing Media to Avoid: None

Special Firefighting Procedures: None

Fire and Explosion Hazards: This material has no unusual fire or explosive hazards.

Protection of Firefighters: No special equipment is required.



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Not applicable with intended use.

Environmental Precautions: Not applicable with intended use.

Methods for Cleaning Up: Not applicable with intended use.

7. HANDLING AND STORAGE

Handling

Technical Measures: None

Precautions: This product will be scorched in the case of fire.

Safe Handling Advice: None

Storage

Technical Measures: None

Storage Conditions: Keep and Store in a cool and dry place.

Incompatible Products: None

Packaging Materials: None

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures

Ventilation: None required with intended use.

Control Parameters

ACGIH-TLV (USA): Not Applicable

OSHA-PEL (USA): Not Applicable

DFG-MAK (EC): Not Applicable

Safe Work Australia-TWA: Not Applicable

Personal Protective Equipment

None required when used as intended in Konica Minolta equipment.

Hygiene Measures: Wash hands after handling.



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical State: Solid Form: Cylinder	Color: Green
Odor:	Almost odorless
Results of the coated compounds on the aluminum substrate.	
Boiling Point(°C):	Not applicable
Melting Point/Softening Point:	No data available
Flash Point:	Not applicable
pH:	Not applicable
Explosion Properties:	Not applicable
Upper/ lower flammability or explosive limits:	No data available
Density(g/cm ³):	1.2
Solubility in water:	Insoluble
Flammability:	Not applicable
Oxidizing Properties:	No data available
Auto-Ignition Temperature(°C):	No data available
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Partition Coefficient, n-Octanol/Water:	Not applicable
Decomposition temperature:	Not applicable
(*= Based on data for other Konica Minolta Products with similar ingredients)	

10. STABILITY AND REACTIVITY

Reactivity:	None
Stability:	Stable
Hazardous Reactions:	None
Conditions to avoid:	None
Materials to Avoid:	None
Hazardous Decomposition Products:	CO, CO2



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

11. TOXICOLOGICAL INFORMATION

Health Effects from Exposure: No symptoms expected with intended use.

Toxicological Data

Result of the coated compounds on the aluminum substrate

Actual Toxicity:

Inhalation, LC50(mg/l):	Not applicable
Ingestion(oral), LD50(mg/kg):	No data available
Dermal, LD50(mg/kg):	Not applicable
Eye irritation:	No data available
Skin irritation:	No data available
Skin sensitizer:	No data available
Mutagenicity:	Negative (AMES test)

Local Effects: No data available

Chronic Toxicity or Long Term Toxicity: None

Carcinogenicity

IARC Monographs:	Not listed
NTP(USA):	Not listed
OSHA Regulated(USA):	Not listed

12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATION

Appropriate Methods of Disposal

Waste may be disposed or incinerated under conditions which meet all federal, state and local environmental regulations.

14. TRANSPORT INFORMATION

Special Precautions: None

Information on Code and Classifications According to International Regulations

UN Classification: None

Further information: Not a dangerous good under IATA or IMDG.

Hazchem code (Austl.): None



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

15. REGULATORY INFORMATION

US Information

California Proposition 65:

This product contains no chemical substances subject to California Proposition 65.

CERCLA(Comprehensive Environmental Response Compensation and Liability Act): None.

SARA Title III (Superfund Amendments and Reauthorization Act) 302 Extreme Hazardous Substance: None.

311/312 Hazard Categories: None.

313 Reportable Ingredients: None.

EU Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- Regulation (EC) No 2037/2000 of the European Parliament and of the Council on Substances That Deplete the Ozone Layer: Not applicable
 - Regulation (EC) No 850/2004 of the European Parliament and of the Council on Persistent Organic Pollutants and Amending Directive 79/117/EEC (POPs): Not applicable
 - Regulation (EU) No 649/2012 of the European Parliament and of the Council on Concerning the Export and Import of Dangerous Chemicals (PIC): Not applicable
 - Directive 2012/18/EU of the European Parliament and of the Council on the Control of Major-Accident Hazards Involving Dangerous Substances, Amending and Subsequently Repealing Council Directive 96/82/EC, (Seveso III): Not applicable
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council:
- Annex XIV- List of Substances Subject To Authorization: Not applicable
 - Annex XVII- Restrictions on the Manufacture, Placing on the Market and Use of Certain Dangerous Substances, Preparations and Articles: Not applicable

For this product a chemical safety assessment was not carried out.



Product Name: DRUM (PHOTOCONDUCTOR)
DR512/DR512K

Prepared Date: 9-Jun-2011

Revised Date: 1-Oct-19

16. OTHER INFORMATION

NFPA Hazard Rating: The National Fire Protection Agency(USA): Health: 0 Flammability: 1 Reactivity: 0
HMIS RATING: The National Paint and Coating Association(USA): Health: 0 Flammability: 1 Reactivity: 0

Recommended Uses: Photoconductor for Electrophotographic Equipment

Abbreviations:

ACGIH-TWA: Threshold Limit Value of American Conference of Government Industrial Hygienists

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

DFG-MAK: Maximale Arbeitsplatz-Konzentration by Deutsche Forschungsgemeinschaft

DGR: Dangerous Goods Regulations

EINECS: European Inventory of Existing Commercial Chemical Substances

H-Code: Hazard Code

HMIS: Hazardous Materials Identification System

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association

IMDG: International Maritime Dangerous Goods Code

NTP: National Toxicology Program

OEL: Occupational exposure limit

OSHA: Occupational Safety and Health Administration

PBT: Persistent, Bioaccumulative and Toxic

SARA: Superfund Amendments and Reauthorization Act

TSCA: Toxic Substances Control Act

vPvB: very Persistent and very Bioaccumulative

Revision Information: Regular revision on revised date.

Literature References:

ANSI Z400.1-1993

ISO 11014-1

Commission Directive 91/155/EEC

Restrictions:

The above information is believed to be accurate and represents the best information currently available to Our Corporation. However, Our Corporation makes no warranty with respect to such information, and Our Corporation assumes no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes.



KONICA MINOLTA

SAFETY DATA SHEET

Page: 1 of 10

SDS No: MFP-0412

Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: TN513/TN322

used for: bizhub 554e/454e/364e/284e/224e

Supplier Identification:

Konica Minolta Business Solutions (Canada), Ltd.
5875 Explorer Drive Mississauga, Ontario L4W 0E1
Telephone: (905)890-6600 Facsimile: (905)283-2511

Emergency Telephone No.

CHEMTREC

Telephone: 1-800-424-9300

WHMIS: This product is NOT subject to the controlled products regulations

2. HAZARDS IDENTIFICATION

Regulation (EC) No 1272/2008

Classification: Not classified as dangerous.

Hazard Communication Standard (USA)

Classification: Not classified as dangerous.

LABEL ELEMENTS

Precautionary pictograms: -

Signal word: -

Hazard Statement: -

Precautionary Statements: -

Other Hazards

Dust explosion (like most finely divided organic powders).



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance [] Preparation [X]

Major Ingredients:

[Generic Name]	[CAS No.]	[%]
Styrene acrylic resin	+++	60-70
Ferrite Iron oxide	1309-37-1	5-15
Manganese oxide	1344-43-0	1-10
Wax	+++	1-10
Carbon black	1333-86-4	1-10
Wax-2	+++	1-10
Amorphous silica	7631-86-9	1-10
Titanium dioxide	13463-67-7	Less than 1

+++ : Supplier's confidential information

Hazardous Ingredients:

Chemical Name: Carbon Black		
	CAS No.: 1333-86-4	
	EINECS-No.: 215-609-9	REACH Registration number: 01-2119384822-32-XXXX
	NTP(USA): Not listed	IARC Monographs: Group 2B
	California Proposition 65(USA): Listed	
	Symbol(EC): Not listed	H code(EC): Not listed
	DFG-MAK(GER): III 3B	
Chemical Name: Manganese oxide		
	CAS No.: 1344-43-0	EINECS-No.: 215-695-8
	Symbol(EC): Not listed	H code(EC): Not listed
Chemical Name: Titanium dioxide		
	CAS No.: 13463-67-7	EINECS-No.: 236-675-5
	NTP(USA): Not listed	IARC Monographs: Group 2B
	Symbol(EC): Not listed	H code(EC): Not listed



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

4. FIRST-AID MEASURES

Ingestion:	Wash out mouth with water. Drink one or two glasses of water. If symptoms occur, get medical attention.
Inhalation:	Move victim to fresh air immediately. If symptoms occur, get medical attention.
Eye Contact:	Immediately flush eyes with plenty of water for 15 minutes. If symptoms occur, get medical attention.
Skin Contact:	Wash with water and mild soap.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media: CO₂, water spray, foam and dry chemical
Extinguishing Media to Avoid: Full water jet
Fire and Explosion Hazards: If dispersed in air, like most finely divided organic powders, may form an explosive mixture.
Protection of Firefighters: Use self-contained breathing apparatus(SCBA).

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:	None
Environmental Precautions:	None
Methods for Cleaning Up:	Wear personal protective equipment (See Section 8). Vacuum or sweep material and place in a bag and hold for waste disposal. Use vacuum equipped with High Efficiency Particulate Air(HEPA) filter. Vacuum should be electrically bonded and grounded to dispel static electricity. To avoid dust generation, do not sweep dry.

7. HANDLING AND STORAGE

Handling

Technical Measures:	None
Precautions:	Do not breathe dust. Avoid contact with eyes.
Safe Handling Advice:	Try not to disperse the particulates.

Storage

Technical Measures:	None
Storage Conditions:	Keep container closed. Store in a cool and dry place. Keep out of reach of children.
Incompatible Products:	None
Packaging Materials:	Bottles or Cartridge designated by Konica Minolta



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures

Ventilation: None required with intended use.

Control Parameters (As total dust)

ACGIH-TLV (USA): 10mg/m³ (Inhalable particles), 3.0 mg/m³ (Respirable particles)OSHA-PEL (USA): 15mg/m³ (Total dusts), 5.0 mg/m³ (Respirable fraction)DFG-MAK (GER): 4mg/m³ (Inhalable fraction), 1.5mg/m³ (Respirable fraction)Safe Work Australia-TWA: 10mg/m³

Control Parameters (As Ingredients: Carbon black)

ACGIH-TLV (USA): 3mg/m³OSHA Z-Table (USA): 3.5mg/m³Safe Work Australia-TWA: 3mg/m³

Control Parameters (As Ingredients: Titanium dioxide)

ACGIH-TLV(USA): 10mg/m³OSHA Z-Tables(USA): 15mg/m³Safe Work Australia-TWA: 10mg/m³

Control Parameters (As Ingredients: Manganese oxide)

ACGIH-TLV(USA): 0.1mg/m³(Mn;Inharable Fraction)0.02mg/m³(Mn;Respirable Fraction)OSHA Z-Tables(USA):ceiling 5mg/m³Safe Work Australia-TWA: 1mg/m³(Mn)

Personal Protective Equipment

Not required under normal conditions. For use other than in normal operating procedures (such as in the event of large spill), goggles and respirators may be required.

Hygiene Measures:

Wash hands after handling.



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	
Physical State: Solid	Color: Black
Form: Powder (mean dia. is 5-10 um by volume)	
Odor:	Almost Odorless
PH:	Not applicable
Boiling Point(°C):	Not applicable
Melting Point(°C)/[F]:	Around No data available /[] (Softening Point)
Flash Point(°C):	Not applicable
Auto-Ignition Temperature(°C):	No data available
Upper/ lower flammability or explosive limits:	No data available
Explosion Properties:	No data available
Evaporation rate:	No data available
Vapor Pressure:	Not applicable
Vapor Density:	Not applicable
Specific Gravity:	1.2
Solubility:	Insoluble in water
Partition Coefficient, n-Octanol/Water:	Not applicable
Decomposition temperature:	Not applicable



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

10. STABILITY AND REACTIVITY

Reactivity:	None
Stability:	Stable except above 200C(392F)
Hazardous Reactions:	Dust explosion, like most finely divided organic powders.
Conditions to avoid:	Electric discharge, throwing into fire.
Materials to Avoid:	Oxidizing materials
Hazardous Decomposition Products:	CO, CO ₂ , NO _x and smoke
Hazardous Polymerization:	Will not occur



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

11. TOXICOLOGICAL INFORMATION

Actue Toxicity:

Ingestion(oral), LD50(mg/kg):	>2000 (Rat) *
Dermal, LD50(mg/kg):	No data available
Inhalation, LC50(mg/l):	>5.13 (Rat,4hour) *

(This was the highest attainable concentration.)

Eye irritation:	Practically None irritant (Rabbit) *
Skin irritation:	None irritant (Rabbit) *
Skin sensitizer:	Non sensitizer (Mouse) *

Local Effects: see Chronic Toxicity or Long term Toxicity

Chronic Toxicity or Long Term Toxicity:

"In a two-year inhalation study of chronic toxicity and carcinogenicity using a typical toner in rats, there were no lung changes at all in the lowest exposure level (1mg/m³), the most relevant level to potential human exposures. A minimal to mild degree of fibrosis was noted in 22% of the animals at the middle exposure level (4mg/m³), and a mild to moderate degree of fibrosis was observed in 92% of the rats at the highest exposure level(16mg/m³). The lung changes observed in the higher exposure groups are interpreted in terms of ""lung overloading"", a series of generic responses to the presence of large quantities of respirable, insoluble and relatively benign dusts retained for extended time periods in the lungs. Lung tumor frequency was unchanged among rats exposed to toner at the three exposure levels, and for air-only control rats."

Carcinogenicity

The IARC reevaluated carbon black as a Group 2B carcinogen (possible human carcinogen). This evaluation is given to Carbon Black for which there is inadequate human evidence, but sufficient animal evidence. The latter is based upon the development of lung tumors in rats receiving chronic inhalation exposures to free carbon black at levels that induce particle overload of the lung.

Studies performed in animal models other than rats have not demonstrated an association between carbon black and lung tumors. Moreover, a two-year cancer bioassay using a typical toner preparation containing carbon black demonstrated no association between toner exposure and tumor development in rats.

The IARC reevaluated titanium dioxide as a Group 2B carcinogen (possible human carcinogen). In animal chronic inhalation studies, the tumor formulation observed in only rats with animal chronic inhalation study are attributed to "lung overloading", a generic response to excessive amounts of any dust retained in the lungs for a prolonged interval. Use of this product, as intended, dose not result in inhalation of excessive dust. Epidemiological study to date have not revealed any evidence of the relation between exposure to titanium dioxide and diseases of the respiratory tract beyond general effects of dust.

Mutagenicity: Negative (AMES test)

Teratogenicity: No data available

(*= Based on data for other Konica Minolta Products with similar ingredients)



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

12. ECOLOGICAL INFORMATION

No data are available on the adverse effects of this material on the environment.

Ecotoxicity:	No data available
Mobility:	No data available
Persistence and degradability:	No data available
Bioaccumulative potential:	No data available

13. DISPOSAL CONSIDERATION

When disposing of the waste or recovered material, consult federal, state and/or local regulations for the proper disposal method.

14. TRANSPORT INFORMATION

Information on Code and Classifications According to International Regulations

UN Classification: None
Further information: Not a dangerous good under IATA or IMDG.
Hazchem code (Austl.): None

15. REGULATORY INFORMATION

US Information

TSCA (Toxic Substances Control Act):

All chemical substances in this product comply with all applicable rules or order under TSCA.

California Proposition 65:

Ingredient carbon black subject to California Proposition 65 is bound in polymer-matrices so that warnings are not required.

CERCLA(Comprehensive Environmental Response Compensation and Liability Act): None.

SARA Title III (Superfund Amendments and Reauthorization Act)302 Extreme Hazardous Substance: None.

311/312 Hazard Categories: None.

313 Reportable Ingredients: None.

EU Information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

- Regulation (EC) No 2037/2000 of the European Parliament and of the Council on Substances That Deplete the Ozone Layer: Not applicable
- Regulation (EC) No 850/2004 of the European Parliament and of the Council on Persistent Organic Pollutants and Amending Directive 79/117/EEC (POPs): Not applicable
- Regulation (EU) No 649/2012 of the European Parliament and of the Council on Concerning the Export and Import of Dangerous Chemicals (PIC): Not applicable
- Directive 2012/18/EU of the European Parliament and of the Council on the Control of Major-Accident Hazards Involving Dangerous Substances, Amending and Subsequently Repealing Council Directive 96/82/EC, (Seveso III): Not applicable



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

15. REGULATORY INFORMATION CONTINUED

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council:

- Annex XIV- List of Substances Subject To Authorization: Not applicable

- Annex XVII- Restrictions on the Manufacture, Placing on the Market and Use of Certain Dangerous Substances, Preparations and Articles: Not applicable

For this product a chemical safety assessment was not carried out.

16. OTHER INFORMATION

HMIS Rating: The National Paint and Coating Association (USA): Health: 1 Flammability: 1 Reactivity: 0

Explanation of term: IARC 2B means 'possible human carcinogen'.

Abbreviations:

ACGIH-TWA: Threshold Limit Value of American Conference of Government Industrial Hygienists

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

DFG-MAK: Maximale Arbeitsplatz-Konzentration by Deutsche Forschungsgemeinschaft

DGR: Dangerous Goods Regulations

EINECS: European Inventory of Existing Commercial Chemical Substances

H-Code: Hazard Code

HMIS: Hazardous Materials Identification System

IARC: International Agency for Research on Cancer

IATA: International Air Transport Association

IMDG: International Maritime Dangerous Goods Code

NTP: National Toxicology Program

OEL: Occupational exposure limit

OSHA: Occupational Safety and Health Administration

PBT: Persistent, Bioaccumulative and Toxic

SARA: Superfund Amendments and Reauthorization Act

TSCA: Toxic Substances Control Act

vPvB: very Persistent and very Bioaccumulative



Product Name: TN513/TN322

Prepared Date: 4-Nov-2010

Revised Date: 01-Oct-19

16. OTHER INFORMATION CONTINUED

Revision Information: Regular revision on revised date.

Literature References:

ANSI Z400.1-1993

ISO 11014-1

Commission Directive 91/155/EEC

IARC(2010): IARC monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, Vol. 93, Carbon Black, Titanium Dioxide, and Talc, Lyon, pp. 43-191

H.Muhle, B.Bellmann, O.Creutzenberg, C.Dasenbrock, H.Ernst, R.Kilpper, J.C.MacKenzie, P.Morrow, U.Mohr, S.Takenaka, and R.Mermelstein(1991)

Pulmonary Response to Toner upon Chronic Inhalation Exposure in Rats. Fundamental and Applied Toxicology 17, pp.280-299.

NIOSH CURRENT INTELLIGENCE BULLETIN: Evaluation of Health Hazard and Recommendation for Occupational Exposure to Titanium Dioxide: DRAFT

Restrictions:

The above information is believed to be accurate and represents the best information currently available to Our Corporation. However, Our Corporation makes no warranty with respect to such information, and Our Corporation assumes no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes.

E. PIPE MATERIALS

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1.) ALUMINIZED STEEL DRAIN PIPE

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Aluminized Steel Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

Contech® Engineered Solutions LLC.
9025 Centre Pointe Drive
West Chester, Ohio 45069
Information: 513-645-7055

Emergency Telephone Number (ChemTel) 1-800-255-3924
The most recent version of this document can be found at www.ContechES.com

SDS CON5
Revision: Jan-19

Product(s): Aluminized steel products – **Type I and II**

Product Use: Industrial use or Construction Use

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:

Steel is considered an article under Reach regulation (REACH REGULATION (EC) No 1907/2006) and is not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008). However, Steel is not exempt as an article under OSHA's Hazard Communication Standard (29 CFR 1910.1200) due to its downstream use, thus this product is considered a mixture and a hazardous material. Therefore, the categories of Health Hazards as defined in "GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

2.1 Classification of the substance or mixture

Skin Sensitization – Category 1
Specific Target Organ Toxicity Repeat Exposure – Category 1 (lung)
Carcinogen – Category 2
Toxic to Reproduction – Category 2
Eye Irritation – Category 2B
Specific Target Organ Toxicity: Single Exposure – Category 3 (Lung)
Acute Toxicity – Oral – Category 4

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause an allergic skin reaction

May cause damage to lungs and central nervous system through prolonged or repeated inhalation

Suspected of causing cancer

Suspected of damaging fertility or the unborn child

Dust, particles and fumes cause eye irritation

May cause respiratory irritation

Harmful if swallowed.

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Obtain special instructions before use.

Wear impervious gloves, eye protection, and protective clothing.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Wash contaminated clothing after use, before re-use, and before removing from workplace.

Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

Do not breathe dust / fumes.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Wash thoroughly with water.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical attention if symptoms are significant or persist.

Dispose of material in accordance with all regulations.

2.3 Additional Information

None

2.3a HNOC – Hazards not otherwise classified: None known

2.3b Unknown Acute Toxicity: None known

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	% by Weight
Iron	7439-89-6	>95
Manganese	7439-96-5	<2.0
Nickle	7440-02-0	<0.2
Metallic Coating Aluminum *	7429-90-5	100

Commercial steel products contain small amounts of various elements in addition to those specified. These small quantities frequently referred to as “trace” or “residual” elements generally originate in the raw materials used and/or are alloying metals. Individual trace elements vary in concentration by weight, and may include boron, calcium, carbon, columbium (niobium), copper, molybdenum, phosphorus, sulfur, titanium, and vanadium.

Percentages are expressed as typical ranges or maximum concentrations for the purpose of communicating the potential hazards of the finished product. Consult product specifications for specific composition information.

* Aluminized Steel Type 1 consists of aluminum coating that covers the surface of a cold roll steel sheet at a coating weight of 0.2 to 0.6 ounces per square foot. Aluminized Steel Type 2 consists of aluminum coating that covers the surface of a cold roll steel sheet with a coating weight of 0.6 to 1.02 ounces per square foot. % weight for individual components is for the metallic coating, not the base metal and coating. Some products may have a light coating of oil This coating is applied for rust inhibition and comprises less than 1% of the total weight of the product.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures

General information: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause damage to lungs through prolonged or repeated inhalation

Skin contact: May cause an allergic skin reaction

Eye Contact: Dust, particles and fumes cause eye irritation

Ingestion: Harmful if swallowed.

4.3 Indication of immediate medical attention and special treatment needed:

None known.

SECTION V - FIRE FIGHTING MEASURES

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

5.1 Flammability of the Product: Non-flammable and non-combustible. Finely divided dust is combustible.

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. IF material is in a dry state, avoid inhalation of dust. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Wear protective equipment for hands to protect from sharp edges. Wear protective equipment to protect feet and body from injury due to the weight of this material. Further processing including welding, burning, & grinding, etc., has the potential for generating high concentrations of airborne particulates and fumes and should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children...

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Iron	10 (as FeOx fume)	5.0
Manganese	5.0 (as fume, Mn compounds)	0.2
Nickel	1.0 (as Ni & insoluble) 15 (total dust) 5 (resp)	1.5 (resp metal), 0.2 (resp inorganics)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection. Cut resistant gloves have been found to offer adequate protection for incidental contact.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:

Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA’s respirator standard (29 CFR 1910.134) and ANSI’s standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information

Appearance	Form: Metallic Color: Gray Odor: None
pH-value at 20°C (68 °F):	Not applicable
Boiling point/Boiling range:	1700 °F (927 °C)
Melting point/Freezing Point:	~2750°F (~1510°C)
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	7.85 g/cc
Solubility in Water:	Insoluble
VOC content:	Not applicable

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials







Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10.6 Hazardous Decomposition or By-products

Thermal oxidative decomposition of steel products can produce flames containing oxides of iron and manganese as well as other alloying elements.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

Hazard Classification	Hazard Category		Hazard Symbols	Signal Word	Hazard Statement
	EU	OSHA			
Acute Toxicity Hazard (covers Categories 1-4)	NA*	4 ^a		Warning	Harmful if swallowed.
Eye Damage/ Irritation (covers Categories 1, 2A and 2B)	NA*	2B ^c	No Pictogram	Warning	Causes eye irritation.
Skin/Dermal Sensitization (covers Category 1)	NA*	1 ^d		Warning	May cause an allergic skin reaction.
Carcinogenicity (covers Categories 1A, 1B and 2)	NA*	2 ^e		Warning	Suspected of causing cancer.
Toxic Reproduction (covers Categories 1A, 1B and 2)	NA*	2 ^h		Warning	Suspected of damaging fertility or the unborn child.
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA*	3 ⁱ		Warning	May cause respiratory irritation.
STOT following Repeated Exposure (covers Categories 1 and 2)	NA*	1 ^j		Danger	Causes damage to lungs and central nervous system through prolonged or repeated inhalation exposure.
* Not Applicable - Semi-formed steel products are considered articles under Reach regulation (REACH REGULATION (EC) No 1907/2006) and are not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008).					

11(a-e) Information on toxicological effects (continued):

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC50 or LD50 has been established for Aluminized Steel Type 1 and Type 2. The following data has been determined for the components:

- Iron: Rat LD50 =98.6 g/kg (REACH)
Rat LD50 =1060 mg/kg (IUCLID)
Rat LD50 =984 mg/kg (IUCLID)
Rabbit LD50 =890 mg/kg (IUCLID)
Guinea Pig LD50 =20 g/kg (TOXNET)
- Nickel: LD50 >9000 mg/kg (Oral/Rat)
- Manganese: Rat LD50 > 2000 mg/kg (REACH)
Rat LD50 > 9000 mg/kg (NLM Toxnet)

b. No Skin (Dermal) Irritation data available for Aluminized Steel Type 1 and Type 2 as a mixture or its individual components.

c. No Eye Irritation data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Eye Irritation information was found for the components:

- Iron: Causes eye irritation.
- Nickel: Slight eye irritation from particulate abrasion only.

d. No Skin (Dermal) Sensitization data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Skin (Dermal) Sensitization information was found for the components:

- Nickel: May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for Aluminized Steel Type 1 and Type 2 as a mixture or its components.

f. No Germ Cell Mutagenicity data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- Iron: IUCLID has found some positive and negative findings in vitro.
- Nickel: EU RAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list Aluminized Steel Type 1 and Type 2 as carcinogens. The following Carcinogenicity information was found for the components:

- Welding Fumes - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
- Nickel and certain nickel compounds – Group 2B - metallic nickel Group 1 - nickel compounds ACGIH confirmed human carcinogen. Nickel –EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.

h. No Toxic Reproduction data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following Toxic Reproductive information was found for the components:

- Nickel: Effects on fertility.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for Aluminized Steel Type 1 and Type 2 as a mixture. The following STOT following a Single Exposure data was found for the components:

- Iron: Irritating to Respiratory tract.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for Aluminized Steel Type 1 and Type 2 as a whole. The following STOT following Repeated Exposure data was found for the components:

- Nickel: Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/ m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.
- Manganese: Inhalation of metal fumes - Degenerative changes in human Brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock et al., 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects:

▫ **Inhalation:** Excessive exposure to high concentrations of metal dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 micrometer and usually between 0.02-0.05 micrometers from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese have been associated with causing metal fume fever.

▫ **Eye:** Excessive exposure to high concentrations of metal dust may cause irritation to the eyes.

▫ **Skin:** Skin contact with metal dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.

▫ **Ingestion:** Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of metal dust may cause nausea or vomiting.

Acute Effects by component:

- ▣ **Iron and iron oxides:** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.
- ▣ **Manganese and manganese oxides:** Manganese and Manganese oxide is harmful if swallowed.
- ▣ **Nickel and nickel oxides:** Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin reaction.

Delayed (chronic) Effects by component:

- ▣ **Iron and iron oxides:** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- ▣ **Manganese and manganese oxides:** Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure. Neurobehavioral alterations in worker populations exposed to manganese oxides include: speed and coordination of motor function are especially impaired.
- ▣ **Nickel and nickel oxides:** Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Nickel causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2015 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Nickel is suspected of damaging the unborn child.

SECTION XII – ECOLOGICAL INFORMATION

12(a) Ecotoxicity (aquatic & terrestrial): No Data Available for **Aluminized Steel Type 1 and Type 2** as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- ▣ **Iron Oxide:** LC50: >1000 mg/L; Fish 48 h-EC50 > 100 mg/L (Currenta, 2008k); 96 h-LC0 ≥ 50,000 mg/L. Test substance: Bayferrox 130 red (95 – 97% Fe2O3; < 4% SiO2 and Al2O3) (Bayer, 1989a).
- ▣ **Hexavalent Chrome:** EU RAR listed as category 1, found acute EC50 and LD50 to algae and invertebrates < 1 mg.
- ▣ **Nickel Oxide:** IUCLID found LC50 in fish, invertebrates and algae > 100 mg/l.

12(b) Persistence & Degradability: No Data Available for **Aluminized Steel Type 1 and Type 2** as sold/shipped or individual components.

12(c) Bioaccumulative Potential: No Data Available for **Aluminized Steel Type 1 and Type 2** as sold/shipped or individual components.

12(d) Mobility (in soil): No data available for **Aluminized Steel Type 1 and Type 2** as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12(e) Other adverse effects: None Known

Additional Information:

Hazard Category: Not Reported Signal Word: No Signal Word

Hazard Symbol: No Symbol

Hazard Statement: No Statement

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The material should be recycled whenever possible, but may be land filled. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Not applicable

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

Canada

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Hazardous Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the HPR.

15.2 US Federal Information

SARA 302/311/312/313 Components

The product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS	Chemical	% by Weight
7440-50-8	Zinc	<0.1 max
7439-96-5	Manganese	2.0 max
7440-02-0	Nickel	0.4 max

15.3 State Right to Know Laws

California Prop. 65 Components



WARNING: This product can expose you to chemicals including nickel which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION XVI – OTHER INFORMATION

Last Updated: January 28, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein.

Prepared by

CONTECH® Engineered Solutions
www.ContechES.com

End of SDS

2.) ASPHALT COATED STEEL DRAIN PIPE

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Asphalt Coated Steel Products

SAFETY DATA SHEET
(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

Contech® Engineered Solutions LLC.
9025 Centre Pointe Drive
West Chester, Ohio 45069
Information: 513-645-7055

Emergency Telephone Number (ChemTel) 1-800-255-3924
The most recent version of this document can be found at www.ContechES.com

SDS CON6
Revision: Jan-19

Product(s): Asphalt Coated (Aluminized steel products – Type II or galvanized)

Product Use: Industrial use or Construction Use

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling:

Steel is considered an article under Reach regulation (REACH REGULATION (EC) No 1907/2006) and is not subject to classification under CLP regulation (REGULATION (EC) No 1272/2008). However, Steel is not exempt as an article under OSHA's Hazard Communication Standard (29 CFR 1910.1200) due to its downstream use, thus this product is considered a mixture and a hazardous material. Therefore, the categories of Health Hazards as defined in "GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information.

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

2.1 Classification of the substance or mixture

Skin Sensitization – Category 1
Specific Target Organ Toxicity Repeat Exposure – Category 1 (lung)
Carcinogen – Category 2
Toxic to Reproduction – Category 2
Eye Irritation – Category 2B
Specific Target Organ Toxicity: Single Exposure – Category 3 (Lung)
Acute Toxicity – Oral – Category 4

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause an allergic skin reaction

May cause damage to lungs and central nervous system through prolonged or repeated inhalation

Suspected of causing cancer

Suspected of damaging fertility or the unborn child

Dust, particles and fumes cause eye irritation

May cause respiratory irritation

Harmful if swallowed.

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Obtain special instructions before use.

Wear impervious gloves, eye protection, and protective clothing.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Wash contaminated clothing after use, before re-use, and before removing from workplace.

Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

Do not breathe dust / fumes.

If swallowed: Rinse mouth. Do NOT induce vomiting.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Wash thoroughly with water.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical attention if symptoms are significant or persist.

Dispose of material in accordance with all regulations.

2.3 Additional Information

None

2.3a HNOC – Hazards not otherwise classified: None known

2.3b Unknown Acute Toxicity: None known

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS No.	% by Weight
Iron	7439-89-6	75-95
Asphalt Cement *	8052-42-4	5-20
Zinc	7440-66-6	4
Nickle	7440-02-0	<2.0
Metallic Coating (If present)		
Aluminum *	7429-90-5	100

Commercial steel products contain small amounts of various elements in addition to those specified. These small quantities frequently referred to as "trace" or "residual" elements generally originate in the raw materials used and/or are alloying metals. Individual trace elements vary in concentration by weight, and may include boron, calcium, carbon, columbium (niobium), copper, molybdenum, phosphorus, sulfur, titanium, and vanadium.

Percentages are expressed as typical ranges or maximum concentrations for the purpose of communicating the potential hazards of the finished product. Consult product specifications for specific composition information.

* Aluminized Steel Type 2 consists of aluminum coating that covers the surface of a cold roll steel sheet with a coating weight of 0.6 to 1.02 ounces per square foot. % weight for individual components is for the metallic coating, not the base metal and coating. Some products may have a light coating of oil. This coating is applied for rust inhibition and comprises less than 1% of the total weight of the product.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures

General information: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause damage to lungs through prolonged or repeated inhalation

Skin contact: May cause an allergic skin reaction

Eye Contact: Dust, particles and fumes cause eye irritation

Ingestion: Harmful if swallowed.

4.3 Indication of immediate medical attention and special treatment needed:

None known.

SECTION V - FIRE FIGHTING MEASURES

This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other processes, potentially hazardous airborne particulate and fumes may be generated. The hazards identified below are only relevant to these processes.

5.1 Flammability of the Product: Non-flammable and non-combustible. Finely divided dust is combustible.

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin. IF material is in a dry state, avoid inhalation of dust. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Wear protective equipment for hands to protect from sharp edges. Wear protective equipment to protect feet and body from injury due to the weight of this material. Further processing including welding, burning, & grinding, etc., has the potential for generating high concentrations of airborne particulates and fumes and should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children...

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	PEL (OSHA) mg/M ³	TLV (ACGIH) mg/M ³
Iron	10 (as FeOx fume)	5.0
Nickel	1.0 (as Ni & insoluble) 15 (total dust) 5 (resp)	1.5 (resp metal), 0.2 (resp inorganics)
Asphalt	5 (resp)	
Aluminum	1 (resp) 5 (fume)	
If present:		
Zinc	5.0 (as ZnO fume) 15 (total dust) 5 (resp)	2 (as ZnO)

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection. Cut resistant gloves have been found to offer adequate protection for incidental contact.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses).

Respiratory protection:

Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, air-negative-pressure purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 50 times the exposure limit. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information

Appearance	Form: Solid pipe / plate / sheets / strips Color: Black Odor: None
pH-value at 20°C (68 °F):	Not applicable
Boiling point/Boiling range:	1700 °F (927 °C)
Melting point/Freezing Point:	200 °F (93 °C) (Asphalt coating)
Flash point:	Not applicable
Auto igniting:	905 °F (485 °C)
Vapor pressure at 21°C (70°F)	Not available
Density at 25°C (77 °F):	8 g/cc
Solubility in Water:	Insoluble
VOC content:	Not applicable

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10.6 Hazardous Decomposition or By-products

Thermal oxidative decomposition of steel products can produce flames containing oxides of iron and manganese as well as other alloying elements.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11(a-e) Information on toxicological effects (continued):

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC50 or LD50 has been established for Aluminized Steel Type 2. The following data has been determined for the components:

- Iron: Rat LD50 =98.6 g/kg (REACH)
Rat LD50 =1060 mg/kg (IUCLID)
Rat LD50 =984 mg/kg (IUCLID)
Rabbit LD50 =890 mg/kg (IUCLID)
Guinea Pig LD50 =20 g/kg (TOXNET)
- Nickel: LD50 >9000 mg/kg (Oral/Rat)
- Manganese: Rat LD50 > 2000 mg/kg (REACH)
Rat LD50 > 9000 mg/kg (NLM Toxnet)

b. No Skin (Dermal) Irritation data available for Aluminized Steel Type 2 as a mixture or its individual components.

c. No Eye Irritation data available for Aluminized Steel Type 2 as a mixture. The following Eye Irritation information was found for the components:

- Iron: Causes eye irritation.
- Nickel: Slight eye irritation from particulate abrasion only.

d. No Skin (Dermal) Sensitization data available for Aluminized Steel Type 2 as a mixture. The following Skin (Dermal) Sensitization information was found for the components:

- Nickel: May cause allergic skin sensitization.

e. No Respiratory Sensitization data available for Aluminized Steel Type 2 as a mixture or its components.

f. No Germ Cell Mutagenicity data available for Aluminized Steel Type 2 as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:

- Iron: IUCLID has found some positive and negative findings in vitro.
- Nickel: EU RAR has found positive results in vitro and in vivo but insufficient data for classification.

g. Carcinogenicity: IARC, NTP, and OSHA do not list Aluminized Steel Type 2 as carcinogens. The following Carcinogenicity information was found for the components:

- Welding Fumes - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
- Nickel and certain nickel compounds – Group 2B - metallic nickel Group 1 - nickel compounds ACGIH confirmed human carcinogen. Nickel –EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.
- Asphalt Cement - IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans

h. No Toxic Reproduction data available for Aluminized Steel Type 2 as a mixture. The following Toxic Reproductive information was found for the components:

- Nickel: Effects on fertility.

i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for Aluminized Steel Type 2 as a mixture. The following STOT following a Single Exposure data was found for the components:

- Iron: Irritating to Respiratory tract.

j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for Aluminized Steel 2 as a whole. The following STOT following Repeated Exposure data was found for the components:

- Nickel: Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/ m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure indices (BEIs) with Other Worldwide Occupational Exposure Values 2009, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects:

- ▣ **Inhalation:** Excessive exposure to high concentrations of metal dust may cause irritation to the eyes, skin and mucous membranes of the upper respiratory tract. Excessive inhalation of fumes of freshly formed metal oxide particles sized below 1.5 micrometer and usually between 0.02-0.05 micrometers from many metals can produce an acute reaction known as “metal fume fever”. Symptoms consist of chills and fever (very similar to and easily confused with flu symptoms), metallic taste in the mouth, dryness and irritation of the throat followed by weakness and muscle pain. The symptoms come on in a few hours after excessive exposures and usually last from 12 to 48 hours. Long-term effects from metal fume fever have not been noted. Freshly formed oxide fumes of manganese have been associated with causing metal fume fever.
- ▣ **Eye:** Excessive exposure to high concentrations of metal dust may cause irritation to the eyes.
- ▣ **Skin:** Skin contact with metal dusts may cause irritation or sensitization, possibly leading to dermatitis. Skin contact with metallic fumes and dusts may cause physical abrasion.
- ▣ **Ingestion:** Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of metal dust may cause nausea or vomiting.

Acute Effects by component:

- ▣ **Iron and iron oxides:** Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage. Particles of iron or iron compounds, which become imbedded in the eye, may cause rust stains unless removed fairly promptly.
- ▣ **Nickel and nickel oxides:** Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin reaction.

Delayed (chronic) Effects by component:

- ▣ **Iron and iron oxides:** Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- ▣ **Nickel and nickel oxides:** Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Nickel causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2015 TLVs® and BEIs® lists insoluble nickel compounds as confirmed human carcinogens. Nickel is suspected of damaging the unborn child.

SECTION XII – ECOLOGICAL INFORMATION

12(a) Ecotoxicity (aquatic & terrestrial): No Data Available for Aluminized Steel Type 2 as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

▣ Iron Oxide: LC50: >1000 mg/L; Fish 48 h-EC50 > 100 mg/L (Currenta, 2008k); 96 h-LC0 ≥ 50,000 mg/L. Test substance: Bayferrox 130 red (95 – 97% Fe2O3; < 4% SiO2 and Al2O3) (Bayer, 1989a).

▣ Hexavalent Chrome: EU RAR listed as category 1, found acute EC50 and LD50 to algae and invertebrates < 1 mg.

▣ Nickel Oxide: IUCLID found LC50 in fish, invertebrates and algae > 100 mg/l.

12(b) Persistence & Degradability: No Data Available for Aluminized Steel Type 2 as sold/shipped or individual components.

12(c) Bioaccumulative Potential: No Data Available for Aluminized Steel Type 2 as sold/shipped or individual components.

12(d) Mobility (in soil): No data available for Aluminized Steel Type 2 as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12(e) Other adverse effects: None Known

Additional Information:

Hazard Category: Not Reported Signal Word: No Signal Word

Hazard Symbol: No Symbol

Hazard Statement: No Statement

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The material should be recycled whenever possible, but may be land filled. This product is not classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations.

Recommended cleansing agent: Not applicable

SECTION XIV – TRANSPORT INFORMATION

	DOT (U.S.)	TDG (Canada)
UN-Number	Not Regulated	Not Regulated
UN proper shipping name	Not Regulated	Not Regulated
Transport Hazard Class(es)	Not Regulated	Not Regulated
Packing Group (if applicable)	Not Regulated	Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code

Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical Canada

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Hazardous Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the HPR.

15.2 US Federal Information

SARA 302/311/312/313 Components

The product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS	Chemical	% by Weight
7440-50-8	Zinc	<0.1 max
7440-02-0	Nickel	0.4 max

15.3 State Right to Know Laws

California Prop. 65 Components



WARNING: This product can expose you to chemicals including hexavalent chromium compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION XVI – OTHER INFORMATION

Last Updated: January 24, 2019

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein.

Prepared by

CONTECH® Engineered Solutions
www.ContechES.com

End of SDS

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3.) DUCTILE IRON PIPE

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AMERICAN

DUCTILE IRON PIPE

THE RIGHT WAY

P.O. Box 2727

Birmingham, AL 35202-2727

Telephone: 1-800-442-2347

Fax: 1-800-442-2348

E-mail: adipcs@american-usa.com

WWW.AMERICAN-USA.COM

AMERICAN Ductile Iron Pipe Product Submittal Package

Cover Page Information

Generated By: Daphne Yelling

Notes: For: John Plott

This is to certify materials furnished on this project by AMERICAN will comply with the ANSI/AWWA Standards listed below. Some components and other materials, including but not limited to various fittings, flanges, gaskets, fasteners, and bolts/nuts may be globally sourced and not of domestic manufacture. ANSI/AWWA Standards are the latest revisions as of this date.

Pipe class and wall thickness may be higher than the specified project requirements in accordance with standard industry practice.

Products Submitted in this Package Include:

1. Safety Data Sheet - Ductile Iron Pipe (pg.1)

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

- Product Name** • **Ductile Iron Pipe/Castings**
- Synonyms** • DI; Ductile Iron; Nodular Iron; SGI; Spheroidal Graphite Iron

1.2 Relevant identified uses of the substance or mixture and uses advised against

- Relevant identified use(s)** • Transport of water, waste water, air.

1.3 Details of the supplier of the safety data sheet

- Manufacturer** • American Cast Iron Pipe Company
P.O. Box 2727
Birmingham, AL 35202
United States
www.american-usa.com
- Telephone (General)** • 205-325-7701

1.4 Emergency telephone number

- Manufacturer** • 205-325-7975

Section 2: Hazards Identification

EU/EEC

According to EU Directive 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

- CLP** • The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
Skin Irritation 2 - H315
Eye Irritation 2 - H319
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Specific Target Organ Toxicity Repeated Exposure 2 - H373
- DSD/DPD** • The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
Irritant (Xi)
Harmful (Xn)
R36/37/38, R48/20

2.2 Label Elements

CLP

WARNING

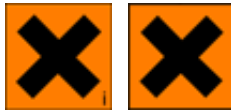


- Hazard statements**
- H315 - Causes skin irritation
 - H319 - Causes serious eye irritation
 - H335 - May cause respiratory irritation
 - H373 - May cause damage to organs (lungs) through prolonged or repeated exposure

Precautionary statements

- **Prevention**
 - P260 - Do not breathe dust/fume.
 - P264 - Wash thoroughly after handling.
 - P271 - Use only outdoors or in a well-ventilated area.
 - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- **Response**
 - P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P332+P313 - If skin irritation occurs: Get medical advice/attention.
 - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P337+P313 - If eye irritation persists: Get medical advice/attention.
 - P321 - Specific treatment, see supplemental first aid information.
- **Storage/Disposal**
 - P403 - Store in a well-ventilated place.
 - P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD



- **Risk phrases**
 - R36/37/38 - Irritating to eyes, respiratory system and skin.
 - R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
- **Safety phrases**
 - S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.3 Other Hazards

- **CLP**
 - Overexposure to thermal processing fumes may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset.
 - The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
 - According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

- **DSD/DPD**
 - Overexposure to thermal processing fumes may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset.
 - The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
 - According to European Directive 1999/45/EC this preparation is considered dangerous.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

- **OSHA HCS 2012**
 - The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
 - Skin Irritation 2 - H315

Eye Irritation 2A - H319
 Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
 Specific Target Organ Toxicity Repeated Exposure 2 - H373
 Hazards Not Otherwise Classified (Health) - Metal Fume Fever

2.2 Label elements

OSHA HCS 2012

WARNING



- Hazard statements**
- Causes skin irritation - H315
 - Causes serious eye irritation - H319
 - May cause respiratory irritation - H335
 - May cause damage to organs (lungs, central nervous system/CNS) through prolonged or repeated exposure - H373

Precautionary statements

- Prevention**
- Do not breathe dust/fume. - P260
 - Wash thoroughly after handling. - P264
 - Use only outdoors or in a well-ventilated area. - P271
 - Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response**
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
 - Call a POISON CENTER or doctor/physician if you feel unwell. - P312
 - IF ON SKIN: Wash with plenty of soap and water. - P302+P352
 - If skin irritation occurs: Get medical advice/attention. - P332+P313
 - Take off contaminated clothing and wash before reuse. - P362
 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
 - If eye irritation persists: Get medical advice/attention. - P337+P313
 - Specific treatment, see supplemental first aid information. - P321
- Storage/Disposal**
- Store in a well-ventilated place. - P403
 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012

- Overexposure to thermal processing fumes may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset. The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded. Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS

- The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.
Other Toxic Effects - D2B

2.2 Label elements

WHMIS



- Other Toxic Effects - D2B

2.3 Other hazards

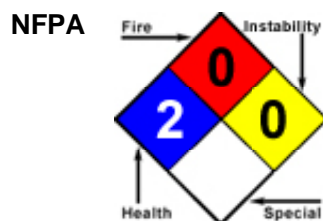
WHMIS

- Overexposure to thermal processing fumes may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset.

The material as it is shipped is not expected to be hazardous. Classifications represented are applicable when the material is cut, ground or welded.

In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information



See Section 12 for Ecological Information.

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Hazardous Components					
Chemical Name	Identifiers	%(weight)	LD50/LC50	Classifications According to Regulation/Directive	Comments
Iron	CAS:7439-89-6 EC Number:231-096-4	0% TO 94.28%	Ingestion/Oral-Rat LD50 • 30 g/kg	EU DSD/DPD: Self Classified - Xi; R37 Xn; R48/20 EU CLP: Self Classified - STOT SE 3, H335; STOT RE 2 (Lung), H373 OSHA HCS 2012: STOT SE 3: Resp. Irrit.; STOT RE 2 (Lung)	Balance
Carbon	CAS:7440-44-0 EC Number:231-153-3 UN:UN1361	3% TO 4%	NDA	EU DSD/DPD: Not Classified - Classification criteria not met EU CLP: Not Classified - Classification criteria not met OSHA HCS 2012: Not Classified - Classification criteria not met	NDA
Silicon	CAS:7440-21-3 EC Number:231-130-8 UN:UN1346	2% TO 3%	Ingestion/Oral-Rat LD50 • 3160 mg/kg	EU DSD/DPD: Self Classified - Xi; R36/37/38 EU CLP: Self Classified - Eye Irrit. 2, H319; Skin Irrit. 2, H315; STOT SE 3, H335 OSHA HCS 2012: Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit.	NDA

Manganese	CAS: 7439-96-5 EC Number: 231-105-1	0.2% TO 1%	Ingestion/Oral-Rat LD50 • 9 g/kg	EU DSD/DPD: Self Classified - N Xi; R36/38 EU CLP: Self Classified - Eye Irrit. 2, H319; Skin Irrit. 2, H315 OSHA HCS 2012: Eye Irrit. 2A; Skin Irrit. 2; STOT RE 2 (CNS)	NDA
Titanium	CAS: 7440-32-6 UN: UN1352 EINECS: 231-142-3	0% TO 0.5%	NDA	EU DSD/DPD: Not Classified - Classification criteria not met EU CLP: Not Classified - Classification criteria not met OSHA HCS 2012: Not Classified - Classification criteria not met	NDA
Magnesium	CAS: 7439-95-4 EC Number: 231-104-6 UN: UN1418	0.02% TO 0.2%	NDA	EU DSD/DPD: Annex I - F; R15 R17 (powder, pyrophoric) EU CLP: Annex VI - Water-react. 1, H260; Pyr. Sol. 1, H250 OSHA HCS 2012: Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Chrome	CAS: 7440-47-3 EC Number: 231-157-5	0% TO 0.2%	NDA	EU DSD/DPD: Not Classified - Classification criteria not met EU CLP: Not Classified - Classification criteria not met OSHA HCS 2012: Not Classified - Classification criteria not met	NDA
Copper	CAS: 7440-50-8 EC Number: 231-159-6	0% TO 0.2%	NDA	EU DSD/DPD: Not Classified - Classification criteria not met EU CLP: Not Classified - Classification criteria not met OSHA HCS 2012: Not Classified - Classification criteria not met	NDA
Oxygen	CAS: 7782-44-7 EC Number: 231-956-9 UN: UN1072	0% TO 0.2%	NDA	EU DSD/DPD: Annex I - O; R8 EU CLP: Annex VI - Ox. Gas 1, H270; Press. Gas, H280 OSHA HCS 2012: Press. Gas; Ox. Gas 1	NDA
Aluminum	CAS: 7429-90-5 EC Number: 231-072-3 UN: UN1309	0% TO 0.1%	NDA	EU DSD/DPD: Annex I - F; R11 R15 (stabilized) EU CLP: Annex VI - Water-react. 2, H261; Flam. Sol. 1, H228 OSHA HCS 2012: Water-react. 2; Flam. Sol. 1	NDA
Nickel	CAS: 7440-02-0 EC Number: 231-111-4	0% TO 0.1%	NDA	EU DSD/DPD: Annex I - Carc. Cat. 3; R40 R43 T; R48/23 EU CLP: Annex VI - Carc. 2, H351; STOT RE 1, H372; Skin Sens. 1, H317; Aquatic Chronic 3, H412 OSHA HCS 2012: Carc. 2; Skin Sens. 1A	NDA
Phosphorus	CAS: 7723-14-0 EC Number: 231-768-7 UN: UN1381	0% TO 0.1%	NDA	EU DSD/DPD: Annex I - F; R11 R16 R52-53 EU CLP: Annex VI - Flam. Sol. 1, H228; Aquatic Chronic 3, H412 OSHA HCS 2012: Eye Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Sulfur	CAS: 7704-34-9 EC Number: 231-722-6 UN: UN1350	0% TO 0.1%	NDA	EU DSD/DPD: Annex I - Xi; R38 EU CLP: Annex VI - Skin Irrit. 2, H315 OSHA HCS 2012: Eye Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Tin	CAS: 7440-31-5 EINECS: 231-141-8	0% TO 0.1%	NDA	EU DSD/DPD: Self Classified - Xi; R36/37 EU CLP: Self Classified - Eye Irrit. 2, H319; STOT SE 3, H335 OSHA HCS 2012: Eye Irrit. 2A; STOT SE 3: Resp. Irrit.	NDA

Vanadium	CAS:7440-62-2 EC Number:231-171-1 UN:UN3285	0% TO 0.1%	NDA	EU DSD/DPD: Self Classified - Xi; R36/37/38 EU CLP: Self Classified - Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3: Resp. Irrit.	NDA
Zinc	CAS:7440-66-6 EC Number:231-175-3 UN:UN1435	0% TO 0.1%	NDA	EU DSD/DPD: Annex I - N; R50-53 EU CLP: Annex VI - Water-react. 1, H260; Pyr. Sol. 1, H250; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: Skin Irrit. 2	NDA
Molybdenum	CAS:7439-98-7 EC Number:231-107-2	0% TO 0.05%	NDA	EU DSD/DPD: Self Classified - Xi; R36/37/38 EU CLP: Self Classified - Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2; STOT SE 3: Resp. Irrit.	NDA
Cerium	CAS:7440-45-1 UN:UN1333 EINECS:231-154-9	0% TO 0.01%	NDA	EU DSD/DPD: Not Classified - Data Lacking EU CLP: Not Classified - Data Lacking OSHA HCS 2012: Not Classified - Data Lacking	NDA
Lead	CAS:7439-92-1 EC Number:231-100-4 UN:UN2291	< 0.1%	NDA	EU DSD/DPD: Annex I - Repr. Cat. 1; R61 Repr. Cat. 3; R62 Xn; R20/22 R33 N; R50-53 EU CLP: Annex VI - Repr. 1A, 360Df; Acute Tox. 4* H332; Acute Tox. 4* H302; STOT RE 2* H373; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: Carc. 2; Repr. 1A	NDA
Lithium	CAS:7439-93-2 EC Number:231-102-5 UN:UN1415	< 0.1%	NDA	EU DSD/DPD: Annex I - R14 F; R15 C; R34 EU CLP: Annex VI - Water-react. 1; H260 Skin Corr. 1B; H314 EUH014 OSHA HCS 2012: Skin Corr. 1B; Eye Dam. 1	NDA
Tungsten	CAS:7440-33-7 EC Number:231-143-9	< 0.1%	NDA	EU DSD/DPD: Self Classified - Xi; R36/37 EU CLP: Self Classified - Skin Irrit. 2, H315; Eye Irrit. 2, H319 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2A	NDA

See Section 11 for Toxicological Information.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

- IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If signs/symptoms continue, get medical attention.

