

# Acetylene, dissolved

## Safety Data Sheet P-4559

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1979 Revision date: 01/12/2015 Supersedes: 07/01/2014

### SECTION 1: Product and company identification

#### 1.1. Product Identifier

Product form : Substance  
Name : Acetylene, dissolved  
CAS No : 74-86-2  
Formula : C<sub>2</sub>H<sub>2</sub>  
Other means of identification : Acetylen, ethine, ethyne, narcylene

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

Use of the substance/mixture : Industrial use. Use as directed.

#### 1.3. Details of the supplier of the safety data sheet

Praxair, Inc.  
39 Old Ridgebury Road  
Danbury, CT 06810-5113 - USA  
T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146  
[www.praxair.com](http://www.praxair.com)

#### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week — Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887 (collect calls accepted, Contract 17729)

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification (GHS-US)

Flam. Gas 1 H220  
Dissolved gas H280

Full text of H-phrases: see section 16

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US)



GHS02

GHS04

Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: H220 - EXTREMELY FLAMMABLE GAS  
H231 - MAY REACT EXPLOSIVELY EVEN IN THE ABSENCE OF AIR AT ELEVATED PRESSURE AND/OR TEMPERATURE  
H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.  
CGA-HG04 - MAY FORM EXPLOSIVE MIXTURES WITH AIR

Precautionary statements (GHS-US)

: P202 - Do not handle until all safety precautions have been read and understood  
P210 - Keep away from heat, Open flames, sparks, hot surfaces. - No smoking  
P271+P403 - Use and store only outdoors or in a well-ventilated place.  
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely  
P381 - Eliminate all ignition sources if safe to do so  
P501 - Dispose of contents/container in accordance with container supplier/owner instructions  
CGA-PG05 - Use a back flow preventive device in the piping.  
CGA-PG13 - Fusible plugs in the top, bottom, or valve melt at 98°C to 107°C (208°F to 224°F).  
Do not discharge at pressures above 15 psig (103 kPa).  
CGA-PG06 - Close valve after each use and when empty.

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CGA-PG11 - Never put cylinders into unventilated areas of passenger vehicles.  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

### 2.3. Other hazards

Other hazards not contributing to the classification : For safety reasons, the acetylene is dissolved in acetone (CAS # 67-64-1; Flam. Liq. 2, Eye Irrit. 2, STOT SE 3) in the gas container. Vapor of the solvent is carried away as impurity when the acetylene is extracted from the gas container. The concentration of the solvent vapor in the gas is lower than the concentration limits to change the classification of the acetylene.

### 2.4. Unknown acute toxicity (GHS-US)

No data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Name	Product Identifier	%
Acetylene, dissolved (Main constituent)	(CAS No) 74-86-2	100

### 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Get immediate medical attention.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : See below. See CGA Pamphlet SB-4, Handling Acetylene Cylinders in Fire Situations, for further information.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : EXTREMELY FLAMMABLE GAS. If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device.

Explosion hazard : EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

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### 5.3. Advice for firefighters

- Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
- Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems. Stop flow of product if safe to do so. Use water spray or fog to knock down fire fumes if possible. Continue water spray from protected position until container stays cool.
- Other information : Acetylene containers are provided with pressure relief devices designed to vent contents when exposed to elevated temperature.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Evacuate area. Ensure adequate ventilation. Stop leak if safe to do so.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

### 6.3. Methods and material for containment and cleaning up

No additional information available

### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.
- Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

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### 7.2. Conditions for safe storage, including any incompatibilities

**Storage conditions** : Store only where temperature will not exceed 125°F (52°C). Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

**Storage area** : Acetylene trailers are designed and intended for outdoor use. Acetylene storage in excess of 2.500 cu ft (70.79 cubic meters) is prohibited in buildings and other occupancies.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Acetylene, dissolved (74-86-2)	
ACGIH	Not established
USA OSHA	Not established

### 8.2. Exposure controls

**Appropriate engineering controls** : An explosion-proof local exhaust system or a mechanical system is acceptable if it can prevent oxygen deficiency and keep hazardous fumes and gases below all applicable exposure limits in the worker's breathing area. During welding, ensure that there is adequate ventilation to keep worker exposure below applicable limits for fumes, gases, and other by-products of welding. Do not breathe fumes or gases. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes, or may cause other similar discomfort.

**Eye protection** : Wear safety glasses with side shields.

**Skin and body protection** : As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.

**Respiratory protection** : When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

**Thermal hazard protection** : Wear cold insulating gloves when transfilling or breaking transfer connections.

**Environmental exposure controls** : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

**Other information** : Consider the use of flame resistant anti-static safety clothing. Wear leather safety gloves and safety shoes when handling cylinders.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

**Physical state** : Gas

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Appearance	: Colorless, odorless gas.
Molecular mass	: 26 g/mol
Color	: Colorless.
Odor	: Garlic like.
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -80.8 °C
Freezing point	: No data available
Boiling point	: -84 °C
Flash point	: No data available
Critical temperature	: 36 °C
Auto-ignition temperature	: 305 °C
Decomposition temperature	: 635 °C
Flammability (solid, gas)	: 2.5 - 100 vol %
Vapor pressure	: 4400 kPa
Critical pressure	: 6138 kPa
Relative vapor density at 20 °C	: No data available
Relative density	: Not applicable.
Specific gravity / density	: 0.0012 g/cm <sup>3</sup> (at 0 °C)
Relative gas density	: 0.9
Solubility	: Water: 1185 mg/l
Log Pow	: 0.37
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Explosive limits	: No data available

### 9.2. Other information

Sublimation point	: -83.3 °C
Gas group	: Dissolved gas

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

### 10.2. Chemical stability

Dissolved in a solvent supported in a porous mass. Stable under recommended handling and storage conditions (see section 7).