Skin

- For skin contact, flush with large amounts of water. If irritation persists, get medical attention.

Eye

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub or scratch your eyes. If eye irritation persists: Get medical advice/attention.

Ingestion

- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

See Section 2 for Potential Health Effects.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media ● Not combustible. Use extinguishing media suitable for surrounding fire.

Unsuitable Extinguishing Media ● None known.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards ● None known.

Hazardous Combustion Products ● Non-combustible, substance itself does not burn but may decompose upon heating to produce toxic fumes.

5.3 Advice for firefighters

- Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing.
- Fire fighters should avoid inhaling any combustion products.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions ● Avoid contact with skin and eyes during clean-up. Do not breathe dust.

Emergency Procedures ● Not applicable.

6.2 Environmental precautions

- Prevent entry into waterways and sewers.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures ● Collect dust or particulates using a vacuum cleaner with a HEPA filter. Avoid the generation of dusts during clean-up.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling ● Do not inhale dusts which may be produced during processing. Do not get into contact with eyes and skin. Use only with adequate ventilation. Keep formation of airborne dusts to a minimum. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

7.2 Conditions for safe storage, including any incompatibilities

Storage ● Guard against dust accumulation of this material. Store in a cool/low-temperature, well-ventilated, dry place.

Incompatible Materials or Ignition Sources ● None known.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Brazil	Canada Ontario	Canada Quebec	Chile
Copper (7440-50-8)	TWAs	0.2 mg/m3 TWA (fume)	Not established	0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)	0.2 mg/m3 TWAEV (fume); 1 mg/m3 TWAEV (dust and mist)	0.16 mg/m3 TWA LPP (fume); 0.8 mg/m3 TWA LPP (dust and mist, as Cu)
Phosphorus (7723-14-0)	TWAs	Not established	Not established	Not established	0.1 mg/m3 TWAEV (yellow)	Not established
Chrome (7440-47-3)	TWAs	0.5 mg/m3 TWA	Not established	0.5 mg/m3 TWA	0.5 mg/m3 TWAEV	0.4 mg/m3 TWA LPP
Aluminum (7429-90-5)	TWAs	1 mg/m3 TWA (respirable fraction)	Not established	1 mg/m3 TWA (respirable)	10 mg/m3 TWAEV	8 mg/m3 TWA LPP (metallic dust)
Molybdenum (7439-98-7)	TWAs	10 mg/m3 TWA (inhalable fraction); 3 mg/m3 TWA (respirable fraction)	Not established	10 mg/m3 TWA (metal, inhalable); 3 mg/m3 TWA (metal, respirable)	Not established	Not established
Nickel (7440-02-0)	TWAs	1.5 mg/m3 TWA (inhalable fraction)	Not established	1 mg/m3 TWA (inhalable)	1 mg/m3 TWAEV	0.8 mg/m3 TWA LPP
Tin (7440-31-5)	TWAs	2 mg/m3 TWA	Not established	2 mg/m3 TWA	2 mg/m3 TWAEV	1.6 mg/m3 TWA LPP
Vanadium (7440-62-2)	TWAs	Not established	Not established	Not established	Not established	0.04 mg/m3 TWA LPP (respirable dust and fume, as V2O5)
Lead as Lead, inorganic compounds	TWAs	0.05 mg/m3 TWA	0.1 mg/m3 TWA LT	0.05 mg/m3 TWA (designated substance regulation); 0.05 mg/m3 TWA (applies to workplaces to which the designated substance regulation does not apply)	0.05 mg/m3 TWAEV	0.12 mg/m3 TWA LPP (dust)
Tungsten (7440-33-7)	STELs	10 mg/m3 STEL	Not established	10 mg/m3 STEL	Not established	Not established
	TWAs	5 mg/m3 TWA	Not established	5 mg/m3 TWA	Not established	Not established
Manganese (7439-96-5)	TWAs	0.2 mg/m3 TWA	5 mg/m3 TWA LT (dust); 1 mg/m3 TWA LT (fume)	0.2 mg/m3 TWA	5 mg/m3 TWAEV (dust); 1 mg/m3 TWAEV (fume)	0.8 mg/m3 TWA LPP (fume); 4 mg/m3 TWA LPP (dust)
	STELs	Not established	Not established	Not established	3 mg/m3 STEV (fume)	3 mg/m3 STEL LPT (fume)
Silicon (7440-21-3)	TWAs	Not established	Not established	10 mg/m3 TWA (total dust)	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	China	NIOSH	OSHA		
Copper	STELs	2.5 mg/m3 STEL (dust); 0.6 mg/m3 STEL (fume)	Not established	Not established	Not established	

(7440-50-8)	TWAs	1 mg/m3 TWA (dust); 0.2 mg/m3 TWA (fume)	1 mg/m3 TWA (dust and mist); 0.1 mg/m3 TWA (fume)	0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dust and mist)
Phosphorus (7723-14-0)	STELs	0.1 mg/m3 STEL	Not established	Not established
	TWAs	0.05 mg/m3 TWA	Not established	0.1 mg/m3 TWA
Chrome (7440-47-3)	STELs	0.15 mg/m3 STEL	Not established	Not established
	TWAs	0.05 mg/m3 TWA	0.5 mg/m3 TWA	1 mg/m3 TWA
Aluminum (7429-90-5)	STELs	6 mg/m3 STEL (total dust)	Not established	Not established
	TWAs	3 mg/m3 TWA (total dust)	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)
Molybdenum (7439-98-7)	STELs	15 mg/m3 STEL	Not established	Not established
	TWAs	6 mg/m3 TWA	Not established	Not established
Nickel (7440-02-0)	STELs	2.5 mg/m3 STEL	Not established	Not established
	TWAs	1 mg/m3 TWA	0.015 mg/m3 TWA	1 mg/m3 TWA
Tin (7440-31-5)	TWAs	Not established	2 mg/m3 TWA	Not established
Vanadium (7440-62-2)	Ceilings	Not established	0.05 mg/m3 Ceiling (except Vanadium metal and Vanadium carbide, as V, dust and fume, 15 min) <i>as Vanadium compounds</i>	0.5 mg/m3 Ceiling (as V2O5, respirable dust); 0.1 mg/m3 Ceiling (as V2O5, fume)
	STELs	Not established	3 mg/m3 STEL (listed under Ferrovandium dust)	Not established
	TWAs	Not established	1 mg/m3 TWA (listed under Ferrovandium dust)	Not established
Lead as Lead, inorganic compounds	STELs	0.15 mg/m3 STEL (dust); 0.09 mg/m3 STEL (fume)	Not established	Not established
	TWAs	0.05 mg/m3 TWA (dust); 0.03 mg/m3 TWA (fume)	0.050 mg/m3 TWA	50 µg/m3 TWA
Tungsten (7440-33-7)	STELs	10 mg/m3 STEL	10 mg/m3 STEL	Not established
	TWAs	5 mg/m3 TWA	5 mg/m3 TWA	Not established
Manganese as Manganese compounds	STELs	0.45 mg/m3 STEL	3 mg/m3 STEL	Not established
	TWAs	0.15 mg/m3 TWA	1 mg/m3 TWA (fume)	Not established
	Ceilings	Not established	Not established	5 mg/m3 Ceiling (fume)
Silicon (7440-21-3)	TWAs	Not established	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)

Exposure Control Notations

Egypt

- Chrome (7440-47-3): **Carcinogens:** (Present)
- Lead (7439-92-1): **Carcinogens:** (Animal Carcinogen)

- Lead as Lead, inorganic compounds: **Carcinogens:** (Animal Carcinogen)

- Nickel (7440-02-0): **Carcinogens:** (Present)

Canada Ontario

- Lead (7439-92-1): **Designated Substances:** (0.05 mg/m3 TWA)

- Lead as Lead, inorganic compounds: **Designated Substances:** (0.05 mg/m3 TWA (except Tetraethyl lead, as Pb))

Canada Quebec

- Lead (7439-92-1): **Carcinogens:** (C3 carcinogen - effect detected in animals)

- Lead as Lead, inorganic compounds: **Carcinogens:** (C3 carcinogen - effect detected in animals)

Chile

- Chrome (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

- Lead as Lead, inorganic compounds: **Carcinogens:** (A3 - Animal Carcinogen (dust and fume))

- Nickel (7440-02-0): **Carcinogens:** (A1 - Confirmed Human Carcinogen)

ACGIH

- Chrome (7440-47-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

- Lead (7439-92-1): **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

- Lead as Lead, inorganic compounds: **Carcinogens:** (A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans)

- Aluminum (7429-90-5): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

- Aluminum as Aluminum insoluble compounds: **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

- Nickel (7440-02-0): **Carcinogens:** (A5 - Not Suspected as a Human Carcinogen)

Exposure Limits Supplemental

Chile

- Chrome (7440-47-3): **BEIs:** (30 µg/g Creatinine Medium: urine Time: end of shift and at end of workweek Parameter: Chromium)

- Lead (7439-92-1): **BEIs:** (40 µg/100mL Medium: blood Time: discretionary Parameter: Lead)

- Manganese (7439-96-5): **BEIs:** (40 µg/L Medium: urine Time: discretionary Parameter: Manganese)

ACGIH

- Copper (7440-50-8): **TLV Basis - Critical Effects:** (metal fume fever (fume))

- Copper as Copper Compounds: **TLV Basis - Critical Effects:** (gastrointestinal (dust and mist); irritation (dust and mist))

- Chrome (7440-47-3): **TLV Basis - Critical Effects:** (skin and upper respiratory tract irritation)

- Lead (7439-92-1): **BEIs:** (30 µg/100 ml Medium: blood Time: not critical Parameter: Lead (Note: Women of child bearing potential, whose blood Pb exceeds 10 µg/dL, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 µg/dL. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.)) | **TLV Basis - Critical Effects:** (CNS and PNS impairment; hematologic effects)

- Lead as Lead, inorganic compounds: **BEIs:** (30 µg/100 ml Medium: blood Time: not critical Parameter: Lead (Note: Women of child bearing potential, whose blood Pb exceeds 10 µg/dL, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 µg/dL. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead.)) | **TLV Basis - Critical Effects:** (CNS and PNS impairment; hematologic effects)

- Manganese (7439-96-5): **TLV Basis - Critical Effects:** (CNS impairment) | **Notice of Intended Changes (TLVs):** (0.1 mg/m3 TWA (inhalable fraction); 0.02 mg/m3 TWA (respirable fraction); A4 - not classifiable as a human carcinogen; TLV basis: CNS impairment)

- Aluminum (7429-90-5): **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)

- Aluminum as Aluminum insoluble compounds: **TLV Basis - Critical Effects:** (pneumoconiosis; lower respiratory tract irritation; neurotoxicity)

- Nickel (7440-02-0): **TLV Basis - Critical Effects:** (dermatitis; pneumoconiosis)

- Tungsten (7440-33-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation)

8.2 Exposure controls

Engineering Measures/Controls

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values.

Personal Protective Equipment

Pictograms



Respiratory

- If ventilation is not sufficient to effectively prevent buildup of dust, appropriate NIOSH/MSHA respiratory protection must be provided.

Eye/Face

- Wear safety glasses.

Hands

- Wear appropriate gloves.

Skin/Body

- Work clothing sufficient to prevent all skin contact should be worn, such as coveralls, long sleeves and cap.

Environmental Exposure Controls

- Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

VME = Valeur Moyenne d'Exposition is the maximum permissible concentration for a work day

NIOSH = National Institute of Occupational Safety and Health

TWAEV = Time-Weighted Average Exposure Value

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures.

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures.

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Solid	Appearance/Description	Dark gray solid with no odor.
Color	Dark gray.	Odor	Odorless
Particulate Type	Dust/Fume	Odor Threshold	Not relevant
General Properties			
Boiling Point	5000 F(2760 C)	Melting Point	2100 to 2280 F(1148.8889 to 1248.8889 C)
Decomposition Temperature	Not relevant	pH	Not relevant
Specific Gravity/Relative Density	7.4 Water=1	Water Solubility	Negligible < 0.1 %
Solvent Solubility	Data lacking	Viscosity	Not relevant
Explosive Properties	Not relevant.	Oxidizing Properties:	Not relevant.
Volatility			
Vapor Pressure	Not relevant	Vapor Density	Not relevant
Evaporation Rate	Not relevant		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not flammable.		
Environmental			
Octanol/Water Partition coefficient	Not relevant		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal conditions.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Avoid creating dusts.

10.5 Incompatible materials

- None known or anticipated.

10.6 Hazardous decomposition products

- No data available.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Other Material Information

- Toxicological information is not available for the material as a whole, but is provided for applicable components.

Component Name	CAS	Data
Silicon (2% TO 3%)	7440-21-3	Acute Toxicity: orl-rat LD50:3160 mg/kg; Irritation: eye-rbt 3 mg MLD
Manganese (0.2% TO 1%)	7439-96-5	Acute Toxicity: orl-rat LD50:9 gm/kg; Irritation: eye-rbt 500 mg/24H MLD; skn-rbt 500 mg/24H MLD; Reproductive: orl-rat TDLo:90 mg/kg (18D post)
Titanium (0% TO 0.5%)	7440-32-6	Reproductive: orl-rat TDLo:158 mg/kg (multigeneration)
Copper (0% TO 0.2%)	7440-50-8	Reproductive: orl-rat TDLo:1210 ug/kg (35W pre)
Oxygen (0% TO 0.2%)	7782-44-7	Reproductive: ihl-rat TCLo:10 pph/9H (22D preg)
Nickel (0% TO 0.1%)	7440-02-0	Reproductive: orl-rat TDLo:158 mg/kg (multigenerations)
Molybdenum (0% TO 0.05%)	7439-98-7	Reproductive: orl-rat TDLo:5800 ug/kg (30W pre/1-20D preg)
Lead (< 0.1%)	7439-92-1	Reproductive: ihl-rat TCLo:10 mg/m3/24H (1-21D preg)
Tungsten (< 0.1%)	7440-33-7	Irritation: eye-rbt 500 mg/24H MLD; skn-rbt 500 mg/24H MLD; Reproductive: orl-rat TDLo:1160 ug/kg (30W pre/1-20D preg)

GHS Properties	Classification
Acute toxicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Aspiration Hazard	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Carcinogenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Skin sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 2

STOT-SE	EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Respiratory sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2A

Potential Health Effects

Inhalation

Acute (Immediate)

- Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)

- Repeated and prolonged exposure to dust may cause lung injury and/or disease.

Skin

Acute (Immediate)

- Dust from this product may cause mechanical irritation.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- Dust generated from this product may cause irritation to the eyes. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)

- No data available.

Ingestion

Acute (Immediate)

- Ingestion of this product unlikely. No significant effects expected.

Chronic (Delayed)

- No applicable information found.

Carcinogenic Effects

- Welding or flame cutting may convert a fraction of the chromium to the water insoluble hexavalent (carcinogenic) form, but the chromium content of the casting is so low that overexposure is not likely.

11.2 Other information

- Overexposure to thermal processing fumes may cause metal fume fever which is an influenza like illness. Symptoms include headache, metallic taste in the mouth, cough, thirst, throat irritation, shortness of breath, fever, sweating and pain in the limbs. This illness is not permanent and recovery usually occurs within 24-48 hours after onset.

Key to abbreviations

- TD = Toxic Dose
- LD = Lethal Dose
- TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

Component	CAS	Data	Comments
Iron (0% TO 94.28%)	7439-89-6	Fish: 96 Hour(s) LC50 Fish 560 µg/L	

Copper (0% TO 0.2%)	7440-50-8	Crustacea: 48 Hour(s) EC50 Water Flea 1.6 µg/L	
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- No information available for the product.

12.2 Persistence and degradability

- No information available for the product.

12.3 Bioaccumulative potential

- No information available for the product.

12.4 Mobility in Soil

- No information available for the product.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user

- The material, as it is shipped, is not expected to be hazardous.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications

- Acute, Chronic

State Right To Know				
Component	CAS	MA	NJ	PA
Iron	7439-89-6	No	No	Yes
Carbon	7440-44-0	No	No	No
Silicon	7440-21-3	Yes	Yes	Yes
Manganese	7439-96-5	Yes	Yes	Yes
Titanium	7440-32-6	No	Yes	No
Magnesium	7439-95-4	Yes	Yes	Yes
Chrome	7440-47-3	Yes	Yes	Yes
Copper	7440-50-8	Yes	Yes	Yes
Oxygen	7782-44-7	Yes	Yes	Yes
Aluminum	7429-90-5	Yes	Yes	Yes
Nickel	7440-02-0	Yes	Yes	Yes
Phosphorus	7723-14-0	No	Yes	Yes
Sulfur	7704-34-9	Yes	Yes	Yes
Tin	7440-31-5	Yes	Yes	Yes
Vanadium	7440-62-2	Yes	Yes	Yes
Zinc	7440-66-6	Yes	Yes	Yes
Molybdenum	7439-98-7	Yes	Yes	Yes
Cerium	7440-45-1	No	Yes	No
Lead	7439-92-1	Yes	Yes	Yes
Lithium	7439-93-2	Yes	Yes	Yes
Tungsten	7440-33-7	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	EU EINECS	EU ELNICS	Japan ENCS	Korea KECL
Iron	7439-89-6	Yes	Yes	No	No	Yes
Carbon	7440-44-0	Yes	Yes	No	No	Yes
Silicon	7440-21-3	Yes	Yes	No	No	Yes
Manganese	7439-96-5	Yes	Yes	No	No	Yes
Titanium	7440-32-6	Yes	Yes	No	No	Yes
Magnesium	7439-95-4	Yes	Yes	No	No	Yes
Chrome	7440-47-3	Yes	Yes	No	No	Yes

Copper	7440-50-8	Yes	Yes	No	No	Yes
Oxygen	7782-44-7	Yes	Yes	No	No	Yes
Aluminum	7429-90-5	Yes	Yes	No	No	Yes
Nickel	7440-02-0	Yes	Yes	No	No	Yes
Phosphorus	7723-14-0	Yes	Yes	No	No	Yes
Sulfur	7704-34-9	Yes	Yes	No	No	Yes
Tin	7440-31-5	Yes	Yes	No	No	Yes
Vanadium	7440-62-2	Yes	Yes	No	No	Yes
Zinc	7440-66-6	Yes	Yes	No	No	Yes
Molybdenum	7439-98-7	Yes	Yes	No	No	Yes
Cerium	7440-45-1	Yes	Yes	No	No	Yes
Lead	7439-92-1	Yes	Yes	No	Yes	Yes
Lithium	7439-93-2	Yes	Yes	No	No	Yes
Tungsten	7440-33-7	Yes	Yes	No	No	Yes

Inventory (Con't.)

Component	CAS	TSCA
Iron	7439-89-6	Yes
Carbon	7440-44-0	Yes
Silicon	7440-21-3	Yes
Manganese	7439-96-5	Yes
Titanium	7440-32-6	Yes
Magnesium	7439-95-4	Yes
Chrome	7440-47-3	Yes
Copper	7440-50-8	Yes
Oxygen	7782-44-7	Yes
Aluminum	7429-90-5	Yes
Nickel	7440-02-0	Yes
Phosphorus	7723-14-0	Yes
Sulfur	7704-34-9	Yes
Tin	7440-31-5	Yes
Vanadium	7440-62-2	Yes
Zinc	7440-66-6	Yes
Molybdenum	7439-98-7	Yes
Cerium	7440-45-1	Yes
Lead	7439-92-1	Yes
Lithium	7439-93-2	Yes
Tungsten	7440-33-7	Yes

Bahrain**Environment**

Bahrain - Banned Chemicals

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	Not Listed
• Chrome	7440-47-3	0% TO 0.2%	Not Listed
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	Not Listed
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	Not Listed
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

Bahrain - Restricted Chemicals

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	Not Listed
• Chrome	7440-47-3	0% TO 0.2%	Not Listed
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	Not Listed
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed

• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	Not Listed
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Lithium	7439-93-2	< 0.1%	B6, E
• Carbon	7440-44-0	3% TO 4%	Uncontrolled product according to WHMIS classification criteria
• Copper	7440-50-8	0% TO 0.2%	Uncontrolled product according to WHMIS classification criteria
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	A, C
• Phosphorus	7723-14-0	0% TO 0.1%	B4, D1A, E
• Chrome	7440-47-3	0% TO 0.2%	Uncontrolled product according to WHMIS classification criteria
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	D2A
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	D2A (including powder)
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Uncontrolled product according to WHMIS classification criteria
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	B6 (powder); Uncontrolled product according to WHMIS classification criteria
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Uncontrolled product according to WHMIS classification criteria
• Nickel	7440-02-0	0% TO 0.1%	D2A, D2B; B6, D2A (Raney)
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	B4
• Tungsten	7440-33-7	< 0.1%	Uncontrolled product according to WHMIS classification criteria
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Uncontrolled product according to WHMIS classification criteria

• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	B4, B6
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	B4

Canada - WHMIS - Ingredient Disclosure List

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	1 %
• Copper as Copper compounds		0% TO 0.2%	1 %
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	1 %
• Chrome	7440-47-3	0% TO 0.2%	0.1 %
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	0.1 %
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	1 %
• Manganese	7439-96-5	0.2% TO 1%	1 %
• Manganese as Manganese compounds		0.2% TO 1%	1 %
• Tin	7440-31-5	0% TO 0.1%	1 %
• Tin as Tin compounds		0% TO 0.1%	1 %
• Aluminum	7429-90-5	0% TO 0.1%	1 %
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	1 %
• Nickel	7440-02-0	0% TO 0.1%	0.1 %
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	1 %
• Vanadium	7440-62-2	0% TO 0.1%	1 %
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

Egypt

Environment

Egypt - Air Pollutants - Maximum Limits

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed

• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	Not Listed
• Chrome	7440-47-3	0% TO 0.2%	Not Listed
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	0.5 µg/m3 ML (24 hours average over 1 year, populated areas); 1.5 µg/m3 ML (24 hours average over 6 months, industrial areas)
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	Not Listed
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

United States

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	
• Chrome	7440-47-3	0% TO 0.2%	Not Listed
• Chromium as Chromium compounds		0% TO 0.2%	(including any unique chemical substance that contains Chromium as part of its infrastructure)
• Lead	7439-92-1	< 0.1%	Not Listed
• Lead as Lead compounds		< 0.1%	(including any unique chemical substance that contains Lead as part of its infrastructure)

• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed
• Manganese as Manganese compounds		0.2% TO 1%	(including any unique chemical substance that contains Manganese as part of its infrastructure)
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	Not Listed
• Nickel as Nickel compounds		0% TO 0.1%	(including any unique chemical substance that contains Nickel as part of its infrastructure)
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	1 lb final RQ; 0.454 kg final RQ
• Chrome	7440-47-3	0% TO 0.2%	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed

• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	100 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 45.4 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm); 1000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm)
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	100 lb TPQ (This material is a reactive solid. The TPQ does not default to 10000 pounds for non-powder, non-molten, non-solution form)
• Chrome	7440-47-3	0% TO 0.2%	Not Listed
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	Not Listed
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed

• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	Not Listed
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	1.0 % de minimis concentration
• Copper as Copper compounds		0% TO 0.2%	1.0 % de minimis concentration (This category does not include CAS numbers 147-14-8, 1328-53-6, or 14302-13-7, or copper phthalocyanine compounds that are substituted with only hydrogen and/or chlorine and/or bromine.)
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	1.0 % de minimis concentration (yellow or white)
• Chrome	7440-47-3	0% TO 0.2%	1.0 % de minimis concentration
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	0.1 % Supplier notification limit; 0.1 % de minimis concentration (when contained in stainless steel, brass, or bronze)
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	0.1 % Supplier notification limit (Chemical Category N420)
• Manganese	7439-96-5	0.2% TO 1%	1.0 % de minimis concentration
• Manganese as Manganese compounds		0.2% TO 1%	1.0 % de minimis concentration (Chemical Category N450)
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	1.0 % de minimis concentration (dust or fume only)
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	0.1 % de minimis concentration

• Nickel as Nickel compounds		0% TO 0.1%	0.1 % de minimis concentration (Chemical Category N495)
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	1.0 % de minimis concentration (except when contained in an alloy)
• Vanadium as Vanadium compounds		0% TO 0.1%	1.0 % de minimis concentration (Chemical Category N770)
• Zinc	7440-66-6	0% TO 0.1%	1.0 % de minimis concentration (dust or fume only)
• Zinc as Zinc compounds		0% TO 0.1%	1.0 % de minimis concentration (Chemical Category N982)
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	(dust and fume)
• Copper as Copper compounds		0% TO 0.2%	
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	
• Chrome	7440-47-3	0% TO 0.2%	
• Chromium as Chromium compounds		0% TO 0.2%	
• Lead	7439-92-1	< 0.1%	
• Lead as Lead compounds		< 0.1%	
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	
• Manganese as Manganese compounds		0.2% TO 1%	
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	
• Nickel as Nickel compounds		0% TO 0.1%	
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	(dust or fume)
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	
• Zinc as Zinc compounds		0% TO 0.1%	
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed

• Sulfur 7704-34-9 0% TO 0.1% Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Lithium	7439-93-2	< 0.1%	Not Listed
• Carbon	7440-44-0	3% TO 4%	Not Listed
• Copper	7440-50-8	0% TO 0.2%	Not Listed
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Not Listed
• Phosphorus	7723-14-0	0% TO 0.1%	Not Listed
• Chrome	7440-47-3	0% TO 0.2%	
• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	Not Listed
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Not Listed
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Not Listed
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Not Listed
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Not Listed
• Nickel	7440-02-0	0% TO 0.1%	
• Nickel as Nickel compounds		0% TO 0.1%	Not Listed
• Silicon	7440-21-3	2% TO 3%	Not Listed
• Tungsten	7440-33-7	< 0.1%	Not Listed
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Not Listed
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Not Listed
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Not Listed

United States - Rhode Island

Labor

U.S. - Rhode Island - Hazardous Substance List

• Lithium	7439-93-2	< 0.1%	Flammable
• Carbon	7440-44-0	3% TO 4%	Toxic
• Copper	7440-50-8	0% TO 0.2%	Toxic (dust, fume, and mist)
• Copper as Copper compounds		0% TO 0.2%	Not Listed
• Cerium	7440-45-1	0% TO 0.01%	Not Listed
• Oxygen	7782-44-7	0% TO 0.2%	Flammable
• Phosphorus	7723-14-0	0% TO 0.1%	Toxic; Flammable
• Chrome	7440-47-3	0% TO 0.2%	Toxic; Carcinogen

• Chromium as Chromium compounds		0% TO 0.2%	Not Listed
• Lead	7439-92-1	< 0.1%	Toxic (dust and fume)
• Lead as Lead compounds		< 0.1%	Not Listed
• Lead as Lead, inorganic compounds		< 0.1%	Not Listed
• Manganese	7439-96-5	0.2% TO 1%	Toxic
• Manganese as Manganese compounds		0.2% TO 1%	Not Listed
• Tin	7440-31-5	0% TO 0.1%	Toxic
• Tin as Tin compounds		0% TO 0.1%	Not Listed
• Aluminum	7429-90-5	0% TO 0.1%	Toxic (dust, powder, welding fumes); Flammable (dust, powder, welding fumes)
• Aluminum as Aluminum insoluble compounds		0% TO 0.1%	Not Listed
• Molybdenum	7439-98-7	0% TO 0.05%	Toxic
• Nickel	7440-02-0	0% TO 0.1%	Toxic; Carcinogen
• Nickel as Nickel compounds		0% TO 0.1%	Carcinogen
• Silicon	7440-21-3	2% TO 3%	Toxic
• Tungsten	7440-33-7	< 0.1%	Toxic
• Vanadium	7440-62-2	0% TO 0.1%	Not Listed
• Vanadium as Vanadium compounds		0% TO 0.1%	Not Listed
• Zinc	7440-66-6	0% TO 0.1%	Flammable
• Zinc as Zinc compounds		0% TO 0.1%	Not Listed
• Iron	7439-89-6	0% TO 94.28%	Not Listed
• Iron as Iron Salts		0% TO 94.28%	Not Listed
• Magnesium	7439-95-4	0.02% TO 0.2%	Flammable
• Titanium	7440-32-6	0% TO 0.5%	Not Listed
• Sulfur	7704-34-9	0% TO 0.1%	Flammable

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

- **WARNING:** This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Section 16 - Other Information

Last Revision Date	• 14/December/2012
Preparation Date	• 14/December/2012
Disclaimer/Statement of Liability	• American Cast Iron Pipe Company believes that the information contained on this Material Safety Data Sheet is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily all-inclusive nor fully adequate in every circumstance. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulations, rules or insurance requirements.

Key to abbreviations

NDA = No data available

4.) HDPE PIPE

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HDPE Pipe Grade Safety Data Sheet

SECTION 1: IDENTIFICATION

Product Name: Pipegrade® (HDPE)

Product Number: HPG-[NUMBERCODE] [e.g., NUMBERCODE = COLOR, SURFACE, GAGE, WIDTH-LENGTH]

Physical State: Solid

Color: Natural processed color is translucent to opaque white (Colorants can be added)

Odor: Faint, mild hydrocarbon odor.

Type of Use: Building Materials, Signs, and Fabricated Polyethylene Products

FDA Status: Complies with FDA Regulations 21 CFR 177.1520 Sections 2.1 and 2.2

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of Hazards

While in normal usage form, this material does not meet or exceed requirements to be classified as a hazardous chemical in accordance with the GHS aligned OSHA Hazardous Communication Standard 29CFR1910.1200 Appendix A, and Appendix B. However, when subjected to processing methods that increase the material temperature, or result in production of material dusts, certain precautions become necessary.

Signal Word and Precautionary Statement (Non-mandatory)

CAUTION!

Product is a clear to white, non-toxic solid sheet material having minimal odor. Dusts and heat-released air emissions may be irritating to the eyes, skin, and respiratory system. Under fire conditions, product will readily burn and emit a heavy, irritating smoke. Contact with molten material may cause serious thermal burns.

Identification Symbols or Labels

Not Applicable

Potential Health Effects

Eyes: Contact of powder or fines with eye may cause mechanical irritation. Contact with hot or molten material may cause severe injury, including possible blindness.

Skin: Contact of powder or fines with skin may cause mild to more serious irritation that is increased by mechanical rubbing or if skin is dry. Contact with hot or molten material may cause severe thermal burns.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce mild gastrointestinal irritation and disturbances.

Inhalation: Inhalation of fine particles may cause respiratory irritation. Fumes produced while thermal processing may cause irritation, pulmonary edema and a possible asthma-like response.

Environmental Hazards: Polyethylene is an essentially biologically inert solid and considered non-toxic. It is stable (does not decompose) in landfills or in aquatic systems.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name: 1-Butene, polymer with ethene, or 1-Hexene, polymer with ethene. (Ethene and ethylene are interchangeable.)

Common Name: High Density Polyethylene, or Polyethylene Copolymer

Synonyms: HDPE Butene Sheet; HDPE Copolymer; Ethylene/Hexene Copolymer Sheet, Ethylene/Octene Copolymer

Component	Percent by Wt.	CAS #
Polyethylene	>=99	CAS# 9002-88-4
Additives*	0-1	N/A



HDPE Pipe Grade Safety Data Sheet

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS Cont.

Additional Information

* Other chemical additives including antioxidants, UV stabilizers, processing aids and slip agents may be formulated into various polyethylene resin grades in a total concentration of less than 1% wt. /wt.

Trade Secret(s) – Compositions given are typical values not specifications. Identity of Resin Manufacturers, Additive Component

Manufacturers and exact percentage of blends are proprietary information.

SECTION 4: FIRST AID MEASURES

Eyes: Remove contact lenses, if it can be done safely. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention if symptoms develop or persist.

Skin: Remove dusty or contaminated clothing and shoes. For skin contact, wash affected area with soap and water. Seek medical attention if symptoms develop or persist. In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product, or molten product that has cooled, from skin without medical assistance.

Inhalation: Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist. Inhalation of smoke following a fire may result in delayed pulmonary edema; seek immediate medical attention.

Ingestion: Material is not expected to be absorbed from the gastrointestinal tract. DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

Notes to Physician: After adequate first aid, no further treatment is necessary, unless symptoms reappear. Burns should be treated as thermal burns. Molten resin will come off as healing occurs; therefore, immediate removal from the skin is not necessary. Treatment should be directed at the control of symptoms and the clinical condition of the patient. Ingested material should pass through the digestive system without injury.

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media

Suitable: Use water fog, or water spray. Small fires may use dry chemical or carbon dioxide or foam.

Un-suitable: Avoid Strong Oxidizing agents. Avoid high pressure, direct water stream that may spread molten or burning resins.

General Fire Hazards: Solid resins support combustion but do not meet combustible definition. Under fire conditions, product will readily burn and emit a heavy, irritating black smoke. A high concentration of airborne powders or dust may form an explosive mixture with air.

Explosion Hazards: Dust particles may form an explosive mixture with air. Risk of dust-air explosion is increased if flammable vapors are also present. Dust may accumulate hazardous static charge.

Hazardous Combustion Products: At temperatures above 300 C, polyethylene may emit various oligomers, waxes and oxygenated hydrocarbons as well as carbon dioxide, carbon monoxide and small amounts of other organic vapors (e.g. aldehydes, acrolein). Inhalation of these decomposition products may be hazardous.

Fire Fighting Equipment/Instructions: (Use ERG Guide #133) Position upwind. Keep unnecessary personnel away. Move containers from fire area if you can do so without risk. Fight fire from maximum distance or use unmanned holders or monitor nozzles. Fire fighters should wear full-face, self-contained breathing apparatus and thermal protective clothing. Avoid inhaling any smoke and combustion materials. Remove and clean or destroy any contaminated clothing. Cool containers with flooding quantities of water until well after the fire is out. Control runoff waters to prevent entry into sewers, drains, underground or confined spaces and waterways.

SECTION 6: ACCIDENTAL RELEASE

Personal Precautions / Protective Measures:

Slipping Hazard, avoid standing or walking on product, or product debris. For product debris: Do not use compressed air to sweep debris. Eliminate sources of ignition. (No smoking, flares, sparks or flames in immediate area). Dissipate static electricity during transfer or processing by use of proper electrical grounding and bonding methods.

Equipment and Emergency Procedures: (Use ERG Guide #133 in event of fire) For debris spill, isolate area for at least 25 meters (75 feet) in all directions, if no fire exists.

In case of Fire: Keep unnecessary personnel away and notify emergency and firefighting personnel. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Stay upwind from fire.



HDPE Pipe Grade Safety Data Sheet

Environmental Precautions: Prevent entry of small debris into ditches, sewers, and waterways. Plastic pellets, and debris are defined by the UA EPA under the Clean Water Act (40CFR 122.26) as a "Significant Material", which requires any industrial plant that may expose pellets to storm water to secure a storm water permit. Pellets or debris found in storm water runoff are subject to EPA regulations with the potential for substantial fines and penalties. Use appropriate tools to put the spilled solid in an appropriate disposal or recovery container. Reuse or recycle where possible.

Methods and Materials for Containment and Cleaning Up Spills:

Wear appropriate protective equipment and clothing during cleanup. Vacuum or sweep material into container, do not use compressed air to sweep debris material.

Other Information: Risk of dust-air explosion is increased if flammable vapors are also present.

SECTION 7: HANDLING AND STORAGE

Handling Procedures:

Sheet Material: Secure product to prevent shifting during handling, or transport.

Debris: Handle in contained and properly designed equipment systems. Avoid ingestion and inhalation. Keep away from uncontrolled heat incompatible materials. Earth (ground) all material handling and transfer equipment to dissipate build-up of static electricity. Keep handling areas and processing equipment free of debris. Do not use compressed air to sweep debris. For additional information on control of static and minimizing potential dust and fire hazards, refer to NFPA-654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, 2006 Edition."

Storage Procedures:

Store sheet material flat. Secure to pallet, rack, or stack. Storage area accessible only to trained and authorized personnel. Store accumulated debris in closed, earthed (grounded) and properly designed vessels, away from uncontrolled heat and incompatible materials. Avoid accumulation of dust by frequent cleaning and suitable construction of storage and handling areas. Keep shovels and vacuum systems readily available for cleanup of debris. DO NOT enter filled bulk containers and attempt to walk over product, due to risk of slipping. Use a fall arrest system when working near open bulk containers.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA Permissible Exposure Limits (OSHA PEL)

Debris and dust produce from processing sheet material can be considered nuisance particulates. Particulates Not Otherwise Classified (PNOC) OSHA PEL (Total Dust) 15 mg/m³ TWA OSHA PEL (Respirable Fraction) 5 mg/m³ TWA (Respirable Fraction) ACGIH (Inhalable Particulate) 10 mg/m³ TWA ACGIH (Respirable Particulate) 3 mg/m³ TWA.

Engineering Controls

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

Personal Protection Equipment (PPE)

Inhalation: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Use appropriate respiratory protection where atmosphere exceeds recommended limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 or ANSI Z88.2 requirements must be followed whenever workplace conditions warrant respirator use. "Nuisance dust" such as polymer dust typically exhibits no significant health effect when they are reasonably controlled. Exposure to high concentrations of dust may cause slight irritation by mechanical action.

Skin: Use chemical resistant gloves appropriate to conditions of use. Wear heat protective gloves and clothing if there is a potential for contact with heated material. Protective clothing such as long sleeves or a lab coat should be worn.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION cont.

Eye: Dust service goggles should be worn to prevent mechanical injury or other irritation to eyes due to airborne particles, which may result from processing of this product. Safety glasses are required as minimum requirement.

Footwear: Use appropriate footwear. Spilled debris can be a serious slipping/falling hazard. Exercise caution when walking on spilled material.



HDPE Pipe Grade Safety Data Sheet

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid Sheet Material - Translucent to white.	Lower Flammable Limit: No Data Available.
Odor: Faint, mild hydrocarbon odor.	Explosive Properties: No Data Available.
Odor Threshold: No value available.	Oxidizing Properties: No Data Available.
pH: Not applicable.	Vapor Pressure: Not applicable.
Freezing Point: Not applicable.	Vapor Density: Not applicable
Melting Point: 100 to 140°C	Relative Density: .91 - .97 (water=1)
Boiling Point/Boiling Range: Not applicable.	Solubility (Water): Insoluble.
Flash Point: Not applicable.	Partition Coefficient (Kow): Specific data not available.
Evaporation Rate: Not applicable.	Auto-ignition: >300°C
Flammability: Not Classified. Burns but does not easily ignite.	Decomposition Temperature: Varies; >300°C
Upper Flammable Limit: No Data Available.	Viscosity: Not applicable.

SECTION 10: STABILITY AND REACTIVITY

Reactivity:

Non-Reactive with Air, or Water

Chemical Stability:

This product is stable under normal use conditions for shock, vibration, pressure, or temperature.

Possibility of Hazardous Reactions:

Certain Halogens, Organic Chlorides and Hydrocarbons may react with and degrade polyethylene. Powders or dusts may form an explosive mixture with air. Dusts may create static discharge; Risk of dust-air explosion is increased if flammable vapors are also present.

Conditions to Avoid:

Avoid processing material over 300°C. Avoid accumulations of debris and dust in air and surfaces.

Incompatibility:

Fluorine gas, (violent reaction), Diethyl ether, Methylene chloride, Ethylene chloride. Polyethylene degrades after lengthy contact with most Aromatic hydrocarbons; benzene, toluene, acetone, xylenes, ammonia gas, turpentine, naphtha, etc., and most Halogenated Hydrocarbons; Perchloroethylene, chloroform, trichloroethylene, carbon tetrachloride, etc.

Hazardous Decomposition products:

At temperatures >300deg C (572deg F), polyethylene may emit various oligomers, waxes and oxygenated hydrocarbons as well as carbon dioxide, carbon monoxide and small amounts of other organic vapors (e.g. aldehydes, acrolein). Inhalation of the decomposition gases may be hazardous.

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Exposure

Eyes, Inhalation, or Skin This product when in sheet material presents no likely route of exposure. However, when machined or processed, or heated, possible exposure can occur by routes stated above.

Symptoms (characteristic)

Physical:

Hot material may cause thermal burns. Mechanical irritation to skin, eyes, and throat may occur with exposure to dust and small particles.

Chemical:

Inhalation of process fumes and vapors may cause soreness in the nose and throat and coughing.

Toxicological:

This material is considered essentially inert and non-toxic. It has no known acute health effects.

Delayed and Immediate Effects:

Coughing, throat soreness, possible redness of skin, or eyes, or throat.



HDPE Pipe Grade Safety Data Sheet

SECTION 11: TOXICOLOGICAL INFORMATION cont.

Chronic Effects: (short and long term exposure)

Product has minimal chronic effect. There are no known or reported reproductive or genetic effects.

Acute Toxicity - L050/LC50

Polyethylene (Ethene homopolymer) (-) Inhalation LC50 Mouse: 12 g/m³/30M

Polyethylene (1-Butene, polymer with ethene) (-) Oral LD50 Rat: 4 g/kg

Acute Toxicity - Effects

Inhalation:

Rats inhaling polyethylene dust developed mild inflammatory changes in the lungs. Prolonged inhalation of thermal degradation products from polyethylene caused neurological effects in rats.

Ingestion:

No adverse health effects were noted on the digestive system of test animals when fed up to 20% polyethylene.

Repeated Dose Toxicity

Sub chronic, 50-90 day, feeding studies conducted on rats, dogs and swine showed no effects from dietary levels of 120% powdered and shredded polyethylene.

Carcinogenicity

Not listed by IARC, NTP, OSHA or EPA.

SECTION 12: ECOLOGICAL INFORMATION (non-mandatory)

The content of this section is considered non-mandatory by OSHA because it concerns matters handled by other agencies.

SECTION 13: DISPOSAL CONSIDERATIONS (non-mandatory)

The content of this section is considered non-mandatory by OSHA because it concerns matters handled by other agencies.

SECTION 14: TRANSPORT INFORMATION (non-mandatory)

The content of this section is considered non-mandatory by OSHA because it concerns matters handled by other agencies.

SECTION 15: REGULATORY INFORMATION / SAFETY, HEALTH AND ENVIRONMENTAL (non-mandatory)

The content of this section is considered non-mandatory by OSHA because it concerns matters handled by other agencies.

SECTION 16: OTHER INFORMATION

Special Considerations:

Exposure to the Hazardous Combustion and Decomposition Products as described in SDS Sections 5 and 10 may be linked with various acute and chronic health effects. These effects include irritation of eyes and upper respiratory tract primarily from the aldehydes, breathing difficulties, systemic toxicity such as liver, kidney, and central nervous system effects. Polyethylene fines and dust particles are listed as a Class I combustible dust by the National Fire Protection Association (see NFPA-68, Table F.1). For additional information on control of static and minimizing potential dust and fire hazards, refer to NFPA-654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids, 2006 Edition".



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5.) PVC PIPE

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1. PRODUCT AND COMPANY IDENTIFICATION

COMMON NAME:	PVC Pipe and Fittings	
CHEMICAL NAME:	Not Applicable. Formulation, see section 3.	
FORMULA:	Mixture	
PRODUCT CAS NO.:	Mixture, see Section 3.	
Recommended Use:	Drain Waste Vent and Pressure Pipe and Fittings	
SUPPLIER:	Charlotte Pipe and Foundry Company (Plastics Division)	
ADDRESS:	4210 Old Charlotte Highway	
CITY, STATE, ZIP:	Monroe, NC 28110	
PHONE:	+1-704-372-3650	EMERGENCY PHONE: +1-704-372-3650

2. HAZARDS IDENTIFICATION



GHS Status	This material is hazardous in accordance with the hazard communication standard, 29 CFR 1910.1200
Classification of the substance or mixture	Skin irritation – Category 2 Eye irritation – Category 2A Carcinogenicity – Category 2B Specific target organ toxicity – single exposure – Category 3
GHS label pictogram	Warning
Signal word	Warning

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Hazard statements	Causes serious eye irritation. Causes skin irritation. May cause respiratory irritation. Suspected of causing cancer. Route of exposure: inhalation of airborne unbound particles of respirable size.
Precautionary statements Prevention	Avoid breathing dust/fume/gas/mist. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective respiratory protection.
Response	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If exposed or concerned: Get medical advice/attention.
Storage	Keep away from intense heat, flames. Store locked up.
Disposal	Dispose of in accordance with local regulations.
Hazards not otherwise classified	None known.
Relevant routes of exposure Inhalation	Skin, eyes, inhalation. Melted product is flammable and produces intense heat and dense smoke during burning. Irritating gases and fumes may be given off during burning or thermal decomposition. Inhalation of airborne unbound particles of respirable size may cause cancer.
Skin contact	Gases and fumes evolved during thermal processing or decomposition can cause skin irritation.
Eye contact	Dust can cause eye irritation. Gases and fumes evolved during thermal processing or decomposition can cause eye irritation.
Ingestion	No data available.

3. HAZARDOUS INGREDIENTS: COMPOSITION/INFORMATION

INGREDIENT	CAS NUMBER	% WEIGHT
Polyvinyl chloride	9002-86-2	> 80%
Titanium dioxide	13463-67-7	0-5%

4. FIRST AID MEASURES

EYE CONTACT: Immediately flush eyes with plenty of water occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Consult a physician.

SKIN CONTACT: Rinse with water. Remove contaminated clothing and shoes. In the event of any complaints or symptoms,

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avoid further exposure. Wash clothing before reuse. Clean shoes before reuse.

INHALATION: If vapors from excessive heating, burning or decomposition products are inhaled: remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular, or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing, such as collar, tie, belt, or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance.

INGESTION: Wash out mouth with water. Remove dentures, if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Loosen tight clothing, such as collar, tie, belt, or waistband. Consult a physician.

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under surveillance for 48 hours.

Specific treatments: None known.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: No data.

Decomposition products may be combustible.

FLAMMABLE LIMITS:

LEL: No data

UEL: No data

EXTINGUISHING MEDIA: Water, foam, dry chemical. Do not use CO₂ on Class A fires, as a lack of cooling capacity may result in re-ignition.

FIRE AND EXPLOSION HAZARDS: Solid does not readily release flammable vapors. Thermoplastic polymers can burn. Smoke, Carbon Monoxide, Carbon Dioxide, Aldehydes, Hydrogen Chloride, Tin. Irritating and/or toxic substances will be emitted during burning, combustion, or decomposition. Run-off water from firefighting may have corrosive effects.

PROTECTIVE MEASURES FOR FIRE FIGHTERS: Firefighters must wear a NIOSH-approved, full-facepiece self-contained breathing apparatus (SCBA) operated in positive pressure mode and full turnout or bunker gear with additional chemical protective clothing as necessary to protect against thermal decomposition products.

SPECIAL PROTECTIVE ACTIONS FOR FIRE FIGHTERS: If there is a fire, promptly isolate the scene by removing all persons from the vicinity of the incident. No action shall be taken involving any personal risk or without suitable training.

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6. ACCIDENTAL RELEASE MEASURES

EMERGENCY OVERVIEW

Toxic and irritating gases and fumes may be given off during burning or thermal decomposition. Avoid generating dust. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Personal precautions, protective equipment, and emergency measures

For non-emergency personnel No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders If specialized clothing is required to deal with decomposition products or fumes from burning or excessive heating, take note of information in Section 8 on suitable and unsuitable materials. See also information in "for non-emergency personnel."

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

Methods and materials for containment and cleanup

Small spill Avoid dust generation. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. See Section 1 for emergency contact information.

Large spill Move containers from spill area. Approach release from upwind. Prevent entry into sewers, waterways, basements, and confined areas. Avoid dust generation. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. See Section 1 for emergency contact information.

7. HANDLING AND STORAGE

Conditions for safe storage, including any incompatibilities Store in a dry place away from direct sunlight, heat, and incompatible materials. Avoid intense heat and flames.

Precautions for safe handling

Protective measures Put on appropriate personal protective equipment (see Section 8). Do not handle until all safety precautions have been read and understood. Do not get particles, vapors or fumes in eyes, on skin, or on clothing. Do not ingest. If during normal use, the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator.

Advice on general occupational hygiene Employees must wash hands and face before eating, drinking, or smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

INGREDIENT	CAS NUMBER	% WEIGHT	PEL-OSHA	TLV-ACGIH	NIOSH REL
Polyvinyl chloride	9002-86-2	> 80%	None established Particulates not otherwise classified: 15 mg/m ³	1 mg/m ³ (respirable fraction) Particulates not otherwise classified: 10 mg/m ³ (inhalable fraction)	None established
Titanium dioxide	13463-67-7	0-5%	15 mg/m ³ , total dust	10 mg/m ³ TWA	None established

ENGINEERING CONTROLS: If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below recommended and statutory limits.

RESPIRATORY PROTECTION: Cutting or sanding this product can generate dust. Used a properly fitted particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and the safe working limits of the respirator. A NIOSH-approved N95 single use or P95 multiple use respirator will protect the employee from at least 95% of airborne particles. Follow the respirator manufacturer's instructions for proper use. If adhesives or other substances are used with this product, refer to the product manufacturer's safety data sheet for applicable respiratory protective measures.

SKIN PROTECTION: Chemical-resistant, impervious gloves complying with an approved standard should be worn when handling this or any chemical product, if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures containing several substances, the protection time of the gloves cannot be accurately estimated. If adhesives or other substances are used with this product, refer to the product manufacturer's safety data sheet for applicable skin protective measures.

BODY PROTECTION: Personal protective equipment for the body should be selected on the task being performed and the risks involved, and should be approved by a specialist before handling this product. If adhesives or other substances are used with this product, refer to the product manufacturer's safety data sheet for applicable skin protective measures.

EYE/FACE PROTECTION: Safety eyewear complying with an approved standard must be used when a risk assessment indicates this is necessary to avoid exposure to dust. Particulates and dust can be formed when cutting, grinding or sanding this product. If contact with dust or particulates is possible, the following should be worn unless the assessment indicates a higher degree of protection: safety glasses with side shields. If adhesives or other substances are used with this product refer to the product manufacturer's safety data sheet for applicable eye and face protective measures.

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Solid. White/grey.
ODOR:	Not applicable
ODOR THRESHOLD:	Not available
BOILING POINT:	Not available
FLASH POINT:	Not applicable
FLAMMABILITY:	Melted product is flammable.
AUTOIGNITION TEMPERATURE:	Not applicable
DECOMPOSITION TEMPERATURE:	Not available
LOWER/UPPER EXPLOSION LIMITS:	Not available
VAPOR PRESSURE:	Not available
LIQUID DENSITY:	Not available
SPECIFIC GRAVITY:	Approximately 1.4
MELTING POINT:	Not available
pH:	Not available
SOLUBILITY:	Insoluble
% VOLATILE:	Not available
VISCOSITY:	Not available

10. STABILITY AND REACTIVITY

Stability:	Stable at normal temperatures and pressures.
Reactivity:	Stable at normal temperatures and pressures.
Conditions to avoid:	Heat, flames, sparks and other sources of ignition.
Incompatible materials/conditions:	Consult the Charlotte Pipe and Foundry chemical resistance guide.
Hazardous decomposition products:	Hydrogen chloride, carbon oxides, small amounts of benzene and aromatic and aliphatic hydrocarbons, phosgene.
Hazardous polymerization:	Not available.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY: No toxicological data is available for the finished product.

SENSITIZATION: No data available.

MUTAGENICITY: No data available.

DEVELOPMENTAL: No data available.



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FERTILITY: No data available.

CARCINOGENICITY: Airborne unbound titanium dioxide particles of respirable size are classified by the International Agency for Research on Cancer (IARC) as 2B, possibly carcinogenic to humans. This product does not contain ingredients classified by the National Toxicology Program Report or OSHA at 29 CFR 1910, Subpart Z, as a carcinogen.

REPRODUCTIVE TOXICITY: Not available

TERATOGENICITY: Not available

SPECIFIC TARGET ORGANS – SINGLE EXPOSURE: Not available

SPECIFIC TARGET ORGANS – REPEATED EXPOSURE: Not available

ASPIRATION HAZARD: Not available

INFORMATION ON THE LIKELY ROUTES OF EXPOSURE:

Potential acute health effects

Eye contact	No known significant effects or critical hazards. Dust can cause eye irritation.
Inhalation	Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact	Skin irritant.
Ingestion	No known significant effects or critical hazards.

Symptoms related to the physical, chemical, and toxicological characteristics

Eye contact	No data available.
Inhalation	No data available.
Skin contact	Adverse symptoms may include irritation.
Ingestion	No data available.

Immediate, delayed and chronic effects from short term exposure

Short term exposure

Potential immediate effects	No data available.
Potential delayed effects	No data available.

Long term exposure

Potential immediate effects	No data available.
Potential delayed effects	No data available.

Potential chronic effects

General	No data available.
Carcinogenicity	Airborne unbound titanium dioxide particles of respirable size are classified as IARC 2B, possibly carcinogenic to humans. On the date of preparation of this SDS, this product did not contain ingredients listed by OSHA or NTP. See Section 11.

12. ECOLOGICAL INFORMATION

Numerical measures of toxicity No data available

Persistence and degradability
Does not biodegrade over time.

Bioaccumulative potential
No data available

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Mobility in soil
No data available.

Other adverse effects: No known significant or critical hazards.

13. DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste should not be disposed of to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste and packaging should be recycled when possible. Incineration or landfill should only be considered when recycling is not feasible. This material must be disposed of in a safe way.

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME:	Not Regulated
HAZARD CLASS:	Not Regulated
IDENTIFICATION NUMBER:	Not Regulated
SHIPPING LABEL:	Not Regulated
PACKING GROUP:	Not Regulated

15. REGULATORY INFORMATION

United States

TSCA 8(b):
All ingredients are listed on the U.S. Toxic Substances Control Act inventory.

This product can expose you to chemicals including titanium dioxide, which is known to the State of California to cause cancer. For more information, go to www.P65Warnings.ca.gov.

16. OTHER INFORMATION

Date of Preparation: 20 April 2020

Key to Acronyms:

CAS:	Chemical Abstracts Service
CFR:	Code of Federal Regulations
HEPA	High-Efficiency Particulate Air (filter)
IARC:	International Agency for Research on Cancer
LD ₅₀ :	Lethal dose to 50% of exposed laboratory animals
LC ₅₀ :	Lethal concentration to 50% of exposed laboratory animals
LEL:	Lower Explosive Limit
mg/l:	Milligrams per liter
NIOSH:	National Institute for Occupational Safety and Health (US)
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration (US)
PEL:	Permissible Exposure Limit
TSCA:	Toxic Substances Control Act
TLV:	Threshold Limit Value – American Conference of Governmental Industrial Hygienists (ACGIH)
TWA:	Time Weighted Average
UEL:	Upper Explosive Limit

ug/m³:

Micrograms per cubic meter

DISCLAIMER

NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE FOR THE MATERIALS AS REPRESENTED IN THIS SDS SHEET. Charlotte Pipe and Foundry assumes no liability whatsoever for the use of or reliance upon this information. The information and data contained in this SDS has been compiled from information believed to be accurate and is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage, handling and disposal of the product in compliance with applicable federal, state, and local laws and regulations.

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F. SHOP & MECHANIC SUPPLIES

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1.) ANTIFREEZE

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SECTION 1. IDENTIFICATION

Product name : Shellzone

Product code : 001B0209

Manufacturer or supplier's details

Manufacturer/Supplier : **Shell Oil Products US**
PO Box 4427
Houston TX 77210-4427
USA

SDS Request : (+1) 877-276-7285
Customer Service :

Emergency telephone number

Spill Information : 877-504-9351
Health Information : 877-242-7400

Recommended use of the chemical and restrictions on use

Recommended use : Antifreeze and coolant.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Specific target organ toxicity : Category 2 (Kidney)
- repeated exposure

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : **PHYSICAL HAZARDS:**
Not classified as a physical hazard under GHS criteria.
HEALTH HAZARDS:
H302 Harmful if swallowed.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.
ENVIRONMENTAL HAZARDS:
Not classified as an environmental hazard under GHS criteria.

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Precautionary statements : **Prevention:**
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

Response:
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330 Rinse mouth.

Storage:
No precautionary phrases.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous components which must be listed on the label:
Contains ethanediol.
Contains bittering agent.

Other hazards which do not result in classification

Intentional abuse, misuse or other massive exposure may cause multiple organ damage and or death.
The classification of this material is based on OSHA HCS 2012 criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture of ethylene glycol, water and additives.

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
disodium tetraborate pentahydrate	Borates, tetra sodium salts, pentahydrate	12179-04-3	0.1 - 0.25
Diethylene glycol	2,2'-oxydiethanol	111-46-6	1 - 5
Ethanediol	ethane-1,2-diol	107-21-1	90 - 100

SECTION 4. FIRST-AID MEASURES

General advice : DO NOT DELAY.
Keep victim calm. Obtain medical treatment immediately.

If inhaled : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

In case of skin contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
If persistent irritation occurs, obtain medical attention.

In case of eye contact : Flush eye with copious quantities of water.
Remove contact lenses, if present and easy to do. Continue

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- rinsing.
If persistent irritation occurs, obtain medical attention.
- If swallowed : DO NOT DELAY.
If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Rinse mouth.
- Most important symptoms and effects, both acute and delayed : Kidney toxicity may be recognized by blood in the urine or increased or decreased urine flow. Other signs and symptoms can include nausea, vomiting, abdominal cramps, diarrhoea, lumbar pain shortly after ingestion, and possibly narcosis and death.
High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
- Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
- Indication of any immediate medical attention and special treatment needed : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!
The preferred treatment is immediate transportation to a medical facility and use of appropriate treatment including possible administration of activated charcoal, gastric lavage and or gastric aspiration. If none of the above are immediately available and a delay of more than one hour is anticipated before such medical attention can be obtained, induction of vomiting may be appropriate using IPECAC syrup (Contraindicated if there are any signs of CNS depression). This should be considered on a case by case basis following specialist advice. Specific other treatments may include ethanol therapy, fomepizole, treatment of acidosis and haemodialysis. Seek specialist advice without delay.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Unsuitable extinguishing media : Do not use water in a jet.
- Specific hazards during fire-fighting : Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide may be evolved if incomplete combustion occurs.
Unidentified organic and inorganic compounds.
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Avoid contact with skin and eyes.

Environmental precautions : Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.

Local authorities should be advised if significant spillages cannot be contained.

Methods and materials for containment and cleaning up : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.

Additional advice : For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.

Local authorities should be advised if significant spillages cannot be contained.

U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Center at (800) 424-8802.

SECTION 7. HANDLING AND STORAGE

Technical measures : Use local exhaust ventilation if there is risk of inhalation of

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vapours, mists or aerosols.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

- Advice on safe handling : Avoid prolonged or repeated contact with skin.
Avoid inhaling vapour and/or mists.
When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.
- Avoidance of contact : Strong oxidising agents.
- Further information on storage stability : Keep container tightly closed and in a cool, well-ventilated place.
Use properly labeled and closable containers.
Store at ambient temperature.
- Packaging material : Suitable material: For containers or container linings, use mild steel or high density polyethylene.
Unsuitable material: Zinc., Avoid contact with galvanized materials.
- Container Advice : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethanediol	107-21-1	TWA (Vapour)	25 ppm	ACGIH
Ethanediol		STEL (Vapour)	50 ppm	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

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National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances <http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany <http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France <http://www.inrs.fr/accueil>

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Adequate ventilation to control airborne concentrations.

Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

General Information:
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.
Drain down system prior to equipment break-in or maintenance.
Retain drain downs in sealed storage pending disposal or subsequent recycle.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.
Practice good housekeeping.

Personal protective equipment

Respiratory protection : No respiratory protection is ordinarily required under normal conditions of use.
In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material.
If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the spe-

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cific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for the combination of organic gases and vapours [Type A/Type P boiling point >65°C (149°F)].

Hand protection Remarks

: Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.

Eye protection

: If material is handled such that it could be splashed into eyes, protective eyewear is recommended.

Skin and body protection

: Skin protection is not ordinarily required beyond standard work clothes. It is good practice to wear chemical resistant gloves.

Protective measures

: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Thermal hazards

: Not applicable

Environmental exposure controls

General advice

: Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Chapter 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before

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discharge to surface water.
Local guidelines on emission limits for volatile substances
must be observed for the discharge of exhaust air containing
vapour.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid at room temperature.

Colour : green

Odour : characteristic

Odour Threshold : Data not available

pH : Not applicable

Melting point/freezing point : -37 °C / -34 °F
(50.0 hPa)
Method: ASTM D1177

Initial boiling point and boiling range : > 100 °C / 212 °F
estimated value(s)

Flash point : 126 °C / 259 °F
Method: Unspecified

Evaporation rate : Data not available

Flammability (solid, gas) : Data not available

Upper explosion limit / upper flammability limit : Typical 15 %(V)

Lower explosion limit / Lower flammability limit : Typical 3 %(V)

Vapour pressure : Data not available

Relative vapour density : Data not available

Relative density : 1,130 (15 °C / 59 °F)

Density : 1.130 kg/m³ (15.0 °C / 59.0 °F)
Method: Unspecified

Solubility(ies)
Water solubility : completely soluble

Solubility in other solvents : Data not available

Partition coefficient: n-octanol/water : Data not available

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Acute inhalation toxicity : LC 50 (Rat): > 5 mg/l
Exposure time: 4 h
Remarks: Low toxicity:

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Remarks: Low toxicity:

Skin corrosion/irritation

Product:

Remarks: Slightly irritating to skin., Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation

Product:

Remarks: Slightly irritating to the eye., Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Product:

Remarks: Not a skin sensitiser.
Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Product:

: Remarks: Non mutagenic, Based on available data, the classification criteria are not met.

Carcinogenicity

Product:

Remarks: Not a carcinogen., Based on available data, the classification criteria are not met.

IARC

Group 2A: Probably carcinogenic to humans

Sodium nitrate

7631-99-4

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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Reproductive toxicity

Product:

:
Remarks: Not a developmental toxicant., Does not impair fertility., Based on available data, the classification criteria are not met.

Components:

disodium tetraborate pentahydrate:

:
Remarks: Based on available data, the classification criteria are not met.

STOT - single exposure

Product:

Remarks: Based on available data, the classification criteria are not met.

STOT - repeated exposure

Product:

Remarks: Kidney: can cause kidney damage.

Aspiration toxicity

Product:

Not an aspiration hazard.

Further information

Product:

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Ecotoxicological data have not been determined specifically for this product.
Information given is based on a knowledge of the components and the ecotoxicology of similar products.
Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Ecotoxicity

Product:

Toxicity to fish (Acute toxici- :)

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ty) Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to daphnia and other aquatic invertebrates (Acute toxicity) : Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to algae (Acute toxicity) : Remarks: LC/EC/IC50 > 100 mg/l
Practically non toxic:
Based on available data, the classification criteria are not met.

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: Data not available

Toxicity to microorganisms (Acute toxicity) : Remarks: Data not available

Persistence and degradability

Product:

Biodegradability : Remarks: Readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Mobility in soil

Product:

Mobility : Remarks: Liquid under most environmental conditions.
If product enters soil, it will be highly mobile and may contaminate groundwater.
Dissolves in water.

Other adverse effects

Product:

Additional ecological information : Does not have ozone depletion potential, photochemical ozone creation potential or global warming potential.

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.
Waste, spills or used product is dangerous waste.

Contaminated packaging : Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

Local legislation

Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

UN/ID/NA number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,
N.O.S.
(Ethylene glycol)
Class : 9
Packing group : III
Labels : 9
Reportable quantity Ethylene glycol
(5,000 lb)
Marine pollutant : no
Remarks : This material is not regulated under 49 CFR if in a container of
119 gallon capacity or less.

International Regulations

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

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Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

The components of this product are reported in the following inventories:

EINECS : All components listed or polymer exempt.
TSCA : All components listed.
DSL : All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reactivity) 2, 1, 0

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
Abbreviations and Acronyms : The standard abbreviations and acronyms used in this document can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial Hygienists
ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS = Australian Inventory of Chemical Substances
ASTM = American Society for Testing and Materials
BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council
CLP = Classification Packaging and Labelling
COC = Cleveland Open-Cup
DIN = Deutsches Institut für Normung
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List
EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty

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ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer
IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty
IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods
INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables
KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty
LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HP V = Occupational Exposure - High Production Volume
PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation
STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act
TWA = Time-Weighted Average
vPvB = very Persistent and very Bioaccumulative

A vertical bar (|) in the left margin indicates an amendment from the previous version.

|| Due to a change in detail in Section 15, this document has been released as a significant change.

Revision Date : 08/29/2018

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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SAFETY DATA SHEET

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

Product number B2047

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.3. Details of the supplier of the safety data sheet

Supplier Byotrol plc
 Building 303 (Ashton),
 Thornton Science Park,
 Pool Lane, Ince, Chester,
 CH2 4NU
 Tel: +44 (0) 1925 742 000
 Fax: +44 (0) 1925 363 099
 info@byotrol.com

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Not Classified

Environmental hazards Not Classified

2.2. Label elements

Hazard statements NC Not Classified

2.3. Other hazards

SECTION 3: Composition/information on ingredients

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

Ingestion Do not induce vomiting. Get medical attention if symptoms are severe or persist. Rinse mouth thoroughly with water. Give plenty of water to drink. Never give anything by mouth to an unconscious person.

Skin contact Skin irritation should not occur when used as recommended. Wash with plenty of water.

Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes and get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

General information The product is considered to be a low hazard under normal conditions of use.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Carbon dioxide (CO₂). Powder. Water spray. Alcohol-resistant foam.

Unsuitable extinguishing media None known.

5.2. Special hazards arising from the substance or mixture

Specific hazards None known.

Hazardous combustion products Toxic gases and fumes may be released in a fire.

5.3. Advice for firefighters

Protective actions during firefighting Use fire-extinguishing media suitable for the surrounding fire. Fight fire with normal precautions from a reasonable distance. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel In case of fire: Wear self-contained breathing apparatus. Wear protective clothing, gloves, eye and face protection. Keep unnecessary and unprotected personnel away from the spillage. Eliminate all sources of ignition. Ventilate closed spaces before entering them.

For emergency responders Wear self-contained breathing apparatus. Wear protective clothing, gloves, eye and face protection. Dilute with plenty of water. Do not allow uncontrolled discharge of product into the environment. Evacuate unnecessary personnel.

6.2. Environmental precautions

Environmental precautions Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Contain spillage with sand, earth or other suitable non-combustible material. Dilute with plenty of water. Contain and dispose of waste according to local regulations.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Use only non-sparking tools. Avoid contact with eyes.

Advice on general occupational hygiene Do not eat, drink or smoke when using this product. No specific hygiene procedures recommended but good personal hygiene practices should always be observed when working with chemical products.

7.2. Conditions for safe storage, including any incompatibilities

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

Storage precautions Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep containers upright. Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from freezing and direct sunlight. Avoid contact with oxidising agents. Store at temperatures not exceeding 35°C.

Storage class Unspecified storage.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

8.2. Exposure controls

Appropriate engineering controls Wash hands at the end of each work shift and before eating, smoking and using the toilet.

Eye/face protection Chemical splash goggles.

Hand protection Hand protection not required.

Respiratory protection Respiratory protection not required.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Odour	Characteristic.
Odour threshold	Not determined.
Melting point	Not determined.
Initial boiling point and range	Not determined.
Flash point	Not determined.
Evaporation rate	Not determined.
Evaporation factor	Not determined.
Flammability (solid, gas)	Not relevant.
Upper/lower flammability or explosive limits	Not relevant.
Other flammability	Not relevant.
Vapour pressure	Not determined.
Vapour density	Not determined.
Bulk density	Not relevant.
Solubility(ies)	Soluble in water.
Partition coefficient	Not determined.
Auto-ignition temperature	Not determined.
Decomposition Temperature	Not determined.
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	Not considered to be explosive.

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

Oxidising properties The mixture itself has not been tested but none of the ingredient substances meet the criteria for classification as oxidising.

Comments Information given is applicable to the product as supplied.

9.2. Other information

Other information None.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Stable at normal ambient temperatures and when used as recommended.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Stable at normal ambient temperatures and when used as recommended.

10.4. Conditions to avoid

Conditions to avoid Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

10.5. Incompatible materials

Materials to avoid Anionics. Hypochlorite. Oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products None known.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects This product is considered non-toxic to humans.

Skin corrosion/irritation

Skin corrosion/irritation

Serious eye damage/irritation

Serious eye damage/irritation Not classified.

Respiratory sensitisation

Respiratory sensitisation Not classified.

Skin sensitisation

Skin sensitisation May cause sensitisation or allergic reactions in sensitive individuals.

Germ cell mutagenicity

Genotoxicity - in vitro Not classified.

Genotoxicity - in vivo Not classified.

Carcinogenicity

Carcinogenicity Not classified.

Reproductive toxicity

Reproductive toxicity - fertility Not classified.

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

Reproductive toxicity - development Not classified.

Specific target organ toxicity - single exposure

STOT - single exposure Not classified.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified.

Aspiration hazard

Aspiration hazard Not classified.

SECTION 12: Ecological information

12.1. Toxicity

Toxicity When used as instructed, the product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

Persistence and degradability Not determined.

12.3. Bioaccumulative potential

Partition coefficient Not determined.

12.4. Mobility in soil

Mobility Not determined.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects Not determined.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Dispose of waste product or used containers in accordance with local regulations Do not discharge into drains or watercourses or onto the ground. Containers with collected spillage must be properly labelled with correct contents and hazard symbol.

Disposal methods The generation of waste should be minimised or avoided wherever possible.

SECTION 14: Transport information

14.1. UN number

14.2. UN proper shipping name

14.3. Transport hazard class(es)

14.4. Packing group

14.5. Environmental hazards

14.6. Special precautions for user

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Byotrol 4in1 Multipurpose Cleaner & Disinfectant (2.5-5% dilution)

EU legislation Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

Revision date	19/08/2019
Revision	2
Supersedes date	05/07/2019
SDS number	5238

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

3.) BATTERY SAVER

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1252	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	BATTERY SAVER	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Aerosol Battery Terminal Cleaner & Protector.	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: Physical Hazards: Flammable aerosols - Category 1	SIGNAL WORD: DANGER	SYMBOL:	
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HAZARD STATEMENTS:

Extremely flammable aerosol.

PRECAUTIONARY STATEMENTS:

Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.

Storage: Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

HAZARDS NOT OTHERWISE SPECIFIED: None.

3. Composition / Information on Ingredients

CHEMICAL NAME	CAS	Concentration % by Weight
Carbonic acid sodium salt (1:1)	144-55-8	1 - <5%
Butane	106-97-8	1 - <5%
Ethanol, 2-butoxy-	111-76-2	1 - <5%
Propane	74-98-6	1 - <5%

*All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments: The components are not hazardous or are below required disclosure limits.

The exact concentration has been withheld as a trade secret.

4. First Aid Measures

EMERGENCY OVERVIEW:

EYES: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

SKIN: Wash skin thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention.

INHALATION:

Move to fresh air.

INGESTION:

Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

PERSONAL PROTECTION FOR FIRST-AID RESPONDERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots and in enclosed spaces, SCBA.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

Symptoms: No data available.

Hazards: No data available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treatment: Get medical attention if symptoms occur.

5. Fire Fighting Measures

GENERAL FIRE HAZARDS:

Use water spray to keep fire-exposed containers cool. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

SUITABLE FIRE EXTINGUISHING MEDIA:

Use fire-extinguishing media appropriate for surrounding materials.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

Do not use water jet as an extinguisher, as this will spread the fire.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Vapors may travel considerable distance to a source of ignition and flash back.

SPECIFIC FIRE-FIGHTING METHODS:

No data available.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots and in enclosed spaces, SCBA.

6. Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

Ventilate closed spaces before entering them. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep upwind.

ACCIDENTAL RELEASE MEASURES:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

Stop the flow of material, if this is without risk. Absorb with sand or other inert absorbent.

ENVIRONMENTAL PRECAUTIONS:

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. Handling and Storage

HANDLING:

TECHNICAL MEASURES (E.G. LOCAL AND GENERAL VENTILATION):

No data available.

SAFE HANDLING ADVICE:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.

Contact Avoidance Measures: No data available.

SAFE STORAGE CONDITIONS:

Pressurized Container: Protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.

Aerosol Level 1

Safe Packaging Materials: No data available.

Storage Temperature: No data available.

8. Exposure Controls / Personal Protection

CONTROL PARAMETERS:

Occupational exposure limits:

Chemical Identity:	Type	Exposure Limit Values		Source
Butane	REL	800 ppm	1,900 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	1,000 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	800 ppm	1,900 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Ethanol, 2-butoxy-	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
	REL	5 ppm	24 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	50 ppm	240 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Propane	TWA	25 ppm	120 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	1,000 ppm	1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	1,000 ppm	1,800 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Ammonium hydroxide ((NH4)(OH))	TWA	1,000 ppm	1,800 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	35 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	25 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	35 ppm	27 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	35 ppm	27 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL	25 ppm	18 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	50 ppm	35 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Ethanol, 2,2',2''-nitrolotris-	REL	3 ppm	15 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	3 ppm	15 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Ethanol, 2,2'-iminobis-	TWA		1 mg/m ³	US. ACGIH Threshold Limit Values, as amended

BIOLOGICAL LIMIT VALUES:

CHEMICAL IDENTITY	EXPOSURE LIMIT VALUE	SOURCE
Ethanol, 2-butoxy- (Butoxyacetic acid (BAA), with hydrolysis: Sampling time: End of shift.)	200 mg/g (Creatinine in urine)	ACGIH BEL

EXPOSURE GUIDELINES:

Ethanol, 2,2'-iminobis- US. ACGIH Threshold Limit Values, as amended Can be absorbed through the skin.

APPROPRIATE ENGINEERING CONTROLS:

No data available.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:



Eye/Face Protection: Wear goggles/face shield.

Skin Protection: Hand Protection: No data available.

Skin and Body Protection: No data available.

Respiratory Protection: In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

General Hygiene Considerations: When using do not smoke. Observe good industrial hygiene practices.

9. Physical & Chemical Properties

Appearance:		Flammability(solid/gas):	No data available.
Physical State:	Liquid.	Explosive Limit – lower (%):	Estimated 1.9 %(V)
Form:	Spray Aerosol.	Explosive Limit – upper (%):	Estimated 9.5 %(V)
Color:	No data available.	Vapor Pressure:	2,757 - 4,136 hPa (20°C)
Odor:	No data available.	Vapor Density (Air=1):	No data available.
Odor Threshold:	No data available.	Density:	No data available.
pH:	No data available.	Relative Density:	No data available.
Freezing Point:	No data available.	Solubility (water):	No data available.
Boiling Point:	No data available.	Solubility (other):	No data available.
Viscosity:	Not available.	Self-Ignition Temperature:	No data available.
Flash Point:	-156.0°F (-104.4°C)	Decomposition Temperature:	No data available.
Kinematic Viscosity:	No data available.	Explosive Properties:	No data available.
Dynamic Viscosity:	No data available.	Evaporation Rate:	No data available.
Oxidizing Properties:	No data available.		

10. Stability & Reactivity Information

REACTIVITY:

No data available.

CHEMICAL STABILITY:

Material is stable under normal conditions.

INCOMPATIBLE MATERIALS:

No data available.

POSSIBILITY OF HAZARDOUS REACTIONS:

No data available.

CONDITIONS TO AVOID:

Avoid heat or contamination.

HAZARDOUS DECOMPOSITION PRODUCTS:

No data available.

11. Toxicological Information

INFORMATION ON LIKELY ROUTES OF EXPOSURE:

Eyes: No data available.

Skin: No data available.

Inhalation: No data available.

Ingestion: No data available.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:

Eyes: No data available.

Skin: No data available.

Inhalation: No data available.

Ingestion: No data available.

ACUTE TOXICITY:

Expected to be a low hazard for usual industrial or commercial handling by trained personnel.

ACUTE TOXICITY:

Oral Product: ATEmix: 85,387.32 mg/kg

Dermal Product: ATEmix: 32,619.33 mg/kg

Inhalation Product: ATEmix: 978.09 mg/l Vapour

ATEmix : 244.52 mg/l Dusts, mists and fumes

REPEATED DOSE TOXICITY:

Product: No data available.

Components:

Butane	LOAEL (Rat(Female, Male), Inhalation, >= 28 d): 12,000 ppm(m) Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation, >= 28 d): 4,000 ppm(m) Inhalation Experimental result, Key study
Ethanol, 2-butoxy-	NOAEL (Rat(Female), Inhalation, 2 yr): < 31 ppm(m) Inhalation Experimental result, Key study NOAEL (Rat(Female), Oral, 90 d): < 82 mg/kg Oral Experimental result, Key study
Propane	NOAEL (Rabbit(Female, Male), Dermal, 90 d): > 150 mg/kg Dermal Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation, >= 28 d): 4,000 ppm(m) Inhalation Experimental result, Key study LOAEL (Rat(Female, Male), Inhalation, >= 28 d): 12,000 ppm(m) Inhalation Experimental result, Key study

SKIN CORROSION/IRRITATION:**Product:** No data available.**Components:**

Carbonic acid sodium salt (1:1)	Assessment Not Classified
Ethanol, 2-butoxy-	in vivo (Rabbit): Irritating

SERIOUS EYE DAMAGE/EYE IRRITATION:**Product:** No data available.**Components:**

Ethanol, 2-butoxy-	Rabbit, 24 - 72 hrs: Irritating
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RESPIRATORY OR SKIN SENSITIZATION:**Product:** No data available.**Components:**

Ethanol, 2-butoxy-	Skin sensitization:, in vivo (Guinea pig): Non sensitising
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CARCINOGENICITY:**Product:** No data available.**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

No carcinogenic components identified.

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogenic components identified.

GERM CELL MUTAGENICITY:**In vitro Product:** No data available.**In vivo Product:** No data available.**REPRODUCTIVE TOXICITY:****Product:** No data available.**SPECIFIC TARGET ORGAN TOXICITY -single exposure:****Product:** No data available.**SPECIFIC TARGET ORGAN TOXICITY -repeated exposure:****Product:** No data available.**ASPIRATION HAZARD****Product:** No data available.**OTHER EFFECTS:**

No data available.

12. Ecological Information**ECOTOXICITY:****AQUATIC HAZARDS TO THE AQUATIC ENVIRONMENT:****FISH****Product:** No data available.**Components:**

Carbonic acid sodium salt (1:1)	NOAEL (Lepomis macrochirus, 96 h): 5,200 mg/l Experimental result, Key study LC 50 (Lepomis macrochirus, 96 h): 7,100 mg/l Experimental result, Key study
Butane	LC 50 (Various, 96 h): 147.54 mg/l QSAR QSAR, Key study
Ethanol, 2-butoxy-	LC 50 (Oncorhynchus mykiss, 96 h): 1,474 mg/l Experimental result, Key study
Propane	LC 50 (Various, 96 h): 147.54 mg/l QSAR QSAR, Key study

AQUATIC INVERTEBRATES:**Product:** No data available.**Components:**

Carbonic acid sodium salt (1:1)	EC 50 (Daphnia magna, 48 h): 4,100 mg/l Experimental result, Key study NOAEL (Daphnia magna, 48 h): 3,100 mg/l Experimental result, Key study
Butane	LC 50 (Daphnia sp., 48 h): 69.43 mg/l QSAR QSAR, Key study
Ethanol, 2-butoxy-	EC 50 (Daphnia magna, 48 h): 1,550 mg/l Experimental result, Key study

CHRONIC HAZARDS TO THE AQUATIC ENVIRONMENT:**FISH****Product:** No data available.**Components:**

Ethanol, 2-butoxy-	NOAEL (Danio rerio): > 100 mg/l Experimental result, Key study
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AQUATIC INVERTEBRATES:**Product:** No data available.**Components:**

Carbonic acid sodium salt (1:1)	NOAEL (Daphnia magna): > 576 mg/l Experimental result, Key study
Ethanol, 2-butoxy-	EC 10 (Daphnia magna): 134 mg/l Experimental result, Key study EC 50 (Daphnia magna): 297 mg/l Experimental result, Key study

TOXICITY TO AQUATIC PLANTS:**Product:** No data available.

PERSISTENCE AND DEGRADABILITY:

Biodegradation Product: No data available.

Components:

Butane	100% (385.5 h) Detected in water. Experimental result, Key study
Ethanol, 2-butoxy-	90.4% Detected in water. Experimental result, Key study
Propane	100% (385.5 h) Detected in water. Experimental result, Key study
	50% (3.19 d) Detected in water. QSAR, Weight of Evidence study

BOD/COD RATIO:

Product: No data available.

BIOACCUMULATIVE POTENTIAL:

Bioconcentration Factor (BCF):

Product: No data available.

PARTITION COEFFICIENT N-OCTANOL / WATER (LOG KOW):

Product: No data available.

MOBILITY IN SOIL:

No data available.

Components:

Carbonic acid sodium salt (1:1)	No data available.
Butane	No data available.
Ethanol, 2-butoxy-	No data available.
Propane	No data available.

OTHER ADVERSE EFFECTS:

No data available.

13. Disposal Consideration**DISPOSAL INSTRUCTIONS:**

Wash before disposal. Dispose to controlled facilities.

CONTAMINATED PACKAGING:

No data available.

14. Transportation Information

DOT: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable
Transport Hazard Class(es):
 Class: 2.1
 Label(s): -
Packing Group: II
Special Precautions for User: Not regulated.

IATA: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable
Transport Hazard Class(es):
 Class: 2.1
 Label(s): -
Packing Group: -
Special Precautions for User: Not regulated.
Passenger and Cargo Aircraft: Allowed. 203
Cargo Aircraft Only: Allowed. 203

IMDG: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable
Transport Hazard Class(es):
 Class: 2
 Label(s): -
Packing Group: -
Special Precautions for User: Not regulated.

**15. Regulatory Information****US FEDERAL REGULATIONS:**

Restrictions on use: Not known.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D):

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity:

UNLISTED HAZARDOUS WASTES CHARACTERISTIC OF IGNITABILITY
 RCRA HAZARDOUS WASTE NO. D001
 GLYCOL ETHERS
 AMMONIUM HYDROXIDE
 DIETHANOLAMINE

Superfund Amendments and Reauthorization Act of 1986 (SARA):

Hazard Categories:

Flammable aerosol

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances:

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) -

Supplier Notification Required:

<u>Chemical Name</u>	<u>% by wt.</u>
Ethanol, 2-butoxy-	1.0%

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

US STATE REGULATIONS:

US. California Proposition 65: For more information go to www.P65Warnings.ca.gov.

US. New Jersey Worker and Community Right-to-Know Act:

Chemical Identity:

Butane
 Ethanol, 2-butoxy-
 Propane

US. Massachusetts RTK - Substance List:

No ingredient regulated by MA Right-to-Know Law present.

US. Pennsylvania RTK – Hazardous Substances:

Chemical Identity:

Butane
 Ethanol, 2-butoxy-
 Propane

US. Rhode Island RTK:

No ingredient regulated by RI Right-to-Know Law present.

INTERNATIONAL REGULATIONS:

Montreal Protocol:

Not applicable.

Stockholm Convention:

Not applicable.

Rotterdam Convention:

Not applicable.

Kyoto Protocol:

INVENTORY STATUS:

Australia AICS:	On or in compliance with the inventory.
Canada DSL Inventory List:	On or in compliance with the inventory.
EINECS, ELINCS or NLP:	Not in compliance with the inventory.
Japan (ENCS) List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory.
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	Not in compliance with the inventory.
US TSCA Inventory:	On or in compliance with the inventory.
New Zealand Inventory of Chemicals:	On or in compliance with the inventory.
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.
Mexico INSQ:	Not in compliance with the inventory.
Ontario Inventory:	On or in compliance with the inventory.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory.

16. Other Information

N/A = Not Applicable; N/D = Not Determined

DISCLAIMER:

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

4.) BIG BLAST

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1515	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	BIG BLAST	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Wasp and Hornet Aerosol Insecticide Spray	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: Dissolved Gas Eye Irritant: Category 2B Aspiration Hazard: Category 1	SIGNAL WORD: DANGER	SYMBOL:		
--	-------------------------------	----------------	---	---

HAZARD STATEMENTS:

Contains gas under pressure; may explode if heated. Causes eye irritation. May be fatal if swallowed and enters airways. This product contains the following percentage of chemicals of unknown toxicity: 0%

PRECAUTIONARY STATEMENTS:

Prevention: Keep away from heat, sparks, open flames, and hot surfaces. No smoking. Do not pierce or burn, even after use. Do not expose to temperatures exceeding 50 °C/122 °F. Wash hands thoroughly after handling.

Response:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical attention.

IF SWALLOWED: Immediately call a poison center or a doctor. Do NOT induce vomiting.

Storage: Store in a well-ventilated place. Protect from sunlight. Store locked up.

Disposal: Dispose of contents/container in accordance with local/regional/national guidelines.

HAZARDS NOT OTHERWISE SPECIFIED:

Not applicable.

3. Composition / Information on Ingredients

CHEMICAL NAME	CAS	Concentration % by Weight
Isoparaffinic Hydrocarbon	64742-47-8	60-100
Carbon Dioxide	124-38-9	1-5

4. First Aid Measures

EMERGENCY OVERVIEW

EYES: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

SKIN: Immediately wash with soap and water for 15 minutes. Remove contaminated clothing and shoes immediately. Seek medical attention if irritation develops.

INHALATION:

Move to fresh air. Administer artificial breathing if breathing has stopped. Seek immediate medical help.

INGESTION:

Seek medical attention immediately.

ACUTE HEALTH HAZARDS:

None known.

CHRONIC HEALTH HAZARDS:

Concentrating vapors and inhaling material can lead to oxygen deprivation, loss of brain function and potential loss of life.

NOTE TO PHYSICIAN:

There is no specific treatment regimen. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA:

Dry chemical, alcohol or alcohol-resistant foam or carbon dioxide. Water may be ineffective.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

Water spray/stream.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Keep away from sparks, open flames, and hot surfaces. No smoking. Do not spray on an open flame or other ignition source.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:

Oxides of carbon.

SPECIFIC FIRE-FIGHTING METHODS:

Use water spray only to cool exposed containers. Keep away from sparks, open flames, and hot surfaces. No smoking. Do not spray on an open flame or other ignition source.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Wear NIOSH approved Self-Contained Breathing Apparatus with a full-face piece operated in a positive pressure demand mode with full body protective clothing when fighting fires.

6. Accidental Release Measures

PERSONAL PRECAUTIONS:

Refer to Section 8 for proper personal protective equipment.

ENVIRONMENTAL PRECAUTIONS AND CLEAN-UP METHODS:

Clean up with non-combustible material like vermiculite, sand, or earth. If many cans are opened remove ignition sources. Prevent spill from entering sewers, storm drains, and natural waterways. Dispose of in accordance with federal, state, and local regulations. Containers may be hazardous when empty.

7. Handling and Storage

HANDLING AND STORAGE:

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Pressurized container: Do not pierce or burn, even after use.

OTHER PRECAUTIONS:

Keep out of the reach of children.

INCOMPATIBILITY:

Some plastics and strong oxidizers.

8. Exposure Controls / Personal Protection

CHEMICAL NAME	ACGIH TLV	OSHA PEL
Isoparaffinic Hydrocarbon	400 ppm	400 ppm
Carbon Dioxide	5000 ppm	5000 ppm

PERSONAL PROTECTIVE EQUIPMENT:



EYE PROTECTION: Safety glasses.

SKIN PROTECTION: Wash hands thoroughly after handling.

RESPIRATORY PROTECTION: Not required with normal use.

ENGINEERING CONTROLS:

General ventilation adequate.

9. Physical & Chemical Properties

APPEARANCE:	Clear.	FLASH POINT:	> 200°F (93°C)
ODOR:	Mild odor.	Flammability Limit-lower (%):	Not determined.
ODOR THRESHOLD:	Not determined.	Flammability Limit-upper (%):	Not determined.
VISCOSITY:	Not determined.	SOLIDS (%):	Not determined.
FREEZING POINT:	Not determined.	VOLATILITY INC WATER (%):	3%
BOILING POINT:	450°F	VAPOR PRESSURE:	0.4
PARTITION COEFF (n-octanol/water):	Not determined.	VAPOR DENSITY (Air=1):	<6
VOC:	<1%	DIELECTRIC STRENGTH (volts):	47,300 volts
SPECIFIC GRAVITY(H2O=1):	0.81	SOLUBILITY (WATER):	0%
EVAPORATION RATE:	< 1	AUTO-IGNITION TEMP:	Not determined.
		DECOMPOSITION TEMP:	Not determined.

10. Stability & Reactivity Information

REACTIVITY:

None known.

CHEMICAL STABILITY:

Stable.

INCOMPATIBLE MATERIALS:

Some plastics and strong oxidizers.

CONDITIONS TO AVOID:

Temperatures greater than 120°F and sources of ignition.

DECOMPOSITION PRODUCTS:

Oxides of carbon.

POSSIBLE HAZARDOUS REACTIONS:

Will not occur.

11. Toxicological Information

Isoparaffinic Hydrocarbon (64742-47-8) LD50 (Oral, Rat) 5 g/kg; LD50 (Dermal, Rabbit) 2 g/kg; LC50 (Rat, 4hr) 5 mg/L

PRIMARY ROUTE OF ENTRY:

Ingestion, inhalation, skin.

ACUTE/POTENTIAL HEALTH EFFECTS:

EYES: Causes irritation, redness, tearing.

SKIN: May cause mild irritation, localized defatting.

INHALATION: May cause dizziness. Excessive exposure may lead to oxygen deprivation and unconsciousness.

INGESTION: May cause nausea, diarrhea, vomiting.

MEDICAL CONDITION AGGRAVATED:

Excessive exposure will aggravate respiratory cardiovascular or pulmonary illnesses.

ACUTE HEALTH HAZARDS:

None known.

CHRONIC / LONG TERM EFFECTS:

Concentrating vapors and inhaling material can lead to oxygen deprivation, loss of brain function and potential loss of life.

CARCINOGENIC INFORMATION:
OSHA: No ACGIH: No NTP: No IARC: No OTHER: N/A.

12. Ecological Information

ECOLOGICAL INFORMATION:
This pesticide is extremely toxic to aquatic organisms, including fish and invertebrates. Do not apply directly to or near water. Drift and run-off may be hazardous to fish in water adjacent to treated areas. Do not contaminate water when disposing of equipment, wash water, or rinsate. This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment areas.

BIODEGRADABILITY:
Component or components of this product are not biodegradable.

BIOACCUMULATION:
Components in this mixture can bioaccumulate in aquatic organisms.

SOIL MOBILITY:
This product is mobile in soil.

OTHER ECOLOGICAL HAZARDS:
None known.

13. Disposal Consideration

Dispose of in accordance with federal, state, and local regulations. Containers may be hazardous when empty.

14. Transportation Information

DOT: **PROPER SHIPPING NAME:** Aerosols, Ltd. Qty.
HAZARD CLASS/DIVISION: 2.2.
UN/NA NUMBER: UN 1950.
PACKAGING GROUP: N/A.

AIR SHIPMENT
PROPER SHIPPING NAME: Aerosols, Ltd. Qty.
HAZARD CLASS/DIVISION: 2.2.
UN/NA NUMBER: UN 1950.

SHIPPING BY WATER:
VESSEL (IMO/IMDG)
PROPER SHIPPING NAME: Aerosols, Ltd. Qty.
HAZARD CLASS/DIVISION: 2.2.
UN/NA NUMBER: UN 1950.

ENVIRONMENTAL HAZARDS WATER:
Marine Pollutant.

15. Regulatory Information

TSCA STATUS:
All chemicals are listed or exempt.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):
None.

SARA 311/312 HAZARD CATEGORIES:
None.

SARA 313 REPORTABLE INGREDIENTS:
None.

STATE REGULATIONS:
California Proposition 65: None.

INTERNATIONAL REGULATIONS:
All components are listed or exempted. This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label: Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. EPA Reg. No. 44446-71.

RCRA Status:
Waste likely considered Non-hazardous under RCRA, however product should be fully characterized prior to disposal (40 CFR 261).

16. Other Information

DISCLAIMER:
To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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5.) BRAKE AWAY

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Safety Data Sheet

1 – PRODUCT IDENTIFICATION

PRODUCT NAME: Brake Away
PRODUCT TYPE: Alkaline liquid cleaning compound
PRODUCT NUMBER: B0395XXX (Last 3 characters vary with the packaging)
CONTROL NUMBER: B0395XXX

COMPANY: **Simoniz USA, Inc.**
201 Boston Turnpike
Bolton, CT 06043
1-800-227-5536
www.simoniz.com
EMERGENCY PHONE:..... (800) 255-3924 (CHEM-TEL)

2 – HAZARDS IDENTIFICATION

CLASSIFICATION OF SUBSTANCE/MIXTURE:..... Skin Corrosion (1A) Serious Eye Damage (1)

SYMBOLS:.....



SIGNAL WORD:..... DANGER!
HAZARD STATEMENT:..... Causes severe skin burns and eye damage. Causes serious eye damage.

PRECAUTIONARY STATEMENTS:

PREVENTION: Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

RESPONSE:..... **IF SWALLOWED:** Rinse mouth. Do NOT induce vomiting. **IF ON SKIN (or hair):** Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. **IF INHALED:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. Specific treatment (see First AID Section on this label). **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. Immediately call a POISON CENTER or doctor/physician.

STORAGE: Store locked up.

DISPOSAL: Dispose of container and contents in accordance with local regulations.

Safety Data Sheet

3 – COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	C.A.S. NUMBER
Water	7732-18-5
Sodium Hydroxide	1310-73-2
Sodium Xylene Sulfonate	1300-72-7
2-Butoxy Ethanol	111-76-2
Sodium Alpha Olefin Sulfonate	68439-57-6

Percentages of ingredients are being withheld as trade secret information. This information will be disclosed as necessary to authorized individuals

4 – FIRST-AID MEASURES

BREATHING (INHALATION): ... If victim shows signs of discomfort or irritation, remove to fresh air. If symptoms persist, get immediate medical attention.

SWALLOWING (INGESTION): . DO NOT INDUCE VOMITING! Drink a large quantity of water or milk. Do not attempt to give liquids to an unconscious person. Get immediate medical attention!

EYES: Flush eyes with a large quantity of fresh water for at least 15 minutes. Apply ice compresses and GET IMMEDIATE EMERGENCY MEDICAL ATTENTION by an eye specialist. It may be necessary to take victim to a hospital emergency room.

SKIN (DERMAL): Flush from skin and clothing with large amounts of fresh water. If irritation persists, consult physician. Wash contaminated clothing before wearing.

5 – FIRE-FIGHTING MEASURES

FLASHPOINT:..... This product is non-flammable.

EXTINGUISHING MEDIA:..... This product is non-flammable. Use extinguishing media suitable for materials already burning.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters working in areas where this product is present should be equipped with an approved, fully enclosed SCBA.

UNUSUAL FIRE AND EXPLOSION HAZARDS:..... None known.

6 – ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES: Dike to prevent spillage into streams or sewer systems. Consult local, state and federal authorities.

WASTE DISPOSAL: As recommended by local, state and federal authorities.

Safety Data Sheet

7 – HANDLING and STORAGE

STORAGE: Store in a cool, well ventilated area. Avoid overheating or freezing.

HANDLING: Under normal use according to label instructions, special protection should not be necessary. Wear eye protection if product is likely to splash. Do not place this product in an unmarked container! Keep away from children! Spilled material is slippery.

8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

RESPIRATORY PROTECTION: Not usually needed in well-ventilated areas. If needed, use a NIOSH approved respirator.

PROTECTIVE CLOTHING: Nitrile or PVC gloves, and chemical splash goggles. Wear protective outerwear and boots when product is likely to splash.

ADDITIONAL MEASURES: Under normal use according to label instructions, special protection should not be necessary. Wear eye protection if product is likely to splash. Do not place this product in an unmarked container! Keep away from children! Spilled material is slippery.

INGREDIENT	C.A.S. NUMBER	PEL
Water	7732-18-5	No limits established
Sodium Hydroxide	1310-73-2	2 mg/m ³ ceiling
Sodium Xylene Sulfonate	1300-72-7	No limits established
2-Butoxy Ethanol	111-76-2	20 ppm TLV, 25 ppm PEL
Sodium Alpha Olefin Sulfonate	68439-57-6	No limits established

9 – PHYSICAL / CHEMICAL PROPERTIES

APPEARANCE & ODOR: Amber transparent liquid. Slight solvent odor.

ODOR THRESHOLD: N/A

pH: 13.5

MELTING POINT: N/A

FREEZING POINT: N/A

BOILING POINT: 210 degrees F.

BOILING POINT RANGE: N/A

FLASHPOINT: This product is non-flammable.

EVAPORATION RATE: N/A

FLAMMABILITY (solid/gas): N/A

EXPLOSION LIMITS: N/A

VAPOR PRESSURE: N/A

VAPOR DENSITY (AIR=1): Greater than 1.

SPECIFIC GRAVITY: 1.1

SOLUBILITY IN WATER: Completely soluble.

PARTITION COEFFICIENT: N/A

Safety Data Sheet

AUTO-IGNITION TEMPERATURE:.....N/A
DECOMPOSITION TEMPERATURE:N/A
VISCOSITY: Water thin

10 – STABILITY and REACTIVITY

STABILITY: Stable under normal conditions.
HAZARDOUS DECOMP.: This product not known to polymerize.
INCOMPATIBILITY: Do not mix with acids or other detergents.

11 – TOXICOLOGICAL INFORMATION

ROUTE(S) OF ENTRY: Ingestion. Not likely to be inhaled in dangerous amounts.
LISTED CARCINOGEN: None over 0.1%.
MEDICAL CONDITION AGGRAVATED:.....May aggravate pre-existing dermatitis.
INHALATION:..... Not likely to be inhaled in hazardous amounts. Maintain adequate ventilation in the work area.
INGESTION:..... This material can cause burns and serious damage to any exposed body parts.
EYES: Undiluted product will cause burns or eye irritation, or possibly blindness.
SKIN (DERMAL): This product may cause burns or irritation if not removed from the skin.
ACUTE TOXICITY* (ORAL):.....>2000 mg/kg
ACUTE TOXICITY* (DERMAL):.....>2000 mg/kg
ACUTE TOXICITY* (INHALATION):.....>20,000 ppm V (Gas), >20 mg/l (Vapor), >5 mg/l (Dust)

*Determined using the additivity formula for mixtures (GHS Purple Book, 3.1.3.6)

12 – ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND DISTRIBUTION: N/A

13 –DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: As recommended by local, state and federal authorities.

14 – TRANSPORTATION INFORMATION

DOT CODE
PROPER SHIPPING NAME:..... Compounds, Cleaning, Liquid (contains sodium hydroxide)
HAZARD CLASS:..... 8
UN/NA NUMBER: NA 1760
PACKAGING GROUP :..... III

Safety Data Sheet

IMDG CODE**PROPER SHIPPING NAME** :...SODIUM HYDROXIDE SOLUTION**HAZARD CLASS** :.....8**UN NUMBER** :.....UN1824**PACKAGING GROUP** :.....III

15 - REGULATIONS

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29CFR 1910.1200

16 – OTHER INFORMATION

NFPA HEALTH: 3**NFPA FLAMMABILITY:** 0**NFPA REACTIVITY:**..... 0**NFPA OTHER:** Alkali

ADDITIONAL:..... The information contained in this SDS is based on the data available to us from sources we believe to be reliable. No warranty or guaranty expressed or implied is made regarding the accuracy of this data or the results obtained from the reliance on this data. The manufacturer assumes no responsibility for injury from the use of this product. Be safe- read this product safety information and pass it on to all persons who may be exposed to this product. Federal law requires it. This product and/or all of its components are either included on or exempt from the TSCA Inventory of Chemical Substances.

REVISION DATE:..... 10/21/2015

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6.) *CHERRY BLAST SOAP*

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Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

1. Identification

1.1. Product identifier

Product Identity Cherry Blast
Alternate Names Cherry Blast, Neutral Detergent

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use See Technical Data Sheet.
Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name TSC Service & Supply
1529 23rd Avenue
Tuscaloosa, AL 35401
Telephone No. Tel: +1 205 553 4041
Fax: +1 205 553 4061

2. Hazard(s) identification

2.1. Classification of the substance or mixture

No applicable GHS categories.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.

No applicable GHS categories.

[Prevention]:

No GHS prevention statements

[Response]:

No GHS response statements

[Storage]:

No GHS storage statements

[Disposal]:

No GHS disposal statements

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

3. Composition/information on ingredients

There are no ingredients in this product which are classified as hazardous, and/or no hazardous ingredients above the GHS cut off percentage.