### 10.3. Possibility of hazardous reactions

May react explosively even in the absence of air. May decompose violently at high temperature and/or pressure or in the presence of a catalyst. Can form explosive mixture with air. May react violently with oxidants.

### 10.4. Conditions to avoid

High temperature. High pressure. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

### 10.5. Incompatible materials

Forms explosive acetylides with copper, silver and mercury. Do not use alloys containing more than 65% copper. Air, Oxidizer. Do not use alloys containing more than 43% silver.

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### 10.6. Hazardous decomposition products

Thermal decomposition or burning may produce carbon monoxide, carbon dioxide, and hydrogen. The welding and cutting process may form reaction products such as carbon monoxide and carbon dioxide. Other decomposition products of normal operation originate from the volatilization, reaction, or oxidation of the material being worked.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable.
Serious eye damage/irritation	: Not classified pH: Not applicable.
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 No known effects from this product.
Aspiration hazard	: Not classified Not applicable.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No known ecological damage caused by this product.

### 12.2. Persistence and degradability

Acetylene, dissolved (74-86-2)	
Persistence and degradability	Will rapidly degrade by indirect photolysis in air. Will not undergo hydrolysis.

### 12.3. Bioaccumulative potential

Acetylene, dissolved (74-86-2)	
Log Pow	0.37
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9

### 12.4. Mobility in soil

Acetylene, dissolved (74-86-2)	
Mobility in soil	No data available.
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.
Effect on the global warming	: No known effects from this product.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

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### SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1001 Acetylene, dissolved  
 UN-No.(DOT) : UN1001  
 Proper Shipping Name (DOT) : Acetylene, dissolved  
 Hazard labels (DOT) : 2.1 - Flammable gas



DOT Special Provisions (49 CFR 172.102) : N86 - UN pressure receptacles made of aluminum alloy are not authorized.  
 N88 - Any metal part of a UN pressure receptacle in contact with the contents may not contain more than 65% copper, with a tolerance of 1%.

#### Additional Information

Emergency Response Guide (ERG) Number : 116 (UN1001)  
 Other information : No supplementary information available.  
 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.

#### Transport by sea

UN-No. (IMDG) : 1001  
 Proper Shipping Name (IMDG) : Acetylene, dissolved  
 Class (IMDG) : 2 - Gases  
 MFAG-No : 116

#### Air transport

UN-No.(IATA) : 1001  
 Proper Shipping Name (IATA) : Acetylene, dissolved  
 Class (IATA) : 2  
 Civil Aeronautics Law : Gases under pressure/Gases flammable under pressure

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

Acetylene, dissolved (74-86-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Reactive hazard Fire hazard

#### 15.2. International regulations

##### CANADA

Acetylene, dissolved (74-86-2)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class F - Dangerously Reactive Material



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### EU-Regulations

#### Acetylene, dissolved (74-86-2)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Gas 1    H220

Dissolved gas    H280

Full text of H-phrases: see section 16

#### 15.2.2. National regulations

##### Acetylene, dissolved (74-86-2)

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 Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

#### 15.3. US State regulations

##### Acetylene, dissolved(74-86-2)

U.S. - California - Proposition 65 - Carcinogens List

No

U.S. - California - Proposition 65 - Developmental Toxicity

No

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

No

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

No

State or local regulations

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

### SECTION 16: Other information

Revision date

: 1/12/2015 12:00:00 AM



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**Other information**

: When using this product in welding and cutting, read and understand the manufacturer's instructions and the precautionary label on the product. Ask your welding products supplier for a copy of Praxair's free safety booklet, P-2035, Precautions and Safe Practices for Gas Welding, Cutting, and Heating, and for other manufacturers' safety publications. For a detailed treatment, get ANSI Z49.1, Safety in Welding, Cutting, and Allied Processes, published by the American Welding Society (AWS), www.aws.org. Order AWS documents from Global Engineering Documents, global.ihs.com. Arcs and sparks can ignite combustible materials. Prevent fires. Refer to NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hotwork. Do not strike an arc on the container. The defect produced by an arc burn may lead to container rupture.

Fumes and gases produced during welding and cutting processes can be dangerous to your health and may cause serious lung disease. **KEEP YOUR HEAD OUT OF FUMES. DO NOT BREATHE FUMES AND GASES.** Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes; or may cause other similar discomfort. Contaminants in the air may add to the hazard of fumes and gases.

When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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PRAXAIR and the Flowing Airstream design are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.

**Full text of H-phrases:**

Dissolved gas	Gases under pressure Dissolved gas
Flam. Gas 1	Flammable gases Category 1
H220	EXTREMELY FLAMMABLE GAS
H280	CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

**NFPA health hazard**

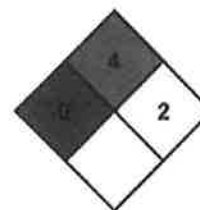
: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

**NFPA fire hazard**

: 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

**NFPA reactivity**

: 2 - Normally unstable and readily undergo violent decomposition but do not detonate. Also: may react violently with water or may form potentially explosive mixtures with water.