4. First aid measures

4.1. Description of first aid measures

General	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.
Eyes	Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.
Ingestion	If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed

Overview	Eyes: Can Cause irritation, redness and burns. Skin: Can cause irritation and dermatitis. Ingestion: Causes burns of Gastro-Intestinal tract. Inhalation: Excessive inhalation can cause nasal and respiratory irritation.
-----------------	---

5. Fire-fighting measures

5.1. Extinguishing media

As appropriate for surrounding fire

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Oxidizing agents.

5.3. Advice for fire-fighters

None

ERG Guide No. ----

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Clean-up workers must use protective clothing to prevent body contact. Pick up with wet mop, wet vac or absorbent material. Rinse floor with clear water and allow floor to dry before allowing traffic.

7. Handling and storage

7.1. Precautions for safe handling

Do not use undiluted (at least 20 to 1) on aluminum and latex painted surfaces.

Keep out of reach of children. Store in closed container away from incompatible materials.

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Store at room temperature. Rinse container before discarding. Store away from Acids.

Incompatible materials: Oxidizing agents.

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

There are no ingredients in this product which are classified as hazardous, and/or no hazardous ingredients above the GHS cut off percentage.

8.2. Exposure controls

Respiratory	None needed under normal conditions.
Eyes	Safety glasses or chemical splash goggles.
Skin	Rubber boots and apron if necessary to avoid contaminating clothing. Wear rubber gloves.
Engineering Controls	Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.
Other Work Practices	Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse. Do not use undiluted (at least 20 to 1) on aluminum or latex painted surfaces.

9. Physical and chemical properties

Appearance	Clear Red Liquid
Odor	Cherry

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

Odor threshold	Not determined
pH	9.0 - 10.0 (Conc) / 8.5 - 9.5 in 1% (Use Dilution)
Melting point / freezing point	Not Measured
Initial boiling point and boiling range	212 Deg F
Flash Point	None
Evaporation rate (Ether = 1)	1.0 (Water)
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured
Vapor pressure (Pa)	Not Measured
Vapor Density	Not Measured
Specific Gravity	1.005
Solubility in Water	Complete
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	Not Measured
Decomposition temperature	Not Measured
Viscosity (cSt)	Not Measured
Percent Volatile (by weight)	> 75 %

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

Oxidizing agents.

10.5. Incompatible materials

Oxidizing agents.

10.6. Hazardous decomposition products

Oxidizing agents.

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

11. Toxicological information

Acute toxicity

There are no ingredients in this product which are classified as hazardous, and/or no hazardous ingredients above the GHS cut off percentage.

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	---	Not Applicable
Serious eye damage/irritation	---	Not Applicable
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

There are no ingredients in this product which are classified as hazardous, and/or no hazardous ingredients above the GHS cut off percentage.

12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

	DOT (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
14.1. UN number	Not Applicable	Not Regulated	Not Regulated
14.2. UN proper shipping name	Not Regulated	Not Regulated	Not Regulated
14.3. Transport hazard class(es)	DOT Hazard Class: Not Applicable	IMDG: Not Applicable Sub Class: Not Applicable	Air Class: Not Applicable
14.4. Packing group	Not Applicable	Not Applicable	Not Applicable
14.5. Environmental hazards			
IMDG	Marine Pollutant: No;		
14.6. Special precautions for user	No further information		

15. Regulatory information

Regulatory Overview	The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.
Toxic Substance Control Act (TSCA)	All components of this material are either listed or exempt from listing on the TSCA Inventory.
WHMIS Classification	Not Regulated
US EPA Tier II Hazards	Fire: No Sudden Release of Pressure: No Reactive: No Immediate (Acute): No Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Safety Data Sheet

Cherry Blast

SDS Revision Date:

10/14/2015

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Pennsylvania RTK Substances (>1%) :

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

Not Applicable

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

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7.) CLEAR SEAL

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Safety Data Sheet

SECTION I - PRODUCT AND COMPANY IDENTIFICATION

Product Name: Clear Seal Product Code: 1000
Recommended Use: Repair and maintenance thermoplastic architectural coating for roofing applications.
Company: Pace Products International
P.O. Box 515
Stilwell, KS 66013

Telephone Number: 1 (800)255-3924 CHEM-TEL (813) 248-0573
**"ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL,
LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS"**

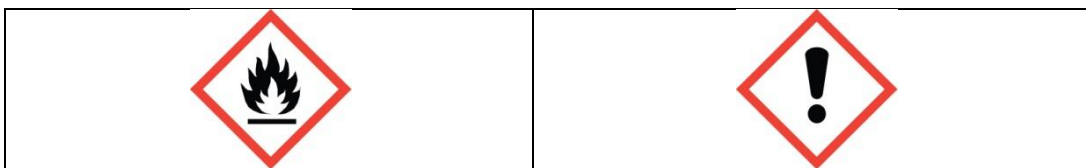
SECTION II – HAZARDS IDENTIFICATION

GHS Classification

Flammable Liquid - Category 3 Skin Irritation - Category 2 Aspiration Hazard - Category 1
Specific Organ Toxicity - Category 2 Eye Irritation - Category 2A Carcinogenicity* - Category 1B
Germ cell Mutagenicity - Category 1B

*Carcinogenicity IARC Group 2B Cumene 98-82-8

ACGIH, NTP, OSHA no component over 0.1% is classified as a Carcinogen or as a potential carcinogen



DANGER!

Hazard Statements:

H226 - Flammable liquid and vapor
H312 - Harmful in contact with skin
H319 - Causes serious eye irritation
H335 - May Cause respiratory irritation
H340 - May cause genetic defects

H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H332 - Harmful if inhaled
H336 - May cause drowsiness or dizziness
H350 - May Cause Cancer

Precautionary Statements:

Prevention:

P201 - Obtain special instructions before use.
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment.
P242 - Use only non-sparking tools.
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P264 - Wash skin thoroughly after handling
P280 - Wear protective gloves/ eye protection/ face protection

P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat/sparks/open flames/ hot surfaces – No smoking
P241 - Use explosion proof electrical/ ventilating/ lighting/ equipment.
P243 - Take precautionary measures against static discharge
P270 - Do not eat, drink, or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P281 - Use personal protective equipment as required.

Response:

P301+P310 - IF SWALLOWED: Immediately Call a POISON CENTER or doctor/physician.
P303+ P361 P353 - IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340+P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P305+ P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362 - Take off contaminated clothing and wash before reuse
P332+P313 - If skin irritation occurs: Get medical advice/ attention.
P331 - Do NOT induce vomiting.
P337+ P313- If eye irritation persists: Get medical advice/ attention
P308+P313 - IF exposed or concerned: Get medical advice/ attention.
P370+ P378 - In case of fire: Use water spray, alcohol resistant foam, dry chemical, or carbon dioxide for extinction.

Storage:

P403+P235 - Store in a well ventilated place. Keep cool.

P403+P233- Store in a well ventilated place. Keep container tightly closed

Disposal:

P501 - Dispose of contents/ container to an approved waste disposal plant.

SECTION III - Composition/Information on Ingredients

Pure Substance/Mixture: MIXTURE

Chemical Name	Cas No.	Percentage	Chemical Name	Cas No.	Percentage
Stoddard Solvent	8052-41-3	60%	Mesitylene	108-67-8	3.3%
Nonane	111-84-2	2.6%	Hydrocarbon Resin	69430-35-9	19.4%
Solvent Naptha, light aromatic	64742-95-6	7.8%	Cumene	98-82-8	0.1%
1,2,4 trimethylbenzene	95-63-6	5.2% max			

*This product is a liquid and has no dust hazards. Many of the components of this product are nuisance dusts which to the best of our knowledge do not apply as a hazard in this form. Further detail on contents is confidential. Any hazards are included in this SDS.

SECTION IV – FIRST AID MEASURES

Inhalation: Move victim to fresh air. If victim is not breathing, immediately begin rescue breathing. If breathing is difficult, 100% humidified oxygen should be administered by a qualified individual. Seek medical attention immediately. Keep the affected person warm and at rest.

Eye Contact: Check for/remove contact lenses. Flush eyes with cool, clean, low pressure water for at least 15 minutes while occasionally lifting and lowering eyelids. Do not use eye ointment unless directed by a physician. Seek medical attention.

Skin contact: Remove contaminated shoes and clothing. Flush affected area with large amounts of water. If skin is damaged, apply a clean dressing and seek medical attention. Do not use ointments. If skin is not damaged, clean affected area thoroughly with mild soap and water. Seek medical attention if tissue appears damaged or in pain or irritation persists.

Ingestion: DO NOT INDUCE VOMITING. If spontaneous vomiting is about to occur, place the victims head below their knees. If victim is drowsy or unconscious, place on left side with head down. Never give anything by mouth to a person who is not fully conscious. Do not leave victim unattended. Seek medical attention immediately.

Note to: INHALATION: Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If difficulty in breathing develops, evaluate upper respiratory tract for irritation and/or inflammation.

Avoid sympathomimetic drugs as this material (or its component) could sensitize the heart to the effects of sympathomimetic amines.

SECTION V – FIRE FIGHTING MEASURES

NFPA Class II combustible liquid.

Flash Point Closed cup 41 C (105°F)

Lower Flammable Limit AP 0.5%

Upper Flammable Limit AP 6%

Auto ignition Temp 230 C (446 °F)

Hazardous Decomposition or Byproducts: Carbon monoxide, carbon dioxide, various hydrocarbon fragments. Irritating vapors are formed at elevated temperatures. Fire fighters should use SCBA with a full face piece operated in positive pressure mode.

Extinguishing Media: Small Fires: Use dry chemicals, carbon dioxide, foam, water fog, or inert gas (nitrogen)
Large Fires: Use foam, water fog or water spray. Water may be ineffective. Water may not extinguish the fire. Water fog and spray are effective in cooling containers and adjacent structures. However, water can be used to cool the external walls of vessels to prevent excessive pressure, auto ignition or explosion. DO NOT use a solid stream of water directly on the fire as the water may spread the fire to a larger area.

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures:	Use Personal protective Equipment Ensure Adequate Ventilation Evacuate personnel to safe areas Material can create slippery conditions Remove all sources of ignition and sparks
Environmental Precautions:	Stop Leak Dike around spills, prevent material from entering sewers, drains and bodies of water
Method for containment	Use absorbent pads and dikes
Cleanup	Soak up with absorbent materials Remove all ignition sources Contact proper local authorities

SECTION VII – HANDLING AND STORAGE

Handling: A static electrical charge can accumulate when this material is flowing through pipe, nozzles and hoses. A static spark can ignite accumulate vapors. Keep unused containers closed to prevent vapor buildup and insure all equipment is properly grounded.

Misuse of empty containers can be dangerous; they may contain residual material which can ignite. Do not cut or weld empty containers. Do not expose empty containers to open flame, sparks or heat. Dispose of all empty containers in accordance with federal, state and local regulations.

Storage: Store in a cool, dry well ventilated area. Keep containers tightly closed. Do not store or use product near high heat, flame or other potential ignition sources. Do not store this material in unlabeled containers. All electrical in the storage area must comply with NFPA National Electric Code (NEC).

SECTION VIII – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ingredient	ACGIH TWA	OSHA PEL	NIOSH REL	NIOSH Ceiling
Stoddard Solvent	100 ppm	500 ppm 2900 mg/m3	350 mg/m3	1800 mg/m3 (15 minutes)
Solvent Naptha, light aromatic			25 ppm 125 mg/m3	
1,2,4 trimethylbenzene			25 ppm 125 mg/m3	
Mesitylene			25 ppm 125 mg/m3	

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep airborne concentrations of vapor below the workplace exposure limits listed below. All electrical should comply with National Electrical Code.

Personal Protective Equipment: Personal protective equipment should be used when working with this material in a typical outdoor work environment.
Breathing – NIOSH approved breathing mask recommended if necessitated by situation.
Eye Protection – Safety glasses with side shield are recommended as minimum protection.
Hand Protection – Avoid skin contact, use rubber gloves constructed of a chemical resistant material and wash hands with soap and water before eating or drinking. Do not use gasoline or kerosene to wash hands. Mild industrial hand cleaners may be used.
Body Protection - Avoid skin contact, change contaminated clothing immediately.
General Comments – Be sure to use this product in a well ventilated area as vapors can build up in unventilated areas to hazardous levels and become a combustible hazard.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White Liquid	Vapor Pressure (mm Hg at 20 C)	0.62
Odor	Mild petroleum odor	Upper/Lower Flammability	N/A
Odor Threshold	2 ppm	Water Soluble	No
Boiling Point	313-351°F (156 – 177 C)	Viscosity	115-120 KU
Flash Point	105°F (41 C)	Auto ignition temp	N/A
Density	9.0 – 10.0 lb/gal	pH	Not applicable
Freeze point	<0°F	Evaporation Rate	0.12 (But Ace =1)
Vapor Density	Not Available		

SECTION X – STABILITY AND REACTIVITY

Chemical Stability:	Stable	Hazardous Polymerization:	will not occur
Conditions to avoid:	Keep away from heat, flame and other potential ignition sources. Keep away from strong oxidizing conditions and agents.		
Material Incompatibility:	Strong acids, alkalis, and oxidizers such as liquid chlorine, other halogens, hydrogen peroxide and oxygen.		
Hazardous Decomp. Products:	No additional hazardous decomposition products were identified other than those in Section V		

SECTION XI – TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
Inhalation, Ingestion, Eye Contact, Skin Contact, Skin absorption

Carcinogenicity: No data available to indicate product or any components present at greater than 0.1% cause cancer.

Mutagenicity: No data available to indicate product or any components present at greater than 0.1% cause mutation.

Reproductive: No data available to indicate product or any components present at greater than 0.1% may be reproductive toxicity.

Teratogenicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Toxicity Data: Petroleum Hydrocarbon distillates
Dermal, Acute LD50 (rabbit) : >2000mg/kg
Inhalation, Acute LD50 (rat) : >5.5mg/L (4 hr mist)
Oral LD50 (Rat) : >5000 mg/kg

Studies on laboratory animals have associated similar materials with eye and respiratory tract irritations and have been shown to cause skin irritation after repeated or prolonged contact. This has been noted as defatting dermatitis and kidney damage in laboratory animals.

SECTION XII – ECOLOGICAL INFORMATION

Duration	Test	Species	Concentration/Conditions
96 hr	LL50	<i>Oncorhynchus mykiss</i>	8.2 mg/L
48 hr	EL50	<i>Oncorhynchus mykiss</i>	32 mg/L
96 hr	LC50	<i>Pimephales promelas (fathead minnow)</i>	>1000 mg/l
72 hr	EC50	<i>Psuedokirchneriella Subcapitata (algae)</i>	>100 mg/l
48 hr	EC50	<i>Daphnia magna</i>	>1000 mg/l
Chronic Survival	NOELR	<i>Aquatic Vertebrates</i>	2.6 mg/L
Chronic Growth	NOELR	<i>Aquatic Vertebrates</i>	2.6 mg/L
Chronic Survival	NOELR	<i>Daphnia magna</i>	16 mg/L
Chronic Reproduction	EL 50	<i>Daphnia magna</i>	10 mg/L
Chronic Reproduction	NOELR	<i>Daphnia magna</i>	2.6 mg/L

Persistence and Degradability: Inherently biodegradable
Bioaccumulation Potential: Not Available

Soil Mobility: Not Available
Other Adverse Effects: Not Available


SECTION XIII- DISPOSAL CONSIDERATIONS

Please check with local and state agencies to determine proper disposal of unused or unwanted product. It is the responsibility of the user to determine the proper transportation and disposal for unused material. Conditions of this product may change which could cause this material to be classified as hazardous at the time of disposal. All waste must be conducted in accordance with RCRA regulations. Contact your local EPA office for assistance.

Do not re-use empty containers

SECTION XIV – TRANSPORTATION INFORMATION

The shipping description below may not represent requirements for all modes of transportation and shipping methods or locations outside the United States.

Regulatory	UN Number	Shipping name	Hazard Class	Packing Group	Placard
U.S. DOT	Not Regulated		Combustible	N/A	N/A
IATA	1139	Coating solution Roof Coating	3	III	
IMDG	1139	Coating solution Roof Coating	3	III	

SECTION XV – REGULATORY INFORMATION

SARA Extremely hazardous Substances (Sections 302 & 304)	This product does not contain greater than 1% of any "Extremely hazardous substances" listed pursuant to Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) section 302 or 304 as identified in 40 CFR Part 355, Appendix A and B	
SARA Section 313	This product contains the following components in concentrations greater than 0.1% for carcinogenic substances and/or 1.0% of the substances subject to the reporting requirements of Section 313 of the Title III SARA of 1986 and 40 CFR Part 372	1,2,4 Trimethylbenzene (CASRN: 95-63-6): 2.7%
Sara Section 311 & 312 Classifications	Acute Hazard: Yes Chronic Hazard Yes	Fire Hazard Yes Reactivity Hazard No
CERCLA	This product contains the following components listed under the Comprehensive Environmental Response, Compensation and Liabilities Act of 1980 (CERCLA) in 40 CFR Part 302 Table 302.4	None

Global Chemical Inventories:

Present: US TSCA*, EU, Australia, New Zealand, Canada, Korea, Philippines, China, Japan,

Not Present:

Not Available: Switzerland, Taiwan

* May be subject to TSCA 12b export notification. Contains Nonane (CASRN 111-84-2) at < 3%

SCA Inventory: This product and/or its components are listed on the Toxic Substance Control Act (TSCA) inventory.

Clean Water Act: Components of this material is classified as an oil under section 311 of the Clean Water Act (CWA) and the Oil Pollution Act of 1990 (OPA). Discharge or spills which produce a visible sheen on waters of the United States must be reported to the EPA's National response center at (800) 424-8802.

Additional Regulatory Remarks: Federal Hazardous Substances Act, related statutes, and Consumer Product Safety Commission regulations, as defined by 16 CFR 1500.14(b)(3) and 1500.83(a)(13): This product contains "Petroleum Distillates" which may require special labeling if distributed in a form suitable for use in a household or by children and should display the following: Danger: Contains Petroleum Distillates! Harmful or fatal if swallowed! Call Physician immediately. KEEP OUT OF REACH OF CHILDREN!

SECTION XVI – OTHER INFORMATION

US NFPA Ratings: Health: 1 Fire: 2 Reactivity: 0
HMIS Ratings: Health: 1 Fire: 2 Physical Hazards: 0

Revision information:
Version number: 1.2
Revision Date: 10/19/2015

Disclaimer of Liability

The information in this SDS was obtained from sources which we believe are reliable, however, the information is provided without any warranty, expressed or implied regarding its correctness. This SDS was prepared and is to be used only for this product. Information given is designed to provide guidance for safe handling, use, storage, transportation, disposal and release and is not to be considered as a warranty or specification.

The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge, for this and other reasons we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with handling, storage or disposal of the product.

8.) ICE ERASER

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1261	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	ICE ERASER	EMERGENCY TELEPHONE:	1-800-535-5053
PRODUCT DESCRIPTION:	Aerosol Spray Deicer	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION:

Physical Hazards: Flammable aerosol: Category 1

Health Hazards: Acute toxicity, oral: Category 3

Acute toxicity (dermal): Category 4

Acute toxicity, (inhalation- dust and mist): Category 4

Serious eye damage/eye irritation: Category 2A

Specific target organ toxicity, single exposure: Category 1

SIGNAL WORD:

DANGER

SYMBOL:



HAZARD STATEMENTS:

Extremely flammable aerosol. Toxic if swallowed. Harmful in contact with skin or if inhaled. Causes serious eye irritation. Causes damage to organs.

PRECAUTIONARY STATEMENTS:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray.

Response: IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of water IF SWALLOWED: Immediately call a POISON CENTER/doctor Rinse mouth. IF exposed or concerned: Call a POISON CENTER/doctor Specific treatment (see on this label). Wash contaminated clothing before reuse.

Storage: Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

HAZARDS NOT OTHERWISE SPECIFIED:

None.

3. Composition / Information on Ingredients

Chemical Name	CAS	Concentration % by Weight
Methanol	67-56-1	50 - <100%
2-Propanol	67-63-0	5 - <10%
1,2-Ethanediol	107-21-1	1 - <5%
Propane	74-98-6	1 - <5%
Carbon Dioxide	124-38-9	1 - <5%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The exact concentration has been withheld as a trade secret.

4. First Aid Measures

EMERGENCY OVERVIEW:

EYES: Remove contact lenses, if present and easy to do. Continue rinsing. Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

SKIN: Wash skin thoroughly with soap and water. Call a POISON CENTER/doctor if you feel unwell.

INHALATION:

Move to fresh air.

INGESTION:

Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

PERSONAL PROTECTION FOR FIRST-AID RESPONDERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

Symptoms: No data available.

Hazards: No data available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treatment: Symptoms may be delayed.

5. Fire-Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA:

Use fire-extinguishing media appropriate for surrounding materials.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

Do not use water jet as an extinguisher, as this will spread the fire.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Vapors may travel considerable distance to a source of ignition and flash back.

SPECIFIC FIRE-FIGHTING METHODS:

Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure buildup. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Use standard firefighting procedures and consider the hazards of other involved materials. In the event of fire and/or explosion, do not breathe fumes.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Special Fire-Fighting Procedures: No data available.

Special Protective Equipment for Fire-Fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots and in enclosed spaces, SCBA.

GENERAL FIRE HAZARDS:

Use water spray to keep fire-exposed containers cool. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

6. Accidental Release Measures

PERSONAL PRECAUTIONS:

See Section 8 of the SDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away. Ventilate closed spaces before entering them. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep upwind.

ACCIDENTAL RELEASE MEASURE:

Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk.

ENVIRONMENTAL PRECAUTIONS:

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANUP:

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

7. Handling and Storage

TECHNICAL MEASURES (E.G LOCAL AND GENERAL VENTILATION):

No data available.

SAFE HANDLING:

Avoid contact with eyes, skin and clothing. Wash hands thoroughly after handling. Do not taste or swallow. Avoid contact with eyes. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.

CONTACT AVOIDANCE MEASURES:

No data available.

SAFE STORAGE AND INCOMPATIBILITIES:

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Aerosol Level 1

SAFE PACKAGING MATERIALS: No data available.

STORAGE TEMPERATURES: No data available.

8. Exposure Controls / Personal Protection

CONTROL PARAMETERS:

Occupational Exposure Limits:

Chemical Identity:	Type	Exposure Limit Values		Source
Methanol	STEL	250 ppm	325 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	200 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	250 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	250 ppm	325 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	200 ppm	260 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	200 ppm	260 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	200 ppm	260 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	400 ppm		US. ACGIH Threshold Limit Values, as amended
2-Propanol	STEL	500 ppm	1,225 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	200 ppm		US. ACGIH Threshold Limit Values, as amended
	REL	400 ppm	980 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	400 ppm	980 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	400 ppm	980 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	400 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	500 ppm	1,225 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	Ceiling	50 ppm	125 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
1,2-Ethanediol	TWA	25 ppm		US. ACGIH Threshold Limit Values, as amended
1,2-Ethanediol - Vapor fraction	STEL	50 ppm		US. ACGIH Threshold Limit Values, as amended
1,2-Ethanediol - Aerosol, inhalable.	STEL		10 mg/m ³	US. ACGIH Threshold Limit Values, as amended
	REL	1,000 ppm	1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Propane	PEL	1,000 ppm	1,800 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	1,000 ppm	1,800 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values, as amended
Carbon Dioxide	TWA	5,000 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	30,000 ppm		US. ACGIH Threshold Limit Values, as amended

	STEL	30,000 ppm	54,000 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL	5,000 ppm	9,000 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	5,000 ppm	9,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	10,000 ppm	18,000 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	30,000 ppm	54,000 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Morpholine	REL	20 ppm	70 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	30 ppm	105 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	20 ppm	70 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	30 ppm	105 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	20 ppm	70 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Ethanol, 2-methoxy-	TWA	0.1 ppm		US. ACGIH Threshold Limit Values, as amended
	REL	0.1 ppm	0.3 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	25 ppm	80 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	25 ppm	80 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
1,2-Ethanediamine	TWA	10 ppm		US. ACGIH Threshold Limit Values, as amended
	PEL	10 ppm	25 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	10 ppm	25 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	10 ppm	25 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended

BIOLOGICAL LIMIT VALUES:

Chemical Identity	Exposure Limit Values	Source
Methanol (methanol: Sampling time: End of shift.)	15 mg/l (urine)	ACGIH BEL
2-Propanol (acetone: Sampling time: End of shift at end of work week.)	40 mg/l (Urine)	ACGIH BEL
Ethanol, 2-methoxy- (2-Methoxyacetic acid: Sampling time: End of shift at end of work week.)	1 mg/g (Creatinine in urine)	ACGIH BEL

EXPOSURE GUIDELINES:

Methanol	US. ACGIH Threshold Limit Values, as amended	Can be absorbed through the skin.
Morpholine	US. ACGIH Threshold Limit Values, as amended	Can be absorbed through the skin.
Ethanol, 2-methoxy-	US. ACGIH Threshold Limit Values, as amended	Can be absorbed through the skin.
1,2-Ethanediamine	US. ACGIH Threshold Limit Values, as amended	Can be absorbed through the skin.

PERSONAL PROTECTIVE EQUIPMENT:



Eye/Face Protection: Wear safety glasses with side shields (or goggles).

Skin Protection:

Hand Protection: No data available.

Skin and Body Protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Respiratory Protection: In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

General Hygiene Considerations: Avoid contact with skin. Observe good industrial hygiene practices. Do not eat, drink or smoke when using the product. Wash hands after handling. Avoid contact with eyes. When using do not smoke.

APPROPRIATE ENGINEERING CONTROLS:

No data available.

9. Physical & Chemical Properties

Physical State:	Liquid.	Flammability(solid/gas):	No data available.
Form:	Spray Aerosol.	Explosive Limit-Lower (%):	Estimated 5.5%(V)
Color:	No data available.	Explosive Limit-Upper (%):	Estimated 33.2%(V)
Odor:	No data available.	Vapor Density (AIR=1):	No data available.
Odor Threshold:	No data available.	Vapor Pressure:	4,481 - 5,860 hPa (20°C)
pH:	No data available.	Relative Density:	No data available.
Freezing Point:	No data available.	Density:	Estimated 0.853 g/cm ³
Boiling Point:	Estimated 100°C	Solubility (water):	No data available.
Kinematic Viscosity:	No data available.	Solubility (other):	No data available.
Dynamic Viscosity:	No data available.	Self-Ignition Temp:	Estimated 458.76°C
Flash Point:	-104.44°C	Decomposition Temp:	No data available.
Evaporation Rate:	No data available.	Partition Coeff(n-octanol/water):	No data available.
Oxidizing Properties:	No data available.	Explosive Properties:	No data available.

10. Stability & Reactivity Information

REACTIVITY:

No data available.

CHEMICAL STABILITY:

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

No data available.

CONDITIONS TO AVOID:

Avoid heat or contamination.

INCOMPATIBLE MATERIALS:

No data available.

HAZARDOUS DECOMPOSITION PRODUCTS:

No data available.

11. Toxicological Information

PRIMARY ROUTE OF ENTRY:

Eyes: No data available.

Skin: No data available.

Inhalation: No data available.

Ingestion: No data available.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:

Eyes: No data available.

Skin: No data available.

Inhalation: No data available.

Ingestion: No data available.

ACUTE TOXICITY:

Oral Product: ATEmix: 154.24 mg/kg

Dermal Product: ATEmix: 1,528.87 mg/kg

Inhalation Product: ATEmix: 1.56 mg/l Dusts, mists and fumes

REPEATED DOSE TOXICITY:

Product: No data available.

Components:

Methanol	LOAEL (Rat(Male), Inhalation, 1 - 6 Weeks): 13.3 mg/l Inhalation Experimental result, Supporting study
2-Propanol	NOAEL (Rat, Inhalation, >= 104 Weeks): 5,000 ppm(m) Inhalation Experimental result, Key study
1,2-Ethanediol	NOAEL (Rat(Male), Oral, 16 Weeks): 150 mg/kg Oral Experimental result, Weight of Evidence study
Propane	NOAEL (Rat(Female, Male), Inhalation, >= 28 d): 4,000 ppm(m) Inhalation Experimental result, Key study
	LOAEL (Rat(Female, Male), Inhalation, >= 28 d): 12,000 ppm(m) Inhalation Experimental result, Key study

SKIN CORROSION/IRRITATION:

Product: No data available.

Components:

Methanol	in vivo (Rabbit): Not irritant
2-Propanol	in vivo (Rabbit): Not classified
1,2-Ethanediol	in vivo (Rabbit): Not irritant

SERIOUS EYE DAMAGE/EYE IRRITATION:

Product: No data available.

Components:

2-Propanol	Rabbit, 1 d: Category 2: Causes serious eye irritation Irritating.
1,2-Ethanediol	Rabbit, 24 hrs: Not irritating

RESPIRATORY OR SKIN SENSITIZATION:

Product: No data available.

Components:

Methanol	Skin sensitization:, in vivo (Guinea pig): Non sensitising
2-Propanol	Skin sensitization:, in vivo (Guinea pig): Non sensitising
1,2-Ethanediol	Skin sensitization:, in vivo (Guinea pig): Non sensitising

CARCINOGENICITY:

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified.

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogenic components identified.

GERM CELL MUTAGENICITY:

In vitro Product: No data available.

In vivo Product: No data available.

REPRODUCTIVE TOXICITY:

Product: No data available.

SPECIFIC TARGET ORGAN TOXICITY -single exposure:

Product: No data available.

Components:

Methanol	Causes damage to organs.
2-Propanol	Narcotic effect. – Category 3 with narcotic effects.

SPECIFIC TARGET ORGAN TOXICITY -repeated exposure:

Product: No data available.

ASPIRATION HAZARD

Product: No data available.

OTHER EFFECTS:

No data available.

12. Ecological Information

ECOTOXICITY:**ACUTE HAZARDS TO THE AQUATIC ENVIRONMENT:****FISH****Product:** No data available.**Components:**

Methanol	EC 50 (Lepomis macrochirus, 96 h): 12,700 mg/l Experimental result, Key study
2-Propanol	LC 50 (Pimephales promelas, 96 h): 9,640 mg/l Experimental result, Key study
1,2-Ethanediol	LC 50 (Pimephales promelas, 96 h): 72,860 mg/l Experimental result, Key study
Propane	LC 50 (Various, 96 h): 147.54 mg/l QSAR QSAR, Key study

AQUATIC INVERTEBRATES:**Product:** No data available.**Components:**

Methanol	EC 50 (Daphnia magna, 96 h): 18,260 mg/l Experimental result, Key study
2-Propanol	LC 50 (Daphnia magna, 24 h): > 10,000 mg/l Experimental result, Key study
1,2-Ethanediol	EC 100 (Daphnia magna, 48 h): > 100 mg/l Experimental result, Key study
	ED 0 (Daphnia magna, 48 h): >= 100 mg/l Experimental result, Key study

CHRONIC HAZARDS TO THE AQUATIC ENVIRONMENT:**FISH****Product:** No data available.**Components:**

Methanol	EC 50 (Oryzias latipes): 9,164 mg/l Experimental result, Supporting study
1,2-Ethanediol	NOAEL (Pimephales promelas): 15,380 mg/l Experimental result, Weight of Evidence study

AQUATIC INVERTEBRATES:**Product:** No data available.**Components:**

Methanol	NOAEL (Daphnia magna): 122 mg/l Experimental result, Supporting study
1,2-Ethanediol	NOAEL (Ceriodaphnia dubia): 8,590 mg/l Experimental result, Weight of Evidence study
	NOAEL (Daphnia magna): > 15,000 mg/l Read-across based on grouping of substances (category approach), Weight of Evidence study

TOXICITY TO AQUATIC PLANTS:**Product:** No data available.**PERSISTENCE AND DEGRADABILITY:****Biodegradation Product:** No data available.**Components:**

Methanol	97% Detected in water. Experimental result, Key study
2-Propanol	53% (5 d) Detected in water. Experimental result, Key study
1,2-Ethanediol	90 - 100% (10 d) Detected in water. Experimental result, Key study
Propane	100% (385.5 h) Detected in water. Experimental result, Key study
	50% (3.19 d) Detected in water. QSAR, Weight of Evidence study

BIOACCUMULATIVE POTENTIAL:**Biodegradation Product:** No data available.**Components:**

Methanol	Leuciscus idus, Bioconcentration Factor (BCF): < 10 Aquatic sediment Experimental result, Supporting study
1,2-Ethanediol	Crayfish (Procambarus), Bioconcentration Factor (BCF): 0.61 (Flow through)

BOD/COD RATIO:**Product:** No data available.**PARTITION COEFFICIENT N-OCTANOL / WATER (LOG KOW):****Product:** No data available.**MOBILITY IN SOIL:**

No data available.

Components:

Methanol	No data available.
2-Propanol	No data available.
1,2-Ethanediol	No data available.
Propane	No data available.
Carbon	No data available.

OTHER ADVERSE EFFECTS:

No data available.

13. Disposal Consideration**DISPOSAL INSTRUCTIONS:**

Discharge, treatment, or disposal may be subject to national, state or local laws.

CONTAMINATED PACKAGING:

No data available.

14. Transportation Information

DOT: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable
Transport Hazard Class(es):
Class: 2.1
Label(s): -
Packing Group: -
Environmental Hazards: No.
Marine Pollutant: No.
Special Precautions for User: Not regulated.

IATA: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable + 6.1
Transport Hazard Class(es):
Class: 2.1
Subsidiary risk: 6.1
Label(s): -
Packing Group: -
Environmental Hazards: No.
Marine Pollutant: No.
Special Precautions for User: Not regulated.

IMDG: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable + 6.1
Transport Hazard Class(es):
Class: 2
Subsidiary risk: 6.1
Label(s): -
EmS No.: F-D, S-U
Packing Group: -
Environmental Hazards: No.
Marine Pollutant: No.
Special Precautions for User: Not regulated.



15. Regulatory Information

US FEDERAL REGULATIONS:

Restrictions on use: Not known.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D):

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity:

Methanol
Methyl Alcohol
Unlisted Hazardous Wastes Characteristic of Ignitability
RCRA Hazardous Waste NO. D001
Ethylene Glycol
Glycol Ethers
Ethylenediamine

Superfund Amendments and Reauthorization Act of 1986 (SARA):

Hazard Categories:

Flammable aerosol, Acute toxicity, Serious Eye Damage/Eye Irritation, Specific Target Organ Toxicity - Single Exposure

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances:

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:

<u>Chemical Name</u>	<u>% by wt.</u>
Methanol	1.0%
2-Propanol	1.0%
1,2-Ethenediol	1.0%

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

US STATE REGULATIONS:

US. California Proposition 65: For more information go to www.P65Warnings.ca.gov.

US. New Jersey Worker and Community Right-to-Know Act:

Chemical Identity:

Methanol
2-Propanol
1,2-Ethenediol
Propane
Carbon Dioxide

US. Massachusetts RTK - Substance List:

Chemical Identity:

1,2-Ethanediamine

US. Pennsylvania RTK – Hazardous Substances:**Chemical Identity:**

Methanol

2-Propanol

1,2-Ethanediol

Propane

Carbon Dioxide

US. Rhode Island RTK:

No ingredient regulated by RI Right-to-Know Law present.

INTERNATIONAL REGULATIONS:**Montreal Protocol:**

Not applicable.

Stockholm Convention:

Not applicable.

Rotterdam Convention:

Not applicable.

Kyoto Protocol:**INVENTORY STATUS:**

Australia AICS:

On or in compliance with the inventory.

Canada DSL Inventory List:

On or in compliance with the inventory.

EINECS, ELINCS or NLP:

Not in compliance with the inventory.

Japan (ENCS) List:

On or in compliance with the inventory.

China Inv. Existing Chemical Substances:

On or in compliance with the inventory.

Korea Existing Chemicals Inv. (KECI):

On or in compliance with the inventory.

Canada NDSL Inventory:

Not in compliance with the inventory.

Philippines PICCS:

On or in compliance with the inventory.

US TSCA Inventory:

On or in compliance with the inventory.

New Zealand Inventory of Chemicals:

On or in compliance with the inventory.

Japan ISHL Listing:

Not in compliance with the inventory.

Japan Pharmacopoeia Listing:

Not in compliance with the inventory.

Mexico INSQ:

On or in compliance with the inventory.

Ontario Inventory:

On or in compliance with the inventory.

Taiwan Chemical Substance Inventory:

On or in compliance with the inventory.

16. Other Information**DISCLAIMER:**

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1683	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	KNOCK OUT II	EMERGENCY TELEPHONE:	1-800-535-5053
PRODUCT DESCRIPTION:	Aerosol Heavy-Duty Foaming Degreaser	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: Gases Under Pressure - Liquefied Gas Carcinogenicity - Category 1B Germ Cell Mutagenicity - Category 1B Skin Sensitizer - Category 1	SIGNAL WORD: DANGER	SYMBOL:			
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HAZARD STATEMENTS:

Physical: H280 - Contains gas under pressure; may explode if heated.
Health: H350 - May cause cancer.
H340 - May cause genetic defects.
H317 - May cause an allergic skin reaction.

PRECAUTIONARY STATEMENTS:

General: P101 - If medical advice is needed, have product container or label at hand.
P102 - Keep out of reach of children.
P103 - Read label before use.

Prevention: P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves, protective clothing, eye protection and face protection.
P261 - Avoid breathing mist, vapors or spray.
P272 - Contaminated work clothing should not be allowed out of the workplace.

Response: P308 + P313 - IF exposed or concerned: Get medical attention.
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.
P333 + P313 - If skin irritation or a rash occurs: Get medical attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.

Storage: P405 - Store locked up.
P410 + P403 - Protect from sunlight. Store in a well-ventilated place.

Disposal: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

3. Composition / Information on Ingredients

Chemical Name	CAS	Concentration % by Weight
Petroleum gases, liquefied, sweetened	68476-86-8	2% - 5%
DIETHYLENE GLYCOL MONOBUTYL ETHER	112-34-5	2% - 4%
ODORLESS MINERAL SPIRITS	64741-65-7	0.1% - 2%
D-LIMONENE	5989-27-5	0.1% - 2%
Terpenes and Terpenoids, sweet orange-oil	68647-72-3	0.1% - 2%

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

4. First Aid Measures

EMERGENCY OVERVIEW

EYES: Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.

SKIN: Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash with plenty of lukewarm, gently flowing water for a duration of 15-20 minutes. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. IF exposed or concerned: Get medical advice/attention.

INHALATION:

Remove source of exposure or move person to fresh air and keep comfortable for breathing. If exposed/feel unwell/concerned. Eliminate all ignition sources, if safe to do so.

INGESTION:

Immediately call a POISON CENTER or doctor. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

No data available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

No data available.

5. Fire-Fighting Measures

SUITABLE EXTINGUISHING MEDIA:

Dry chemical, foam, carbon dioxide. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Sand or earth may be used for small fires only. Do not direct a solid stream of water or foam into hot, burning pools. This may result in frothing and increased fire intensity.

UNSUITABLE EXTINGUISHING MEDIA:

No data available.

SPECIFIC HAZARDS IN CASE OF FIRE:

Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Product is highly flammable and forms explosive mixtures with air, oxygen, and all oxidizing agents. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition. High temperatures can cause sealed containers to rupture due to a build up of internal pressures. Cool with water. Empty Containers retain product residue which may exhibit hazards of material; therefore do not pressurize, cut, glaze, weld or use for any other purposes. Container could potentially burst or be punctured upon mechanical impact, releasing flammable vapors.

FIRE-FIGHTING PROCEDURES:

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SPECIAL PROTECTIVE ACTIONS:

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental Release Measures

EMERGENCY PROCEDURE:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated.

RECOMMENDED EQUIPMENT:

Wear liquid tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus (SCBA).

PERSONAL PRECAUTIONS:

Avoid breathing vapor. Avoid contact with skin, eye or clothing. Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing.

ENVIRONMENTAL PRECAUTIONS:

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth, or other appropriate barriers.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

Absorb liquids in vermiculite, dry sand, earth, or similar inert material and deposit in sealed containers for disposal.

7. Handling and Storage

GENERAL:

Do not puncture or incinerate (burn) cans. Do not stick pins, nails, or any other sharp objects into opening on top of can. Do not spray in eyes. Do not take internally.

VENTILATION REQUIREMENTS:

Use in a well-ventilated place.

STORAGE ROOM REQUIREMENTS:

Store and use in a cool, dry, well-ventilated area. Do not store above 120°F. See product label for additional information.

8. Exposure Controls / Personal Protection

PERSONAL PROTECTIVE EQUIPMENT:



Eye/Face Protection: Wear safety glasses with side shields. Eyewash stations and showers should be available in areas where this material is used and stored.

Skin Protection: Use solvent-resistant protective gloves for prolonged or repeated contact.

Respiratory Protection: In restricted areas, use approved chemical/mechanical filters designed to remove a combination of particles and vapor. In confined areas, use an approved air line respirator or hood. A self-contained breathing apparatus is required for vapor concentrations above PEL/TLV limits.

APPROPRIATE ENGINEERING CONTROLS

Ventilation should be sufficient to prevent inhalation of any vapors.

Chemical Name	OSHA TWA (mg/m3)	OSHA TWA (ppm)	OSHA STEL (mg/m3)	OSHA STEL (ppm)	OSHA Carcinogen	OSHA Skin designation	OSHA Tables (Z1, Z2, Z3)	ACGIH TWA (mg/m3)	ACGIH TWA (ppm)
DIETHYLENE GLYCOL MONOBUTYL ETHER									10(IFV)
ODORLESS MINERAL SPIRITS	2000	500					1	[(L)]; [5 (I)];	(L)
Petroleum gases, liquefied, sweetened	2000	500					1		

Chemical Name	ACGIH STEL (mg/m3)	ACGIH STEL (ppm)	ACGIH Carcinogen	ACGIH TLV Basis	ACGIH Notations	NIOSH TWA (mg/m3)	NIOSH TWA (ppm)	NIOSH STEL (mg/m3)	ACGIH TWA (ppm)	NIOSH Carcinogen
DIETHYLENE GLYCOL MONOBUTYL ETHER				Hematologic, liver & kidney eff						
ODORLESS MINERAL SPIRITS			[A2]; [A4];	URT irr	[A2]; [A4];					
Petroleum gases, liquefied, sweetened										

C) - Ceiling limit, (IFV) - Inhalable fraction and vapor, (L) - Exposure by all routes should be carefully controlled to levels as low as possible, A3 -Confirmed) Animal Carcinogen with Unknown Relevance to Humans, A4 - Not Classifiable as a Human Carcinogen, BEI - Substances for which there is a Biological Exposure Index or Indices, dam - Damage, DSEN - Dermal sensitization, eff - Effects, irr - Irritation, repro - reproductive, URT -Upper respiratory tract

9. Physical & Chemical Properties

Appearance:	N/A	Flammability(solid/gas):	Flash point below 73°F/23°C
Odor:	N/A	Explosive Limit-Lower (%):	N/A
Odor Threshold:	N/A	Explosive Limit-Upper (%):	N/A
pH:	N/A	Vapor Density:	N/A
Melting/Freezing Point:	N/A	Solubility (water):	N/A
Boiling Point/Range:	N/A	Auto-Ignition Temp:	N/A
Viscosity:	N/A	Decomposition Point:	N/A
Flash Point:	N/A	% VOC:	6.08%
Flash Point Symbol:	N/A	Density:	7.99 lb/gal
Evaporation Rate:	Slower than ether	Density VOC:	0.49 lb/gal

10. Stability & Reactivity Information**CHEMICAL STABILITY:**

Stable under normal storage and handling conditions.

CONDITIONS TO AVOID:

Avoid heat, sparks, flame, high temperature and contact with incompatible materials. Dropping containers may cause bursting.

INCOMPATIBLE MATERIALS:

Avoid strong oxidizers, reducers, acids, and alkalis.

HAZARDOUS REACTIONS/POLYMERIZATION:

Will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS:

No data available.

11. Toxicological Information**SKIN CORROSION/IRRITATION:**

No data available.

LIKELY ROUTE OF EXPOSURE:

Inhalation, ingestion, skin absorption.

SERIOUS EYE DAMAGE/IRRITATION:

No data available.

CARCINOGENICITY:

May cause cancer.

GERM CELL MUTAGENICITY:

May cause genetic defects.

REPRODUCTIVE TOXICITY:

No data available.

RESPIRATORY/SKIN SENSITIZATION:

May cause an allergic skin reaction.

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE:

No data available.

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE:

No data available.

ASPIRATION HAZARD:

No data available.

ACUTE TOXICITY:

No data available.

POTENTIAL HEALTH EFFECTS – MISCELLANEOUS:**ETHYLENE GLYCOL MONOBUTYL ETHER 0000111-76-2**

Can be absorbed through the skin in harmful amounts. May cause injury to the kidneys, liver, blood and/or bone marrow. Repeated overexposure may result in damage to the blood. Eye contact may cause corneal injury. Has been toxic to the fetus in laboratory animals at doses that are toxic to the mother

ODORLESS MINERAL SPIRITS 0064741-65-7

Laboratory studies with rats have shown that petroleum distillates can cause kidney damage and kidney or liver tumors. These effects were not seen in similar studies with guinea pigs, dogs, or monkeys. Several studies evaluating petroleum workers have not shown a significant increase of kidney damage or an increase in kidney or liver tumors.

0000111-76-2 ETHYLENE GLYCOL MONOBUTYL ETHER

LC50 (female rat): 450 ppm (4-hour exposure) (2)

LC50 (male rat): 486 ppm (4-hour exposure) (2)

LD50 (oral, male weanling rat): 3000 mg/kg (1)

LD50 (oral, 6-week old male rat): 2400 mg/kg (1)

LD50 (oral, yearling male rat): 560 mg/kg (1)

LD50 (oral, female rat): 530 mg/kg; 2500 mg/kg (1) LD50 (oral, male mouse): 1230 mg/kg (1)

LD50 (oral, rabbit): 320 mg/kg (1)

LD50 (dermal, male rabbit): 406 mg/kg (cited as 0.45 mL/kg) (1)

0000109-86-4 2-METHOXYETHANOL

LC50 (mouse): 1480 ppm (7-hour exposure) (1)

LD50 (oral, rat): 2460 mg/kg (19); 3250 mg/kg (18)

LD50 (oral, guinea pig): 950 mg/kg (18,19)

LD50 (oral, rabbit): 890 mg/kg (18)

LD50 (dermal, rabbit): 1300 mg/kg (cited as 1.34 mL/kg) (24-hours contact)(18)

12. Ecological Information**TOXICITY:**

No data available.

PERSISTENCE AND DEGRADABILITY:

No data available.

BIOACCUMULATIVE POTENTIAL:

No data available.

MOBILITY IN SOIL:

No data available.

OTHER ADVERSE EFFECTS:

No data available.

13. Disposal Consideration**DISPOSAL INSTRUCTIONS:**

Under RCRA, it is the responsibility of the user of the product, to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.

CONTAMINATED PACKAGING:

Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

14. Transportation Information**DOT:**

UN Number: UN1950

UN Proper Shipping Name: Aerosols

Transport Hazard Class(es)

Class: 2.2

Packing Group: N.A.

Hazardous Substance (RQ): No data available.

Marine Pollutant: No data available.

Note/Special Provision: (LTD QTY)

Toxic-Inhalation Hazard: No data available.

IATA:

UN Number: UN1950

UN Proper Shipping Name: Aerosols, non-flammable

Transport Hazard Class(es)

Class: 2.2

Packing Group: N.A.

Note/Special Provision: (LTD QTY)

Hazardous Substance (RQ):

IMDG:

UN Number: UN1950

UN Proper Shipping Name: Aerosols

Transport Hazard Class(es)

Class: 2.2

Packing Group: N.A.

Marine Pollutant: No data available.

Note/Special Provision: (LTD QTY)

Hazardous Substance (RQ):

15. Regulatory Information

US. FEDERAL REGULATIONS:

CAS	Chemical Name	% By Weight	Regulation List
68476-86-8	Petroleum gases, liquefied, sweetened	2% - 5%	SARA312, TSCA, OSHA
112-34-5	DIETHYLENE GLYCOL MONOBUTYL ETHER	2% - 4%	SARA313, CERCLA, HAPS, SARA312, VHAPS, VOC, TSCA, ACGIH
64741-65-7	ODORLESS MINERAL SPIRITS	0% - 2%	SARA312, VOC, TSCA, ACGIH, OSHA
5989-27-5	D-LIMONENE	0% - 2%	SARA312, VOC, TSCA
68647-72-3	Terpenes and Terpenoids, sweet orange-oil	0% - 2%	SARA312, TSCA
6834-92-0	SODIUM METASILICATE	0% - 0%	SARA312, TSCA
78-70-6	1,6-Octadien-3-ol, 3,7-dimethyl-	Trace	SARA312, TSCA
5392-40-5	2,6-Octadienal, 3,7-dimethyl-	Trace	SARA312, TSCA, ACGIH
111-76-2	ETHYLENE GLYCOL MONOBUTYL ETHER	Trace	SARA313, CERCLA, SARA312, VOC, TSCA, ACGIH, OSHA
109-86-4	2-METHOXYETHANOL	Trace	SARA313, CERCLA, HAPS, SARA312, VHAPS, VOC, TSCA, ACGIH, California Proposition 65 Developmental - Toxicity Male, OSHA

16. Other Information

GLOSSARY:

ACGIH- American Conference of Governmental Industrial Hygienists; ANSI- American National Standards Institute; Canadian TDG Canadian Transportation of Dangerous Goods; CAS- Chemical Abstract Service; Chemtrec- Chemical Transportation Emergency Center (US); CHIP- Chemical Hazard Information and Packaging; DSL- Domestic Substances List; EC- Equivalent Concentration; EH40 (UK)- HSE Guidance Note EH40 Occupational Exposure Limits; EPCRA- Emergency Planning and Community Right-To-Know Act; ESL Effects screening levels; HMIS- Hazardous Material Information Service; LC- Lethal Concentration; LD- Lethal Dose; NFPA- National Fire Protection Association; OEL- Occupational Exposure Limits; OSHA- Occupational Safety and Health Administration, US Department of Labor; PEL- Permissible Exposure Limit; SARA (Title III)- Superfund Amendments and Reauthorization Act; SARA 313- Superfund Amendments and Reauthorization Act, Section 313; SCBA- Self-Contained Breathing Apparatus; STEL- Short Term Exposure Limit; TCEQ- Texas Commission on Environmental Quality; TLV- Threshold Limit Value; TSCA- Toxic Substances Control Act Public Law 94- 469; TWA- Time Weighted Value; US DOT- US Department of Transportation; WHMIS- Workplace Hazardous Materials Information System.

DISCLAIMER:

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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10.)MECHANICS HELPER

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1286	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	MECHANIC'S HELPER	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Low Volatile Black RTV Silicone Automotive Gasket Maker	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). Gases under pressure- Liquefied gas Skin corrosion/irritation: Category 2 Serious eye damage/eye irritation: - Category 2	SIGNAL WORD: WARNING	SYMBOL:		
--	---------------------------------------	----------------	---	---

For this product, the ignition distance test and the flammability test do not apply. Therefore, the final product is non-flammable.

HAZARD STATEMENTS:

- Contains gas under pressure; may explode if heated.
- Causes serious eye irritation.
- Causes skin irritation.

PRECAUTIONARY STATEMENTS:

General:

- Read label before use
- Keep out of reach of children.
- If medical advice is needed, have product container or label at hand.

Prevention:

- Wear protective gloves.
- Wear eye or face protection.
- Wash hands thoroughly after handling.

Response:

- IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage: Protect from sunlight. Store in a well-ventilated place.

Disposal: Not applicable.

HAZARDS NOT OTHERWISE SPECIFIED:

None known.

3. Composition / Information on Ingredients

CHEMICAL NAME	CAS	CONCENTRATION % by WEIGHT	PURE SUBSTANCE CLASSIFICATION
Triacetoxymethylsilane	17689-77-9	1-5	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION/IRRITATION - Category 1B SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
Methylsilanetriyl triacetate	4253-34-3	1-5	ACUTE TOXICITY (oral) - Category 4 SKIN CORROSION/IRRITATION - Category 1C SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
1,1-Difluoroethane	75-37-6	1-5	FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

4. First Aid Measures

EMERGENCY OVERVIEW

EYES: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Get medical attention.

SKIN: Flush contaminated skin with plenty of water. Continue to rinse for at least 20 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

INHALATION:

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

INGESTION:

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If

material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick, as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

Potential Acute Health Effects:

Eye contact: Causes serious eye irritation.

Inhalation: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact: Causes skin irritation.

Ingestion: Irritating to mouth, throat, and stomach.

Over-Exposure Signs/Symptoms:

Eye contact: Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation: No known significant effects or critical hazards.

Skin contact: Adverse symptoms may include the following: irritation, redness.

Ingestion: No known significant effects or critical hazards.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Notes to Physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific Treatments: No specific treatment.

Protection of First-Aiders: No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

5. Fire-Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA:

Use an extinguishing agent suitable for the surrounding fire.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

None known.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

No specific fire or explosion hazard.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:

Decomposition products may include the following materials: carbon dioxide, carbon monoxide, halogenated compounds, carbonyl halides, metal oxide/oxides.

SPECIFIC FIRE-FIGHTING METHODS:

No special precaution is required.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Firefighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental Release Measures

PERSONAL PRECAUTIONS:

Non-emergency Personnel: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Emergency Responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel."

ENVIRONMENTAL PRECAUTIONS AND CLEAN-UP METHODS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

Small Spill: Move containers from spill area. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large Spill: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas. Do not dry sweep. Dispose of via a licensed waste disposal contractor. Note: See Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and Storage

SAFE HANDLING:

Protective Measures: Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin, and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

General Occupational Hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash hands and face before eating, drinking, and smoking. See also Section 8 for additional information on hygiene measures.

SAFE STORAGE & INCOMPATIBILITIES:

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool, and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Protect from sunlight. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls / Personal Protection

OCCUPATIONAL EXPOSURE LIMITS:

None.

ENGINEERING CONTROLS:

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

ENVIRONMENTAL EXPOSURE CONTROLS:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

PERSONAL PROTECTIVE EQUIPMENT:



EYE/FACE PROTECTION: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or gases. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: Chemical splash goggles.

SKIN PROTECTION: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures consisting of several substances, the protection time of the gloves cannot be accurately estimated. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

RESPIRATORY PROTECTION: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

GENERAL HYGIENE CONSIDERATIONS: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking, and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical & Chemical Properties

Appearance:		Flammability(solid/gas):	Not available.
Physical State:	Solid (paste).	Upper/Lower Explosive Limit:	Not available.
Color:	Various.	Vapor Density:	Not available.
Odor:	Acetic acid odor.	Vapor Pressure:	Not available.
Odor Threshold:	Not available.	Relative Density:	1.007
pH:	Not available.	Solubility:	Not available.
Melting Point:	Not available.	Auto-Ignition Temperature:	Not available.
Boiling Point:	Not available.	Decomposition Temperature:	Not available.
Flash Point:	Closed cup: >100°C (>212°F)	Partition Coeff (n-octanol/water):	Not available.
SADT:	Not available.	Burning Time:	Not available.
Evaporation Rate:	Not available.	Burning Rate:	Not available.
Viscosity:	Not available.		

10. Stability & Reactivity Information

REACTIVITY:

No specific test data related to reactivity available for this product or its ingredients.

CHEMICAL STABILITY:

The product is stable.

POSSIBILITY OF HAZARDOUS REACTIONS:

Under normal conditions of storage and use, hazardous reactions will not occur.

INCOMPATIBLE MATERIALS:

Reactive or incompatible with the following materials: oxidizing materials.

CONDITIONS TO AVOID:

No specific data.

HAZARDOUS DECOMPOSITION PRODUCTS:

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological Information

ACUTE TOXICITY

Product/ingredient name	Result	Species	Dose	Exposure
Methylsilanetriyl triacetate	LD50 Oral	Rat	2060 mg/kg	-

IRRITATION/CORROSION

Product/ingredient name	Result	Species	Score	Exposure	Observation
Silica	Eyes - Mild irritant	Rabbit	-	24 hours 25 mg	-

SENSITIZATION:

There is no data available.

MUTAGENICITY:

There is no data available.

CARCINOGENICITY:

There is no data available.

REPRODUCTIVE TOXICITY:

There is no data available.

TERATOGENICITY:

There is no data available.

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE):

There is no data available.

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE):

There is no data available.

ASPIRATION HAZARD:

There is no data available.

INFORMATION ON THE LIKELY ROUTES OF EXPOSURE:

Dermal contact. Eye contact. Inhalation. Ingestion.

POTENTIAL ACUTE HEALTH EFFECTS

Eye Contact: Causes serious eye irritation.

Inhalation: Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact: Causes skin irritation.

Ingestion: Irritating to mouth, throat and stomach.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:

Eye: Adverse symptoms may include the following: pain or irritation, watering, redness.

Inhalation: No known significant effects or critical hazards.

Skin: Adverse symptoms may include the following: irritation, redness.

Ingestion: No known significant effects or critical hazards.

DELAYED & IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE:**Short-Term Exposure:**

Immediate: No known significant effects or critical hazards.

Delayed: No known significant effects or critical hazards.

Long-Term Exposure:

Immediate: No known significant effects or critical hazards.

Delayed: No known significant effects or critical hazards.

Potential Chronic Health Effects:

General: No known significant effects or critical hazards.

Carcinogenicity: No known significant effects or critical hazards.

Mutagenicity: No known significant effects or critical hazards.

Teratogenicity: No known significant effects or critical hazards.

Developmental: No known significant effects or critical hazards.

Fertility: No known significant effects or critical hazards.

NUMERICAL MEASURES OF TOXICITY:

Acute Toxicity Estimates: There is no data available.

12. Ecological Information**TOXICITY:**

There is no data available.

PERSISTENCE AND DEGRADABILITY:

There is no data available.

BIOACCUMULATIVE POTENTIAL:

There is no data available.

MOBILITY IN SOIL:

Soil/water partition coefficient (Koc): There is no data available.

OTHER ADVERSE EFFECTS:

No known significant effects or critical hazards.

13. Disposal Consideration

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions, and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

14. Transportation Information

DOT: **UN NUMBER:** UN1950
UN PROPER SHIPPING NAME: Aerosols, flammable (each not exceeding 1 L capacity)(1, 1-Difluoroethane).
TRANSPORT HAZARD CLASS(ES):

Class: 2.1

PACKING GROUP: --

ENVIRONMENTAL HAZARDS: No.

REMARKS: Limited Quantity Exemption.

IMDG: **UN NUMBER:** UN1950
UN PROPER SHIPPING NAME: Aerosols, flammable (each not exceeding 1 L capacity)(1, 1-Difluoroethane).
TRANSPORT HAZARD CLASS(ES):

Class: 2.1

PACKING GROUP: --

ENVIRONMENTAL HAZARDS: No.

REMARKS: Limited Quantity Exemption.

IATA: **UN NUMBER:** UN1950
UN PROPER SHIPPING NAME: Aerosols, flammable (each not exceeding 1 L capacity)(1, 1-Difluoroethane).



TRANSPORT HAZARD CLASS(ES):

Class: 2.1

PACKING GROUP: --**ENVIRONMENTAL HAZARDS:** No.**REMARKS:** Limited Quantity Exemption.**SPECIAL PRECAUTIONS FOR USER:**

Transport within user's premises: Always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE:

Not available.

15. Regulatory Information**US FEDERAL REGULATIONS:**

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Air Act (CAA) 112 regulated flammable substances: 1,1-Difluoroethane

CLEAN AIR ACT SECTION 112 (B) HAZARDOUS AIR POLLUTANTS (HAPs):

Not listed.

CLEAN AIR ACT SECTION 602 CLASS I SUBSTANCES:

Not listed.

CLEAN AIR ACT SECTION 602 CLASS II SUBSTANCES:

Not listed.

DEA LIST I CHEMICALS (PRECURSOR CHEMICALS):

Not listed.

DEA LIST II CHEMICALS (ESSENTIAL CHEMICALS):

Not listed.

SARA 302/304:**COMPOSITION/INFORMATION ON INGREDIENTS:** No products were found.**SARA 304 RQ:**

Not applicable

SARA 311/312**CLASSIFICATION:** Sudden release of pressure immediate (acute) health hazard

Chemical Name	%	Fire Hazard	Sudden Release of Pressure	Reactive	Immediate (acute) Health Hazard	Delayed (chronic) Health Hazard
Triacetoxylethylsilane	1-5	No	No	No	Yes	No
Methylsilanetriyl triacetate	1-5	No	No	No	Yes	No

STATE REGULATIONS:

Massachusetts: The following components are listed: Silicon dioxide; 1,1-Difluoroethane

New York: None of the components are listed.

New Jersey: The following components are listed: 1,1-Difluoroethane

Pennsylvania: The following components are listed: Silicon dioxide

California Prop 65: No products were found.

INTERNATIONAL INVENTORIES:

Australia inventory (AICS): All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

Japan inventory: Not determined.

Korea inventory: All components are listed or exempted.

Malaysia Inventory (EHS Register): Not determined.

New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted.

Taiwan inventory (CSNN): Not determined.

CHEMICAL WEAPONS CONVENTION LIST SCHEDULE I CHEMICALS:

Not listed.

CHEMICAL WEAPONS CONVENTION LIST SCHEDULE II CHEMICALS:

Not listed.

CHEMICAL WEAPONS CONVENTION LIST SCHEDULE III CHEMICALS:

Not listed.

16. Other Information**KEY TO ABBREVIATIONS:**

ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labeling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. \

("Marpol" = marine pollution)

UN = United Nations

DISCLAIMER:

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and

disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

11.) PANEL BRITE

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Safety Data Sheet

Panel Brite (Alkaline detergent)

SDS Revision Date:

10/14/2015

1. Identification

1.1. Product identifier

Product Identity Panel Brite (Alkaline detergent)

Alternate Names Panel Brite (Alkaline detergent)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use See Technical Data Sheet.

Application Method See Technical Data Sheet.

1.3. Details of the supplier of the safety data sheet

Company Name TSC Service & Supply
1529 23rd Avenue
Tuscaloosa, AL 35401

Telephone No. Tel: +1 205 553 4041
Fax: +1 205 553 4061

2. Hazard(s) identification

2.1. Classification of the substance or mixture

Skin Corr. 1B;H314 Causes severe skin burns and eye damage.

Eye Dam. 1;H318 Causes serious eye damage.

2.2. Label elements

Using the Toxicity Data listed in section 11 and 12 the product is labeled as follows.



Danger

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

[Prevention]:

P260 Do not breathe mist / vapors / spray.

P264 Wash thoroughly after handling.

P280 Wear protective gloves / eye protection / face protection.

Safety Data Sheet

Panel Brite (Alkaline detergent)

SDS Revision Date:

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[Response]:

P301+330+331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+361+353 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water / shower.

P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.

P310 Immediately call a POISON CENTER or doctor / physician.

P363 Wash contaminated clothing before reuse.

[Storage]:

P405 Store locked up.

[Disposal]:

P501 Dispose of contents / container in accordance with local / national regulations.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the relevant State and Federal Hazardous Substances regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Sodium hydroxide CAS Number: 0001310-73-2	1 - 5	Skin Corr. 1A;H314 Acute Tox. 4;H312 Aquatic Acute 2;H401 Aquatic Chronic 2;H411	[1][2]

In accordance with paragraph (i) of §1910.1200, the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

[1] Substance classified with a health or environmental hazard.

[2] Substance with a workplace exposure limit.

[3] PBT-substance or vPvB-substance.

*The full texts of the phrases are shown in Section 16.

4. First aid measures

4.1. Description of first aid measures

General

In all cases of doubt, or when symptoms persist, seek medical attention.
Never give anything by mouth to an unconscious person.

Inhalation

Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Eyes

Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.

Skin

Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.

Ingestion

If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

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4.2. Most important symptoms and effects, both acute and delayed

Overview	Will cause irritation to skin and eyes. Prolonged skin contact will cause burns or irritation. Ingestion will cause irritation to stomach and trachea and/or nausea. See section 2 for further details.
Eyes	Causes serious eye damage.
Skin	Causes severe skin burns and eye damage.

5. Fire-fighting measures

5.1. Extinguishing media

As appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition: Carbon dioxide and carbon monoxide

Do not breathe mist / vapors / spray.

5.3. Advice for fire-fighters

None

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Put on appropriate personal protective equipment (see section 8).

6.2. Environmental precautions

Do not allow spills to enter drains or waterways.

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

6.3. Methods and material for containment and cleaning up

Small Spill/Leak: Neutralize with mild acid.

Large Spill/Leak : Mop up or absorb as much as possible. Neutralize with mild acid. All clean-up material should be removed and placed in approved containers.

7. Handling and storage

7.1. Precautions for safe handling

See section 2 for further details. - [Prevention]:

7.2. Conditions for safe storage, including any incompatibilities

Handle containers carefully to prevent damage and spillage.

Clean up all spill Promptly.

Keep Container closed when not in use.

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KEEP OUT OF REACH OF CHILDREN.
CORROSIVE.

Incompatible materials: No data available.

See section 2 for further details. - [Storage]:

7.3. Specific end use(s)

No data available.

8. Exposure controls and personal protection

8.1. Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0001310-73-2	Sodium hydroxide	OSHA	TWA 2 mg/m ³
		ACGIH	Ceiling: 2 mg/m ³
		NIOSH	C 2 mg/m ³
		Supplier	No Established Limit

Carcinogen Data

CAS No.	Ingredient	Source	Value
0001310-73-2	Sodium hydroxide	OSHA	Select Carcinogen: No
		NTP	Known: No; Suspected: No
		IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;

8.2. Exposure controls

Respiratory

If workers are exposed to concentrations above the exposure limit they must use the appropriate, certified respirators.

Eyes

Full face shield and goggles when there is potential for contact.

Skin

Gloves Required.

Engineering Controls

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits suitable respiratory protection must be worn.

Other Work Practices

Use good personal hygiene practices. Wash hands before eating, drinking, smoking or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.

See section 2 for further details. - [Prevention]:

9. Physical and chemical properties

Appearance

Dark brown, thick consistency Liquid

Odor

Mild Sugar

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Odor threshold	Not determined
pH	13.5
Melting point / freezing point	NA
Initial boiling point and boiling range	212 degree F
Flash Point	NA
Evaporation rate (Ether = 1)	NA
Flammability (solid, gas)	Not Applicable
Upper/lower flammability or explosive limits	Lower Explosive Limit: NA Upper Explosive Limit: NA
Vapor pressure (Pa)	NA
Vapor Density	NA
Specific Gravity	1.095
Solubility in Water	Complete
Partition coefficient n-octanol/water (Log Kow)	Not Measured
Auto-ignition temperature	NA
Decomposition temperature	NA
Viscosity (cSt)	Not Measured

9.2. Other information

No other relevant information.

10. Stability and reactivity

10.1. Reactivity

Hazardous Polymerization will not occur.

10.2. Chemical stability

Stable under normal circumstances.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Strong acidic materials.

10.6. Hazardous decomposition products

Carbon dioxide and carbon monoxide

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11. Toxicological information

Acute toxicity

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Sodium hydroxide - (1310-73-2)	6,600.00, Mouse - Category: NA	1,350.00, Rabbit - Category: 4	600.00, Mouse - Category: NA	No data available	No data available

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	1B	Causes severe skin burns and eye damage.
Serious eye damage/irritation	1	Causes serious eye damage.
Respiratory sensitization	---	Not Applicable
Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

12. Ecological information

12.1. Toxicity

The preparation has been assessed following the conventional method of the Dangerous Preparations Directive 1999/45/EC and GHS and is not classified as dangerous for the environment, but contains substance(s) dangerous for the environment. See section 3 for details

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Sodium hydroxide - (1310-73-2)	196.00, Poecilia reticulata	40.38, Ceriodaphnia dubia	Not Available

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12.2. Persistence and degradability

There is no data available on the preparation itself.

12.3. Bioaccumulative potential

Not Measured

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

12.6. Other adverse effects

No data available.

13. Disposal considerations

13.1. Waste treatment methods

Observe all federal, state and local regulations when disposing of this substance.

14. Transport information

Not provided

15. Regulatory information

Regulatory Overview

The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

Toxic Substance Control Act (TSCA)

All components of this material are either listed or exempt from listing on the TSCA Inventory.

WHMIS Classification

D2B E

US EPA Tier II Hazards

Fire: No

Sudden Release of Pressure: No

Reactive: No

Immediate (Acute): Yes

Delayed (Chronic): No

EPCRA 311/312 Chemicals and RQs (lbs):

Sodium hydroxide (1,000.00)

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

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Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Sodium hydroxide

Pennsylvania RTK Substances (>1%):

Sodium hydroxide

16. Other information

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H401 Toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

The information contained herein is furnished without warranty of any kind. The above information is believed to be correct but does not purport to be all inclusive and should be used only as a guide. Users should make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.

End of Document

12.) PEAK PERFORMANCE

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1751	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	PEAK PERFORMANCE	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Aerosol Air Tool Lubricant and Cleaner	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION:

Physical Hazards:

Flammable aerosol – Category 1

Health Hazards:

Aspiration Hazard – Category 1

Environment Hazards:

Acute hazards to the aquatic environment – Category 2

SIGNAL WORD:

DANGER

SYMBOL:



HAZARD STATEMENTS:

Extremely flammable aerosol. May be fatal if swallowed and enters airways. Toxic to aquatic life.

PRECAUTIONARY STATEMENTS:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use. Avoid release to the environment.

Response: IF SWALLOWED: Immediately call a poison center/doctor. Do NOT induce vomiting.

Storage: Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store locked up.

Disposal: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

HAZARDS NOT OTHERWISE SPECIFIED:

None.

3. Composition / Information on Ingredients

Chemical Name	CAS	Concentration % by Weight
Distillates (petroleum), light distillate hydrotreating process, low-boiling	68410-97-9	25 - <50%
Naphtha (petroleum), light alkylate	64741-66-8	10 - <25%
Butane	106-97-8	10 - <20%
White mineral oil (petroleum)	8042-47-5	10 - <20%
Petrolatum	8009-03-8	5 - <10%
Ethanol	64-17-5	5 - <10%
Propane	74-98-6	5 - <10%
Solvent naphtha (petroleum), light aliph.	64742-89-8	1 - <5%
Heptane	142-82-5	1 - <5%
Heptane, branched, cyclic and linear	426260-76-6	1 - <2.5%
Naphtha (petroleum), hydrotreated light	64742-49-0	1 - <5%

*All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

The exact concentration has been withheld as a trade secret.

4. First Aid Measures

EMERGENCY OVERVIEW

EYES: Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. If eye irritation persists: Get medical advice/attention.

SKIN: Wash skin thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention.

INHALATION:

Move to fresh air.

INGESTION:

Call a physician or poison control center immediately. Rinse mouth. Never give liquid to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

PERSONAL PROTECTION FOR FIRST-AID RESPONDERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots and in enclosed spaces, SCBA.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

Symptoms: No data available.

Hazards: No data available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Treatment: Symptoms may be delayed.

5. Fire Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA:

Use fire-extinguishing media appropriate for surrounding materials.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

Do not use water jet as an extinguisher, as this will spread the fire.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Vapors may travel considerable distance to a source of ignition and flash back.

SPECIFIC FIRE-FIGHTING METHODS:

No data available.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

GENERAL FIRE HAZARDS:

Use water spray to keep fire-exposed containers cool. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

6. Accidental Release Measures

PERSONAL PRECAUTIONS:

Ventilate closed spaces before entering them. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep upwind.

ACCIDENTAL RELEASE MEASURES:

Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk.

MATERIALS AND METHODS FOR CLEANUP:

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

ENVIRONMENTAL PRECAUTIONS:

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

7. Handling and Storage

SAFE HANDLING:

Technical Measures (e.g. Local and general ventilation): No data available.

Safe Handling Advice: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not spray on an open flame or other ignition source. Do not pierce or burn, even after use.

Contact Avoidance Measures: No data available.

SAFE STORAGE AND INCOMPATIBILITIES:

Store locked up. Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use. Aerosol Level 3

Safe Packaging Materials: No data available.

Storage Temperature: No data available.

8. Exposure Controls / Personal Protection

CONTROL PARAMETERS:

Occupational exposure limits:

Chemical Identity:

	Type	Exposure Limit Values	Source
Distillates (petroleum), light distillate hydrotreating process, low-boiling - Mist.	STEL	10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Butane	REL	800 ppm 1,900 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	1,000 ppm	US. ACGIH Threshold Limit Values, as amended
	TWA	800 ppm 1,900 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
White mineral oil (petroleum) - Mist.	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL	10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
White mineral oil (petroleum) - Inhalable fraction.	TWA	5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Petrolatum - Mist.	STEL	10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Petrolatum - Inhalable fraction.	TWA	5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Petrolatum - Mist.	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Ethanol	REL	1000 ppm 1,900 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	1000 ppm 1,900 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	1000 ppm 1,900 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL	1000 ppm	US. ACGIH Threshold Limit Values, as amended
Propane	REL	1000 ppm 1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	1000 ppm 1,800 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	1000 ppm 1,800 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended

Solvent naphtha (petroleum), light aliph.	TWA	100 ppm	400 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	100 ppm	400 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Naphtha (petroleum), hydrotreated light	REL	100 ppm	400 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	100 ppm	400 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	100 ppm	400 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	400 ppm	1,600 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Heptane	REL	85 ppm	350 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL	500 ppm	2,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	STEL	500 ppm	2,000 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	400 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	500 ppm		US. ACGIH Threshold Limit Values, as amended
	Ceil_Time	440 ppm	1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
2-Propanol, 2-methyl-	STEL	150 ppm	450 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	100 ppm	300 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	100 ppm	300 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	100 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	150 ppm	450 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	100 ppm	300 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), hydrotreated heavy naphthenic	TWA	400 ppm	1,600 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	500 ppm	2,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Distillates (petroleum), hydrotreated heavy naphthenic - Mist.	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Distillates (petroleum), hydrotreated heavy naphthenic	Ceil-Time		1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), hydrotreated heavy naphthenic - Inhalable fraction.	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Distillates (petroleum), hydrotreated heavy naphthenic	REL		350 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), hydrotreated heavy paraffinic <3% DMSO - Inhalable fraction.	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Distillates (petroleum), hydrotreated heavy paraffinic <3% DMSO - Mist.	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates, Petroleum, Hydrotreated Light Naphthenic - Mist.	PEL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Distillates, Petroleum, Hydrotreated Light Naphthenic	TWA	400 ppm	1,600 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	PEL	500 ppm	2,600 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
Distillates, Petroleum, Hydrotreated Light Naphthenic - Mist.	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates, Petroleum, Hydrotreated Light Naphthenic	Ceil_Time		1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL		350 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates, Petroleum, Hydrotreated Light Naphthenic - Inhalable fraction.	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
	TWA	400 ppm	1,600 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Distillates (petroleum), solvent-dewaxed heavy paraffinic	PEL	500 ppm	2,000 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), solvent-dewaxed heavy paraffinic - Mist.	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	PEL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Distillates (petroleum), solvent-dewaxed heavy paraffinic - Inhalable fraction.	Ceil_Time		1,800 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL		350 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), hydrotreated light paraffinic - Mist.	PEL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
Distillates (petroleum), hydrotreated light paraffinic - Inhalable	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended

fraction.				
Distillates (petroleum), solvent-dewaxed light paraffinic - Mist.	STEL		10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL		5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA		5 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL		5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Distillates (petroleum), solvent-dewaxed light paraffinic - Inhalable fraction.	TWA		5 mg/m ³	US. ACGIH Threshold Limit Values, as amended
Benzene, methyl-	STEL	150 ppm	560 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	REL	100 ppm	375 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	100 ppm	375 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	Ceiling	300 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended
	TWA	200 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	MAX. CONC	500 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	STEL	150 ppm	560 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
Benzene	REL	0.1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	1 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	Ceiling	25 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
	TWA	0.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	2.5 ppm		US. ACGIH Threshold Limit Values, as amended
	STEL	5 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended
	OSHA ACT	0.5 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended
	TWA	10 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended
MAX. CONC	50 ppm		US. OSHA Table Z-2 (29 CFR 1910.1000), as amended	
STEL	5 ppm		US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended	
TWA	1 ppm		US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053), as amended	
STEL	1 ppm		US. NIOSH: Pocket Guide to Chemical Hazards, as amended	
Benzene, (1-methylethyl)-	REL	50 ppm	245 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	TWA	50 ppm		US. ACGIH Threshold Limit Values, as amended
	REL	50 ppm	245 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	TWA	50 ppm	245 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	1 ppm		US. ACGIH Notice of Intended Changes (NIC) to Threshold Limit Values, as amended
Benzene, ethyl-	STEL	125 ppm	545 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL	100 ppm	435 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended
	REL	100 ppm	435 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000), as amended
	STEL	125 ppm	545 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	100 ppm	435 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000), as amended
	TWA	20 ppm		US. ACGIH Threshold Limit Values, as amended

BIOLOGICAL LIMIT VALUE:

Chemical Identity	Exposure Limit Values	Source
Benzene, methyl- (toluene: Sampling time: End of shift.)	0.03 mg/l (Urine)	ACGIH BEL
Benzene, methyl- (o-Cresol, with hydrolysis: Sampling time: End of shift.)	0.3 mg/g (Creatinine in urine)	ACGIH BEL
Benzene, methyl- (toluene: Sampling time: Prior to last shift of work week.)	0.02 mg/l (Blood)	ACGIH BEL
Benzene (S-Phenylmercapturic acid: Sampling time: End of shift.)	25 µg/g (Creatinine in urine)	ACGIH BEL
Benzene (t,t-Muconic acid: Sampling time: End of shift.)	500 µg/g (Creatinine in urine)	ACGIH BEL
Benzene, ethyl- (Sum of mandelic acid and phenylglyoxylic acid: Sampling time: End of shift.)	0.15 g/g (Creatinine in urine)	ACGIH BEL

EXPOSURE GUIDELINES:

Benzene US. ACGIH Threshold Limit Values, as amended Can be absorbed through the skin.

APPROPRIATE ENGINEERING CONTROLS:

No data available.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:



Eye/Face Protection: Wear safety glasses with side shields (or goggles).

Skin Protection:

Hand Protection: No data available.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: In case of inadequate ventilation use suitable respirator. Seek advice from local supervisor.

General Hygiene Considerations: Observe good industrial hygiene practices. When using do not smoke.

9. Physical & Chemical Properties			
Physical State:	Liquid.	Flammability (solid/gas):	No data available
Form:	Spray Aerosol.	Explosive Limit – lower (%):	Estimated 1.9%(V)
Color:	No data available.	Explosive Limit – upper (%):	Estimated 9.5%(V)
Odor:	No data available.	Vapor Pressure:	2,068 - 3,447 hPa (20°C)
Odor Threshold:	No data available.	Vapor Density (air=1):	No data available.
pH:	No data available.	Density:	No data available.
Freezing Point:	No data available.	Relative Density:	No data available.
Boiling Point/Range:	Estimated 95°C	Solubility (water):	No data available.
Partition Coeff (n-octanol/water):	No data available.	Solubility (other):	No data available.
Kinematic Viscosity:	No data available.	Self-Ignition Temperature:	No data available.
Dynamic Viscosity:	No data available.	Decomposition Temperature:	No data available.
Flash Point:	Estimated -104.4°C	Oxidizing Properties:	No data available.
Explosive Properties:	No data available.	Evaporations Rate:	No data available.

10. Stability & Reactivity Information	
REACTIVITY:	No data available.
CHEMICAL STABILITY:	Material is stable under normal conditions.
POSSIBILITY OF HAZARDOUS REACTIONS:	No data available.
INCOMPATIBLE MATERIALS:	No data available.
CONDITIONS TO AVOID:	Avoid heat or contamination.
HAZARDOUS DECOMPOSITION PRODUCTS:	No data available.

11. Toxicological Information	
PRIMARY ROUTE OF ENTRY:	
Eyes:	No data available.
Skin:	No data available.
Inhalation:	No data available.
Ingestion:	No data available.
SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:	
Eyes:	No data available.
Skin:	No data available.
Inhalation:	No data available.
Ingestion:	No data available.
ACUTE TOXICITY:	
Oral Product:	Not classified for acute toxicity based on available data.
Dermal Product:	Not classified for acute toxicity based on available data.
Inhalation Product:	Not classified for acute toxicity based on available data.
REPEATED DOSE TOXICITY:	
Product:	No data available.
Components	
Distillates (petroleum), light distillate hydrotreating process, low-boiling	NOAEL (Rat(Female, Male), Inhalation): 9,840 mg/m3 Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 5 - 28 d): 3,750 mg/kg Dermal Experimental result, Key study NOAEL (Rat(Male), Oral, 28 d): < 500 mg/kg Oral Experimental result, Supporting study
Naphtha (petroleum), light alkylate	NOAEL (Mouse, Rat(Female, Male), Inhalation, 107 - 113 Weeks): 1,402 mg/m3 Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 5 - 28 d): 3,750 mg/kg Dermal Experimental result, Key study
Butane	LOAEL (Rat(Female, Male), Inhalation, >= 28 d): 12,000 ppm(m) Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Inhalation, >= 28 d): 4,000 ppm(m) Inhalation Experimental result, Key study
White mineral oil (petroleum) Petrolatum	NOAEL (Rat(Female, Male), Oral, 90 d): >= 20,000 ppm(m) Oral Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 13 Weeks): > 2,000 mg/kg Dermal Read-across from supporting substance (structural analogue or surrogate), Key study
Ethanol	NOAEL (Rat(Male), Oral, 7 - 14 Weeks): 10% (m) Oral Experimental result, Key study
Propane	NOAEL (Rat(Female, Male), Inhalation, >= 28 d): 4,000 ppm(m) Inhalation Experimental result, Key study LOAEL (Rat(Female, Male), Inhalation, >= 28 d): 12,000 ppm(m) Inhalation Experimental result, Key study
Solvent naphtha (petroleum), light aliph.	NOAEL (Mouse, Rat(Female, Male), Inhalation, 107 - 113 Weeks): 1,402 mg/m3 Inhalation Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 5 - 28 d): 3,750 mg/kg Dermal Experimental result, Key study NOAEL (Rat(Female, Male), Dermal, 28 d): > 375 mg/kg Dermal Experimental result, Supporting study
Heptane	NOAEL (Rat(Male), Inhalation): 12,470 mg/m3 Inhalation Experimental result, Key study

Naphtha (petroleum), hydrotreated light

NOAEL (Rat(Female, Male), Inhalation): 10,000 mg/m³ Inhalation Experimental result, Key study
LOAEL (Rat(Female, Male), Oral, 13 Weeks): 1,250 mg/kg Oral Read-across based on grouping of substances (category approach), Key study NOAEL (Rat(Female, Male), Dermal, 28 d): > 375 mg/kg
Dermal Experimental result, Supporting study

SKIN CORROSION/IRRITATION:

Product: No data available.

Components

Distillates (petroleum), light distillate hydrotreating process, low-boiling
Naphtha (petroleum), light alkylate

Assessment Not irritating
In vitro (Human): not corrosive

White mineral oil (petroleum)

in vivo (Rabbit): Not irritant

Ethanol, 2,2'-iminobis-

in vivo (Rabbit): Not irritant

Solvent naphtha (petroleum), light aliph.

Assessment Non-Irritating

Heptane

in vivo (Rabbit): Irritating

Heptane, branched, cyclic and linear

Assessment Irritating.

Naphtha (petroleum), hydrotreated light

Assessment Non-Irritating In vitro (Human): not corrosive

SERIOUS EYE DAMAGE/IRRITATION:

Product: No data available.

Components

Distillates (petroleum), light distillate hydrotreating process, low-boiling
Naphtha (petroleum), light alkylate

Rabbit, 24 - 72 hrs: Not irritating
Rabbit, 24 - 72 hrs: Not irritating

White mineral oil (petroleum)

Rabbit, 24 - 72 hrs: Not irritating

Petrolatum

Rabbit, 24 - 72 hrs: Not irritating

Ethanol

Rabbit, 1 - 24 hrs: Not irritating

Solvent naphtha (petroleum), light aliph.

Rabbit: Not irritating

Heptane

Rabbit, 24 - 72 hrs: Not irritating

Naphtha (petroleum), hydrotreated light

Rabbit, 24 - 72 hrs: Not irritating

RESPIRATORY OR SKIN SENSITIZATION:

Product: No data available.

Components

Distillates (petroleum), light distillate hydrotreating process, low-boiling

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Naphtha (petroleum), light alkylate

Skin sensitization:, in vivo (Guinea pig): Non sensitising

White mineral oil (petroleum)

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Petrolatum

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Ethanol

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Solvent naphtha (petroleum), light aliph.

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Heptane

Skin sensitization:, in vivo (Guinea pig): Non sensitising

Naphtha (petroleum), hydrotreated light

Skin sensitization:, in vivo (Guinea pig): Non sensitizing

CARCINOGENICITY:

Product: No data available.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified.

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) as amended:

No carcinogenic components identified.

GERM CELL MUTAGENICITY:

In vitro Product: No data available.

In vivo Product: No data available.

REPRODUCTIVE TOXICITY:

Product: No data available.

SPECIFIC TARGET ORGAN TOXICITY (single exposure):

Product: No data available.

Heptane: Narcotic effect. - Category 3 with narcotic effects.

SPECIFIC TARGET ORGAN TOXICITY (repeated exposures):**Product:** No data available.**ASPIRATION HAZARD:****Product:** No data available.**Components**

Distillates (petroleum), light distillate hydrotreating process, low-boiling	May be fatal if swallowed and enters airways.
Naphtha (petroleum), light alkylate	May be fatal if swallowed and enters airways.
White mineral oil (petroleum)	May be fatal if swallowed and enters airways.
Solvent naphtha (petroleum), light aliph.	May be fatal if swallowed and enters airways.
Heptane	May be fatal if swallowed and enters airways.
Heptane, branched, cyclic and linear	May be fatal if swallowed and enters airways.
Naphtha (petroleum), hydrotreated light	May be fatal if swallowed and enters airways.

OTHER EFFECTS:

No data available.

12. Ecological Information**ECOTOXICITY:****Acute hazards to the aquatic environment:****Fish****Product:** No data available.**Components:**

Distillates (petroleum), light distillate hydrotreating process, low-boiling	LL 50 (Pimephales promelas, 96 h): 8.2 mg/l Experimental result, Key study
Naphtha (petroleum), light alkylate	LL 50 (Oncorhynchus mykiss, 96 h): 10 mg/l Experimental result, Key study
Butane	LC 50 (Various, 96 h): 147.54 mg/l QSAR QSAR, Key study
White mineral oil (petroleum)	NOAEL (Oncorhynchus mykiss, 96 h): >= 100 mg/l Experimental result, Key study
Petrolatum	NOAEL (Pimephales promelas, 96 h): >= 100 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study
Ethanol	LC 50 (Pimephales promelas, 96 h): 15.3 g/l Experimental result, Key study
Propane	LC 50 (Various, 96 h): 147.54 mg/l QSAR QSAR, Key study
Heptane	LC 50 (Mozambique tilapia (Tilapia mossambica), 96 h): 375 mg/l Mortality
Naphtha (petroleum), hydrotreated light	LC 50 (96 h): 8.41 mg/l Experimental result, Key study

Aquatic Invertebrates:**Product:** No data available.**Components:**

Distillates (petroleum), light distillate hydrotreating process, low-boiling	EC 50 (Daphnia magna, 48 h): 4.5 mg/l Experimental result, Key study NOAEL (Daphnia magna, 48 h): 0.5 mg/l Experimental result, Key study
Naphtha (petroleum), light alkylate	EC 50 (Daphnia magna, 48 h): 4.5 mg/l Experimental result, Key study NOAEL (Daphnia magna, 48 h): 0.5 mg/l Experimental result, Key study
Butane	LC 50 (Daphnia sp., 48 h): 69.43 mg/l QSAR QSAR, Key study
White mineral oil (petroleum)	NOAEL (Daphnia magna, 48 h): >= 100 mg/l Experimental result, Key study
Petrolatum	EC 50 (Daphnia magna, 48 h): > 10,000 mg/l Read-across from supporting substance (structural analogue or surrogate), Key study
Ethanol	LC 50 (Ceriodaphnia dubia, 48 h): 5,012 mg/l Experimental result, Key study
Solvent naphtha (petroleum), light aliph.	EC 50 (Daphnia magna, 48 h): 32 mg/l Experimental result, Supporting study
Heptane	EC 50 (Daphnia magna, 48 h): 1.5 mg/l Experimental result, Key study
Naphtha (petroleum), hydrotreated light	EC 50 (Daphnia magna, 48 h): 1.5 mg/l Experimental result, Key study

Chronic hazards to the aquatic environment:**Fish****Product:** No data available.

Components:

Distillates (petroleum), light distillate hydrotreating process, low-boiling	NOAEL (Pimephales promelas): 2.6 mg/l Experimental result, Supporting study
Naphtha (petroleum), light alkylate White mineral oil (petroleum)	NOAEL (Pimephales promelas): 2.6 mg/l Experimental result, Supporting study LC 50 (Pimephales promelas): 16.25 mg/l Experimental result, Supporting study
Ethanol	NOAEL (Oryzias latipes): 7,900 mg/l Read-across from supporting substance (structural analogue or surrogate), Supporting study
Heptane	NOAEL (Oncorhynchus mykiss): 1.284 mg/l QSAR QSAR, Key study
Naphtha (petroleum), hydrotreated light	NOAEL (Daphnia magna): 2.6 mg/l Other, Key study

Aquatic Invertebrates:**Product:** No data available.**Components:**

Distillates (petroleum), light distillate hydrotreating process, low-boiling Naphtha (petroleum), light alkylate	NOAEL (Daphnia magna): 2.6 mg/l Experimental result, Key study NOAEL (Daphnia magna): 2.6 mg/l Experimental result, Key study
White mineral oil (petroleum)	NOAEL (Daphnia magna): >= 1,000 mg/l QSAR QSAR, Supporting study
Ethanol	LC 50 (Daphnia magna): 454 mg/l Experimental result, Key study NOAEL (Daphnia magna): 9.6 mg/l Experimental result, Key study
Heptane	NOAEL (Daphnia magna): 0.17 mg/l Read-across based on grouping of substances (category approach), Key study EC 50 (Daphnia magna): 0.23 mg/l Read-across based on grouping of substances (category approach), Key study
Heptane, branched, cyclic and linear	NOEC : < 1 mg/l estimation
Naphtha (petroleum), hydrotreated light	EC 50 (Daphnia magna): 10 mg/l Experimental result, Key study

Toxicity to Aquatic Plants:**Product:** No data available.**PERSISTENCE AND DEGRADABILITY:****Biodegradation Product:** No data available.**Components:**

Distillates (petroleum), light distillate hydrotreating process, low-boiling	90.35% (28 d) Detected in water. Experimental result, Supporting study
Naphtha (petroleum), light alkylate	77.05% Detected in water. Experimental result, Supporting study 90.35% (28 d) Detected in water. Experimental result, Supporting study
Butane	100% (385.5 h) Detected in water. Experimental result, Key study
White mineral oil (petroleum)	31% (28 d) Detected in water. Read-across from supporting substance (structural analogue or surrogate), Supporting study
Petrolatum	31% (28 d) Detected in water. Read-across from supporting substance (structural analogue or surrogate), Supporting study
Ethanol	95% Detected in water. Experimental result, Key study
Propane	100% (385.5 h) Detected in water. Experimental result, Key study 50% (3.19 d) Detected in water. QSAR, Weight of Evidence study
Solvent naphtha (petroleum), light aliph.	90.35% (28 d) Detected in water. Experimental result, Supporting study
Heptane	70% Detected in water. Experimental result, Key study
Naphtha (petroleum), hydrotreated light	90.35% (28 d) Detected in water. Experimental result, Supporting study

BOD/COD RATIO:**Product:** No data available.**BIOACCUMULATIVE POTENTIAL:****Bioconcentration Factor (BCF)****Product:** No data available.**Components:**

Distillates (petroleum), light distillate hydrotreating process, low-boiling	Bioconcentration Factor (BCF): 10 - 2,500 Aquatic sediment Estimated by calculation, Key study
Naphtha (petroleum), light alkylate	Bioconcentration Factor (BCF): 10 - 2,500 Aquatic sediment Estimated by calculation, Key study

Ethanol	Cyprinus carpio, Bioconcentration Factor (BCF): 4.5 Aquatic sediment Read-across from supporting substance (structural analogue or surrogate), Supporting study
Solvent naphtha (petroleum), light aliph.	Bioconcentration Factor (BCF): 10 - 2,500 Aquatic sediment Estimated by calculation, Key study
Heptane	Bioconcentration Factor (BCF): 552 Aquatic sediment Estimated by calculation, Key study
Naphtha (petroleum), hydrotreated light	Bioconcentration Factor (BCF): 10 - 2,500 Aquatic sediment Estimated by calculation, Key study

PARTITION COEFFICIENT N-OCTANOL / WATER (LOG KOW):

Product: No data available.

Components:

Naphtha (petroleum), hydrotreated light Log Kow: > 2.4 - < 5.7 23°C Yes Experimental result, Key study

MOBILITY IN SOIL:

No data available.

Components:

Distillates (petroleum), light distillate hydrotreating process, low-boiling	No data available.
Naphtha (petroleum), light alkylate	No data available.
Butane	No data available.
White mineral oil (petroleum)	No data available.
Petrolatum	No data available.
Ethanol	No data available.
Propane	No data available.
Solvent naphtha (petroleum), light aliph.	No data available.
Heptane	No data available.
Heptane, branched, cyclic and linear	No data available.
Naphtha (petroleum), hydrotreated light	No data available.

OTHER ADVERSE EFFECTS:

Toxic to aquatic organisms.

13. Disposal Consideration

DISPOSAL INSTRUCTIONS:

Discharge, treatment or disposal may be subject to national, state or local laws.

CONTAMINATED PACKAGING:

No data available.

14. Transportation Information

DOT: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable.
Transport Hazard Class(es)
 Class: 2.1
 Label(s): -
 EmS No.:



Packing Group: II
Special precautions for user: Not regulated.

IATA: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable.
Transport Hazard Class(es)
 Class: 2.1
 Label(s): -



Packing Group: -
Special Precautions for User: Not regulated.

Other Information:

Passenger and Cargo Aircraft: Allowed. 203
Cargo Aircraft Only: Allowed. 203

IMDG: UN Number: UN1950
UN Proper Shipping Name: Aerosols, flammable.
Transport Hazard Class(es)
 Class: 2
 Subsidiary Risk: -
 Label(s): -
 EmS No: -



Packing Group: -
Special Precautions for User: Not regulated.

15. Regulatory Information

US FEDERAL REGULATIONS:

Restrictions on Use: Not known.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

Chemical Identity	OSHA Hazard(s)
Benzene	Flammability Cancer Aspiration

Eye
Blood
Skin
Respiratory tract irritation
Central nervous system

CERCLA HAZARDOUS SUBSTANCE LIST (40 CFR 302.4):

Chemical Identity:

Unlisted hazardous wastes characteristics of ignitability
RCRA Hazardous waste No. D001
Benzene, Methyl
Benzene
Benzene, 1-Methylethyl-
Cumene
Ethylbenzene

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA)

Hazard Categories: Flammable (gases, aerosols, liquids, or solids), Aspiration Hazard

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances:

None present or none present in regulated quantities.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required: None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

US. STATE REGULATIONS

US. California Proposition 65: For more information go to www.P65Warnings.ca.gov.

US. New Jersey Worker and Community Right-to-Know Act:

Chemical Identity:

Distillates (petroleum), light distillate hydrotreating process, low-boiling
Butane
White mineral oil (petroleum)
Petrolatum
Ethanol
Propane
Solvent naphtha (petroleum), light aliph.
Naphtha (petroleum), hydrotreated light
Heptane

US. Massachusetts RTK - Substance List:

Chemical Identity:

Distillates, Petroleum, Hydrotreated Light Naphthenic
Distillates (petroleum), hydrotreated light paraffinic
Distillates (petroleum), solvent-dewaxed light paraffinic
Benzene

US. Pennsylvania RTK - Hazardous Substances:

Chemical Identity:

Distillates (petroleum), light distillate hydrotreating process, low-boiling
Butane
White mineral oil (petroleum)
Petrolatum
Ethanol
Propane
Solvent naphtha (petroleum), light aliph.
Naphtha (petroleum), hydrotreated light
Heptane

US. Rhode Island RTK: No ingredient regulated by RI Right-to-Know Law present.

INTERNATIONAL REGULATIONS:

Montreal Protocol: Not applicable.

Stockholm Convention: Not applicable.

Rotterdam Convention: Not applicable.

Kyoto Protocol: Not applicable.

INVENTORY STATUS:

Australia AICS	On or in compliance with the inventory.
Canada DSL Inventory List	On or in compliance with the inventory.
Canada NDSL Inventory	Not in compliance with the inventory.
Ontario Inventory	Not in compliance with the inventory.
China Inv. Existing Chemical Substances	Not in compliance with the inventory.
Japan (ENCS) List	Not in compliance with the inventory.
Japan ISHL Listing	Not in compliance with the inventory.
Japan Pharmacopoeia Listing	Not in compliance with the inventory.
Korea Existing Chemicals Inv. (KECI)	On or in compliance with the inventory.
Mexico INSQ	Not in compliance with the inventory.
New Zealand Inventory of Chemicals	On or in compliance with the inventory.
Philippines PICCS	On or in compliance with the inventory.
Taiwan Chemical Substance Inventory	On or in compliance with the inventory.
US TSCA Inventory	On or in compliance with the inventory.
EINECS, ELINCS or NLP	Not in compliance with the inventory.

16. Other Information

DISCLAIMER:

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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13.) SAFETY KLEEN

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Section 1 - PRODUCT AND COMPANY IDENTIFICATION**Material Name**

SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

Synonyms

Safety-Kleen Premium Gold Solvent; Safety-Kleen Continued Use Product Solvent (CUP); Safety-Kleen 150 Solvent; High Flash Degreasing Solvent; Parts Washer Solvent; Petroleum Distillates; Petroleum Naphtha; Naphtha, Solvent; Mineral Spirits

Product Use

Cleaning and degreasing metal parts. If this product is used in combination with other products, refer to the Safety Data Sheets for those products.

Restrictions on Use

None known.

MANUFACTURERSafety-Kleen Systems, Inc.
42 Longwater Drive
Norwell, MA 02061-9149
U.S.A.**SUPPLIER (in Canada)**Safety-Kleen Canada, Inc.
25 Regan Road
Brampton, Ontario L1A 1B2
Canadawww.safety-kleen.com

Phone: 1-800-669-5740

Emergency Phone #: 1-800-468-1760**Issue Date**

October 29, 2019

Supersedes Issue Date

September 30, 2016

Original Issue Date

January 26, 1995

Section 2 - HAZARDS IDENTIFICATION**Classification in accordance with Schedule 1 of Canada's Hazardous Products Regulations (HPR) (SOR/2015-17) and paragraph (d) of 29 CFR 1910.1200 in the United States**

Flammable Liquids - Category 4

Aspiration Hazard - Category 1

Specific Target Organ Toxicity - Single Exposure - Category 3 (central nervous system)

GHS Label Elements**Symbol(s)****Signal Word**

Danger

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Hazard Statement(s)

Combustible liquid.
May be fatal if swallowed and enters airways.
May cause drowsiness or dizziness.

Precautionary Statement(s)

Prevention

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Use only outdoors or in a well-ventilated area. Wear protective gloves and eye protection/face protection. Avoid breathing vapor or mist.

Response

In case of fire: Use Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular foam, dry chemical, water spray, or water fog for extinction. IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting.

Storage

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

None known.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
64742-47-8	Petroleum distillates, hydrotreated light	100

Section 4 - FIRST AID MEASURES

Inhalation

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin

IF ON SKIN: Wash with plenty of soap and water. Remove contaminated clothing and wash it before reuse. Get medical attention if irritation develops or persists.

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.

Ingestion

Aspiration hazard. IF SWALLOWED: Do NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Immediately call a POISON CENTER or doctor/physician.

Most Important Symptoms/Effects

Acute

May be fatal if swallowed and enters airways. May cause drowsiness or dizziness.

Delayed

May cause damage to central nervous system.

Indication of any immediate medical attention and special treatment needed

IF exposed: Immediately call a POISON CENTER or doctor/physician. Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of incident. Call 1-800-468-1760 for additional information.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Media to use includes Class B/C or Class A/B/C fire extinguisher, carbon dioxide, regular dry chemical, foam, water spray, and water fog.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

Special Hazards Arising from the Chemical

Combustible liquid and vapor. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Do not allow run-off from fire-fighting to enter drains or water courses. Closed containers may rupture violently when heated. Empty containers may retain product residue including flammable/explosive vapors. Take precautionary measures against static discharge: May cause fire or explosion.

Hazardous Combustion Products

Decomposition and combustion materials may be toxic. Burning may produce carbon monoxide and other organic compounds.

Advice for firefighters

Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Keep away from ignition sources - No smoking. Keep unnecessary people away, isolate hazard area and deny entry. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Stay away from the ends of tanks. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Stay upwind and keep out of low areas. Dike for later disposal.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Remove all sources of ignition. Do not touch or walk through spilled material. Stop leak if safe to do so. Wear personal protective clothing and equipment. Appropriate engineering controls: Keep unnecessary people away, isolate hazard area and deny entry. Ventilate the area. Avoid breathing vapor or mist. Use foam on spills to minimize vapors. Keep out of water supplies and sewers. Absorb with earth, sand or other non-combustible material and transfer to container. Use non-sparking tools. Large spills: Reduce vapors with water spray. Dike for later disposal.

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks and flame. Use personal protective equipment as required. When transferring product, trucks and tank cars should be grounded and bonded. Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Do not eat, drink or smoke when using this product.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place. Keep container tightly closed. Keep cool. Store locked up. Keep away from heat and ignition sources. Do not cut, puncture, or weld on or near this container. Empty containers may contain product residue.

Incompatible Materials

Avoid acids, alkalis, oxidizing agents, reducing agents, halogens.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Petroleum distillates, hydrotreated light	64742-47-8
ACGIH:	100 ppm TWA (related to Stoddard solvent)
NIOSH:	350 mg/m ³ TWA (related to Stoddard solvent) ; 1800 mg/m ³ Ceiling (15 minutes)
OSHA (US):	500 ppm TWA ; 2900 mg/m ³ TWA (Related to Stoddard solvent) 100 ppm TWA (Related to Stoddard solvent) ; 525 mg/m ³ TWA (OSHA (Vacated))
British Columbia	200 mg/m ³ TWA (application restricted to conditions in which there are negligible aerosol exposures) as total Hydrocarbon vapor Skin notation

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Provide general ventilation needed to maintain concentration of vapor or mist below applicable exposure limits. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

Wear safety glasses. Additional protection like goggles, face shields, or respirators may be needed dependent upon anticipated use and concentrations of mists or vapors. Eye wash fountain and emergency showers are recommended. Contact lens use is not recommended.