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### HMS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur  
Flammability : 4 Severe Hazard  
Physical : 2 Moderate Hazard

SDS US (GHS HazCom 2012) - Praxair

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

# Safety Data Sheet: ALL-BRIGHT

Supersedes Date 02/06/2014

Issuing Date 09/12/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** ALL-BRIGHT  
**Recommended use** Cleaning agent  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 0505  
**Chemical nature** Alkaline Aqueous solution  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone Inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Red

**Physical State** Liquid

**Odor** Odorless

### GHS

#### Classification

##### Physical Hazards

Substances/mixtures corrosive to metal

Category 1

##### Health Hazard

Skin Corrosion/Irritation

Category 1

Serious Eye Damage/Eye Irritation

Category 1

##### Other hazards

None

### Labeling

#### Signal Word

DANGER



#### Hazard Statements

H314 - Causes severe skin burns and eye damage

H290 - May be corrosive to metals

#### Precautionary Statements

P280 - Wear protective gloves, protective clothing, eye protection and face protection.

P264 - Wash face, hands and any exposed skin thoroughly after handling.

P260 - Do not breathe mist

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water or shower

P333 + P313 - If skin irritation or rash occurs, get medical attention

P363 - Wash contaminated clothing 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.

P310 - Immediately call a physician

P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

P342 + P311 - If experiencing respiratory symptoms, call a physician

P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Call a physician if unwell.

P406 - Store in a corrosion-resistant container.

P390 - Absorb spillage to prevent damage

P501 - Dispose of contents and container in accordance with applicable regulations.

8 % of the mixture consists of ingredient(s) of unknown toxicity

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Sodium hydroxide	1310-73-2	7-13
Tetrasodium ethylenediaminetetraacetate	64-02-8	5-10

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**4. FIRST AID MEASURES**

<b>General advice</b>	Do not get in eyes, on skin or on clothing. Do not breathe mist.
<b>Eye Contact</b>	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention immediately.
<b>Skin Contact</b>	Remove immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately.
<b>Inhalation</b>	Move to fresh air. In case of shortness of breath, give oxygen. If breathing has stopped, apply artificial respiration. Get medical attention immediately.
<b>Ingestion</b>	Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person.
<b>Notes to physician</b>	The product causes burns of eyes, skin and mucous membranes. Control of circulatory system, shock therapy if needed.

**5. FIRE-FIGHTING MEASURES**

<b>Flash Point</b>	> 201 °F / > 94 °C	<b>Method</b>	Seta closed cup
<b>Flammability Limits in Air % Hydrogen, by reaction with metals.</b>		<b>Upper</b>	75
<b>Suitable Extinguishing Media</b>		<b>Lower</b>	4
Water spray. Carbon dioxide (CO2). Foam. Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.			
<b>Specific hazards arising from the chemical</b>			
Contact with metals may evolve flammable hydrogen gas. Material can create slippery conditions.			
<b>Protective Equipment and Precautions for Firefighters</b>			
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.			
<b>NFPA</b>	<b>Health</b> 3	<b>Flammability</b>	1
<b>HMS</b>	<b>Health</b> 3	<b>Flammability</b>	1
		<b>Instability</b>	0
		<b>Instability</b>	0

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Wear protective gloves/clothing. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.
<b>Environmental Precautions</b>	Do not flush into surface water or sanitary sewer system.
<b>Methods for Containment</b>	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
<b>Methods for Cleaning Up</b>	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust)
<b>Neutralizing Agent</b>	Acetic acid, diluted.

**7. HANDLING AND STORAGE**

<b>Handling</b>	Do not get in eyes, on skin or on clothing. Do not breathe mist.			
<b>Storage</b>	Keep container tightly closed in a dry and well-ventilated place. Metal containers must be lined. Freezing will affect the physical condition but will not damage the material. Thaw and mix before using.			
<b>Storage Temperature</b>	<b>Minimum</b>	35 °F / 2 °C	<b>Maximum</b>	110 °F / 43 °C
<b>Storage Conditions</b>	<b>Indoor</b>	X	<b>Outdoor</b>	<b>Heated</b> <b>Refrigerated</b>

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Sodium hydroxide	Ceiling: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> Ceiling: 2 mg/m <sup>3</sup>

<b>Engineering Measures</b>	Ensure adequate ventilation, especially in confined areas. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.
<b>Personal Protective Equipment</b>	
<b>Eye/Face Protection</b>	Tightly fitting safety goggles. Face-shield.
<b>Skin Protection</b>	Wear suitable protective clothing, Impervious gloves.
<b>Respiratory Protection</b>	In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
<b>General Hygiene Considerations</b>	Wear protective gloves/clothing. Ensure that eyewash stations and safety showers are close to the workstation location. Remove and wash contaminated clothing before re-use.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Liquid	<b>Viscosity</b>	Non viscous
<b>Color</b>	Red	<b>Odor</b>	Odorless
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Transparent
<b>pH</b>	13.3	<b>Specific Gravity</b>	1.175
<b>Evaporation Rate</b>	0.48 (Butyl acetate=1)	<b>Percent Volatile (Volume)</b>	81.6
<b>VOC Content (%)</b>	0	<b>Vapor Pressure</b>	13.84 mmHg @ 70°F
<b>Vapor Density</b>	0.6	<b>Solubility</b>	Completely soluble
<b>n-Octanol/Water Partition</b>	No data available	<b>Melting Point/Range</b>	No data available
<b>Decomposition Temperature</b>	No data available	<b>Boiling Point/Range</b>	> 212 °F / 100 °C
<b>Flammability (solid, gas)</b>	No data available	<b>Method</b>	Seta closed cup
<b>Flash Point</b>	> 201 °F / > 94 °C		
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	Hydrogen, by reaction with metals. <b>Upper 75 Lower 4</b>		