Respiratory Protection

Use NIOSH-certified P- or R- series particulate filter and organic vapor cartridges when concentration of vapor or mist exceeds applicable exposure limits. Protection provided by air purifying respirators is limited. Do not use N-rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4.

Glove Recommendations

Wear appropriate chemical resistant gloves. In case of skin contact: neoprene, nitrile, as well as similar materials in protection gloves; do not use natural rubber.

Protective Materials

Personal protective equipment should be selected based upon the conditions under which this material is used. A hazard assessment of the work area for PPE requirements should be conducted by a qualified professional pursuant to regulatory requirements. The following PPE should be considered the minimum required: Safety glasses, gloves, and lab coat or apron.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Clear liquid	Physical State	Liquid
Odor	Mild ,hydrocarbon odor	Color	Colorless to pale yellow
Odor Threshold	30 ppm (based on Stoddard Solvent)	pH	Not applicable
Melting Point	-45 F (-43 C)	Boiling Point	350 F (177 C)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	<0.1 (butyl acetate = 1)	Flammability (solid, gas)	Not available
Autoignition Temperature	480 F (249 C)(minimum)	Flash Point	148 F (64 C)
Lower Explosive Limit	0.7 VOL%	Decomposition temperature	Not available
Upper Explosive Limit	5 VOL%	Vapor Pressure	< 1.0 mm Hg (at 68 F)
Vapor Density (air=1)	5 (air = 1) (approximately)	Specific Gravity (water=1)	0.77 - 0.82 (at 60 F)
Water Solubility	Insoluble	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Solubility (Other)	Not available
Density	6.4 - 6.7 lb/US gal	VOC	100 WT%; 6.4 to 6.7 LB/US gal; 770 to 800 g/l; As per 40 CFR Part 51.100(s); VOC Vapor Pressure: <1.0 mmHg @ 20°C; Product may or may not be considered photochemically reactive (100% by weight); Consult your state or local air district regulations for location specific information.
Molecular Weight	Not available		
Other Information	No additional information is available.		

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize under normal temperature and pressure conditions.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials

Avoid acids, alkalis, oxidizing agents, reducing agents, halogens.

Hazardous decomposition products

Not applicable under normal conditions of use and storage. Reference to other sections: Section 5.

Thermal decomposition products

Burning may produce carbon monoxide and other organic compounds.

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation

May cause respiratory irritation, nausea, loss of appetite, headache, drowsiness, dizziness, disorientation, tremors, lung damage, convulsions, coma.

Skin Contact

May cause skin irritation.

Eye Contact

No information on significant adverse effects.

Ingestion

May cause drowsiness or dizziness, headache, loss of coordination, aspiration hazard.

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Petroleum distillates, hydrotreated light (64742-47-8)

Oral LD50 Rat >5000 mg/kg; Dermal LD50 Rabbit >2000 mg/kg; Inhalation LC50 Rat >5.2 mg/L 4 h

Immediate Effects

May cause central nervous system depression. Aspiration may result in lung damage, respiratory tract irritation, May cause skin irritation.

Delayed Effects

May cause damage to central nervous system.

Irritation/Corrosivity Data

May cause respiratory tract irritation and skin irritation.

Respiratory Sensitization

No information available for the product.

Dermal Sensitization

No information available for the product.

Component Carcinogenicity

Petroleum distillates, hydrotreated light	64742-47-8
DFG:	Category 3B (could be carcinogenic for man)

Germ Cell Mutagenicity

No information available for the product.

Tumorigenic Data

No data available

Reproductive Toxicity

No information available for the product.

Specific Target Organ Toxicity - Single Exposure

May cause central nervous system depression.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Specific Target Organ Toxicity - Repeated Exposure

May cause damage to central nervous system.

Aspiration hazard

May be fatal if swallowed and enters airways. May cause lung damage.

Medical Conditions Aggravated by Exposure

Individuals with pre-existing respiratory tract (nose, throat, and lungs), central nervous system, kidneys, and eye and/or skin disorders may have increased susceptibility to the effects of exposure.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

According to the California Code of Regulations, a toxicity to aquatic life, specifically fish, is determined using an acute 96 hour bioassay. A material is non-hazardous if the LC50 is >500 mg/L. This product passed the bioassay and is considered non-hazardous.

Persistence and Degradability

No information available for the product.

Bioaccumulative Potential

This material is believed not to bioaccumulate.

Mobility

Expected to have high mobility in soil.

Other Toxicity

No additional information is available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of in accordance with all applicable federal, state and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste. Contact Safety-Kleen regarding proper recycling or disposal. This product, if discarded, is not expected to be a characteristic or listed hazardous waste. Processing, use, or contamination by the user may change the waste code(s) applicable to the disposal of this product.

Section 14 - TRANSPORT INFORMATION

US DOT Information:

Non-Bulk Packages (less than or equal to 119 gallons): Not regulated. Shipping Name: Cleaning compounds (Petroleum naphtha) (Not US DOT regulated)

Bulk Packages

Shipping Name: COMBUSTIBLE LIQUID, N.O.S., (Petroleum naphtha)

Hazard Class: 3 **UN/NA #:** NA1993 **Packing Group:** III **Required Label(s):** 3

IATA Information:

UN#: Not regulated as a dangerous good

TDG Information:

UN#: Not regulated as a dangerous good

Additional information

Emergency Response Guide Number: 128: Reference: North American Emergency Response Guide Book.

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Section 15 - REGULATORY INFORMATION

Canada Regulations

CEPA - Priority Substances List

None of this product's components are on the list.

Ozone Depleting Substances

None of this product's components are on the list.

Council of Ministers of the Environment - Soil Quality Guidelines

None of this product's components are on the list.

Council of Ministers of the Environment - Water Quality Guidelines

None of this product's components are on the list.

Further information

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by the CPR.

U.S. Federal Regulations

None of this product's components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C) 2016 reporting categories

Acute Health: yes **Chronic Health:** yes **Fire:** yes **Pressure:** no **Reactivity:** no

U.S. State Regulations

None of this product's components are listed on the state lists from MA, MN, NJ or PA

WARNING! This product can expose you to chemicals including benzene, dichlorobenzene, ethylbenzene, and naphthalene which are known to the State of California to cause cancer and benzene and toluene which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.gov.

Component Analysis - Inventory

Petroleum distillates, hydrotreated light (64742-47-8)

US	CA	AU	CN	EU	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2
Yes	DSL	Yes	Yes	EIN	No	No	Yes	No
KR - REACH CCA		MX	NZ	PH	TH-TECI	TW	VN (Draft)	
No		Yes	Yes	Yes	No	Yes	Yes	

U.S. Inventory (TSCA)

TSCA: All the components of this substance are listed on or are exempt from the inventory.

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 1 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Regulatory review and update.

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CFR - Code of Federal Regulations (US); CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP -

Safety Data Sheet

Material Name: SAFETY-KLEEN PREMIUM SOLVENT (VIRGIN AND RECYCLED)

SDS ID: 82658

Classification, Labelling, and Packaging; CPR - Controlled Products Regulations; DOT - Department of Transportation; DSL - Domestic Substances List; EPA - Environmental Protection Agency; F - Fahrenheit; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NDSL - Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; RCRA - Resource Conservation and Recovery Act; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

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14.) SLITHER

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1727	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	SLITHER	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Aerosol Penetrant Lubricant	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION:

Acute aquatic toxicity: Category 2
Acute toxicity Dermal: Category 5
Acute toxicity Oral: Category 4
Aerosols: Category 1
Aspiration Hazard: Category 1
Carcinogenicity: Category 1B
Chronic aquatic toxicity: Category 2
Eye Irritation: Category 2A
Germ Cell Mutagenicity: Category 1B
Reproductive Toxicity: Category 2
Skin Irritation: Category 2
Specific Target Organ Toxicity - Repeated Exposure: Category 2
Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation): Category 3

SIGNAL WORD:
DANGER

SYMBOL:



HAZARD STATEMENTS:

H222 - Extremely flammable aerosol.
H229 - Pressurized container: May burst if heated.
H313 - May be harmful in contact with skin.
H302 - Harmful if swallowed.
H304 - May be fatal if swallowed and enters airways.
H350 - May cause cancer.
H319 - Causes serious eye irritation.
H340 - May cause genetic defects.
H361 - Suspected of damaging fertility or an unborn child.
H315 - Causes skin irritation.
H373 - May cause damage to organs through prolonged or repeated exposure.
H335 - May cause respiratory irritation.
H401 - Toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:

P101 - If medical advice is needed, have product container or label at hand.
P102 - Keep out of reach of children.
P103 - Read label before use.

Prevention:

P273 - Avoid release to the environment.
P264 - Wash thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P211 - Do not spray on an open flame or other ignition source.
P251 - Do not pierce or burn, even after use.
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P271 - Use only outdoors or in a well-ventilated area.
P233 - Keep container tightly closed.

Response:

P312 - Call a POISON CENTER/doctor if you feel unwell.
P301 + P312 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P330 - Rinse mouth.
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor.
P331 - Do NOT induce vomiting.
P308 + P313 - IF exposed or concerned: Get medical advice/attention.
P391 - Collect spillage.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 - If eye irritation persists: Get medical advice/attention.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P321 - For specific treatment see section 4.
P332 + P313 - If skin irritation occurs: Get medical advice/attention.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P314 - Get Medical advice/attention if you feel unwell.
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Storage:

P410 + P412 - Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
P405 - Store locked up.
P403 + P405 - Store in a well-ventilated place. Store locked up.

Disposal:

P501 - Dispose of contents/container to disposal recycling center. Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.

HAZARDS NOT OTHERWISE SPECIFIED:

None.

SUPPLEMENTAL INFORMATION:

Acute toxicity of 12.51% of the mixture is unknown.

3. Composition / Information on Ingredients

Chemical Name	CAS	Concentration % by Weight
Aromatic Hydrocarbon Mixture >C9	64742-95-6	19% - 31%
1,2,4-Trimethylbenzene	95-63-6	15% - 24%
Non Hazardous Volatile	NA-ERAEnviro	7% - 15%
Chlorinated Paraffins	63449-39-8	7% - 15%
Ethylene Glycol Monobutyl Ether	111-76-2	4% - 10%
Mesitylene	108-67-8	3% - 5%
CO ₂	124-38-9	2% - 4%
Mineral Oil, Slab Oil	8042-47-5	2% - 3%
Diethylbenzene	25340-17-4	1.1% - 2%
Xylene	1330-20-7	1.1% - 2%
Cumene	98-82-8	1.1% - 2%
Pine Oil	8002-09-3	1.1% - 2%
Naphthalenesulfonic acid, dinonyl-, barium salt	25619-56-1	0.1% - 1.3%
Ethylene Glycol	107-21-1	Trace

Specific chemical identity and/or exact percentage (concentration) of the composition has been withheld to protect confidentiality.

4. First Aid Measures

EMERGENCY OVERVIEW

EYES: Remove source of exposure or move person to fresh air. Rinse eyes cautiously with lukewarm, gently flowing water for several minutes, while holding the eyelids open. Remove contact lenses, if present and easy to do. Continue rinsing for a duration of 15-20 minutes. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists: Get medical advice/attention.

SKIN: Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash with plenty of lukewarm, gently flowing water for a duration of 15-20 minutes. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. IF exposed or concerned: Get medical advice/attention.

INHALATION:

Remove source of exposure or move person to fresh air and keep comfortable for breathing. If exposed/If you feel unwell/If concerned: Call a POISON CENTER/doctor. Eliminate all ignition sources if safe to do so.

INGESTION:

Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED:

No data available.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

No data available.

5. Fire Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA:

Dry chemical, foam, carbon dioxide. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Sand or earth may be used for small fires only.

UNSUITABLE FIRE EXTINGUISHING MEDIA:

Do not direct a solid stream of water or foam into hot, burning pools as this may result in frothing and increase fire intensity.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Product is highly flammable and forms explosive mixtures with air, oxygen and all oxidizing agents. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. During a fire, irritating and highly toxic gases may be generated during combustion or decomposition. High temperatures can cause sealed containers to rupture due to a buildup of internal pressures. Cool with water. Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Container could potentially burst or be punctured upon mechanical impact, releasing flammable vapors.

SPECIFIC FIRE-FIGHTING METHODS:

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. Move undamaged containers from immediate hazard area if it can be done safely. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Water may be ineffective but can be used to cool containers exposed to heat or flame. Caution should be exercised when using water or foam as frothing may occur, especially if sprayed into containers of hot, burning liquid. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Wear protective pressure self-contained breathing apparatus (SCBA) and full turnout gear.

6. Accidental Release Measures**PERSONAL PRECAUTIONS:**

Avoid breathing vapor. Avoid contact with skin, eye or clothing. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or spilled materials unless wearing appropriate protective clothing. Wear liquid tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus (SCBA).

MATERIALS AND METHODS FOR CLEANUP:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Isolate hazard area and keep unnecessary people away. Remove all possible sources of ignition in the surrounding area. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. If spilled material is cleaned up using a regulated solvent, the resulting waste mixture may be regulated. Absorb liquids in vermiculite, dry sand, earth or similar inert material and deposit in sealed containers for disposal.

ENVIRONMENTAL PRECAUTIONS:

Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways by using sand, earth or other appropriate barriers.

7. Handling and Storage**SAFE HANDLING:**

Wash hands after use. Do not get in eyes, on skin or on clothing. Do not breathe vapors or mists. Use good personal hygiene practices. Eating, drinking and smoking in work areas is prohibited. Remove contaminated clothing and protective equipment before entering eating areas. Eyewash stations and showers should be available in areas where this material is used and stored. Use only with adequate ventilation to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source.

SAFE STORAGE & INCOMPATIBILITIES:

Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not pressurize containers to empty them. Store at temperatures below 120°F.

8. Exposure Controls / Personal Protection**APPROPRIATE ENGINEERING CONTROLS:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

Chemical Name	OSHA TWA (ppm)	OSHA TWA (mg/m ³)	OSHA STEL (ppm)	OSHA STEL (mg/m ³)	OSHA Tables (Z1, Z2, Z3)	OSHA Carcinogen	OSHA Skin designation	NIOSH TWA (ppm)	NIOSH TWA (mg/m ³)	NIOSH STEL (ppm)	NIOSH STEL (mg/m ³)	NIOSH Carcinogen
1,2,4-Trimethylbenzene								25	125			
Aromatic hydrocarbon mixture >C9	500	2,000			1							
CO ₂	5,000	9,000			1			5,000	9,000	30,000	54,000	
Ethylene glycol												
Ethylene glycol monobutyl ether	50	240			1		1	5	24			
Mesitylene								25	125			
Naphthalenesulfonic acid, dinonyl-barium salt		0.5			1							
Xylene	100	435			1			100	435	150	655	

Chemical Name	ACGIH TWA (ppm)	ACGIH TWA (mg/m ³)	ACGIH STEL (ppm)	ACGIH STEL (mg/m ³)
1,2,4-Trimethylbenzene				
Aromatic hydrocarbon mixture >C9				
CO ₂	5,000	9,000	30,000	54,000
CUMENE	50	246		
Ethylene glycol	25(v)		50(v)	10(l, H)
Ethylene glycol monobutyl ether	20	97		
Mesitylene				
Naphthalenesulfonic acid, dinonyl-		0.5		

barium salt				
Xylene	100	434	150	651

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:



Eye Protection: Wear eye protection with side shields or goggles. Wear indirect-vent, impact and splash resistant goggles when working with liquids. If additional protection is needed for entire face, use in combination with a face shield.

Skin Protection: Use of gloves approved to relevant standards made from the following materials may provide suitable chemical protection: PVC, neoprene or nitrile rubber gloves. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Use of an apron and over-boots of chemically impervious materials such as neoprene or nitrile rubber is recommended to avoid skin sensitization. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Launder soiled clothes or properly disposed of contaminated material, which cannot be decontaminated.

Respiratory Protection: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker, a respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed. Check with respiratory protective equipment suppliers.

9. Physical & Chemical Properties

Appearance:	Red liquid.	Flammability:	Not available.
Odor:	Pine.	Explosive Limit – lower (%):	Not available.
Odor Threshold:	Not available.	Explosive Limit – upper (%):	Not available.
pH:	Not available.	Vapor Pressure:	Not available.
Melting Point:	Not available.	Vapor Density:	Not available.
Low Boiling Point:	Not available.	Solubility (water):	Not available.
High Boiling Point:	Not available.	Auto-Ignition Temperature:	Not available.
Viscosity:	Not available.	VOC Composite Partial Pressure:	Not available.
Flash Point:	Not available.	Evaporation Rate:	1.
Explosive Properties:	Not explosive.	Oxidizing Properties:	Not oxidizing.
VOC Actual (g/L):	629.60900 g/L	Density:	7.70864 lb/gal.
% VOC:	68.15970%	Density VOC:	5.25419 lb/gal.
Flash Point Symbol:	Not available.	Freezing Point:	Not available.

10. Stability & Reactivity Information

CHEMICAL STABILITY:

Stable under normal storage and handling conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

Will not occur.

INCOMPATIBLE MATERIALS:

Avoid strong oxidizers, reducers, acids and alkalis.

CONDITIONS TO AVOID:

Avoid heat, sparks, flame, high temperature and contact with incompatible materials. Dropping containers may cause bursting.

HAZARDOUS DECOMPOSITION PRODUCTS:

No data available.

11. Toxicological Information

PRIMARY ROUTE OF ENTRY:

Inhalation, ingestion, skin absorption.

ACUTE TOXICITY:

If inhaled, may cause dizziness, nausea, upper respiratory irritation, drowsiness, mental depression or narcosis, difficulty in breathing, irregular heartbeats. May be harmful in contact with skin. Harmful if swallowed.

POTENTIAL HEALTH EFFECTS – MISCELLANEOUS:

0000111-76-2 Ethylene Glycol Monobutyl Ether: Can be absorbed through the skin in harmful amounts. May cause injury to the kidneys, liver, blood and/or bone marrow. Repeated overexposure may result in damage to the blood. Eye contact may cause corneal injury. Has been toxic to the fetus in laboratory animals at doses that are toxic to the mother.

0001330-20-7 Xylene: Increased susceptibility to the effects of this material may be observed in people with preexisting disease of any of the following: bone marrow, cardiovascular system, central nervous system, kidneys, liver, lungs. Recurrent overexposure may result in liver and kidney injury. High exposures may produce irregular heartbeats. Canada classifies Xylene as a developmental toxin as high exposures to xylenes in some animal studies have been reported to cause health effects on the developing fetus/embryo. These effects were often at levels toxic to the adult animal. The significance of these effects to humans is not known. Repeated or prolonged skin contact may cause any of the following: irritation, dryness, cracking of the skin.

0064742-95-6 Aromatic Hydrocarbon Mixture >C9: The following medical conditions may be aggravated by exposure: skin disorders. Laboratory studies with rats have shown that petroleum distillates can cause kidney damage and kidney or liver tumors. These effects were not seen in similar studies with guinea pigs, dogs, or monkeys. Several studies evaluating petroleum workers have not shown a significant increase of kidney damage or an increase in kidney or liver tumors.

COMPONENTS	SPECIES	TEST RESULTS
Ethylene Glycol CAS# 107-21-1		
Acute <i>Dermal</i> LD50	Rabbit	9.5 g/kg (6)
<i>Oral</i> LD50	Rat Mouse Guinea pig Rabbit	5.89 g/kg; 8.54 g/kg; 13.0 g/kg (5) 7.5 g/kg; 15.28 g/kg (5,6) 6.6 g/kg; 11.0 g/kg (5) 5.0 g/kg (5)
Ethylene glycol monobutyl ether CAS #111-76-2		
Acute <i>Dermal</i> LD50	Male rabbit	406 mg/kg (cited as 0.45 mL/kg) (1)
<i>Inhalation</i> LC50	Female rat Male rat	450 ppm (4-hour exposure) (2) 486 ppm (4-hour exposure) (2)
<i>Oral</i> LD50	Male weanling rat 6-week-old male rat Yearling male rat Female rat Male mouse Rabbit	3000 mg/kg (1) 2400 mg/kg (1) 560 mg/kg (1) 530 mg/kg; 2500 mg/kg (1) 1230 mg/kg (1) 320 mg/kg (1)
1,2,4-Trimethylbenzene CAS #95-63-6		
Acute <i>Inhalation</i> LC50	Rat	18 g/m ³ (4-hour exposure) (1)
<i>Oral</i> LD50	Rat	5 g/kg (1)
Cumene CAS #98-82-8		
Acute <i>Dermal</i> LD50	Rabbit	10627 mg/kg (4)
<i>Inhalation</i> LC50	Mouse Rat	10 mg/L; (2000 ppm); 7-hour exposure (1,3) 39 mg/L (8000 ppm); 4-hour exposure (1,3,6)
<i>Oral</i> LD50	Rat	Reported as 1.4 g/kg and 2.26 g/kg (1,3,4)
Mesitylene CAS #108-67-8		
Acute <i>Inhalation</i> LC50	Rat	(4-hour exposure) (2)
Xylene CAS #1330-20-7		
Acute <i>Dermal</i> LD50	Rabbit Rabbit	12180 mg/kg (m-xylene); greater than 1700 mg/kg (mixed xylenes - undefined composition) (3) 12180 mg/kg (m-xylene); greater than 1700 mg/kg (mixed xylenes - undefined composition) (3)
<i>Inhalation</i> LC50	Rat Rat Rat	6350 ppm (4-hour exposure) (unspecified isomers and ethylbenzene) (1) 6700 ppm (4-hour exposure) (65% m-xylene, 7.6% o-xylene, 7.8% p-xylene, 19.3% ethylbenzene) (2) ethylbenzene) (1) 6700 ppm (4-hour exposure) (65% m-xylene, 7.6% o-xylene, 7.8% p-xylene, 19.3% ethylbenzene)(2)
<i>Oral</i> LD50	Rat Female mouse Male mouse Female mouse Male mouse	5400 mg/kg (52% m-, 19% o-, 24% p-) (1) 251 mg/kg (60.2% m-, 9.1% o-, 14.6% p-, 17.0% ethylbenzene) (4) 5627 mg/kg (60.2% m-, 9.1% o-, 14.6% p-, 17.0% ethylbenzene) (4) 5251 mg/kg (60.2% m-, 9.1% o-, 14.6% p-, 17.0% ethylbenzene) (4) 5627 mg/kg (60.2% m-, 9.1% o-, 14.6% p-, 17.0% ethylbenzene) (4)
SKIN CORROSION/IRRITATION:		
Prolonged or repeated contact with this product may dry and/or defat the skin. This product may be harmful if it is absorbed through the skin. Causes skin irritation.		

SERIOUS EYE DAMAGE/IRRITATION:

Eye contact may lead to permanent damage if not treated promptly. Liquid or vapors may irritate the eyes. Symptoms may include stinging, tearing, redness, swelling and blurred vision. Eye contact may lead to permanent damage if not treated promptly. Causes serious eye irritation.

RESPIRATORY SENSITIZATION:

No data available.

GERM CELL MUTAGENICITY:

May cause genetic defects.

CARCINOGENICITY:

May cause cancer.

REPRODUCTIVE TOXICITY:

Suspected of damaging fertility or an unborn child.

SPECIFIC TARGET ORGAN TOXICITY (single exposure):

May cause respiratory irritation.

SPECIFIC TARGET ORGAN TOXICITY (repeated exposures):

Causes damage to organs through prolonged or repeated exposure. May cause damage to organs through prolonged or repeated exposure.

ASPIRATION HAZARD:

May be fatal if swallowed and enters airways.

CHRONIC EFFECTS:

98-82-8 CUMENE

Teratogenic Effects: Cumene has been Classified as POSSIBLE for humans.

1330-20-7 XYLENE

High exposure to Xylenes in some animal studies have been reported to cause health effects on the developing embryo/fetus. Xylene in high concentrations has caused embryotoxic effects in laboratory animals.

12. Ecological Information**TOXICITY:**

Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

PERSISTENCE AND DEGRADABILITY:

No data available.

BIOACCUMULATIVE POTENTIAL:

No data available.

MOBILITY IN SOIL:

No data available.

OTHER ADVERSE EFFECTS:

No data available.

13. Disposal Consideration**DISPOSAL INSTRUCTIONS:**

Under RCRA it is the responsibility of the user of the product to determine at the time of disposal whether the product meets RCRA criteria for hazardous waste. Waste management should be in full compliance with federal, state and local laws.

CONTAMINATED PACKAGING:

Empty Containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse.

14. Transportation Information

DOT: Ground Transportation: (Continental United States, Canada & Mexico): Limited quantity.

IATA: We do NOT recommend this product to be shipped via air. It would need to be repacked by an authorized packing company and the DG would have to be completed by a licensed hazardous material shipping company.

IMDG: **UN NUMBER:** UN1950

UN Proper Shipping Name: Aerosols.

Transport Hazard Class(es)

Class: 2.1

Required Placard: Limited quantity.

Environmental Hazards:

Marine pollutant: No data available.

15. Regulatory Information

Chemical Name	CAS #	% by Wt	Regulation List
Aromatic Hydrocarbon Mixture >C9	64742-95-6	19 - 31	Canada_NPRI, DSL, SARA312, VOC, TSCA
1,2,4-Trimethylbenzene	95-63-6	15 - 24	Canada_NPRI, DSL, SARA312, VOC, TSCA
Non Hazardous Volatile	NA-ERAEnviro-	7 - 15	SARA312
Chlorinated Paraffins	63449-39-8	7 - 15	DSL, SARA312, TSCA
Ethylene Glycol Monobutyl Ether	111-76-2	4 - 10	Canada_NPRI, DSL, CERCLA, SARA312, VOC, TSCA
Mesitylene	108-67-8	3 - 5	Canada_NPRI, DSL, SARA312, VOC, TSCA
CO ₂	124-38-9	2 - 4	DSL, SARA312, TSCA
Mineral Oil, Slab Oil	8042-47-5	2 - 3	Canada_NPRI, DSL, SARA312, TSCA
Diethylbenzene	25340-17-4	1.1 - 2	DSL, SARA312, VOC, TSCA
Xylene	1330-20-7	1.1 - 2	Canada_NPRI, DSL, CERCLA, HAPS, SARA312, VHAPS, VOC, TSCA, RCRA
Cumene	98-82-8	1.1 - 2	Canada_NPRI, DSL, CERCLA, HAPS, SARA312, VHAPS, VOC, TSCA, RCRA, CA Prop65 - California Proposition 65
Pine Oil	8002-09-3	1.1 - 2	DSL, SARA312, VOC, TSCA
Naphthalenesulfonic acid, dinonyl-	25619-56-1	0.1 - 1.3	DSL, SARA312, TSCA

barium salt			
Ethylene Glycol	107-21-1	Trace	Canada_NPRI, DSL, CERCLA, HAPS, SARA312, VHAPS, VOC, TSCA, CA Prop 65 -California Proposition 65

16. Other Information

DISCLAIMER:

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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15.) SOLAR SHIELD

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1267	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	SOLAR SHIELD	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Aerosol Surface Protector and Restorer.	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: Aspiration Hazard - Category 1 Skin Irritation - Category 2 Eye Irritation - Category 2 Specific Target Organ Toxicity (single exposure) - Category 3 Flammable Aerosols - Category 1 Gases under pressure - Liquefied gas	SIGNAL WORD: DANGER	SYMBOL:				
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HAZARD STATEMENTS:

- Keep out of reach of children.
- Read label and SDS before use.
- Extremely flammable aerosol.
- Contains gas under pressure; may explode if heated.
- May be fatal if swallowed and enters airways.
- May cause drowsiness or dizziness.
- Causes skin irritation.
- Causes serious eye irritation.

PRECAUTIONARY STATEMENTS:

Prevention:

- Avoid breathing mist/spray.
- Use only outdoors or in a well-ventilated area.
- Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
- Do not spray on an open flame or other ignition source.
- Pressurized container: Do not pierce or burn, even after use.
- Wash hands thoroughly after handling.
- Wear protective gloves.
- Wear eye protection.

Response:

- IF SWALLOWED: Immediately call a poison center or a doctor. Do NOT induce vomiting.
- IF ON SKIN: Wash with plenty of soap and water.
- If skin irritation occurs get medical attention.
- Take off contaminated clothing and wash it before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If eye irritation persists: Get medical attention.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- Call a poison center or a doctor if you feel unwell.

Storage:

- Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
- Store in a well-ventilated place.
- Store locked up.

Disposal: Dispose of contents and container in accordance with all local, regional, and national regulations.

HAZARDS NOT OTHERWISE SPECIFIED:

Not applicable.

3. Composition / Information on Ingredients

CHEMICAL NAME	CAS	CONCENTRATION % by WEIGHT
Heptane	142-82-5	>=60 <= 70
Propane	74-98-6	>=10 <= 20
Butane	106-97-8	>=1 <= 5

4. First Aid Measures

EMERGENCY OVERVIEW

- DANGER:** Extremely flammable. Contents under pressure. Harmful or fatal if swallowed. Aspiration hazard if swallowed. Vapor harmful. Keep away from heat and flame. Can cause nervous system depression.
- EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
- SKIN:** Wash with plenty of soap and water. If skin irritation or rash occurs get medical attention. Take off contaminated clothing and wash it before reuse.

INHALATION:

Remove person to fresh air and keep comfortable for breathing. Call a poison center or a doctor if you feel unwell.

INGESTION:

Harmful or fatal if swallowed. Seek medical attention immediately. Aspiration hazard - this material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

5. Fire-Fighting Measures**SUITABLE FIRE EXTINGUISHING MEDIA:**

Use water spray, fog, or foam.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Flammable aerosol. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of subsequent explosion. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion. Bursting aerosol containers may be propelled from a fire at high speed. Runoff to sewer may create fire or explosion hazard.

HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:

Carbon Dioxide. Carbon Monoxide.

SPECIFIC FIRE-FIGHTING METHODS:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area, if this can be done without risk. Use water spray to keep fire-exposed containers cool.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Firefighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.

6. Accidental Release Measures**PERSONAL PRECAUTIONS:**

Put on appropriate personal protective equipment (see Section 8).

ENVIRONMENTAL PRECAUTIONS AND CLEAN-UP METHODS:

Stop all leaks. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Eliminate all ignition sources. Disperse vapors with water spray. Prevent runoff from entering drains, sewers, streams, or other bodies of water. Absorb spill with inert material. Absorb unrecoverable product. Transfer contaminated absorbent, soil, and other materials to containers for disposal.

7. Handling and Storage

Do not use or store near heat, sparks, or open flame. Exposure to temperatures above 120°F may cause bursting. Do not puncture or incinerate container. Store in a cool, dry place. Do not get in eyes, on skin, or on clothing. Intentional misuse by deliberately concentrating and inhaling may be harmful or fatal. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Butane: ACGIH TLV: 1000 ppm

Heptane: ACGIH TLV: 50 ppm

OSHA PEL: 50 ppm

Propane: ACGIH TLV: 1000 ppm

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Wear safety glasses or goggles.

SKIN PROTECTION: To prevent repeated or prolonged contact, wear impervious gloves (made from rubber, nitrile, or neoprene).

RESPIRATOR PROTECTION: When respiratory protection is required use an organic vapor cartridge. A respiratory program that meets OSHA's 29 CFR 1910.34 & ANSI Z88.2 requirements must be followed.

APPROPRIATE ENGINEERING CONTROLS:

Good general ventilation required.

9. Physical & Chemical Properties

Appearance:	Clear spray/mist.	Explosive Limit Ranges:	Not available.
Physical State:	Liquid.	Explosive Properties:	Not available.
Color:	Colorless.	VOC Content (Wt. %):	87
Odor:	Solvent/cherry.	Oxidizing Properties:	Not available.
Odor Threshold:	Not available.	Vapor Density:	Not available.
pH:	Not applicable.	Vapor Pressure:	Not available.
Melting/Freezing Point:	Not available.	Relative Density:	0.8
Boiling Point:	Not available.	Solubility (water):	Insoluble.
Viscosity:	Not available.	Auto-Ignition Temperature:	Not available.
Flash Point:	<0 F (liquid portion)	Decomposition Temperature:	Not available.
Evaporation Rate:	Not available.	Partition COeff (n-octanol/water):	Not available.

10. Stability & Reactivity Information**REACTIVITY:**

Under normal conditions of storage and use, hazardous reactions will not occur.

CHEMICAL STABILITY:

Stable under normal conditions.

INCOMPATIBLE MATERIALS:

Acids and strong oxidizers.

CONDITIONS TO AVOID:

High temperatures, open flames, sparks, welding.

DECOMPOSITION PRODUCTS:

CO, CO₂.

*Vapors may ignite at temperatures exceeding flash point.

11. Toxicological Information**PRIMARY ROUTE OF ENTRY:**

Skin contact, inhalation.

ACUTE/POTENTIAL HEALTH EFFECTS:

Eyes: May cause serious eye irritation. Symptoms include stinging, tearing and redness.

Skin: May cause skin irritation. Prolonged or repeated contact may dry the skin. Symptoms may include redness, burning, drying of skin, and skin burns.

Inhalation: High vapor/aerosol concentrations (>1000 ppm) are irritating to the eyes and respiratory tract. May cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death. May cause peripheral nervous system disorder and/or damage.

Ingestion: Harmful or fatal if swallowed. Aspiration hazard - this material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

CHRONIC/LONG TERM EFFECTS:

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage.

Signs and Symptoms of Overexposure: Signs and symptoms of overexposure to this material through breathing, swallowing, and/or passage of material through the skin may include: stomach or intestinal upset (nausea vomiting, diarrhea) irritation (nose, throat, airways), central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness).

TARGET ORGAN EFFECTS:

Central nervous system.

REPRODUCTIVE/DEVELOPMENTAL INFORMATION:

None known.

CARCINOGENIC INFORMATION:

This material is not listed as a carcinogen by IARC, NTP, or OSHA.

ACUTE TOXICITY VALUES:

Not available.

12. Ecological Information

Not available.

13. Disposal Consideration

Waste must be disposed of in accordance with federal, state, and local environmental control regulations. See label for further instructions.

14. Transportation Information

Certain shipping modes or package sizes may have exceptions from the transport regulations. The classification provided may not reflect those exceptions and may not apply to all shipping modes or package sizes.

DOT: UN Number: UN1950

Proper Shipping Name: Aerosols, flammable

Class: 2.1

Packing group: -

15. Regulatory Information

If identified components of this product are **CERCLA** hazardous substances and/or listed under **Sections 302, 304, or 313 of Title III** of the Superfund Amendments and Reauthorization Act (SARA) of 1986 (also known as EPCRA, the Emergency Planning and Community Right-To-Know Act), or under **California Proposition 65** (Safe Drinking Water and Toxic Enforcement Act), they are listed above in Section 15 of this SDS.

If identified components of this product are listed under Section 313, this product contains toxic chemicals subject to the reporting requirements of Section 313. This information must be included in all SDS that are copied and distributed for this material.

Title III Section 311/312:

Hazardous Categories - 40 CFR 370.2:

ACUTE (X) Chronic (X) Fire (X) Pressure (X) Reactive () Not Applicable ()

T.S.C.A. Status:

All chemical substances found in this product comply with the Toxic Substances Control Act inventory reporting requirements.

RCRA Status:

Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. If this product becomes hazardous waste it would be assigned RCRA Code(s): D001

16. Other Information**DISCLAIMER:**

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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16.) WHITE LUBE

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SAFETY DATA SHEET

1. Product and Company Identification

PRODUCT NUMBER:	1723	COMPANY PHONE:	1-800-241-8180
PRODUCT NAME:	WHITE LUBE	EMERGENCY TELEPHONE:	1-800-241-8180
PRODUCT DESCRIPTION:	Aerosol White Lithium Grease	INFOTRAC:	1-800-535-5053
COMPANY INFORMATION:	PRO CHEM, INC. 1475 Bluegrass Lakes Parkway Alpharetta, GA 30004		

2. Hazards Identification

GHS CLASSIFICATION: Flammable aerosols: Category 1 Aspiration hazard: Category 1 Environmental Hazards: Hazardous to the aquatic environment, acute hazard: Category 2 Hazardous to the aquatic environment, long-term hazard: Category 2	SIGNAL WORD: DANGER	SYMBOL:		
OSHA DEFINED HAZARDS: Not classified.				
HAZARD STATEMENTS: Extremely flammable aerosol. May be fatal if swallowed and enters airways.				
PRECAUTIONARY STATEMENTS: Prevention: Keep away from heat/sparks/open flames/hot surfaces. No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Response: IF SWALLOWED: Immediately call a poison center/doctor. Do NOT induce vomiting. IF EXPOSED OR CONCERNED: Get medical advice/attention Storage: Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Disposal: Dispose of contents/container in accordance with local/regional/national/international regulations.				
HAZARDS NOT OTHERWISE SPECIFIED: None known.				
SUPPLEMENTAL INFORMATION: None.				

3. Composition / Information on Ingredients

CHEMICAL NAME	CAS	Concentration % by Weight
Distillates (Petroleum), Hydrotreated Light	64742-47-8	20 - 40
Propane	74-98-6	10 - 20
Naphtha, (Petroleum), Hydrotreated Light	64742-49-0	2.5 - 10
n-Heptane	142-82-5	2.5 - 10
Titanium dioxide	13463-67-7	1 - 2.5
Zinc Oxide	1314-13-2	1 - 2.5
Other components below reportable levels		40 - 60

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First Aid Measures

EMERGENCY OVERVIEW
GENERAL: Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
EYES: Rinse with water. Get medical attention if irritation develops and persists.
SKIN: Wash off with soap and water. Get medical attention if irritation develops and persists.
INHALATION: If symptoms develop move victim to fresh air. Get medical attention if symptoms persist.
INGESTION: Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED: Aspiration may cause pulmonary edema and pneumonitis.
INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

5. Fire-Fighting Measures

SUITABLE FIRE EXTINGUISHING MEDIA: Alcohol resistant foam. Powder. Dry chemicals. Carbon dioxide (CO ₂).
UNSUITABLE FIRE EXTINGUISHING MEDIA: Do not use water jet as an extinguisher, as this will spread the fire.
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL: Contents under pressure. Pressurized container may explode when exposed to heat or flame. During fire, gases hazardous to health may be formed.
FIRE FIGHTING EQUIPMENT/INSTRUCTIONS: Move containers from fire area if you can do so without risk. Cool containers exposed to heat with water spray and remove container, if no risk is involved. Containers should be cooled with water to prevent vapor pressure buildup. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out. Use standard firefighting procedures and consider the hazards of other involved materials.

SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots and in enclosed spaces, SCBA. Structural firefighter's protective clothing will only provide limited protection.

GENERAL FIRE HAZARDS:

Extremely flammable aerosol.

6. Accidental Release Measures**PERSONAL PRECAUTIONS:**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during cleanup. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.

ENVIRONMENTAL PRECAUTIONS AND CLEANUP METHODS:

Refer to attached safety data sheets and/or instructions for use. Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. Prevent entry into waterways, sewer, basements or confined areas. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see Section 13 of the SDS.

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and Storage**SAFE HANDLING:**

Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind or expose containers to heat, flame, sparks or other sources of ignition. All equipment used when handling the product must be grounded. Do not reuse empty containers. Avoid prolonged or repeated contact with skin. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

SAFE STORAGE & INCOMPATIBILITIES:

Level 3 Aerosol.

Store locked up. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122°F. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Store away from incompatible materials (See Section 10 of the SDS).

8. Exposure Controls / Personal Protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

COMPONENTS	TYPE	VALUE	FORM
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m ³ 500 ppm	
Propane (CAS 74-98-6)	PEL	1800 mg/m ³ 1000 ppm	
Titanium dioxide (CAS 13463-67-7)	PEL	15 mg/m ³	Total dust.
Zinc Oxide (CAS 1314-13-2)	PEL	5 mg/m ³ 5 mg/m ³ 15 mg/m ³	Fume. Respirable fraction. Total dust.

US. ACGIH Threshold Limit Values

COMPONENTS	TYPE	VALUE	
n-Heptane (CAS 142-82-5)	STEL TWA	500 ppm 400 ppm	
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m ³	
Zinc Oxide (CAS 1314-13-2)	STEL TWA	10 mg/m ³ 2 mg/m ³	Respirable fraction. Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

COMPONENTS	TYPE	VALUE	
n-Heptane (CAS 142-82-5)	Ceiling TWA	1800 mg/m ³ 440 ppm 350 mg/m ³ 85 ppm	
Propane (CAS 74-98-6)	TWA	1800 mg/m ³ 1000 ppm	
Zinc Oxide (CAS 1314-13-2)	Ceiling STEL TWA	15 mg/m ³ 10 mg/m ³ 5 mg/m ³ 5 mg/m ³	Dust. Fume. Fume. Dust.

BIOLOGICAL LIMIT VALUE:

No biological exposure limits noted for the ingredient(s).

APPROPRIATE ENGINEERING CONTROLS:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT:

Face/Eye Protection: Face shield is recommended. Wear safety glasses with side shields (or goggles).

Skin Protection: Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Other: Wear suitable protective clothing.

Respiratory Protection: If permissible levels are exceeded use NIOSH mechanical filter/organic vapor cartridge or an air-supplied respirator.

Thermal Hazards: Wear appropriate thermal protective clothing, when necessary.

General Hygiene Considerations: When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Physical State:	Liquid.	Flammability (solid/gas):	Not available.
Form:	Aerosol.	Flammability Limit-lower (%):	0.7% estimated.
Color:	Not available.	Flammability Limit-upper (%):	8% estimated.
Odor:	Not available.	Explosive Properties:	Not explosive.
Odor Threshold:	Not available.	Explosive Limit – lower (%):	Not available.
pH:	Not available.	Explosive Limit – upper (%):	Not available.
Melting/Freezing Point:	Not available.	Vapor Pressure:	Not available.
Boiling Point/Range:	209.3°F (98.5°C) estimated.	Vapor Density:	Not available.
Partition Coeff (n-octanol/water):	Not available.	Relative Density:	Not available.
Heat of Combustion (NFPA 30B):	39.65 kJ/g estimated.	Solubility (water):	Not available.
Viscosity:	Not available.	Auto-Ignition Temperature:	421°F (216.11°C) estimated.
Evaporation Rate:	Not available.	Decomposition Temperature:	Not available.
Oxidizing Properties:	Not oxidizing.	Flash Point:	-156.0°F (-104.4°C) Propellant estimated.

10. Stability & Reactivity Information**REACTIVITY:**

The product is stable and nonreactive under normal conditions of use, storage and transport.

CHEMICAL STABILITY:

Material is stable under normal conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

Hazardous polymerization does not occur.

INCOMPATIBLE MATERIALS:

Strong oxidizing agents.

CONDITIONS TO AVOID:

Avoid temperatures exceeding the flash point. Contact with incompatible materials.

DECOMPOSITION PRODUCTS:

No hazardous decomposition products are known.

11. Toxicological Information**PRIMARY ROUTE OF ENTRY:**

Eyes: Direct contact with eyes may cause temporary irritation.

Skin: No adverse effects due to skin contact are expected.

Inhalation: No adverse effects due to inhalation are expected.

Ingestion: Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS:

Aspiration may cause pulmonary edema and pneumonitis.

ACUTE TOXICITY:

May be fatal if swallowed and enters airways.

COMPONENTS	SPECIES	TEST RESULTS
Distillates (Petroleum), Hydrotreated Light (CAS 64742-47-8)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg > 2000 mg/kg, 24 Hours
<i>Inhalation</i>		
LC50	Rat	> 7.5 mg/l, 6 Hours > 4.6 mg/l, 4 Hours
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg

Naphtha, (Petroleum), Hydrotreated Light (CAS 64742-49-0)

Acute

Dermal

LD50

Guinea pig; Rabbit
Rabbit

>9.4 ml/kg, 24 Hours
>1900 mg/kg, 24 Hours

Inhalation

LC50

Rat

>5000 mg/m³, 4 Hours
>4980 mg/m³
>4980 mg/m³, 4 Hours
>4.96 mg/l, 4 Hours
13700 ppm, 4 Hours

Oral

LD50

Rat

4820 mg/kg

n-Heptane (CAS 142-82-5)

Acute

Dermal

LD50

Rabbit

>2000 mg/kg, 24 Hours

Inhalation

LC50

Rat

>29.29 mg/l, 4 Hours

Oral

LD50

Rat

>5000 mg/kg

Propane (CAS 74-98-6)

Acute

Inhalation

LC50

Mouse

1237 mg/l, 120 Minutes
52%, 120 Minutes

Rat

1355 mg/l
658 mg/l/4h

Titanium dioxide (CAS 13463-67-7)

Acute

Inhalation

LC50

Rat

>2.28 mg/l, 4 Hours

Oral

LD50

Mouse

>5000 mg/kg

Rat

>2000 mg/kg

Zinc Oxide (CAS 1314-13-2)

Acute

Dermal

LD50

Rat

>2000 mg/kg, 24 Hours

Inhalation

LC50

Rat

> 5700 mg/m³

Oral

LD50

Mouse

2000 - 5000 mg/kg

Rat

>5000 mg/kg

* Estimates for product may be based on additional component data not shown.

SKIN CORROSION/IRRITATION:

Prolonged skin contact may cause temporary irritation.

SERIOUS EYE DAMAGE/IRRITATION:

Direct contact with eyes may cause temporary irritation.

RESPIRATORY SENSITIZATION:

Not a respiratory sensitizer.

SKIN SENSITIZATION:

This product is not expected to cause skin sensitization.

GERM CELL MUTAGENICITY:

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

CARCINOGENICITY:

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity:

Titanium dioxide (CAS 13463-67-7) 2B Possibly carcinogenic to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens:

Not listed.

REPRODUCTIVE TOXICITY:

This product is not expected to cause reproductive or developmental effects.

SPECIFIC TARGET ORGAN TOXICITY (single exposure):

Not classified.

SPECIFIC TARGET ORGAN TOXICITY (repeated exposures):

Not classified.

ASPIRATION HAZARD:

May be fatal if swallowed and enters airways.

12. Ecological Information

ECOTOXICITY:

Toxic to aquatic life with long lasting effects.

PRODUCT	SPECIES	TEST RESULTS	
WHITE LUBE			
Aquatic			
Algae	IC50	Algae	50256 mg/L, 72 Hours
Crustacea	EC50	Daphnia	2478 mg/L, 48 Hours
Fish	LC50	Fish	134 mg/L, 96 Hours
COMPONENTS			
SPECIES			
TEST RESULTS			
Distillates (Petroleum), Hydrotreated Light (CAS 64742-47-8)			
Aquatic			
Fish	LC50	Rainbow trout, donaldson trout (<i>Oncorhynchus mykiss</i>)	2.9 mg/l, 96 hours
Titanium dioxide (CAS 13463-67-7)			
Aquatic			
Crustacea	EC50	Water flea (<i>Daphnia magna</i>)	>1000 mg/l, 48 hours
Fish	LC50	Mummichog (<i>Fundulus heteroclitus</i>)	>1000 mg/l, 96 hours
n-Heptane (CAS 142-82-5)			
Aquatic			
Fish	LC50	Mozambique tilapia (<i>Tilapia mossambica</i>)	375 mg/l, 96 hours
Zinc Oxide (CAS 1314-13-2)			
Aquatic			
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>)	2246 mg/l, 96 hours
* Estimates for product may be based on additional component data not shown.			
PERSISTENCE AND DEGRADABILITY:			
No data is available on the degradability of this product.			
BIOACCUMULATIVE POTENTIAL:			
Partition coefficient n-octanol / water (log Kow):			
n-Heptane	4.66		
Propane	2.36		
MOBILITY IN SOIL:			
No data available.			
OTHER ADVERSE EFFECTS:			
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.			

13. Disposal Consideration

DISPOSAL INSTRUCTIONS:

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

LOCAL DISPOSAL REGULATIONS:

Dispose in accordance with all applicable regulations.

HAZARDOUS WASTE CODE:

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

WASTE FROM RESIDUES/UNUSED PRODUCTS:

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (See: Disposal Instructions).

CONTAMINATED PACKAGING:

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not reuse empty containers.

14. Transportation Information

DOT: **UN NUMBER:** UN1950
UN PROPER SHIPPING NAME: Aerosols, flammable, (each not exceeding 1 L capacity)
TRANSPORT HAZARD CLASS(ES)

Class: 2.1
Subsidiary Risk: -
Label(s): 2.1

PACKING GROUP: Not applicable.

SPECIAL PRECAUTIONS FOR USER: Not available.

SPECIAL PROVISIONS: N82

PACKAGING EXCEPTIONS: 306

PACKAGING NON BULK: None.

PACKAGING BULK: None.

This product meets the exception requirements of section 173.306 as a limited quantity and may be shipped as a limited quantity. Until 12/31/2020, the "Consumer Commodity - ORM-D" marking may still be used in place of the new limited quantity diamond mark for packages of UN 1950 Aerosols. Limited quantities require the limited quantity diamond mark on cartons after 12/31/20 and may be used now in place of the "Consumer Commodity ORM-D" marking and both may be displayed concurrently.

IATA: **UN NUMBER:** UN1950
UN PROPER SHIPPING NAME: Aerosols, flammable
TRANSPORT HAZARD CLASS(ES)"

Class: 2.1
Subsidiary Risk: -
Label(s): 2.1



PACKING GROUP: Not applicable.

ENVIRONMENTAL HAZARDS: Yes.

ERG CODE: 10L

SPECIAL PRECAUTIONS FOR USER: Read safety instructions, SDS and emergency procedures before handling.

OTHER INFORMATION:

PASSENGER AND CARGO AIRCRAFT: Allowed with restrictions.

CARGO AIRCRAFT ONLY: Allowed with restrictions.

PACKAGING EXCEPTIONS: LTD QTY

IMDG: **UN NUMBER:** UN1950

UN PROPER SHIPPING NAME: AEROSOLS

TRANSPORT HAZARD CLASS(ES)

Class: 2.1

Subsidiary Risk: -

Label(s): None.

PACKING GROUP: Not applicable.

ENVIRONMENTAL HAZARDS:

Marine pollutant: Yes.

General Information: IMDG Regulated Marine Pollutant

EmS: F-D, S-U

SPECIAL PRECAUTIONS FOR USER: Read safety instructions, SDS and emergency procedures before handling.

PACKAGING EXCEPTIONS: LTD QTY

TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 and the IBC CODE:

Not established.



15. Regulatory Information

US FEDERAL REGULATIONS:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D): Not regulated.

CERCLA HAZARDOUS SUBSTANCE LIST (40 CFR 302.4): Not listed.

SARA 304 EMERGENCY RELEASE NOTIFICATION: Not regulated.

OSHA SPECIFICALLY REGULATED SUBSTANCES (29 CFR 1910.1001-1050): Not listed.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA):

Hazard categories	Immediate Hazard – Yes.
	Delayed Hazard – No.
	Fire Hazard – Yes.
	Pressure Hazard – No.
	Reactivity Hazard – No.

SARA 302 Extremely Hazardous Substance: Not listed.

SARA 311/312 Hazardous Chemical: No.

SARA 313 (TRI reporting): Not regulated.

OTHER FEDERAL REGULATIONS:

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List: Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

Propane (CAS 74-98-6)

Safe Drinking Water Act (SDWA): Not regulated.