### 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	None known
<b>Incompatible Products</b>	Oxidizing agents, Acids, Aldehydes, Halogenated hydrocarbon, Acid anhydrides, Organic materials.
<b>Hazardous Decomposition Products</b>	Carbon oxides, Nitrogen oxides (NOx), Sulfur oxides, Sodium oxides, Ammonia, Hydrogen, by reaction with metals.
<b>Possibility of Hazardous Reactions</b>	None under normal processing

### 11. TOXICOLOGICAL INFORMATION

#### Product Information

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	77,849.04
<b>Dermal LD50</b>	11,370.98
<b>Inhalation LC50</b>	
<b>Gas</b>	No information available
<b>Mist</b>	928.60
<b>Vapor</b>	928.60

<b>Principle Route of Exposure</b>	Skin contact, Eye contact, Inhalation.
<b>Primary Routes of Entry</b>	None known

#### Acute Effects

<b>Eyes</b>	Corrosive to the eyes and may cause severe damage including blindness.
<b>Skin</b>	Causes skin burns.
<b>Inhalation</b>	Harmful by inhalation. Causes burns.
<b>Ingestion</b>	If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach. May be fatal if swallowed.

#### Chronic Toxicity

<b>Target Organ Effects</b>	Inhaled corrosive substances can lead to a toxic edema of the lungs.
<b>Aggravated Medical Conditions</b>	Eyes, Skin, Respiratory system.
<b>Component Information</b>	Skin disorders, Respiratory disorders.

#### Acute Toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Sodium hydroxide	no data available	= 1350 mg/kg ( Rabbit )	no data available	no data available	no data available
Tetrasodium ethylenediaminetetraacetate	= 1658 mg/kg ( Rat )	no data available	no data available	no data available	no data available

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Sodium hydroxide	no data available	no data available	no data available	no data available	eyes, respiratory system, skin

<b>Carcinogenicity</b>	There are no known carcinogenic chemicals in this product.
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### 12. ECOLOGICAL INFORMATION

**Product Information** No information available.

#### Component Information

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow

Sodium hydroxide	no data available	LC50 = 45.4 mg/L Oncorhynchus mykiss 96 h	no data available	no data available	N/A
Tetrasodium ethylenediaminetetraacetate	EC50 = 1.01 mg/L Desmodemus subspicatus 72 h	LC50 = 41 mg/L Lepomis macrochirus 96 h LC50 = 59.8 mg/L Pimephales promelas 96 h	no data available	EC50 610 mg/L Daphnia magna 24 h	N/A

**Persistence and Degradability** No information available.  
**Bioaccumulation** No information available.  
**Mobility** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal** Dispose of in accordance with local regulations.  
**Container Disposal** Empty containers should be taken for local recycling, recovery, or waste disposal.

**14. TRANSPORT INFORMATION**

**DOT**  
**Proper Shipping Name** Caustic alkali liquids, n.o.s.  
**Hazard Class** 8  
**UN-No** UN1719  
**Packing Group** III  
**Description** Caustic alkali liquids, n.o.s.(Sodium hydroxide),8,UN1719,PG III

**TDG**  
**Proper shipping name** Caustic alkali liquid, n.o.s  
**Hazard Class** 8  
**UN-No** UN1719  
**Packing Group** III

**ICAO**  
**UN-No** UN1719  
**Proper Shipping Name** Caustic alkali liquid, n.o.s.\*  
**Hazard Class** 8  
**Packing Group** III  
**Shipping Description** Caustic alkali liquid, n.o.s., (Sodium hydroxide),8,UN1719,PG III

**IATA**  
**UN-No** UN1719  
**Proper Shipping Name** Caustic alkali liquid, n.o.s.\*  
**Hazard Class** 8  
**Packing Group** III  
**ERG Code** 8L  
**Shipping Description** UN1719,Caustic alkali liquid, n.o.s.,(Sodium hydroxide),8,PG III

**IMDG/IMO**  
**Proper Shipping Name** Caustic alkali liquid, n.o.s.  
**Hazard Class** 8  
**UN-No** UN1719  
**Packing Group** III  
**EmS No.** F-A, S-B  
**Shipping Description** UN1719, Caustic alkali liquid, n.o.s.(Sodium hydroxide),8,PG III

**15. REGULATORY INFORMATION**

**Inventories**  
**TSCA** Complies  
**DSL** Complies

**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 and Title 40 of the Code of Federal Regulations, Part 372.

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	No	No	No	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium hydroxide	1000 lb	Not applicable

**16. OTHER INFORMATION**

**Prepared By** Angela Hutson  
**Supersedes Date** 02/06/2014  
**Issuing Date** 09/12/2014  
**Reason for Revision** No information available.  
**Glossary** No information available.  
**List of References.** No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.





# Carbon Dioxide, Solid or Dry Ice

## Safety Data Sheet P-4575

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1997    Revision date: 01/12/2015    Supersedes: 05/01/2009

### SECTION 1: Product and company identification

#### 1.1. Product Identifier

Product form : Substance  
Name : Carbon Dioxide, Solid or Dry Ice  
CAS No : 124-38-9  
Formula : CO<sub>2</sub>  
Other means of identification : Dry ice (nuggets, pellets, or blocks), carbonice, carbonic anhydride

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

Use of the substance/mixture : Industrial use. Use as directed.

#### 1.3. Details of the supplier of the safety data sheet

Praxair, Inc.  
39 Old Ridgebury Road  
Danbury, CT 06810-5113 - USA  
T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146  
[www.praxair.com](http://www.praxair.com)

#### 1.4. Emergency telephone number

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week — Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887 (collect calls accepted, Contract 17729)

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

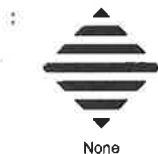
##### Classification (GHS-US)

Not classified

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US)



Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: CGA-HG01 - MAY CAUSE FROSTBITE.  
MAY CAUSE CRYOGENIC BURNS OR INJURY  
CGA-HG03 - MAY INCREASE RESPIRATION AND HEART RATE.  
VAPOR MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION

#### 2.3. Other hazards

Other hazards not contributing to the classification

: Refrigerated solidified gas. CONTACT WITH PRODUCT MAY CAUSE COLD BURNS OR FROSTBITE.

Dry ice sublimates to carbon dioxide vapor at -109°F (-78°C). VAPOR MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.

#### 2.4. Unknown acute toxicity (GHS-US)

No data available

### SECTION 3: Composition/information on ingredients

#### 3.1. Substance



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Name	Product Identifier	%
Carbon Dioxide, Solid or Dry Ice (Main constituent)	(CAS No) 124-38-9	100

### 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
- First-aid measures after skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Get immediate medical attention.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 4.3. Indication of any immediate medical attention and special treatment needed

None.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

No additional information available

### 5.2. Special hazards arising from the substance or mixture

Reactivity : None.

### 5.3. Advice for firefighters

- Firefighting instructions : Evacuate all personnel from danger area. Do not discharge sprays onto solid carbon dioxide. Solid carbon dioxide will freeze water rapidly. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP. Move packages away from fire area if safe to do so. Self-contained breathing apparatus may be required by rescue workers. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Use protective clothing. Wear cold-insulating gloves/face shield/eye protection. Chemical asphyxiant. Exposure to low concentrations for extended periods may result in dizziness or unconsciousness, and may lead to death. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. NEVER HANDLE SOLID CARBON DIOXIDE WITH YOUR BARE HANDS. USE GLOVES OR DRY ICE TONGS OR A DRY SHOVEL OR SCOOP.

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Prevent waste from contaminating the surrounding environment. Prevent soil and water pollution. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

### 6.3. Methods and material for containment and cleaning up

No additional information available

# Carbon Dioxide, Solid or Dry Ice

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### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling

: Avoid materials incompatible with cryogenic use; some metals such as carbon steel may fracture easily at low temperature. Vapor can cause rapid suffocation due to oxygen deficiency. Never allow any unprotected part of your body to touch solid carbon dioxide or to touch uninsulated pipes or vessels containing solid or liquid carbon dioxide or cold carbon dioxide gas. Not only can you suffer frostbite, your skin may stick fast to the cold surfaces. Use tongs or insulated gloves when handling solid carbon dioxide or objects in contact cold carbon dioxide in any form. Wear protective clothing and equipment as prescribed in section 8. For other precautions in using carbon dioxide, see section 16.

### 7.2. Conditions for safe storage, including any Incompatibilities

Storage conditions

: Store and use with adequate ventilation. Do not store in tight containers or confined spaces. Storage areas should be clean and dry. Solid carbon dioxide is generally delivered to customers in 50-lb (22.7-kg), ½-cubic ft (0.0142 cubic meter) blocks (approximate dimensions), wrapped in kraft paper. Small pellets or nuggets are also produced. The product should be stored in insulated containers that open from the top. Lids should fit loosely so the carbon dioxide vapor given off as the solid sublimates can escape into the atmosphere. Carbon dioxide gas is about 1½ times as heavy as air and will accumulate in low-lying areas, so ventilation must be adequate at floor or below grade level.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Carbon Dioxide, Solid or Dry Ice (124-38-9)		
ACGIH	ACGIH TLV-TWA (ppm)	5000 ppm
ACGIH	ACGIH TLV-STEL (ppm)	30000 ppm
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	9000 mg/m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (ppm)	5000 ppm

### 8.2. Exposure controls

Appropriate engineering controls

: Oxygen detectors should be used when asphyxiating gases may be released. Ensure exposure is below occupational exposure limits (where available). Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities.

Hand protection

: Cold-insulating gloves.

Eye protection

: Wear safety glasses with side shields.

Respiratory protection

: When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Thermal hazard protection

: Wear cold insulating gloves.

Environmental exposure controls

: None necessary.