US STATE REGULATIONS:

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100): Not listed.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd.(a)):

Naphtha, (Petroleum), Hydrotreated Light (CAS 64742-49-0)

Titanium dioxide (CAS 13463-67-7)

US. Massachusetts RTK - Substance List:

n-Heptane (CAS 142-82-5)

Propane (CAS 74-98-6)

Titanium dioxide (CAS 13463-67-7)

Zinc Oxide (CAS 1314-13-2)

US. New Jersey Worker and Community Right-to-Know Act:

n-Heptane (CAS 142-82-5)

Propane (CAS 74-98-6)

Titanium dioxide (CAS 13463-67-7)

Zinc Oxide (CAS 1314-13-2)

US. Pennsylvania Worker and Community Right-to-Know Law:

n-Heptane (CAS 142-82-5)

Propane (CAS 74-98-6)

Titanium dioxide (CAS 13463-67-7)

Zinc Oxide (CAS 1314-13-2)

US. Rhode Island RTK:

Propane (CAS 74-98-6)

US. California Proposition 65:

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed Date/Carcinogenic Substance:

Benzene (CAS 71-43-2) Listed: February 27, 1987

Ethyl Benzene (CAS 100-41-4) Listed: June 11, 2004

Titanium dioxide (CAS 13463-67-7) Listed: September 2, 2011

US - California Proposition 65 - CRT: Listed Date/Developmental Toxin:

Benzene (CAS 71-43-2) Listed: December 26, 1997

Toluene (CAS 108-88-3) Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed Date/Male Reproductive Toxin:

Benzene (CAS 71-43-2) Listed: December 26, 1997

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information**DISCLAIMER:**

To the best of our knowledge, information contained herein is accurate. However, there is no assumption of liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazard, which exists. The information contained in this SDS was obtained from current and reliable sources; however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of the manufacturer, the manufacturer will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this SDS shall be created or inferred by any statement in this SDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this SDS. The user is responsible for full compliance.

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G. WELDING & CUTTING MATERIALS

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1.) ABRASIVE BLADES & WHEELS

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1. IDENTIFICATION

Product Identity / Trade Name: Grinding and Cutting Wheels, Resinoid (Type 1, Type 27, Type 28, Type 29), Cup Wheels (Type 11) Cones and Plugs (Type 16, Type 17 and Type 18) Mounted Point.

Product Use: Abrasive materials used for cutting and grinding concrete, masonry and building materials.

Restriction on Use: Use only as directed

Manufacturer: United Abrasives, Inc.
185 Boston Post Road
North Windham, CT 06256

Internet: www.unitedabrasives.com

Information Phone: (860) 456-7131 **Emergency Phone:** (860) 456-7131

Date of Preparation: July 8, 2021

2. HAZARD(S) IDENTIFICATION

Classification: Not classified as hazardous as defined by the GHS and OSHA 29 CFR 1910.1200.

Label Elements: None Required.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Silicon Carbide	409-21-2	0-95
Cured Phenolic Resin	N/A	1-30
Nitrile Compounds	N/A	1-20
Fluoride Compounds	N/A	1-20
Iron Pyrite	12068-85-8	0-20
Woven Fiberglass	N/A	0-15
Calcium Compounds	N/A	0-15
Sulfur	7704-34-9	0-15
Calcium Oxide	1305-78-8	1-10
Cryolite	15096-52-3	1-10
Cured Epoxy Resin	N/A	1-10
Calcium Carbonate	1317-65-3	0-5
Iron Oxide	1309-37-1	0-5
Graphite	7782-42-5	0-5
Aluminum Potassium Fluoride	14484-69-6	0.1-0.5
Potassium Fluoroborate	14075-53-7	0.1-0.5

The specific identity and/or exact percentage has been withheld as a trade secret.

4. FIRST-AID MEASURES

Ingestion: If grinding dust is swallowed, seek medical attention.

Inhalation: If overexposed to grinding dust, remove victim to fresh air and get medical attention.

Eye Contact: Flush eyes thoroughly with water, holding open eyelids. Get medical attention if irritation persists. Obtain immediate medical attention for foreign body in the eye.

Skin Contact: Wash dust from skin with soap and water. Launder contaminated clothing before reuse.

Most important symptoms/effects, acute and delayed: May cause mechanical eye and skin irritation. Inhalation of dust may cause nose, throat and upper respiratory tract irritation. Prolonged inhalation of high concentration of dust may cause adverse effects on the lungs. Prolonged overexposure may cause damage to the respiratory tract, bones and teeth by inhalation.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is not required.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use any media that is appropriate for the surrounding fire.

Specific hazards arising from the chemical: This product is not combustible, however, consideration must be given to the potential fire or explosion hazards from the base material being processed. Many materials create flammable or explosive dusts or turnings when machined or ground.

Special protective equipment and precautions for fire-fighters: Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate respirator and protective clothing as needed to avoid eye contact and inhalation of dust.

Environmental precautions: Avoid release into the environment. Report releases as required by local, state and federal authorities.

Methods and materials for containment and cleaning up: Pick up, sweep up or vacuum and place in a container for disposal. Minimize generation of dust.

7. HANDLING AND STORAGE

Precautions for safe handling: Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling and use, especially before eating, drinking or smoking. Refer to ANSI B7.1, Safety Requirements for the Use, Care and Protection of Abrasive Wheels for additional information. Consider potential exposure to components of the base materials or coatings being ground. Refer to OSHA's substance specific standards for additional work practice requirements where applicable.

Conditions for safe storage, including any incompatibilities: Store in accordance with ANSI B7.1. Protect abrasive wheels from damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Silicon Carbide (nonfibrous)	3 mg/m ³ TWA ACGIH TLV (respirable fraction) 10 mg/m ³ TWA ACGIH TLV (inhalable fraction)
Cured Phenolic Resin	None Established
Nitrile Compounds	None Established

Fluoride Compounds	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Iron Pyrite	None Established
Woven Fiberglass	5 mg/m3 TWA ACGIH TLV (inhalable) 1 f/cc TWA ACGIH TLV (respirable)
Calcium Compounds	None Established
Sulfur	None Established
Calcium Oxide	2 mg/m3 TWA ACGIH TLV 5 mg/m3 TWA OSHA PEL
Cryolite (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Cured epoxy resin	None Established
Calcium Carbonate	15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)
Iron Oxide	5 mg/m3 TWA ACGIH TLV (respirable fraction) 10 mg/m3 TWA OSHA PEL (fume)
Graphite	2 mg/m3 TWA ACGIH TLV (respirable fraction) 15 mppcf mg/m3 TWA OSHA PEL
Aluminum Potassium Fluoride (as Al metal)	1 mg/m3 ACGIH TLV (respirable fraction) 15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)
Aluminum Potassium Fluoride (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Potassium Fluoroborate (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL

Note: Consider also components of base materials and coatings being ground.

Appropriate engineering controls: Use local exhaust or general ventilation as required to minimize exposure to dust and maintain the concentration of contaminants below occupational exposure limits.

Individual protection measures, such as personal protective equipment:

Respiratory protection: Use NIOSH approved respirator if exposure limits are exceeded or where dust exposures are excessive. Consider the potential for exposure to components of the coatings or base material being ground in selecting proper respiratory protection. Refer to OSHA's specific standards for lead, cadmium, etc. where appropriate. Selection of respiratory protection depends on the contaminant type, form and concentration. Select and use respirators in accordance with OSHA 1910.134 and good industrial hygiene practice.

Skin protection: Cloth or leather gloves recommended.

Eye protection: Safety goggles or face shield over safety glasses with side shields.

Other: Protective clothing as needed to prevent contamination of personal clothing. Hearing protection may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): Black, brown or reddish colored solid wheel.

Odor: No Odor

Odor threshold: Not applicable	pH: Not applicable
Melting point/freezing point: Not applicable	Boiling Point: Not applicable
Flash point: Not applicable	Evaporation rate: Not applicable
Flammability (solid, gas): Not combustible	
Flammable limits: LEL: Not applicable	UEL: Not applicable
Vapor pressure: Not applicable	Vapor density:
Relative density: Not applicable	Solubility(ies): Not soluble

Partition coefficient: n-octanol/water: Not applicable	Auto-ignition temperature: Not applicable
Decomposition temperature: Not applicable	Viscosity: Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable.

Possibility of hazardous reactions: None known.

Conditions to avoid: None known.

Incompatible materials: None known.

Hazardous decomposition products: Dust from grinding could contain ingredients listed in Section 3 and other, potentially more hazardous components of the base material being ground or coatings applied to the base material.

11. TOXICOLOGICAL INFORMATION

Routes of exposure:

Inhalation: Dust may cause respiratory irritation.

Ingestion: None expected under normal use conditions. Swallowing large pieces may cause obstruction of the gastrointestinal tract.

Skin contact: None expected under normal use conditions. Rubbing product across the skin may cause mechanical irritation or abrasions.

Eye contact: Dust may cause mechanical irritation.

Chronic effects from short- and long-term exposure: Long-term overexposure to respirable dust may cause lung damage (fibrosis) with symptoms of coughing, shortness of breath and diminished breathing capacity. Chronic effects may be aggravated by smoking. Prolonged overexposure to fluorides may cause a bone condition, fluorosis. Prolonged exposure to elevated noise levels during operations may affect hearing. A greater hazard, in most cases, is the exposure to the dust/fumes from the material or paint/coatings being ground. Most of the dust generated during grinding is from the base material being ground and the potential hazard from this exposure must be evaluated.

Carcinogenicity: None of the components is listed as a carcinogen or potential carcinogen by OSHA, NTP or IARC.

Numerical measures of toxicity:

Silicon Carbide: Oral rat LD50 >2000 mg/kg, Dermal rat LD50 >2000 mg/kg

Iron Pyrite: No toxicity data available

Sulfur: Oral rat LD50 >2000 mg/kg, Inhalation rat LC50 >5.43 mg/L/4 hr, Dermal rat LD50 >200 mg/L

Calcium Oxide: Oral rat LD50 >7340 mg/kg

Cryolite: LD50 Oral rat >5,000 mg/kg

Calcium Carbonate: No toxicity data available

Iron Oxide: LD50 oral rat > 10000 mg/kg

Graphite: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 2 mg/L

Aluminum Potassium fluoride: LD50 oral rat 2150 mg/kg, LC50 inhalation rat > 3.4 mg/L, LD50 dermal rabbit > 2000 mg/kg.

Potassium Fluoroborate: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 5.3 mg/L

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Silicon Carbide: No data available

Iron Pyrite: No data available

Sulfur: 96 hr LC50 *Oncorhynchus mykiss* > 5 µg/L (solubility limit of sulfur), 48 hr EC50 *daphnia magna* > 5 µg/L (solubility limit of sulfur)

Calcium oxide: 96 hr LC50 Cyprinus carpio >1070 mg/L
Cryolite: No data available
Calcium Carbonate: No data available
Iron Oxide: No data available
Graphite: Danio rerio LC50 > 100 mg/L/96hr
Aluminum Potassium fluoride: Brachydanio rerio LC50 > 10 mg/L/96hr
Potassium Fluoroborate: Leuciscus idus LC50: 760 mg/L/96hr

Persistence and degradability: Biodegradation is not applicable to inorganic compounds.

Bioaccumulative potential: No data available

Mobility in soil: No data available.

Other adverse effects: No hazards to the environment are expected from this product. However, consideration must be given to potential environment effects of the base material being processed.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable local, state/provincial and federal regulations. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	None	Not Regulated	None	None	
TDG	None	Not Regulated	None	None	

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None identified.

15. REGULATORY INFORMATION

SARA Section 311/312 Hazard Categories: Classified as per Section 2 of this SDS.

SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Toxic Chemical Release Reporting): None

16. OTHER INFORMATION

NFPA Rating: Health = 1 Flammability = 0 Instability = 0
HMIS Rating: Health = 1 Flammability = 0 Physical Hazard = 0
*Chronic health hazard

Date Previous Revision: 2/2/17

Date This Revision: 7/8/21

Revision Summary:

8/24/12: Section 3 Updated Composition, Section 8 Updated exposure limits, Section 11 Updated Acute toxicity values.

3/31/15: Changed all sections. Updated format to GHS.

9/30/16: Section 2 Classification, Hazard Phrases, Precautionary Phrases; Section 3 Composition; Section 8 Exposure guidelines; Section 11 Numerical measures of toxicity; Section 12 Ecotoxicity.

2/2/17: Section 2 Classification, Labeling Elements, Section 3 Composition, Section 4 Most important symptoms/effects, acute and delayed, Section 8 Exposure guidelines, Section 11 Carcinogenicity, Numerical measures of toxicity, Section 12 Ecotoxicity.

7/8/21: Updated Section 8: Exposure limits.

The preceding information is believed to be correct and current as of the date of preparation of this Safety Data Sheet. Since the use of this information and the conditions of use of this product are not within the control of United Abrasives, Inc., it is the user's obligation to assure safe use of this product.

1. IDENTIFICATION

Product Identity / Trade Name: Diamond Wheels

Product Use: Abrasive materials used for cutting and grinding of metals, concrete, masonry and building materials.

Manufacturer: United Abrasives, Inc.
185 Boston Post Road
North Windham, CT 06256

Internet: www.unitedabrasives.com

Information Phone: (860) 456-7131 **Emergency Phone:** (860) 456-7131

Date of Preparation: July 9, 2021

2. HAZARD(S) IDENTIFICATION

As sold, this product is a manufactured article. During use, dust generated has the following hazards:

Classification:

Physical	Health
Not Hazardous	Respiratory Sensitization Category 1 Skin Sensitization Category 1 Specific Target Organ Toxicity – Repeated Exposure Category 1 (Respiratory Tract) Carcinogen Category 1B Toxic to Reproduction Category 2

Label Elements:



Danger!

Hazard statement(s)

H317 May cause an allergic skin reaction
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H350 May cause cancer by inhalation.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to respiratory tract through prolonged or repeated exposure.

Precautionary statement(s)

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust or fumes.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.

P284 In case of inadequate ventilation, wear respiratory protection.
P280 Wear protective gloves and eye protection.
P304+P340 IF INHALED: remove person to fresh air and keep comfortable for breathing.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P302+P352 IF ON SKIN: Wash with plenty of water
P333+P313 If skin irritation or rash occurs: Get medical attention
P362+P364 Take off contaminated clothing and wash it before reuse.
P308 + P313 IF exposed or concerned: Get medical attention.
P405 Store locked up.
P501 Dispose of contents in accordance with local, regional and national regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Steel	12597-69-2	68-90
Nickel	7440-02-0	2-9
Copper	7440-50-8	5-8
Iron	7439-89-6	0-7
Tin	7440-31-5	2-5
Cobalt	7440-48-4	0-3
Diamond	7782-40-3	0-3

The specific identity and/or exact percentage has been withheld as a trade secret.

4. FIRST-AID MEASURES

Ingestion: If dust is swallowed, seek medical attention.

Inhalation: If overexposed to dust, remove victim to fresh air and get medical attention.

Eye Contact: Flush eyes thoroughly with water, holding open eyelids. Get medical attention if irritation persists. Obtain immediate medical attention for foreign body in the eye.

Skin Contact: Wash dust from skin with soap and water. Launder contaminated clothing before reuse.

Most important symptoms/effects, acute and delayed: Dust particles or filings may cause abrasive injury to the eyes. Nickel and cobalt can cause skin irritation and skin and/or respiratory sensitization. Prolonged inhalation of dust or fumes from this product may cause perforation of the nasal septum and lung damage. May cause cancer. May cause reproductive or developmental effects.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is required if allergic respiratory symptoms occur.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use any media that is appropriate for the surrounding fire.

Specific hazards arising from the chemical: None known.

Special protective equipment and precautions for fire-fighters: Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate protective clothing as needed to avoid eye and skin contact.

Environmental precautions: Avoid release into the environmental. Report releases as required by local, state and federal authorities.

Methods and materials for containment and cleaning up: Pick up, sweep up or vacuum and place in a container for disposal. Minimize generation of dust.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid breathing dust. Avoid eye or skin contact. Do not ingest dust. Wash thoroughly after handling and use, especially before eating, drinking or smoking. Consider potential exposure to components of the base materials or coatings being ground. Refer to OSHA's substance specific standards for additional work practice requirements where applicable.

In normal power machining operations, the material being removed will fly off the cutting tool with considerable force. The potential for serious injury exists for both the operator and others in the work area (possibly 50 feet or more from the cutting tool). To protect against this hazard, before rotating the cutting tool, during rotation and until the rotation stops, all persons in the area must wear safety goggles or full face shields over safety glasses with side shields, along with appropriate protective clothing.

Conditions for safe storage, including any incompatibilities: Store in accordance with manufacturing instructions.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Steel	None Established
Nickel (as nickel metal)	1 mg/kg TWA OSHA PEL 1.5 mg/kg TWA ACGIH TLV (inhalable fraction)
Copper	1 mg/m ³ TWA OSHA PEL (dusts and mists) 1 mg/m ³ TWA ACGIH TLV (dusts and mists)
Iron (as iron oxide)	10 mg/m ³ TWA OSHA PEL (fume) 5 mg/m ³ TWA ACGIH TLV (respirable)
Tin	2 mg/m ³ TWA OSHA PEL 2 mg/m ³ TWA ACGIH TLV
Cobalt(as cobalt and inorganic compounds)	0.1 mg/m ³ TWA OSHA PEL (metal dust and fume) 0.02 mg/m ³ TWA ACGIH TLV (DSEN, RSEN)
Diamond	None Established

Note: Consider also components from base materials and coatings.

Appropriate engineering controls: Use local exhaust or general ventilation as required to minimize exposure to dust and maintain the concentration of contaminants below occupational applicable limits.

Individual protection measures, such as personal protective equipment:

Respiratory protection: Use NIOSH approved respirator if exposure limits are exceeded or where dust exposures are excessive. Consider the potential for exposure to components of the coatings or base material being ground in selecting proper respiratory protection. Refer to OSHA's specific standards for lead, cadmium, etc. where appropriate. Selection of respiratory protection depends on the contaminant type, form and

concentration. Select and use respirators in accordance with OSHA 1910.134 and good industrial hygiene practice.

Skin protection: Cloth or leather gloves recommended.

Eye protection: Safety goggles or face shield over safety glasses with side shields.

Other: Protective clothing as needed to prevent contamination of personal clothing. Hearing protection may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): Gray solid wheel.

Odor: No Odor

Odor threshold: Not applicable	pH: Not applicable
Melting point/freezing point: Not applicable	Boiling Point: Not applicable
Flash point: Non-Combustible	Evaporation rate: Not applicable
Flammability (solid, gas): Not applicable	
Flammable limits: LEL: Not applicable	UEL: Not applicable
Vapor pressure: Not applicable	Vapor density:
Relative density: Not applicable	Solubility(ies): Not soluble
Partition coefficient: n-octanol/water: Not applicable	Auto-ignition temperature: Not applicable
Decomposition temperature: Not applicable	Viscosity: Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not reactive

Chemical stability: Stable

Possibility of hazardous reactions: None known.

Conditions to avoid: None known.

Incompatible materials: Strong oxidizers and acids.

Hazardous decomposition products: Dust from machining could contain ingredients listed in Section 3 and other, potentially more hazardous components of the base material being processes or coatings applied to the base material.

11. TOXICOLOGICAL INFORMATION

Routes of exposure:

Ingestion: None expected under normal use conditions. Swallowing large pieces may cause obstruction of the gastrointestinal tract.

Inhalation: Dust may cause respiratory irritation.

Eye: Dust may cause eye irritation. Dust particles or filings may cause abrasive injury to the eyes.

Skin: Rubbing brush across the skin may cause mechanical irritation or abrasions. Nickel exposure can cause an allergic dermatitis called "nickel itch".

Sensitization: Nickel and cobalt can cause skin and/or respiratory sensitization.

Chronic: Long-term overexposure to respirable dust may cause lung damage (fibrosis) with symptoms of coughing, shortness of breath and diminished breathing capacity. Skin and/or respiratory sensitization may also occur. Chronic effects may be aggravated by smoking. Prolonged exposure to elevated noise levels during operations may affect hearing. A greater hazard, in most cases, is the exposure to the dust/fumes from the material or paint/coatings being sanded. Most of the dust generated during sanding is from the base material being sanded and the potential hazard from this exposure must be evaluated.

Carcinogenicity: Nickel and cobalt are classified as group 2B carcinogens by IARC. Nickel is listed by NTP as reasonably anticipated to be a carcinogen. None of the other components are listed as carcinogens by IARC, NTP or OSHA.

Reproductive Toxicity: Cobalt has been shown to cause reproductive toxicity in laboratory animals. In a 12 week study, male rats were administered 6.4, 11.6 or 23 mg/kg in drinking water. At all doses, decreased

implantations, increased resorptions, decreased viable fetuses and decrease sperm counts were observed. The two higher doses showed decreased relative testes weight ad testes necrosis and degenerations.

Numerical measures of toxicity: This product and its components are not acutely toxic. The only acute toxicity data available for the components are listed below.

Steel: No data available

Nickel: LD50 oral rat > 9000 mg/kg

Copper: LD50 oral rat > 2500 mg/kg, LC50 inhalation rat > 5.11 mg/L, LD50 dermal rat > 2000 mg/kg,

Oncorhynchus mykiss LC50 : 190 ug/L/96hr

Iron: LD50 oral rat: 98.6 g/kg, LD50 inhalation rat > 5 mg/kg (intracheal instillation applied)

Tin: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 4.75 mg/L, LD50 dermal rat > 2000 mg/kg, Pimephales promelas LC50 > 12.4 ug/L/96 hr

Cobalt: LD50 oral rat: 550 mg/kg, LC50 inhalation rat <= 0.05 mg/L (analytical), LD50 dermal rat > 2000 mg/kg

Diamond: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 5.2 mg/L, LD50 dermal rat > 2000 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Nickel: Oncorhynchus mykiss LC50: 15.3 mg/L/96hr

Copper: Oncorhynchus mykiss LC50 190 ug/L/96hr

Tin: Pimephales promelas LC50 > 12.4 ug/L/96 hr

Cobalt: Danio rerio LC50 > 181 mg/L/96hr

Persistence and degradability: Biodegradation is not applicable to inorganic compounds.

Bioaccumulative potential: No data available

Mobility in soil: No data available.

Other adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable local, state/provincial and federal regulations. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	None	Not Regulated	None	None	
TDG	None	Not Regulated	None	None	

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None identified.

15. REGULATORY INFORMATION

SARA Section 311/312 Hazard Categories: Classified as per Section 2 of this SDS.

SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Toxic Chemical Release Reporting):

Nickel	7440-02-0	68-90
Copper	7440-50-8	5-8
Cobalt	7440-48-4	0-3

16. OTHER INFORMATION

NFPA Rating: Health = 1 Flammability = 0 Instability = 0
HMIS Rating: Health = 1* Flammability = 0 Physical Hazard = 0
*Chronic health hazard

Date Previous Revision: 7/13/18

Date This Revision: 7/9/21

Revision Summary:

7/9/21: Updated Section 8: Exposure limits.

7/12/18: Three year review. Change to Section 8, 15 & 16.

3/31/15: Changed all sections. Updated format to GHS.

12/14/12: Comprehensive Review.

The preceding information is believed to be correct and current as of the date of preparation of this Safety Data Sheet. Since the use of this information and the conditions of use of this product are not within the control of United Abrasives, Inc., it is the user's obligation to assure safe use of this product.



SAFETY DATA SHEET
Resinoid Bonded Abrasives
For Cutting and Grinding Metal
SDS #1

1. IDENTIFICATION

Product Identity / Trade Name: Grinding and Cutting Wheels, Resinoid (Type 1, Type 27, Type 28, Type 29), Cup Wheels (Type 11) Cones and Plugs (Type 16, Type 17 and Type 18), Mounted Point.

Product Use: Abrasive materials used for cutting and grinding metals.

Restriction on Use: Use only as directed

Manufacturer: United Abrasives, Inc.
185 Boston Post Road
North Windham, CT 06256

Internet: www.unitedabrasives.com

Information Phone: (860) 456-7131 **Emergency Phone:** (860) 456-7131

Date of Preparation: February 4, 2021

2. HAZARD(S) IDENTIFICATION

Classification: This product is not classified as hazardous in accordance with the OSHA Hazard Communication Standard (29CFR 1910.1200).

Label Elements:
None required.

Hazards not otherwise classified: Most of the dust/fumes generated in the cutting and grinding process is from the base material. The exposure to the dust/fumes from the material the potential hazard from this exposure must be evaluated.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Aluminum Oxide	1344-28-1	0-95%
Zirconium Oxide	1314-23-4	0-80%
Cured Phenolic Resin	N/A	1-30%
Nitrile Compounds	N/A	1-20%
Fluoride Compounds	N/A	1-20%
Iron Pyrite	12068-85-8	0-20%
Woven Fiberglass	N/A	0-15%
Calcium Compounds	N/A	0-15%
Sulfur	7704-34-9	0-15%
Calcium Oxide	1305-78-8	1-10%
Cryolite	15096-52-3	1-10%
Cured Epoxy Resin	N/A	1-10%
Calcium Carbonate	1317-65-3	0-5%
Iron Oxide	1309-37-1	0-5%



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Graphite	7782-42-5	0-5%
Aluminum Potassium Fluoride	14484-69-6	0-0.5%
Potassium Fluoroborate	14075-53-7	0.1-0.5%
Titanium Dioxide	13463-67-7	0.1-0.5%

The specific identity and/or exact percentage has been withheld as a trade secret.

4. FIRST-AID MEASURES

Ingestion: If grinding dust is swallowed, seek medical attention.

Inhalation: If overexposed to grinding dust, remove victim to fresh air and get medical attention.

Eye Contact: Do not rub eyes. Flush eyes thoroughly with water, holding open eyelids. Get medical attention if irritation persists. Obtain immediate medical attention for foreign body in the eye.

Skin Contact: Wash dust from skin with soap and water. Launder contaminated clothing before reuse.

Most important symptoms/effects, acute and delayed: May cause mechanical eye and skin irritation. Inhalation of dust may cause nose, throat and upper respiratory tract irritation. Prolonged inhalation of high concentration of dust may cause adverse effects on the lungs. Prolonged overexposure may cause damage to the respiratory tract, bones and teeth by inhalation.

Indication of immediate medical attention and special treatment, if necessary: Immediate medical attention is not required.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use any media that is appropriate for the surrounding fire.

Specific hazards arising from the chemical: This product is not combustible, however, consideration must be given to the potential fire or explosion hazards from the base material being processed. Many materials create flammable or explosive dusts or turnings when machined or ground.

Special protective equipment and precautions for fire-fighters: Firefighters should wear full emergency equipment and NIOSH approved positive pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Wear appropriate respirator and protective clothing as needed to avoid eye contact and inhalation of dust.

Environmental precautions: Avoid release into the environmental. Report releases as required by local, state and federal authorities.

Methods and materials for containment and cleaning up: Pick up, sweep up or vacuum and place in a container for disposal. Minimize generation of dust.

7. HANDLING AND STORAGE

Precautions for safe handling: Use only with adequate ventilation. Avoid breathing dust. Wash thoroughly after handling and use, especially before eating, drinking or smoking. Refer to ANSI B7.1, Safety Requirements for the



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Use, Care and Protection of Abrasive Wheels for additional information. Consider potential exposure to components of the base materials or coatings being ground. Refer to OSHA's substance specific standards for additional work practice requirements where applicable.

Conditions for safe storage, including any incompatibilities: Store in accordance with ANSI B7.1. Protect abrasive wheels from damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Aluminum Oxide	1 mg/m3 ACGIH TLV (respirable fraction) (as Al metal) 15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)
Zirconium Oxide (as zirconium compounds)	5 mg/m3 TWA, 10 mg/m3 STEL ACGIH TLV 5 mg/m3 TWA OSHA PEL
Cured Phenolic Resin	None Established
Nitrile Compounds	None Established
Fluoride Compounds	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Iron Pyrite	None Established
Woven Fiberglass	5 mg/m3 TWA ACGIH TLV (inhalable) 1 f/cc TWA ACGIH TLV (respirable)
Calcium Compounds	None Established
Sulfur	None Established
Calcium Oxide	2 mg/m3 TWA ACGIH TLV 5 mg/m3 TWA OSHA PEL
Cryolite (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Cured epoxy resin	None Established
Calcium Carbonate	15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)
Iron Oxide	5 mg/m3 TWA ACGIH TLV (respirable fraction) 10 mg/m3 TWA OSHA PEL (fume)
Graphite	2 mg/m3 TWA ACGIH TLV (respirable fraction) 15 mppcf mg/m3 TWA OSHA PEL
Aluminum Potassium Fluoride (as Al metal)	1 mg/m3 ACGIH TLV (respirable fraction) (as Al metal) 15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)
Aluminum Potassium Fluoride (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Potassium Fluoroborate (as fluorides)	2.5 mg/m3 TWA ACGIH TLV 2.5 mg/m3 TWA OSHA PEL
Titanium Dioxide	10 mg/m3 TWA ACGIH TLV 15 mg/m3 TWA OSHA PEL (total dust)

Note: Consider also components of base materials and coatings being ground.



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Appropriate engineering controls: Use local exhaust or general ventilation as required to minimize exposure to dust and maintain the concentration of contaminants below occupational exposure limits.

Individual protection measures, such as personal protective equipment:

Respiratory protection: Use NIOSH approved respirator if exposure limits are exceeded or where dust exposures are excessive. Consider the potential for exposure to components of the coatings or base material being ground in selecting proper respiratory protection. Refer to OSHA’s specific standards for lead, cadmium, etc. where appropriate. Selection of respiratory protection depends on the contaminant type, form and concentration. Select and use respirators in accordance with OSHA 1910.134 and good industrial hygiene practice.

Skin protection: Cloth or leather gloves recommended.

Eye protection: Safety goggles or face shield over safety glasses with side shields.

Other: Protective clothing as needed to prevent contamination of personal clothing. Hearing protection may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): Black, brown or reddish colored solid wheel.

Odor: No Odor

Odor threshold: Not applicable	pH: Not applicable
Melting point/freezing point: Not applicable	Boiling Point: Not applicable
Flash point: Not applicable	Evaporation rate: Not applicable
Flammability (solid, gas): Not combustible	
Flammable limits: LEL: Not applicable	UEL: Not applicable
Vapor pressure: Not applicable	Vapor density:
Relative density: Not applicable	Solubility(ies): Not soluble
Partition coefficient: n-octanol/water: Not applicable	Auto-ignition temperature: Not applicable
Decomposition temperature: Not applicable	Viscosity: Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Not reactive.

Chemical stability: Stable.

Possibility of hazardous reactions: None known.

Conditions to avoid: None known.

Incompatible materials: None known.

Hazardous decomposition products: Dust from grinding could contain ingredients listed in Section 3 and other, potentially more hazardous components of the base material being ground or coatings applied to the base material.

11. TOXICOLOGICAL INFORMATION

Routes of exposure:

Inhalation: Dust may cause respiratory irritation.

Ingestion: None expected under normal use conditions. Swallowing large pieces may cause obstruction of the gastrointestinal tract.

Skin contact: None expected under normal use conditions. Rubbing product across the skin may cause mechanical irritation or abrasions.



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Eye contact: Dust may cause mechanical irritation.

Chronic effects from short- and long-term exposure: Long-term overexposure to respirable dust may cause lung damage (fibrosis) with symptoms of coughing, shortness of breath and diminished breathing capacity. Chronic effects may be aggravated by smoking. Prolonged overexposure to fluorides may cause a bone condition, fluorosis. Prolonged exposure to elevated noise levels during operations may affect hearing. A greater hazard, in most cases, is the exposure to the dust/fumes from the material or paint/coatings being ground. Most of the dust generated during grinding is from the base material being ground and the potential hazard from this exposure must be evaluated.

Carcinogenicity: Titanium Dioxide is listed by IARC as a group 2B Carcinogen (suspected human carcinogen). None of the other components is listed as a carcinogen or potential carcinogen by OSHA, NTP or IARC.

Additional Information: This SDS is applicable to product from United Abrasives only. The material being processed must be evaluated to determine any potential hazard.

This product contains titanium dioxide which has caused cancer in rats after high level exposure and inhalation. No exposure to titanium dioxide has been detected through air sampling during tests to simulate use. Thus, there are no health effects associated with titanium dioxide during the normal use of this product.

Numerical measures of toxicity:

Aluminum Oxide: LD50 Oral rat >5,000 mg/kg

Zirconium Oxide: Oral rat LD50 >5000 mg/kg

Iron Pyrite: No toxicity data available

Sulfur: Oral rat LD50 >2000 mg/kg, Inhalation rat LC50 >5.43 mg/L/4 hr, Dermal rat LD50 >200 mg/L

Calcium Oxide: Oral rat LD50 >7340 mg/kg

Cryolite: LD50 Oral rat >5,000 mg/kg

Titanium Dioxide: LD50 Oral rat >5,000 mg/kg, Inhalation rat LC50 >6.82 mg/L/4 hr

Calcium Carbonate: No toxicity data available

Iron Oxide: LD50 oral rat > 10000 mg/kg

Graphite: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 2 mg/L

Aluminum Potassium fluoride: LD50 oral rat 2150 mg/kg, LC50 inhalation rat > 3.4 mg/L, LD50 dermal rabbit > 2000 mg/kg.

Potassium Fluoroborate: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 5.3 mg/L

Titanium Dioxide: LD50 Oral rat >5,000 mg/kg, Inhalation rat LC50 >6.82 mg/L/4 hr

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Aluminum Oxide: 96 hr LC50 Pimephales promelas 35 mg/L

Zirconium Oxide: 96 hr LC50 Danio rerio >100 mg/L, 48 hr EC50 daphnia magna >100 mg/L

Iron Pyrite: No data available

Sulfur: 96 hr LC50 Oncorhynchus mykiss > 5 µg/L (solubility limit of sulfur), 48 hr EC50 daphnia magna > 5 µg/L (solubility limit of sulfur)

Calcium oxide: 96 hr LC50 Cyprinus carpio >1070 mg/L

Cryolite: No data available

Calcium Carbonate: No data available

Iron Oxide: No data available

Graphite: Danio rerio LC50 > 100 mg/L/96hr

Aluminum Potassium fluoride: Brachydanio rerio LC50 > 10 mg/L/96h



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For Cutting and Grinding Metal
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Potassium Fluoroborate: Leuciscus idus LC50: 760 mg/L/96hr
Titanium Dioxide: 48 hr EC50 daphnia magna >500 mg/L

Persistence and degradability: Biodegradation is not applicable to inorganic compounds.

Bioaccumulative potential: No data available

Mobility in soil: No data available.

Other adverse effects: No hazards to the environment are expected from this product. However, consideration must be given to potential environment effects of the base material being processed.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all applicable local, state/provincial and federal regulations. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	None	Not Regulated	None	None	
TDG	None	Not Regulated	None	None	

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None identified.

15. REGULATORY INFORMATION

SARA Section 311/312 Hazard Categories: Not Applicable (manufactured articles)

SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Toxic Chemical Release Reporting): None

California Proposition 65: WARNING! You create dust when you cut, sand, drill or grind materials such as wood, paint, cement, masonry or metal. This dust often contains chemicals known to cause cancer, birth defects or other reproductive harm.

Canadian Regulations:

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List, Canadian Non-Domestic Substances List, or exempt from notification.

16. OTHER INFORMATION

NFPA Rating: Health = 1 Flammability = 0 Instability = 0
HMIS Rating: Health = 1 Flammability = 0 Physical Hazard = 0



SAFETY DATA SHEET
Resinoid Bonded Abrasives
For Cutting and Grinding Metal
SDS #1

Date Previous Revision: 2/15/17

Date This Revision: 2/4/21

Revision Summary: 3 yr review. Updated Section 8 and 15.

The preceding information is believed to be correct and current as of the date of preparation of this Material Safety Data Sheet. Since the use of this information and the conditions of use of this product are not within the control of United Abrasives, Inc., it is the user's obligation to assure safe use of this product.

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2.) COMPRESSED ACETYLENE

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SAFETY DATA SHEET

Acetylene

Section 1. Identification

GHS product identifier	: Acetylene
Chemical name	: acetylene
Other means of identification	: Ethyne; Ethine; Narcylen; C ₂ H ₂ ; Acetylen; UN 1001; Vinylene
Product type	: Gas.
Product use	: Synthetic/Analytical chemistry.
Synonym	: Ethyne; Ethine; Narcylen; C ₂ H ₂ ; Acetylen; UN 1001; Vinylene
SDS #	: 001001
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas
GHS label elements	
Hazard pictograms	: 
Signal word	: Danger
Hazard statements	: Extremely flammable gas. Contains gas under pressure; may explode if heated. May displace oxygen and cause rapid suffocation. May form explosive mixtures with air.
Precautionary statements	
General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Fusible plugs in top, bottom, or valve melt at 98°C to 107°C (208°F to 224°F). Do not discharge at pressures above 15psig (103kpa). Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.
Prevention	: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Response	: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.
Storage	: Protect from sunlight. Store in a well-ventilated place.
Disposal	: Not applicable.
Hazards not otherwise classified	: In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: acetylene
Other means of identification	: Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene
Product code	: 001001

CAS number/other identifiers

CAS number : 74-86-2

Ingredient name	%	CAS number
Acetylene	100	74-86-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: Contact with rapidly expanding gas may cause burns or frostbite.
Frostbite	: Try to warm up the frozen tissues and seek medical attention.
Ingestion	: As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

Eye contact	: No specific data.
Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: No specific treatment.

Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Acetylene	<p>NIOSH REL (United States, 10/2016). CEIL: 2662 mg/m³ CEIL: 2500 ppm</p> <p>ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.</p> <p>California PEL for Chemical Contaminants (Table AC-1) (United States). Oxygen Depletion [Asphyxiant].</p>

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 8. Exposure controls/personal protection

- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas.
- Color** : Colorless.
- Odor** : Mild. Ethereal.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : -81°C (-113.8°F)
- Boiling point** : Not available.
- Critical temperature** : 35.25°C (95.5°F)
- Flash point** : Closed cup: -18.15°C (-0.67°F)
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Highly flammable in the presence of the following materials or conditions: heat.
- Lower and upper explosive (flammable) limits** : Lower: 2.5%
Upper: 100%
- Vapor pressure** : 635 (psig)
- Vapor density** : 0.907 (Air = 1)
- Specific Volume (ft³/lb)** : 14.7058
- Gas Density (lb/ft³)** : 0.0691
- Relative density** : Not applicable.
- Solubility** : Not available.
- Solubility in water** : 1.2 g/l
- Partition coefficient: n-octanol/water** : 0.37
- Auto-ignition temperature** : 305°C (581°F)

Section 9. Physical and chemical properties

Decomposition temperature	: Not available.
Viscosity	: Not applicable.
Flow time (ISO 2431)	: Not available.
Molecular weight	: 26.04 g/mole
Aerosol product	
Heat of combustion	: -48257522 J/kg

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	: Oxidizers
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : No known significant effects or critical hazards.
Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Acetylene	0.37	-	low

Mobility in soil






Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1001	UN1001	UN1001	UN1001	UN1001
UN proper shipping name	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Additional information

DOT Classification

: **Limited quantity** Yes.

Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 15 kg.

TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index

0

Passenger Carrying Vessel Index

75

Passenger Carrying Road or Rail Index

Forbidden

Section 14. Transport information

Special provisions

38

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 15 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
Clean Air Act (CAA) 112 regulated flammable substances: acetylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

Section 15. Regulatory information

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

Not listed.

[Inventory list](#)

Australia	: This material is listed or exempted.
Canada	: This material is listed or exempted.
China	: This material is listed or exempted.
Europe	: This material is listed or exempted.
Japan	: Japan inventory (ENCS) : This material is listed or exempted. Japan inventory (ISHL) : Not determined.
New Zealand	: This material is listed or exempted.
Philippines	: This material is listed or exempted.
Republic of Korea	: This material is listed or exempted.
Taiwan	: This material is listed or exempted.
Thailand	: Not determined.
Turkey	: This material is listed or exempted.
United States	: This material is active or exempted.
Viet Nam	: This material is listed or exempted.

Section 16. Other information

[Hazardous Material Information System \(U.S.A.\)](#)

Health	/	0
Flammability		4
Physical hazards		3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

[National Fire Protection Association \(U.S.A.\)](#)



Note: The instability hazard rating for acetylene, dissolved (stabilized acetylene) is 2.

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

[Procedure used to derive the classification](#)

Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

Section 16. Other information

History

Date of printing : 6/21/2021

Date of issue/Date of revision : 6/21/2021

Date of previous issue : 11/11/2020

Version : 2.02

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

: Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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3.) COMPRESSED OXYGEN

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SAFETY DATA SHEET

Oxygen

Section 1. Identification

GHS product identifier	: Oxygen
Chemical name	: oxygen
Other means of identification	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
Product type	: Gas.
Product use	: Synthetic/Analytical chemistry.
Synonym	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
SDS #	: 001043
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas
GHS label elements	
Hazard pictograms	: 
Signal word	: Danger
Hazard statements	: May cause or intensify fire; oxidizer. Contains gas under pressure; may explode if heated.
Precautionary statements	
General	: Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.
Prevention	: Keep away from clothing and other combustible materials. Keep reduction valves, valves and fittings free from oil and grease.
Response	: In case of fire: Stop leak if safe to do so.
Storage	: Protect from sunlight. Store in a well-ventilated place.
Disposal	: Not applicable.
Hazards not otherwise classified	: None known.

Section 3. Composition/information on ingredients

Substance/mixture	: Substance
Chemical name	: oxygen
Other means of identification	: Molecular oxygen; Oxygen molecule; Pure oxygen; O ₂ ; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)
Product code	: 001043

CAS number/other identifiers

CAS number : 7782-44-7

Ingredient name	%	CAS number
oxygen	100	7782-44-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

- Hazardous thermal decomposition products** : No specific data.

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.
Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Separate from reducing agents and combustible materials. Store away from grease and oil. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
oxygen	None.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Gas. [Compressed gas.]
- Color** : Colorless. Blue.
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point** : -218.4°C (-361.1°F)
- Boiling point** : -183°C (-297.4°F)
- Critical temperature** : -118.15°C (-180.7°F)
- Flash point** : [Product does not sustain combustion.]
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : 1.1 (Air = 1)
- Specific Volume (ft³/lb)** : 12.0482
- Gas Density (lb/ft³)** : 0.083
- Relative density** : Not applicable.
- Solubility** : Not available.
- Solubility in water** : Not available.
- Partition coefficient: n-octanol/water** : 0.65
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not applicable.
- Flow time (ISO 2431)** : Not available.
- Molecular weight** : 32 g/mole

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing fire

Section 10. Stability and reactivity

- Conditions to avoid** : No specific data.
- Incompatible materials** : Highly reactive or incompatible with the following materials:
combustible materials
reducing materials
grease
oil
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

- Eye contact** : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

- General** : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
oxygen	0.65	-	low

Mobility in soil










Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1072	UN1072	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1)  	2.2 	2.2 (5.1)  	2.2 (5.1)  	2.2 (5.1)  
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Additional information

- DOT Classification** : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.
Special provisions A52
- TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 50
Passenger Carrying Road or Rail Index 75
Special provisions 42
- IATA** : **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Section 15. Regulatory information

- Republic of Korea** : This material is listed or exempted.
- Taiwan** : This material is listed or exempted.
- Thailand** : Not determined.
- Turkey** : Not determined.
- United States** : This material is active or exempted.
- Viet Nam** : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	/	0
Flammability		0
Physical hazards		3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

History

- Date of printing** : 9/22/2020
- Date of issue/Date of revision** : 9/22/2020
- Date of previous issue** : 2/3/2018
- Version** : 1

Key to abbreviations

- : ATE = Acute Toxicity Estimate
- : BCF = Bioconcentration Factor
- : GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- : IATA = International Air Transport Association
- : IBC = Intermediate Bulk Container
- : IMDG = International Maritime Dangerous Goods
- : LogPow = logarithm of the octanol/water partition coefficient

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References

: Not available.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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4.) WELDING ROD (6010)

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SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: 6010 Mild Steel Electrodes
Product Size: 1/8" (3.2 mm)

Other means of identification

SDS number: 200000006767

Recommended use and restriction on use

Recommended use: SMAW (Shielded Metal Arc Welding)

Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name: The Harris Products Group
Address: 4501 Quality Place
Mason, OH 45040-1971
USA
Telephone: +1 (513) 754-2000
Contact Person: Safety Data Sheet Questions: custservmason@jwharris.com

Company Name: The Lincoln Electric Company of Canada LP
Address: 179 Wicksteed Avenue
Toronto, Ontario M4G 2B9
Canada
Telephone: +1 (416) 421-2600
Contact Person: Safety Data Sheet Questions: www.lincolnelectric.com/sds
Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico	+1 (888) 609-1762
Americas/Europe	+1 (216) 383-8962
Asia Pacific	+1 (216) 383-8966
Middle East/Africa	+1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol:	No symbol
Signal Word:	No signal word.
Hazard Statement:	Not applicable
Precautionary Statements:	Not applicable



Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5

3. COMPOSITION / INFORMATION ON INGREDIENTS

Reportable Hazardous Ingredients Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Cellulose, pulp	65996-61-4	1 - <5%
Sodium silicate	1344-09-8	1 - <5%
Titanium dioxide	13463-67-7	1 - <5%
Manganese	7439-96-5	0.1 - <1%
Chlorite	1318-59-8	0.1 - <1%
Iron oxide	1309-37-1	0.1 - <1%
Magnesite	546-93-0	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments:

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion:

Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth



activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.



Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, <http://pubs.aws.org> and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, including any incompatibilities: Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Titanium dioxide	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values, as amended (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	IDLH	5,000 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02



			2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume. - as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Iron oxide	IDLH	2,500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Magnesite - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Magnesite - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Magnesite - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Magnesite - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Titanium dioxide	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety



			Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Iron oxide - Respirable.	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Dust. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
Iron oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Iron oxide - Dust and fume. -	15 MIN	10 mg/m3	Canada. Saskatchewan OELs

as Fe	ACL		(Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Iron oxide - Dust and fume. - as Fe	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Magnesite - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Magnesite	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Magnesite - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Iron - as Fe	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Titanium dioxide	VLE-PPT	10 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Iron oxide - Respirable fraction.	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	TWA	5,000 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	STEL	30,000 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5,000 ppm 9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm 54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm 9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	40,000 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)

	PEL	50 ppm	55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm	40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceil_Time	200 ppm	229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	1,200 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm		US. ACGIH Threshold Limit Values, as amended (02 2012)
	Ceiling	5 ppm	9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm	1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm	0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm	0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.20 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.10 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.08 ppm		US. ACGIH Threshold Limit Values, as amended (03 2014)
	IDLH	5 ppm		US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling		5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL		1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese	IDLH		500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	STEL	30,000 ppm	54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as

				amended (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)



	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006,

			The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)



Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment
General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Eye/face protection:

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection:

Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other:

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or



other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Steel rod with extruded flux coating.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY



Reactivity:	The product is non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	None under normal conditions.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Strong acids. Strong oxidizing substances. Strong bases.
Hazardous Decomposition Products:	<p>Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)</p> <p>In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.</p>

11. TOXICOLOGICAL INFORMATION

General information:	The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.
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Information on likely routes of exposure

Inhalation:	Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.
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Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: Not classified
Specified substance(s):
Iron LD 50 (Rat): 98.6 g/kg
Sodium silicate LD 50 (Rat): 1.1 g/kg

Dermal

Product: Not classified

Inhalation

Product: Not classified

Repeated dose toxicity

Product: Not classified

Skin Corrosion/Irritation

Product: Not classified

Serious Eye Damage/Eye Irritation

Product: Not classified

Respiratory or Skin Sensitization

Product: Not classified

Carcinogenicity

Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Titanium dioxide Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: Not classified



In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure
Product: Not classified

Aspiration Hazard
Product: Not classified
Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Inhalation:
Specified substance(s):
Manganese Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.

Additional toxicological Information under the conditions of use:

Acute toxicity
Inhalation
Specified substance(s):
Carbon dioxide LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide LC 50 (Rat, 4 h): 88 ppm
Ozone LC Lo (Human, 30 min): 50 ppm

Other effects:
Specified substance(s):
Carbon dioxide Asphyxia
Carbon monoxide Carboxyhemoglobinemia
Nitrogen dioxide Lower respiratory tract irritation

12. ECOLOGICAL INFORMATION

Ecotoxicity
Acute hazards to the aquatic environment:

Fish
Product: Not classified.
Specified substance(s):
Sodium silicate LC 50 (Western mosquitofish (Gambusia affinis), 96 h): 1,800 mg/l



Aquatic Invertebrates

Product: Not classified.
Specified substance(s):
Sodium silicate EC 50 (Water flea (Ceriodaphnia dubia), 48 h): 22.94 - 49.01 mg/l
Manganese EC 50 (Water flea (Daphnia magna), 48 h): 40 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: Not classified.

Aquatic Invertebrates

Product: Not classified.

Toxicity to Aquatic Plants

Product: Not classified.

Persistence and Degradability

Biodegradation

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available.

Mobility in soil: No data available.

13. Disposal considerations

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.

Disposal instructions: Dispose of this material and its container to hazardous or special waste collection point.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT
UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): -
Packing Group: -
Marine Pollutant: No

IMDG
UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR



Label(s): -
 EmS No.: -
 Packing Group: -
 Marine Pollutant: No

IATA

UN Number:
 Proper Shipping Name: NOT DG REGULATED
 Transport Hazard Class(es):
 Class: NR
 Label(s): -
 Packing Group: -
 Marine Pollutant: No
 Cargo aircraft only: Allowed.

TDG

UN Number:
 UN Proper Shipping Name: NOT DG REGULATED
 Transport Hazard Class(es)
 Class: NR
 Label(s): -
 Packing Group: -
 Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity

Manganese

Reportable quantity

Included in the regulation but with no data values. See regulation for further details.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Not classified

Not classified

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity

Manganese

Reportable quantity

Included in the regulation but with no data values. See regulation for further details.

SARA 311/312 Hazardous Chemical

Chemical Identity

Iron

Cellulose, pulp

Sodium silicate

Titanium dioxide

Threshold Planning Quantity

10000 lbs

10000 lbs

10000 lbs

10000 lbs

Manganese	10000 lbs
Chlorite	10000 lbs
Iron oxide	10000 lbs
Magnesite	10000 lbs

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65



WARNING

Cancer - www.P65Warnings.ca.gov

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity

Titanium dioxide

US. Massachusetts RTK - Substance List

Chemical Identity

Quartz

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Titanium dioxide

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Chemical Identity

Titanium dioxide

Iron oxide

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5 Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI Not Regulated



Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	One or more components are not listed or are exempt from listing.
Canada DSL Inventory List:	One or more components are not listed or are exempt from listing.
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	One or more components are not listed or are exempt from listing.
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	One or more components are not listed or are exempt from listing.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. OTHER INFORMATION

Definitions:

Revision Date: 04/13/2020

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.



Revision Date: 04/13/2020

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5.) WELDING ROD (308L-16)

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SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Supercore™ 308L

Product Size: 1.6 mm (1/16")

Other means of identification

SDS number: 200000010639

Recommended use and restriction on use

Recommended use: FCAW-G (Gas Shielded Flux Cored Arc Welding)

Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name: Metrode Products Ltd.