Other information

: Wear safety shoes while handling containers.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state

: Solid

Appearance

: Opaque. White crystalline solid.

Molecular mass

: 44 g/mol

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Color	: White.
Odor	: No data available
Odor threshold	: No data available
pH	: 3.7 (carbonic acid)
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -78.5 °C
Freezing point	: No data available
Boiling point	: -78.5 °C
Flash point	: Not applicable.
Critical temperature	: 30 °C
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: 5730 kPa
Critical pressure	: 7375 kPa
Relative vapor density at 20 °C	: No data available
Relative density	: 0.82
Specific gravity / density	: 1562 kg/m <sup>3</sup>
Relative gas density	: 1.52
Solubility	: Water: 2000 mg/l Completely soluble.
Log Pow	: 0.83
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: None.
Explosive limits	: Not applicable.

### 9.2. Other information

Sublimation point	: -78.5 °C    Expansion ratio for solid to gas at sublimation point is 1 to 554.
Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

None.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Alkali metals, Alkaline earth metals, Acetylide forming metals, Chromium, Titanium > 1022°F (550°C), Uranium (U) > 1382°F (750°C), Magnesium > 1427°F (775°C).

### 10.6. Hazardous decomposition products

Electrical discharges and high temperatures decompose carbon dioxide into carbon monoxide and oxygen.

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### 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 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 No known effects from this product.
Aspiration hazard	: Not classified Not applicable.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

#### 12.2. Persistence and degradability

Carbon Dioxide, Solid or Dry Ice (124-38-9)	
Persistence and degradability	No ecological damage caused by this product.

#### 12.3. Bioaccumulative potential

Carbon Dioxide, Solid or Dry Ice (124-38-9)	
BCF fish 1	(no bioaccumulation)
Log Pow	0.83
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

#### 12.4. Mobility in soil

Carbon Dioxide, Solid or Dry Ice (124-38-9)	
Mobility in soil	No data available.
Ecology - soil	No ecological damage caused by this product.

#### 12.5. Other adverse effects

Other adverse effects	: Can cause frost damage to vegetation.
Effect on ozone layer	: None.
Global warming potential [CO <sub>2</sub> =1]	: 1
Effect on the global warming	: When discharged in large quantities may contribute to the greenhouse effect.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods	: See Section 6.
Waste disposal recommendations	: Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

# Carbon Dioxide, Solid or Dry Ice

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### SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1845 Carbon dioxide, solid, 9  
 UN-No.(DOT) : UN1845  
 Proper Shipping Name (DOT) : Carbon dioxide, solid  
 Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140  
 Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : A - Material is regulated as a hazardous material only when be transported by air,W - Material is regulated as a hazardous material only when be transported by water

#### Additional information

Emergency Response Guide (ERG) Number : 120 (UN1013)  
 Other information : No supplementary information available.  
 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.

#### Transport by sea

UN-No. (IMDG) : 1845  
 Proper Shipping Name (IMDG) : CARBON DIOXIDE, SOLID (DRY ICE)  
 Class (IMDG) : 9 - Miscellaneous dangerous compounds

#### Air transport

UN-No.(IATA) : 1845  
 Proper Shipping Name (IATA) : Carbon dioxide, solid  
 Class (IATA) : 9 - Miscellaneous Dangerous Goods

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

##### Carbon Dioxide, Solid or Dry Ice (124-38-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

#### 15.2. International regulations

##### CANADA

##### Carbon Dioxide, Solid or Dry Ice (124-38-9)

Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class A - Compressed Gas

#### EU-Regulations

##### Carbon Dioxide, Solid or Dry Ice (124-38-9)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
--

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

# Carbon Dioxide, Solid or Dry Ice

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### 15.2.2. National regulations

Carbon Dioxide, Solid or Dry Ice (124-38-9)	
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 Japanese ENCS (Existing & New Chemical Substances) inventory	
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)	

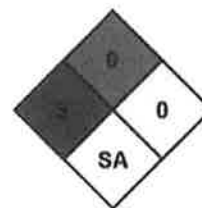
### 15.3. US State regulations

Carbon Dioxide, Solid or Dry Ice(124-38-9)	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	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

## SECTION 16: Other information

Revision date : 1/12/2015 12:00:00 AM

- NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.
- NFPA fire hazard : 0 - Materials that will not burn.
- NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
- NFPA specific hazard : SA - This denotes gases which are simple asphyxiants.



### HMIS III Rating

- Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
- Flammability : 0 Minimal Hazard
- Physical : 0 Minimal Hazard

SDS US (GHS HazCom 2012) - Praxair

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*





### 1. Product and Company Information

<b>Product Identifier:</b>	Clear Melt
<b>General Use:</b>	Windshield Washer Solution
<b>Product Description:</b>	Purple liquid with alcohol odor

**Manufactured By:**

Craft Laboratories, Inc.  
1901 Lakeview Drive  
Fort Wayne, IN 46808  
260-432-9467 / 800-535-5053  
[www.craftlabs.com](http://www.craftlabs.com) / [info@craftlabs.com](mailto:info@craftlabs.com)

**Emergency Contact:**

INFOTRAC  
200 North Palmetto Street  
Leesburg, FL 34748  
800-535-5053 / Service 24/7