Address: Hanworth Lane
Chertsey, Surrey KT16 9LL
United Kingdom

Telephone: +44(0)1932 566721

Contact Person: Safety Data Sheet Questions: www.lincolnelectric.com/sds
Arc Welding Safety Information: www.lincolnelectric.com/safety

Company Name: The Lincoln Electric Company

Address: 22801 Saint Clair Avenue
Cleveland, Ohio 44117
USA

Telephone: +1 (216) 481-8100

Contact Person: Safety Data Sheet Questions: www.lincolnelectric.com/sds
Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico +1 (888) 609-1762

Americas/Europe +1 (216) 383-8962

Asia Pacific +1 (216) 383-8966

Middle East/Africa +1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol

Signal Word: No signal word.

Hazard Statement: Not applicable

Precautionary Not applicable

Statements:
Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5
Chromium (VI)	18540-29-9
Nickel	7440-02-0
Chromium oxide	1308-38-9

3. COMPOSITION / INFORMATION ON INGREDIENTS
Reportable Hazardous Ingredients Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Chromium and chromium alloys or compounds (as Cr)	7440-47-3	10 - <20%
Nickel	7440-02-0	5 - <10%
Titanium dioxide (naturally occurring)	13463-67-7	1 - <5%
Zircon	14940-68-2	1 - <5%
Manganese	7439-96-5	1 - <5%
Titanium dioxide (synthetic)	13463-67-7	1 - <5%
Nepheline Syenite	37244-96-5	1 - <5%
Silicon	7440-21-3	0.1 - <1%
Sodium fluorosilicate	16893-85-9	0.1 - <1%
Iron oxide	1309-37-1	0.1 - <1%
Quartz	14808-60-7	0.1 - <1%
Manganese oxide (MnO ₂)	1313-13-9	0.1 - <1%
Sodium oxide	1313-59-3	0.1 - <1%

Molybdenum	7439-98-7	0.1 - <1%
Aluminum and/or aluminum alloys (as Al)	7429-90-5	0.1 - <1%
Copper and/or copper alloys and compounds (as Cu)	7440-50-8	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments: The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

Ingestion: Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.

Inhalation: Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.

Skin Contact: Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.

Eye contact: Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.

Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

Symptoms: Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

Hazards: The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

General Fire Hazards: As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, <http://pubs.aws.org> and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, Store in closed original container in a dry place. Store in accordance with

including any incompatibilities: local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: US

Chemical Identity	Type	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr) - as Cr	PEL	1 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	0.5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Chromium and chromium alloys or compounds (as Cr) - Inhalable fraction. - as Cr(0)	TWA	0.5 mg/m ³	US. ACGIH Threshold Limit Values (03 2018)
Chromium and chromium alloys or compounds (as Cr)	IDLH	250 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - Inhalable fraction.	TWA	1.5 mg/m ³	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	REL	0.015 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Nickel	IDLH	10 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - as Ni	PEL	1 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide (naturally occurring)	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values (12 2010)
	IDLH	5,000 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Titanium dioxide (naturally occurring) - Total dust.	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide (naturally occurring) - Respirable fraction.	TWA	5 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (naturally occurring) - Total dust.	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (naturally occurring) - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (naturally occurring) - Total dust.	TWA	15 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Zircon - as Zr	STEL	10 mg/m ³	US. ACGIH Threshold Limit Values (12 2010)
	TWA	5 mg/m ³	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	10 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Zircon	IDLH	25 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)

Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Titanium dioxide (synthetic)	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	IDLH	5,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Titanium dioxide (synthetic) - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide (synthetic) - Respirable fraction.	TWA	5 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (synthetic) - Total dust.	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (synthetic) - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Titanium dioxide (synthetic) - Total dust.	TWA	15 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (03 2016)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Silicon - Respirable particles.	TWA	3 mg/m3	US. ACGIH Threshold Limit Values (01 2021)
Silicon - Inhalable particles.	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (01 2021)
Silicon - Respirable fraction.	TWA	5 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
Silicon - Total dust.	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
	TWA	15 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
Silicon - Respirable fraction.	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
Sodium fluorosilicate - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	REL	2.5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Sodium fluorosilicate - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Sodium fluorosilicate - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (01 2021)
Sodium fluorosilicate	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2019)
Sodium fluorosilicate - as F	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (01 2017)
Sodium fluorosilicate - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (01 2017)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Iron oxide - Fume.	PEL	10 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Iron oxide - Dust and fume. - as Fe	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)

Iron oxide	IDLH	2,500 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Quartz - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.1 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Quartz - Respirable dust.	TWA	0.05 mg/m ³	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
	OSHA_ACT	0.025 mg/m ³	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
Quartz - Respirable dust.	PEL	0.05 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
Quartz	IDLH	50 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Quartz - Respirable fraction.	TWA	0.025 mg/m ³	US. ACGIH Threshold Limit Values (02 2020)
Manganese oxide (MnO ₂) - Inhalable fraction. - as Mn	TWA	0.1 mg/m ³	US. ACGIH Threshold Limit Values (02 2013)
Manganese oxide (MnO ₂) - Respirable fraction. - as Mn	TWA	0.02 mg/m ³	US. ACGIH Threshold Limit Values (02 2013)
Manganese oxide (MnO ₂) - Fume. - as Mn	STEL	3 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	1 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese oxide (MnO ₂)	IDLH	500 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese oxide (MnO ₂) - as Mn	Ceiling	5 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Molybdenum - Total dust. - as Mo	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)
Molybdenum - Respirable fraction. - as Mo	TWA	3 mg/m ³	US. ACGIH Threshold Limit Values (03 2014)
Molybdenum	IDLH	5,000 mg/m ³	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Molybdenum - Respirable particles.	TWA	3 mg/m ³	US. ACGIH Threshold Limit Values (01 2021)
Molybdenum - Inhalable particles.	TWA	10 mg/m ³	US. ACGIH Threshold Limit Values (01 2021)
Molybdenum - Total dust.	TWA	15 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
	TWA	50 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
Molybdenum - Respirable fraction.	TWA	5 mg/m ³	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
	TWA	15 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (09 2016)
Aluminum and/or aluminum alloys (as Al) - Respirable fraction.	TWA	1 mg/m ³	US. ACGIH Threshold Limit Values (12 2010)
Aluminum and/or aluminum alloys (as Al) - Total dust. - as Al	PEL	15 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum and/or aluminum alloys (as Al) - Welding fume or pyrophoric powder. - as Al	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Aluminum and/or aluminum alloys (as Al) - Respirable.	REL	5 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Aluminum and/or aluminum	REL	10 mg/m ³	US. NIOSH: Pocket Guide to Chemical

alloys (as Al) - Total			Hazards, as amended (2005)
Aluminum and/or aluminum alloys (as Al) - Respirable fraction. - as Al	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
	REL	0.1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	PEL	0.1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Copper and/or copper alloys and compounds (as Cu)	IDLH	100 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr) - as Cr	TWA	0.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	0.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Chromium and chromium alloys or compounds (as Cr)	TWA	0.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Chromium and chromium alloys or compounds (as Cr) - Inhalable fraction. - as Cr(0)	TWA	0.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
Chromium and chromium alloys or compounds (as Cr) - Total	TWA	0.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Nickel - as Ni	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
Nickel - Inhalable fraction. - as Ni	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)

	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Nickel - Inhalable dust.	TWA	1.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (03 2020)
Titanium dioxide (naturally occurring)	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Titanium dioxide (naturally occurring) - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide (naturally occurring) - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide (naturally occurring)	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Titanium dioxide (naturally occurring) - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Zircon - as Zr	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	STEL	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	STEL	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as

			amended (05 2009)
	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Titanium dioxide (synthetic)	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Titanium dioxide (synthetic) - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide (synthetic) - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide (synthetic)	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Titanium dioxide (synthetic) - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Nepheline Syenite - Total	TWA	10 mg/m3	Canada. Ontario OELs. (Control of

dust.			Exposure to Biological or Chemical Agents), as amended (07 2010)
Silicon - Total dust.	TWA	10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Silicon	8 HR ACL	10 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Silicon - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Silicon - Respirable particles.	TWA	3 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (01 2019)
Silicon - Total particulate.	TWA	10 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (01 2019)
Silicon - Total dust.	TWA	10 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Silicon - Respirable fraction.	TWA	3 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Silicon - Inhalable particles.	TWA	10 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
Silicon - Respirable particles.	TWA	3 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
Silicon - Respirable fraction.	TWA	3 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Silicon - Inhalable fraction.	TWA	10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Silicon - Inhalable particles.	TWA	10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Silicon - Respirable particles.	TWA	3 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Sodium fluorosilicate - as F	TWA	2.5 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	2.5 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	2.5 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)

	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (12 2008)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (01 2019)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (06 2016)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (06 2016)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (03 2020)
Iron oxide - Respirable.	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Iron oxide - Total dust.	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Dust. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Fume. - as Fe	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Iron oxide - Respirable fraction.	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
Iron oxide	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety

			Regulations, 1996, Table 21), as amended (05 2009)
Iron oxide - Dust and fume. - as Fe	15 MIN ACL	10 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	5 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Quartz - Respirable particles.	TWA	0.025 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	0.10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Quartz - Respirable dust.	TWA	0.1 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Quartz - Respirable fraction.	TWA	0.025 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
	TWA	0.025 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
Manganese oxide (MnO ₂) - as Mn	TWA	0.2 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Manganese oxide (MnO ₂) - Respirable. - as Mn	TWA	0.02 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese oxide (MnO ₂) - Total - as Mn	TWA	0.2 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese oxide (MnO ₂) - Inhalable fraction. - as Mn	TWA	0.1 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2013)
Manganese oxide (MnO ₂) - Respirable fraction. - as Mn	TWA	0.02 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2013)
Manganese oxide (MnO ₂) - Inhalable fraction. - as Mn	TWA	0.1 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Manganese oxide (MnO ₂) - as Mn	8 HR ACL	0.2 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese oxide (MnO ₂) - Fume, total dust. - as Mn	TWA	0.2 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m ³	Canada. Saskatchewan OELs

			(Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Molybdenum - Respirable fraction. - as Mo	8 HR ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Molybdenum - Inhalable fraction. - as Mo	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Molybdenum - Respirable fraction. - as Mo	15 MIN ACL	6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Molybdenum - Inhalable fraction. - as Mo	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Molybdenum - Respirable fraction. - as Mo	TWA	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Molybdenum - Total particulate.	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (01 2019)
Molybdenum - Respirable particles.	TWA	3 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (01 2019)
Molybdenum - Respirable. - as Mo	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Molybdenum - Inhalable - as Mo	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Molybdenum - Inhalable particles.	TWA	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
Molybdenum - Respirable particles.	TWA	3 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)
	TWA	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Molybdenum - Inhalable particles.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Molybdenum - Respirable fraction.	TWA	3 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Molybdenum - Inhalable fraction.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (01 2020)
Molybdenum - Respirable dust. - as Mo	TWA	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (03 2020)
Molybdenum - Inhalable dust. - as Mo	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (03 2020)
Aluminum and/or aluminum alloys (as Al) - Pyrophoric powder. - as Al	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Aluminum and/or aluminum alloys (as Al) - Dust.	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Aluminum and/or aluminum	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006,

alloys (as Al) - Respirable fraction.			The Workplace Safety And Health Act), as amended (03 2011)
	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
Aluminum and/or aluminum alloys (as Al) - Pyrophoric powder. - as Al	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Aluminum and/or aluminum alloys (as Al) - Dust. - as Al	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Aluminum and/or aluminum alloys (as Al) - Pyrophoric powder. - as Al	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Aluminum and/or aluminum alloys (as Al) - Dust. - as Al	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Aluminum and/or aluminum alloys (as Al)	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Aluminum and/or aluminum alloys (as Al) - as Al	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Aluminum and/or aluminum alloys (as Al) - Welding fume. - as Al	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Aluminum and/or aluminum alloys (as Al) - Respirable.	TWA	1.0 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Copper and/or copper alloys and compounds (as Cu) - Fume.	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and fume. - as Cu	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	8 HR ACL	1 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)

Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	8 HR ACL	0.2 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	TWA	1 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	TWA	0.2 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	TWA	0.2 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (08 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Iron - as Fe	VLE-PPT	1 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Chromium and chromium alloys or compounds (as Cr)	VLE-PPT	0.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	0.05 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	0.01 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Titanium dioxide (naturally occurring)	VLE-PPT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Zircon - as Zr	VLE-PPT	5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-CT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Titanium dioxide (synthetic)	VLE-PPT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Silicon - Inhalable fraction.	VLE-PPT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Silicon - Respirable fraction.	VLE-PPT	3 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Sodium fluorosilicate - as F	VLE-PPT	2.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	2.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace;

			Assessment and Control), as amended (04 2014)
Iron oxide - Respirable fraction.	VLE-PPT	5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Quartz - Respirable fraction.	VLE-PPT	0.025 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese oxide (MnO2) - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Molybdenum - Respirable fraction. - as Mo	VLE-PPT	0.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Aluminum and/or aluminum alloys (as Al) - Respirable fraction.	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Fume. - as Cu	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Copper and/or copper alloys and compounds (as Cu) - Dust and mist. - as Cu	VLE-PPT	1 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Biological Limit Values: US

Chemical Identity	Exposure Limit Values	Source
Chromium and chromium alloys or compounds (as Cr) (Total chromium: Sampling time: End of shift at end of work week.)	0.7 µg/l (Urine)	ACGIH BEI (01 2021)
Nickel (Nickel: Sampling time: End of shift at end of work week.)	5 µg/l (Urine)	ACGIH BEI (01 2021)
Sodium fluorosilicate (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (03 2013)
Sodium fluorosilicate (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEI (03 2013)
	3 mg/l (Urine)	ACGIH BEI (01 2021)
Sodium fluorosilicate (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (01 2021)

Biological Limit Values: Mexico

Chemical Identity	Exposure Limit Values	Source
Sodium fluorosilicate (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Sodium fluorosilicate (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)
Sodium fluorosilicate (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Sodium fluorosilicate (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	TWA	5,000 ppm	US. ACGIH Threshold Limit Values (12 2010)
	STEL	30,000 ppm	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5,000 ppm 9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm 54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm 9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	40,000 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Carbon monoxide	TWA	25 ppm	US. ACGIH Threshold Limit Values (12 2010)
	PEL	50 ppm 55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm 40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceiling_Time	200 ppm 229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	1,200 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nitrogen dioxide	TWA	0.2 ppm	US. ACGIH Threshold Limit Values (02 2012)
	Ceiling	5 ppm 9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm 1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	IDLH	13 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	PEL	0.1 ppm 0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceiling_Time	0.1 ppm 0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.10 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm	US. ACGIH Threshold Limit Values (03 2014)
	IDLH	5 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	TWA	0.20 ppm	US. ACGIH Threshold Limit Values (02 2020)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Chromium (VI)	TWA	0.005 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)

	OSHA_ACT	0.0025 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (02 2006)
	Ceiling	0.1 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Chromium (VI) - as Cr(VI)	REL	0.0002 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Chromium (VI) - Inhalable fraction. - as Cr(VI)	TWA	0.0002 mg/m3	US. ACGIH Threshold Limit Values (03 2018)
	TWA	0.0002 mg/m3	US. ACGIH Threshold Limit Values (03 2018)
	STEL	0.0005 mg/m3	US. ACGIH Threshold Limit Values (03 2018)
	STEL	0.0005 mg/m3	US. ACGIH Threshold Limit Values (03 2018)
Chromium (VI)	IDLH	15 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (2018)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
Nickel - as Ni	REL	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Nickel	IDLH	10 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Nickel - as Ni	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Chromium oxide - as Cr	PEL	0.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Chromium oxide - Inhalable fraction. - as Cr(III)	TWA	0.003 mg/m3	US. ACGIH Threshold Limit Values (03 2018)
Chromium oxide - as Cr(III)	REL	0.5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2016)
Chromium oxide	IDLH	25 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Chromium oxide - Inhalable fraction. - as Cr(III)	TWA	0.003 mg/m3	US. ACGIH Threshold Limit Values (01 2021)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	STEL	30,000 ppm 54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm	Canada. Saskatchewan OELs

			(Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	30,000 ppm 54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Carbon monoxide	TWA	25 ppm 29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	25 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	25 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	35 ppm 40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	200 ppm 230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Nitrogen dioxide	STEL	5 ppm 9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm 5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2012)
	STEL	5 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN	5 ppm	Canada. Saskatchewan OELs

	ACL			(Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (12 2008)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (02 2020)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL		0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL		0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)

Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Chromium (VI) - as Cr	TWA	0.01 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	15 MIN ACL	0.03 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.15 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.01 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	0.05 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	TWA	0.01 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Chromium (VI) - Inhalable fraction. - as Cr(VI)	STEL	0.0005 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
	STEL	0.0005 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
	TWA	0.0002 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
	TWA	0.0002 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
Chromium (VI) - Total - as Cr	CEILING	0.1 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
	TWA	0.025 mg/m3	Canada. British Columbia OELs.

			(Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (06 2020)
Nickel	TWA	1.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Nickel - as Ni	TWA	0.05 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Nickel - Inhalable fraction.	TWA	1.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
Nickel - Inhalable fraction. - as Ni	TWA	1 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
	8 HR ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	3 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Nickel - Inhalable dust.	TWA	1.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (03 2020)
Chromium oxide - as Cr	TWA	0.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	0.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	1.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	0.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Chromium oxide - Inhalable fraction. - as Cr(III)	TWA	0.003 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2018)
Chromium oxide - Total - as Cr	TWA	0.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Chromium oxide - Inhalable fraction. - as Cr(III)	TWA	0.003 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (01 2021)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014

			Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Chromium (VI)	VLE-PPT	0.05 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nickel - Inhalable fraction. - as Ni	VLE-PPT	1.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Chromium oxide	VLE-PPT	0.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such

as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Eye/face protection:

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electroslag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection:

Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other:

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection:

Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures:

Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Cored welding wire.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper:	No data available.
Explosive limit - lower:	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. STABILITY AND REACTIVITY

Reactivity:	The product is non-reactive under normal conditions of use, storage and transport.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	None under normal conditions.
Conditions to avoid:	Avoid heat or contamination.
Incompatible Materials:	Strong acids. Strong oxidizing substances. Strong bases.
Hazardous Decomposition Products:	<p>Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)</p> <p>In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in</p>

the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation: Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.

Skin Contact: Arc rays can burn skin. Skin cancer has been reported.

Eye contact: Arc rays can injure eyes.

Ingestion: Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation: Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. Note: All regional authorities do not use the same criteria for assigning carcinogenic classifications to chemicals. For example, the European Union (EU) CLP does not require classifying crystalline silica as a carcinogenic compound. Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product:	Not classified
Specified substance(s):	
Iron	LD 50 (Rat): 98.6 g/kg
Zircon	LD 50 (Rat): 3,200 mg/kg
Sodium fluorosilicate	LD 50 (Rat): 125 mg/kg
Manganese oxide	LD 50 (Rat): > 3,480 mg/kg

(MnO₂)
Copper and/or copper
alloys and compounds
(as Cu) LD 50 (Rat): 481 mg/kg

Dermal
Product: Not classified

Inhalation
Product: Not classified
Specified substance(s):
Sodium fluorosilicate LC 50 (Rat, 4 h): 1.673 mg/l
Aluminum and/or LC 50 (Rat, 1 h): 7.6 mg/l
aluminum alloys (as Al)

Repeated dose toxicity
Product: Not classified

Skin Corrosion/Irritation
Product: Not classified

Serious Eye Damage/Eye Irritation
Product: Not classified

Respiratory or Skin Sensitization
Product: Not classified

Carcinogenicity
Product: Arc rays: Skin cancer has been reported.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Nickel Overall evaluation: 2B. Possibly carcinogenic to humans.
Titanium dioxide Overall evaluation: 2B. Possibly carcinogenic to humans.
(naturally occurring)
Titanium dioxide Overall evaluation: 2B. Possibly carcinogenic to humans.
(synthetic)
Quartz Overall evaluation: 1. Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Nickel Reasonably Anticipated to be a Human Carcinogen.
Quartz Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

Quartz Cancer

Germ Cell Mutagenicity

In vitro
Product: Not classified

In vivo
Product: Not classified

Reproductive toxicity
Product: Not classified

Specific Target Organ Toxicity - Single Exposure
Product: Not classified

Specific Target Organ Toxicity - Repeated Exposure

Product: Not classified

Aspiration Hazard

Product: Not classified

Other effects: Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use

Inhalation:

Specified substance(s):

Manganese	Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.
Chromium (VI)	Chromates may cause ulceration, perforation of the nasal septum, and severe irritation of the bronchial tubes and lungs. Liver damage and allergic reactions, including skin rash, have been reported. Asthma has been reported in some sensitized individuals. Skin contact may result in irritation, ulceration, sensitization, and contact dermatitis. Chromates contain the hexavalent form of chromium. Hexavalent chromium and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans.
Nickel	Nickel and its compounds are on the IARC and NTP lists as posing respiratory cancer risk, and are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

Additional toxicological information under the conditions of use:

Acute toxicity

Oral

Specified substance(s):

Chromium (VI) LD 50 (Rat): 27 - 59 mg/kg

Inhalation

Specified substance(s):

Carbon dioxide	LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide	LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm
Chromium (VI)	LC 50 (Rat, 4 h): 33 - 70 mg/m3

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Specified substance(s):

Chromium (VI)	Overall evaluation: 1. Carcinogenic to humans.
Nickel	Overall evaluation: 2B. Possibly carcinogenic to humans.
Chromium oxide	Overall evaluation: 3. Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Specified substance(s):

Chromium (VI) Known To Be Human Carcinogen.
Nickel Reasonably Anticipated to be a Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

Specified substance(s):

Chromium (VI) Cancer

Other effects:

Specified substance(s):

Carbon dioxide Asphyxia
Carbon monoxide Carboxyhemoglobinemia
Nitrogen dioxide Lower respiratory tract irritation
Nickel Dermatitis Pneumoconiosis

12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute hazards to the aquatic environment:

Fish

Product: Not classified.

Specified substance(s):

Nickel LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 2.916 mg/l
Sodium fluorosilicate LC 50 (Bluegill (*Lepomis macrochirus*), 96 h): 49 mg/l
Molybdenum LC 50 (Rainbow trout, donaldson trout (*Oncorhynchus mykiss*), 96 h): 800 mg/l
Aluminum and/or aluminum alloys (as Al) LC 50 (Grass carp, white amur (*Ctenopharyngodon idella*), 96 h): 0.21 - 0.31 mg/l
Copper and/or copper alloys and compounds (as Cu) LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 1.6 mg/l

Aquatic Invertebrates

Product: Not classified.

Specified substance(s):

Nickel EC 50 (Water flea (*Daphnia magna*), 48 h): 1 mg/l
Manganese EC 50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l
Copper and/or copper alloys and compounds (as Cu) EC 50 (Water flea (*Daphnia magna*), 48 h): 0.102 mg/l

Chronic hazards to the aquatic environment:

Fish

Product: Not classified.

Aquatic Invertebrates

Product: Not classified.

Toxicity to Aquatic Plants

Product: Not classified.

Specified substance(s):

Copper and/or copper alloys and compounds (as Cu) LC 50 (Green algae (*Scenedesmus dimorphus*), 3 d): 0.0623 mg/l

Persistence and Degradability

Biodegradation

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product:	No data available.
Specified substance(s):	
Nickel	Zebra mussel (<i>Dreissena polymorpha</i>), Bioconcentration Factor (BCF): 5,000 - 10,000 (Lotic) Bioconcentration factor calculated using dry weight tissue conc
Copper and/or copper alloys and compounds (as Cu)	Blue-green algae (<i>Anacystis nidulans</i>), Bioconcentration Factor (BCF): 36.01 (Static)

Mobility in soil: No data available.

13. Disposal considerations

General information: The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in accordance with all applicable Federal, State, Provincial, and Local requirements.

Disposal instructions: Disposal of this product may be regulated as a Hazardous Waste. The welding consumable and/or by-product from the welding process (including, but not limited to slag, dust, etc.) may contain levels of leachable heavy metals such as Barium or Chromium. Prior to disposal, a representative sample must be analyzed in accordance with US EPA's Toxicity Characteristic Leaching Procedure (TCLP) to determine if any constituents exist above regulated threshold levels. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner according to Federal, State and Local Regulations.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN number or ID number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	-
Packing Group:	-
Marine Pollutant:	No

IMDG

UN number or ID number:	
UN Proper Shipping Name:	NOT DG REGULATED
Transport Hazard Class(es)	
Class:	NR
Label(s):	-
EmS No.:	
Packing Group:	-
Marine Pollutant:	No

IATA

UN number or ID number:
 Proper Shipping Name: NOT DG REGULATED
 Transport Hazard Class(es):
 Class: NR
 Label(s): -
 Packing Group: -
 Marine Pollutant: No
 Cargo aircraft only: Allowed.

TDG

UN number or ID number:
 UN Proper Shipping Name: NOT DG REGULATED
 Transport Hazard Class(es):
 Class: NR
 Label(s): -
 Packing Group: -
 Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
 None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

<u>Chemical Identity</u>	<u>OSHA hazard(s)</u>
Quartz	kidney effects lung effects immune system effects Cancer

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Chromium and chromium alloys or compounds (as Cr)	5000lbs.
Nickel	100lbs.
Manganese	Included in the regulation but with no data values. See regulation for further details.
Copper and/or copper alloys and compounds (as Cu)	5000lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Not classified
 Not classified

SARA 302 Extremely Hazardous Substance
 None present or none present in regulated quantities.

SARA 304 Emergency Release Notification
 None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
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SARA 313 (TRI Reporting)

<u>Chemical Identity</u>	<u>Reporting threshold for other users</u>	<u>Reporting threshold for manufacturing and processing</u>
Chromium and chromium alloys or compounds (as Cr)	10000 lbs	25000 lbs.
Nickel	10000 lbs	25000 lbs.
Manganese	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65



WARNING: This product can expose you to chemicals including, Nickel, Titanium dioxide (naturally occurring), Titanium dioxide (synthetic), Quartz, which is [are] known to the State of California to cause cancer.

For more information go to www.P65Warnings.ca.gov.

WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov

US. New Jersey Worker and Community Right-to-Know Act

No ingredient regulated by NJ Right-to-Know Law present.

US. Massachusetts RTK - Substance List

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)
Nickel
Quartz

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

Chromium and chromium alloys or compounds (as Cr)
Nickel
Titanium dioxide (naturally occurring)
Manganese
Titanium dioxide (synthetic)

US. Rhode Island RTK

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations

List of Toxic Substances (CEPA, Schedule 1)

Chemical Identity

Sodium fluorosilicate

Export Control List (CEPA 1999, Schedule 3)

Not Regulated

National Pollutant Release Inventory (NPRI)

Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements

NPRI PT5 Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI Not Regulated

CA CDSII Not Regulated

CA CDSIII Not Regulated

CA CDSIV Not Regulated

CA CDSV Not Regulated

CA CDSVII Not Regulated

CA CDSVIII Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable

Inventory Status:

Australia AICS:	One or more components are not listed or are exempt from listing.
Canada DSL Inventory List:	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Korea Existing Chemicals Inv. (KECI):	One or more components are not listed or are exempt from listing.
Mexico INSQ:	One or more components are not listed or are exempt from listing.
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	One or more components are not listed or are exempt from listing.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	One or more components are not listed or are exempt from listing.
EINECS, ELINCS or NLP:	One or more components are not listed or are exempt from listing.

16. OTHER INFORMATION

Definitions:

Revision Date: 07/29/2021

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods

of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

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6.) WELDING ROD (7018)

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SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: EASYARC® 7018

Product Size: 2.6 mm (.102")

Other means of identification

SDS number: 200000008445

Recommended use and restriction on use

Recommended use: SMAW (Shielded Metal Arc Welding)

Restrictions on use: Not known. Read this SDS before using this product.

Manufacturer/Importer/Supplier/Distributor Information

Company Name: The Nanjing Lincoln Electric Co., Ltd.
Address: No.18, Baoxiang Road
Riverside Economic Development Zone
Jiangning District
Nanjing, Jiangsu Province 211161
China

Telephone: +86 25 8418 8377

Contact Person: Safety Data Sheet Questions: www.lincolnelectric.com/sds
Arc Welding Safety Information: www.lincolnelectric.com/safety

Emergency telephone number:

USA/Canada/Mexico +1 (888) 609-1762
Americas/Europe +1 (216) 383-8962
Asia Pacific +1 (216) 383-8966
Middle East/Africa +1 (216) 383-8969

3E Company Access Code: 333988

2. HAZARDS IDENTIFICATION

Classified according to the criteria of the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), The United States Occupational Safety and Health Administration's Hazard Communication Standard (29 CFR 1910.1200), Canada's Hazardous Product Regulations and Mexico's Harmonized System for the Identification and Communication of Hazards and Risks from Hazardous Chemicals in the Workplace.

Hazard Classification Not classified as hazardous according to applicable GHS hazard classification criteria.

Label Elements

Hazard Symbol: No symbol
Signal Word: No signal word.
Hazard Statement: Not applicable
Precautionary Statements: Not applicable

Other hazards which do not result in GHS classification:

Electrical Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with work piece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Arc rays can injure eyes and burn skin. Welding arc and sparks can ignite combustibles and flammable materials. Overexposure to welding fumes and gases can be hazardous. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product. Refer to Section 8.

Substance(s) formed under the conditions of use:

The welding fume produced from this welding electrode may contain the following constituent(s) and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed below.

Chemical Identity	CAS-No.
Carbon dioxide	124-38-9
Carbon monoxide	630-08-0
Nitrogen dioxide	10102-44-0
Ozone	10028-15-6
Manganese	7439-96-5
Fluorides (as F)	16984-48-8

3. COMPOSITION / INFORMATION ON INGREDIENTS
Reportable Hazardous Ingredients Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	50 - <100%
Limestone	1317-65-3	10 - <20%
Fluorides (as F)	16984-48-8	1 - <5%
Titanium dioxide	13463-67-7	1 - <5%
Manganese	7439-96-5	1 - <5%
Zircon	14940-68-2	1 - <5%
Sodium silicate	1344-09-8	1 - <5%
Potassium silicate	1312-76-1	1 - <5%
Silicon	7440-21-3	1 - <5%
Quartz	14808-60-7	0.1 - <1%
Hydroxyethyl cellulose	9004-62-0	0.1 - <1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - <1%
Kaolin	1332-58-7	0.1 - <1%
Lithium oxide	12057-24-8	0.1 - <1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition Comments:

The term "Hazardous Ingredients" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a welding hazard. The product may contain additional non-

hazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

4. FIRST AID MEASURES

- Ingestion:** Avoid hand, clothing, food, and drink contact with fluxes, metal fume or powder which can cause ingestion of particulate during hand to mouth activities such as drinking, eating, smoking, etc. If ingested, do not induce vomiting. Contact a poison control center. Unless the poison control center advises otherwise, wash out mouth thoroughly with water. If symptoms develop, seek medical attention at once.
- Inhalation:** Move to fresh air if breathing is difficult. If breathing has stopped, perform artificial respiration and obtain medical assistance at once.
- Skin Contact:** Remove contaminated clothing and wash the skin thoroughly with soap and water. For reddened or blistered skin, or thermal burns, obtain medical assistance at once.
- Eye contact:** Dust or fume from this product should be flushed from the eyes with copious amounts of clean, tepid water until transported to an emergency medical facility. Do not allow victim to rub or keep eyes tightly closed. Obtain medical assistance at once.
- Arc rays can injure eyes. If exposed to arc rays, move victim to dark room, remove contact lenses as necessary for treatment, cover eyes with a padded dressing and rest. Obtain medical assistance if symptoms persist.

Most important symptoms/effects, acute and delayed

- Symptoms:** Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

- Hazards:** The hazards associated with welding and its allied processes such as soldering and brazing are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to fumes, gases or dusts potentially generated during the use of this product. Refer to Section 11 for more information.

Indication of immediate medical attention and special treatment needed

- Treatment:** Treat symptomatically.

5. FIRE-FIGHTING MEASURES

- General Fire Hazards:** As shipped, this product is nonflammable. However, welding arc and sparks as well as open flames and hot surfaces associated with brazing and soldering can ignite combustible and flammable materials. Read and understand American National Standard Z49.1, "Safety in Welding, Cutting and Allied Processes" and National Fire Protection Association NFPA 51B, "Standard for Fire Prevention during Welding, Cutting and Other Hot Work" before using this product.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.

Unsuitable extinguishing media: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical: Welding arc and sparks can ignite combustibles and flammable products.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use standard firefighting procedures and consider the hazards of other involved materials.

Special protective equipment for fire-fighters: Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

Methods and material for containment and cleaning up: Absorb with sand or other inert absorbent. Stop the flow of material, if this is without risk. Clean up spills immediately, observing precautions in the personal protective equipment in Section 8. Avoid generating dust. Prevent product from entering any drains, sewers or water sources. Refer to Section 13 for proper disposal.

Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water sources or sewer. Environmental manager must be informed of all major spillages.

7. HANDLING AND STORAGE

Precautions for safe handling: Prevent formation of dust. Provide appropriate exhaust ventilation at places where dust is formed.

Read and understand the manufacturer's instruction and the precautionary label on the product. Refer to Lincoln Safety Publications at www.lincolnelectric.com/safety. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, <http://pubs.aws.org> and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, www.gpo.gov.

Conditions for safe storage, including any incompatibilities: Store in closed original container in a dry place. Store in accordance with local/regional/national regulations. Store away from incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Control Parameters
Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air

			Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Limestone - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Fluorides (as F)	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Titanium dioxide	TWA	10 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Titanium dioxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Titanium dioxide	IDLH	5,000 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Zircon - as Zr	STEL	10 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	TWA	5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Zircon	IDLH	25 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Silicon - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
Quartz - Respirable.	TWA	2.4 millions of particles per cubic foot of air	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
	TWA	0.1 mg/m3	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)

Quartz - Respirable dust.	TWA	0.05 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
	OSHA_ACT	0.025 mg/m3	US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) (03 2016)
Quartz - Respirable dust.	PEL	0.05 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (03 2016)
Quartz	IDLH	50 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Kaolin - Respirable fraction.	TWA	2 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Kaolin - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Kaolin - Respirable.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Kaolin - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)

Occupational Exposure Limits: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Limestone - Total dust.	STEL	20 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone - Respirable fraction.	TWA	3 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Limestone	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Limestone - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)

	TWA	2.5 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	2.5 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	2.5 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Titanium dioxide	TWA	10 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide - Respirable fraction.	TWA	3 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Titanium dioxide	TWA	10 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	10 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Titanium dioxide - Total dust.	TWA	10 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - as Mn	TWA	0.2 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL	0.2 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	0.6 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA	0.2 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)

Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Zircon - as Zr	TWA	5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	STEL	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	STEL	10 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	10 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	STEL	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
Silicon	8 HR ACL	10 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Silicon - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.025 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)

	8 HR ACL	0.05 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	0.10 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (06 2015)
Quartz - Respirable dust.	TWA	0.1 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Kaolin - Respirable.	TWA	2 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2 mg/m ³	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
Kaolin - Respirable fraction.	TWA	2 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	8 HR ACL	2 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	4 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Kaolin - Respirable dust.	TWA	5 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Kaolin - Respirable fraction.	TWA	2 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (08 2017)

Occupational Exposure Limits: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Iron - as Fe	VLE-PPT	1 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Fluorides (as F) - as F	VLE-PPT	2.5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Titanium dioxide	VLE-PPT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Zircon - as Zr	VLE-PPT	5 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-CT	10 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Quartz - Respirable fraction.	VLE-PPT	0.025 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Kaolin - Respirable fraction.	VLE-PPT	2 mg/m ³	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Biological Limit Values: US

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEI (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEI (03 2013)

Biological Limit Values: Mexico

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: Prior to shift.)	3 mg/g (Creatinine in urine)	MX IBE (06 2012)
Fluorides (as F) (fluorides: Sampling time: End of shift.)	10 mg/g (Creatinine in urine)	MX IBE (06 2012)

Additional exposure limits under the conditions of use: US

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	TWA	5,000 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	STEL	30,000 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	5,000 ppm 9,000 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	30,000 ppm 54,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	REL	5,000 ppm 9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Carbon monoxide	IDLH	40,000 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	TWA	25 ppm	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	50 ppm 55 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	35 ppm 40 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	Ceil_Time	200 ppm 229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Nitrogen dioxide	IDLH	1,200 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	TWA	0.2 ppm	US. ACGIH Threshold Limit Values, as amended (02 2012)
	Ceiling	5 ppm 9 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	STEL	1 ppm 1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	IDLH	20 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Ozone	IDLH	13 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
	PEL	0.1 ppm 0.2 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	Ceil_Time	0.1 ppm 0.2 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.20 ppm	US. ACGIH Threshold Limit Values, as

			amended (03 2014)
	TWA	0.10 ppm	US. ACGIH Threshold Limit Values, as amended (03 2014)
	TWA	0.08 ppm	US. ACGIH Threshold Limit Values, as amended (03 2014)
	IDLH	5 ppm	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Manganese - Fume. - as Mn	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards, as amended (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	US. ACGIH Threshold Limit Values, as amended (03 2014)
Manganese	IDLH	500 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)
Fluorides (as F) - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values, as amended (12 2010)
	PEL	2.5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m3	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Fluorides (as F)	IDLH	250 mg/m3	US. NIOSH. Immediately Dangerous to Life or Health (IDLH) Values (10 2017)

Additional exposure limits under the conditions of use: Canada

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	STEL	30,000 ppm 54,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	5,000 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	15,000 ppm	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	5,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	STEL	30,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	5,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	5,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor

				- Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	30,000 ppm	54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Carbon monoxide	TWA	25 ppm	29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	25 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	STEL	100 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	25 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	CEILING	1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2012)
	STEL	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	TWA	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table

				2), as amended (07 2009)
	TWA	0.1 ppm	0.2 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	0.05 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.08 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.2 ppm		Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	0.1 ppm	0.2 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	STEL	0.3 ppm	0.6 mg/m ³	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	CEILING	0.1 ppm	0.2 mg/m ³	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA		0.2 mg/m ³	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	8 HR ACL		0.2 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL		0.6 mg/m ³	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m ³	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2014)
Manganese - as Mn	TWA		0.2 mg/m ³	Canada. Ontario OELs. (Control of

			Exposure to Biological or Chemical Agents), as amended (06 2015)
Manganese - Fume, total dust. - as Mn	TWA	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)
Manganese - Respirable. - as Mn	TWA	0.02 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Manganese - Total - as Mn	TWA	0.2 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2018)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2), as amended (07 2009)
	TWA	2.5 mg/m3	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	2.5 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act), as amended (03 2011)
	TWA	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents), as amended (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21), as amended (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety), as amended (09 2017)

Additional exposure limits under the conditions of use: Mexico

Chemical Identity	Type	Exposure Limit Values	Source
Carbon dioxide	VLE-CT	30,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
	VLE-PPT	5,000 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Carbon monoxide	VLE-PPT	25 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Nitrogen dioxide	VLE-PPT	0.2 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Ozone	VLE-P	0.1 ppm	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
Manganese - as Mn	VLE-PPT	0.2 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)

Fluorides (as F) - as F	VLE-PPT	2.5 mg/m3	Mexico. OELs. (NOM-010-STPS-2014 Chemical Pollutants at the Workplace; Assessment and Control), as amended (04 2014)
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Appropriate Engineering Controls

Ventilation: Use enough ventilation and local exhaust at the arc, flame or heat source to keep the fumes and gases from the worker's breathing zone and the general area. Train the operator to keep their head out of the fumes. **Keep exposure as low as possible.**

Individual protection measures, such as personal protective equipment

General information:

Exposure Guidelines: To reduce the potential for overexposure, use controls such as adequate ventilation and personal protective equipment (PPE). Overexposure refers to exceeding applicable local limits, the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) or the Occupational Safety and Health Administration's (OSHA) Permissible Exposure Limits (PELs). Workplace exposure levels should be established by competent industrial hygiene assessments. Unless exposure levels are confirmed to be below the applicable local limit, TLV or PEL, whichever is lower, respirator use is required. Absent these controls, overexposure to one or more compound constituents, including those in the fume or airborne particles, may occur resulting in potential health hazards. According to the ACGIH, TLVs and Biological Exposure Indices (BEIs) "represent conditions under which ACGIH believes that nearly all workers may be repeatedly exposed without adverse health effects." The ACGIH further states that the TLV-TWA should be used as a guide in the control of health hazards and should not be used to indicate a fine line between safe and dangerous exposures. See Section 10 for information on constituents which have some potential to present health hazards. Welding consumables and materials being joined may contain chromium as an unintended trace element. Materials that contain chromium may produce some amount of hexavalent chromium (CrVI) and other chromium compounds as a byproduct in the fume. In 2018, the American Conference of Governmental Industrial Hygienists (ACGIH) lowered the Threshold Limit Value (TLV) for hexavalent chromium from 50 micrograms per cubic meter of air (50 µg/m³) to 0.2 µg/m³. At these new limits, CrVI exposures at or above the TLV may be possible in cases where adequate ventilation is not provided. CrVI compounds are on the IARC and NTP lists as posing a lung cancer and sinus cancer risk. Workplace conditions are unique and welding fume exposures levels vary. Workplace exposure assessments must be conducted by a qualified professional, such as an industrial hygienist, to determine if exposures are below applicable limits and to make recommendations when necessary for preventing overexposures.

Eye/face protection:

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes – or follow the recommendations as specified in ANSI Z49.1, Section 4, based on your process and settings. No specific lens shade recommendation for submerged arc or electrosag processes. Shield others by providing appropriate screens and flash goggles.

Skin Protection

Hand Protection:

Wear protective gloves. Suitable gloves can be recommended by the glove supplier.

Other:

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, open flames, hot surfaces, sparks and electrical shock. See Z49.1. At a minimum, this includes welder's gloves and a protective face shield when welding, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing when

welding, brazing and soldering. Wear dry gloves free of holes or split seams. Train the operator not to permit electrically live parts or electrodes from contacting the skin . . . or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

Respiratory Protection: Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

Hygiene measures: Do not eat, drink or smoke when using the product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, www.aws.org.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Steel rod with extruded flux coating.
Physical state:	Solid
Form:	Solid
Color:	No data available.
Odor:	No data available.
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	No data available.
Initial boiling point and boiling range:	No data available.
Flash Point:	No data available.
Evaporation rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper:	No data available.
Explosive limit - lower:	No data available.
Vapor pressure:	No data available.
Vapor density:	No data available.
Density:	No data available.
Relative density:	No data available.
Solubility(ies)	
Solubility in water:	No data available.
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.

Viscosity: No data available.

10. STABILITY AND REACTIVITY

Reactivity: The product is non-reactive under normal conditions of use, storage and transport.

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: None under normal conditions.

Conditions to avoid: Avoid heat or contamination.

Incompatible Materials: Strong acids. Strong oxidizing substances. Strong bases.

Hazardous Decomposition Products: Fumes and gases from welding and its allied processes such as brazing and soldering cannot be classified simply. The composition and quantity of both are dependent upon the metal to which the joining or hot work is applied, the process, procedure - and where applicable - the electrode or consumable used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded or worked (such as paint, plating, or galvanizing), the number of operators and the volume of the work area, the quality and amount of ventilation, the position of the operator's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.)

In cases where an electrode or other applied material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding and brazing include the oxides of iron, manganese and other metals present in the welding consumable or base metal. Hexavalent chromium compounds may be in the welding or brazing fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the fume of consumables or flux materials which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc associated with welding.

11. TOXICOLOGICAL INFORMATION

General information: The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

Information on likely routes of exposure

Inhalation:	Potential chronic health hazards related to the use of welding consumables are most applicable to the inhalation route of exposure. Refer to Inhalation statements in Section 11.
Skin Contact:	Arc rays can burn skin. Skin cancer has been reported.
Eye contact:	Arc rays can injure eyes.
Ingestion:	Health injuries from ingestion are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation:	Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. Note: All regional authorities do not use the same criteria for assigning carcinogenic classifications to chemicals. For example, the European Union (EU) CLP does not require classifying crystalline silica as a carcinogenic compound. Short-term (acute) overexposure to fumes and gases from welding and allied processes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Long-term (chronic) overexposure to fumes and gases from welding and allied processes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects.
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Information on toxicological effects**Acute toxicity (list all possible routes of exposure)****Oral**

Product:	Not classified
Specified substance(s):	
Iron	LD 50 (Rat): 98.6 g/kg
Limestone	LD 50 (Rat): 6,450 mg/kg
Fluorides (as F)	LD 50 (Rat): 4,250 mg/kg
Zircon	LD 50 (Rat): 3,200 mg/kg
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

Dermal

Product:	Not classified
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Inhalation

Product:	Not classified
Specified substance(s):	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m ³

Repeated dose toxicity

Product:	Not classified
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Skin Corrosion/Irritation

Product:	Not classified
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Serious Eye Damage/Eye Irritation

Product:	Not classified
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Respiratory or Skin Sensitization**Product:** Not classified**Carcinogenicity****Product:** Arc rays: Skin cancer has been reported.**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:**

Titanium dioxide Overall evaluation: 2B. Possibly carcinogenic to humans.

Quartz Overall evaluation: 1. Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Quartz Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

Quartz Cancer

Germ Cell Mutagenicity**In vitro****Product:** Not classified**In vivo****Product:** Not classified**Reproductive toxicity****Product:** Not classified**Specific Target Organ Toxicity - Single Exposure****Product:** Not classified**Specific Target Organ Toxicity - Repeated Exposure****Product:** Not classified**Aspiration Hazard****Product:** Not classified**Other effects:**

Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

Symptoms related to the physical, chemical and toxicological characteristics under the condition of use**Inhalation:****Specified substance(s):**

Manganese

Overexposure to manganese fumes may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.

Additional toxicological information under the conditions of use:**Acute toxicity**

Oral

Specified substance(s):

Fluorides (as F) LD 50 (Rat): 4,250 mg/kg

Inhalation**Specified substance(s):**Carbon dioxide LC Lo (Human, 5 min): 90000 ppm
Carbon monoxide LC 50 (Rat, 4 h): 1300 ppm
Nitrogen dioxide LC 50 (Rat, 4 h): 88 ppm
Ozone LC Lo (Human, 30 min): 50 ppm**Other effects:****Specified substance(s):**Carbon dioxide Asphyxia
Carbon monoxide Carboxyhemoglobinemia
Nitrogen dioxide Lower respiratory tract irritation**12. ECOLOGICAL INFORMATION****Ecotoxicity****Acute hazards to the aquatic environment:****Fish****Product:** Not classified.**Specified substance(s):**Sodium silicate LC 50 (Western mosquitofish (*Gambusia affinis*), 96 h): 1,800 mg/l**Aquatic Invertebrates****Product:** Not classified.**Specified substance(s):**Manganese EC 50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l
Sodium silicate EC 50 (Water flea (*Ceriodaphnia dubia*), 48 h): 22.94 - 49.01 mg/l
Carboxymethyl cellulose, sodium salt EC 50 (Water flea (*Ceriodaphnia dubia*), 48 h): 46.04 - 165.37 mg/l**Chronic hazards to the aquatic environment:****Fish****Product:** Not classified.**Aquatic Invertebrates****Product:** Not classified.**Toxicity to Aquatic Plants****Product:** Not classified.**Persistence and Degradability****Biodegradation****Product:** No data available.**Bioaccumulative potential****Bioconcentration Factor (BCF)****Product:** No data available.**Mobility in soil:**

No data available.

13. Disposal considerations**General information:**

The generation of waste should be avoided or minimized whenever possible. When practical, recycle in an environmentally acceptable, regulatory compliant manner. Dispose of non-recyclable products in

accordance with all applicable Federal, State, Provincial, and Local requirements.

Disposal instructions: Dispose of this material and its container to hazardous or special waste collection point.

Contaminated Packaging: Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

14. TRANSPORT INFORMATION

DOT

UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): -
Packing Group: -
Marine Pollutant: No

IMDG

UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): -
EmS No.:
Packing Group: -
Marine Pollutant: No

IATA

UN Number:
Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es):
Class: NR
Label(s): -
Packing Group: -
Marine Pollutant: No
Cargo aircraft only: Allowed.

TDG

UN Number:
UN Proper Shipping Name: NOT DG REGULATED
Transport Hazard Class(es)
Class: NR
Label(s): -
Packing Group: -
Marine Pollutant: No

15. REGULATORY INFORMATION

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

Chemical Identity

Quartz

OSHA hazard(s)kidney effects
lung effects
immune system effects
Cancer**CERCLA Hazardous Substance List (40 CFR 302.4):****Chemical Identity**

Manganese

Reportable quantity

Included in the regulation but with no data values. See regulation for further details.

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**Not classified
Not classified**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

None present or none present in regulated quantities.

SARA 311/312 Hazardous Chemical**Chemical Identity****Threshold Planning Quantity****SARA 313 (TRI Reporting)****Chemical Identity**

Manganese

**Reporting threshold
for other users**

10000 lbs

Reporting threshold for**manufacturing and processing**

25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations**US. California Proposition 65****WARNING**Cancer - www.P65Warnings.ca.gov**WARNING:** This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)**WARNING:** Cancer and Reproductive Harm – www.P65Warnings.ca.gov**US. New Jersey Worker and Community Right-to-Know Act****Chemical Identity**Limestone
Fluorides (as F)
Titanium dioxide
Manganese
Silicon
Quartz

US. Massachusetts RTK - Substance List**Chemical Identity**

Quartz

US. Pennsylvania RTK - Hazardous Substances**Chemical Identity**Limestone
Fluorides (as F)
Titanium dioxide
Manganese
Silicon**US. Rhode Island RTK**

No ingredient regulated by RI Right-to-Know Law present.

Canada Federal Regulations**List of Toxic Substances (CEPA, Schedule 1)****Chemical Identity**Fluorides (as F)
Titanium dioxide
Kaolin**Export Control List (CEPA 1999, Schedule 3)**

Not Regulated

National Pollutant Release Inventory (NPRI)**Canada. National Pollutant Release Inventory (NPRI) Substances, Part 5, VOCs with Additional Reporting Requirements**

NPRI PT5 Not Regulated

Canada. National Pollutant Release Inventory (NPRI) (Schedule 1, Parts 1-4)

NPRI Not Regulated

Greenhouse Gases

Not Regulated

Controlled Drugs and Substances Act

CA CDSI	Not Regulated
CA CDSII	Not Regulated
CA CDSIII	Not Regulated
CA CDSIV	Not Regulated
CA CDSV	Not Regulated
CA CDSVII	Not Regulated
CA CDSVIII	Not Regulated

Precursor Control Regulations

Not Regulated

Mexico. Substances subject to reporting for the pollutant release and transfer registry (PRTR): Not applicable**Inventory Status:**

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	One or more components are not listed or are exempt from listing.
EINECS, ELINCS or NLP:	One or more components are not listed or are exempt from listing.

Japan (ENCS) List:	One or more components are not listed or are exempt from listing.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	One or more components are not listed or are exempt from listing.
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	One or more components are not listed or are exempt from listing.
Japan Pharmacopoeia Listing:	One or more components are not listed or are exempt from listing.
Mexico INSQ:	One or more components are not listed or are exempt from listing.
Ontario Inventory:	One or more components are not listed or are exempt from listing.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. OTHER INFORMATION**Definitions:**

Revision Date: 05/15/2020

Further Information: Additional information is available by request.

Disclaimer: The Lincoln Electric Company urges each end user and recipient of this SDS to study it carefully. See also www.lincolnelectric.com/safety. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond Lincoln Electric's control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user.

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