### 2. Hazards Identification

**GHS Hazard Classification:**

Combustible Liquid; Category 4  
Acute toxicity; Oral Category 5  
Acute toxicity; Inhalation Category 5  
Acute toxicity; Dermal Category 5  
Specific Target Organ Toxicity (STOT), single exposure; Category 1

**Human Health Hazards:**

H315 Causes skin irritation  
H320 Causes eye irritation  
H333 May be harmful if inhaled  
H303 May be harmful if swallowed

**Signal Word(s):** Warning

**Hazard Statement(s) - Physical:**

H226 Flammable liquid and vapor

**Hazard Statement(s) - Physical:**

H305 May be harmful if swallowed and enters airways  
H370 Causes damage to organs (- liver, kidneys, central nervous system and optic nerve)

**Hazard Pictograms:**



**Precautionary Statement(s):**

P210 Store away from heat and ignition sources  
P260 Do not breathe dust/fume/gas/mist/vapors/spray  
P262 Do not get in eyes, on skin, or on clothing  
P264 Wash thoroughly after handling  
P362 Take off contaminated clothing and wash before use  
P281 Use personal protective equipment as required  
P420 Store away from other materials (oxidizers, strong acids)  
P331 DO NOT induce vomiting  
P102 Keep out of reach of children  
P103 Read label before use

### 3. Composition / Information on Ingredients

Ingredient:	CAS#:	Concentration:
Methanol	67-56-1	< 20%

### 4. First Aid Measures

**Eyes:**

Immediately flush eyes with warm water for at least 15 minutes. If applicable, remove contact lenses. Seek medical attention if irritation persists.

**Skin:**

Immediately remove contaminated clothing and/or shoes. Flush affected areas with water until irritation subsides. Seek medical attention if irritation persists. Wash contaminated clothing before reuse.

**Inhalation:**

Immediately remove exposed individual to fresh air. Seek immediate medical attention if irritation persists.

**Ingestion:**

DO NOT INDUCE VOMITING unless directed to do so by a medical professional. Rinse mouth thoroughly with water. Drink large quantities of water or milk. Contact poison control or seek immediate medical attention in cases where large quantities have been ingested. Loosen tight clothing including collar, belt, waistband or tie.

### 5. Fire Fighting Measures

**Suitable Extinguishing Media:**

Use media suitable for surrounding fire. This may include water spray or fog, dry chemical powder, foam or carbon dioxide. DO NOT use water jet.

**Specific Protective Equipment:**

Full protective clothing and NIOSH-approved self-contained breathing apparatus with full face shield operated in the pressure demand or other positive pressure mode.

**Hazardous Combustion Products:**

Products of combustion are carbon oxides (CO, CO2).

**Unusual Hazards:**

Vapors may travel back to ignition source. Closed containers exposed to heat may explode.

### 6. Accidental Release Measures

**Spill or Leak Procedures:**

Exposure to the spilled material may be severely irritating or toxic. Wear personal protective equipment (PPE) as identified in Section 8 at all times. PPE must be evaluated based on circumstances surrounding spill including: material spilled; quantity of spill; area in which spill occurred; and expertise of responding employees. Never exceed any occupational exposure limits. Prevent material from entering waterways, sewers or confined spaces. Stop or reduce leak if it can be done safely. Contain spill with earth, sand or absorbent material that does not react with spilled material. Transfer to covered plastic containers for recovery or disposal. Flush area with water. Dispose of waste and clean up materials in accordance with regulations. Shut off ignition sources and equipment.



# Safety Data Sheet: CLEAR MELT

Effective: 04/20/2015

Version: 1.0

## 7. Handling and Storage

### Handling Precautions:

Wear personal protective equipment at all times. Keep away from heat, sparks, open flames and hot surfaces. DO NOT smoke, eat or drink while using this product. Ground or bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting, etc. equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Use outdoors or with adequate ventilation and do not breathe vapor, dust, fumes, gas, spray or mist. Do not swallow. Avoid contact with eyes and prolonged contact with skin. Wash hands after using and before smoking or eating.

### Storage Conditions:

Keep container tightly closed when not in use. Ground or bond container and receiving equipment. Take precautionary measures against static discharge. Store in a secure, dry, cool, well-ventilated area out of direct sunlight and suitable for flammable materials. Store away from oxidizing materials and strong acids. Store unused portion in original container. The shelf life of this product is one (1) year. Do not reuse container.

## 8. Exposure Controls and Personal Protection

### Occupational Exposure Limits:

Methanol	ACGIH	(TWA)	200 ppm
		(STEL)	250 ppm
	OSHA	(TWA)	200 ppm; 260 mg/m <sup>3</sup>
		(STEL)	N/A

### Engineering Controls:

Exhaust ventilation or other engineering controls to keep airborne concentration vapors below their respective occupational exposure limits. Wear appropriate respirator when ventilation is inadequate. Local exhaust ventilation is generally preferred because it can control emissions of contaminant at the source, preventing dispersion into general work area. Refer to ACGIH document: Industrial Ventilation, A Manual of Recommended Practices for details.

### Personal Protective Equipment

#### Eyes:

Approved safety glasses or splash goggles and face shield

#### Skin:

Wear appropriate protective clothing to prevent skin contact including impermeable chemical handling gloves (such as nitrile or rubber); synthetic coat and apron; and chemical resistant boots.

#### Inhalation:

Wear appropriate respirator when ventilation is inadequate. If exposure limit is exceeded and engineering controls are not feasible, a half face piece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full face piece particulate respirator (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest.

## 8. Exposure Controls and Personal Protection (Continued)

### Personal Protective Equipment (Continued)

#### Inhalation (Continued):

If oil particles (e.g. lubricants, cutting fluids, Glycerin, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in Oxygen-deficient atmospheres.

#### Other:

Eye wash facilities in case of exposure to eyes and shower facility in case of exposure to skin.

### OSHA Hazardous Components (29 CFR 1910.1200)

Methanol	ACGIH	(TWA)	200 ppm
		(STEL)	250 ppm
	OSHA	(TWA)	200 ppm; 260 mg/m <sup>3</sup>
		(STEL)	N/A

## 9. Physical and Chemical Properties

<b>Appearance:</b>	Blue liquid
<b>Odor:</b>	Alcohol odor
<b>Odor Threshold:</b>	Not established
<b>pH (concentrate):</b>	8.7
<b>Melting Point:</b>	Not established
<b>Freezing Point:</b>	0° F (-17.78°C)
<b>Boiling Point/Range:</b>	188° F (86.66°C)
<b>Flash Point:</b>	108° F (42.22°C)
<b>Method:</b>	Not applicable
<b>Evaporation Rate:</b>	< 1
<b>Flammability Limits:</b>	Not established
<b>Conditions of Flammability:</b>	Not established
<b>Explosive Properties:</b>	Not established
<b>Vapor Pressure:</b>	17.0 @ 68° F (20°C)
<b>Vapor Density:</b>	0.6
<b>Relative Density:</b>	1.02
<b>Solubility:</b>	Completely soluble in water
<b>Auto-Ignition Temperature:</b>	Not established
<b>Coefficient of Water/Oil Distribution:</b>	Not available

## 10. Stability and Reactivity

<b>Stability:</b>	This product is stable at under normal conditions and at ambient temperatures
<b>Conditions of Reactivity:</b>	Not established
<b>Incompatible Materials:</b>	Strong acids
<b>Conditions to Avoid:</b>	Heat, sparks, open flames, hot surfaces, static discharge
<b>Hazardous Decomposition:</b>	Burning may produce carbon monoxide and/or carbon dioxide
<b>Hazardous Polymerization:</b>	Will not occur

**11. Toxicological Information**

**Likely Routes of Exposure and Related Effects**

**Eyes:**

Prolonged or repeated contact may cause severe irritation.

**Skin:**

Frequent or prolonged contact causes irritation including inflammation and redness.

**Inhalation:**

Mist from spray may cause coughing, sneezing, severe irritation of nose and throat.

**Ingestion:**

May cause gastrointestinal irritation including vomiting and diarrhea in cases where large quantities are ingested. Amounts as small as 30-250 mL of pure methanol may be fatal.

**Acute Toxicity Components**

Component:	Code:	Type:	Species:	Result:
Methanol	LD50	Oral	Rat	7300 mg/kg
	LD50	Dermal		15800 mg/kg
	LC50	Inhalation		87.5 mg/L; 6 hours

**Immediate, Delayed and Chronic Effects**

**Immediate Effects:**

Irritation of eyes, skin and respiratory tract.

**Delayed Effects:**

Risk of damage to eyes, skin and respiratory tract.

**Chronic Effects:**

Acute exposure to methanol by inhalation or ingestion may result in visual disturbances, such as blurred or dimness of vision, leading to blindness. Neurological damage, specifically permanent motor dysfunction, may also result.

**Target Organ Effects:**

**Specific Target Organ Toxicity (single exposure):**

Component:	Code:	Type:	Result:
Methanol	STOT	Oral	> 5,000 mg/kg
	STOT	Dermal	> 20,000 mg/kg
	STOT	Inhalation	> 20,000 mg/kg

**Specific Target Organ Toxicity (repeated exposure):**

Component:	Code:	Type:	Result:
Methanol	RfD	Oral	0.5 mg/kg Daily Exposure
	RfD	Oral	Liver damage when RfD oral ingestion is exceeded daily.

**Aspiration hazard**

Methanol	Human exposure studies Tolerance 200 ppm/ 40 hours
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**Carcinogenicity**

The components of this product have no known carcinogenic effects

**IARC:** Not listed

**Toxicology Program:** Not listed

**11. Toxicological Information (Continued)**

**OSHA:**

Methanol	ACGIH	(TWA)	200 ppm
		(STEL)	250 ppm
	OSHA	(TWA)	200 ppm; 260 mg/m <sup>3</sup>
		(STEL)	N/A

**ACGIH®\_USA (2005):**

Methanol	ACGIH	(TWA)	200 ppm
		(STEL)	250 ppm
	OSHA	(TWA)	200 ppm; 260 mg/m <sup>3</sup>
		(STEL)	N/A

**NIOSH:**

Methanol	ACGIH	(TWA)	200 ppm
		(STEL)	250 ppm
	OSHA	(TWA)	200 ppm; 260 mg/m <sup>3</sup>
		(STEL)	N/A

**California Prop 65:**

This product is not subject to the reporting requirements under California's Proposition 65

**Reproductive Toxicity:** Not available

**Teratogenicity:** Not available

**Mutagenicity:** Not available

**Synergistic Products:** Not available

**12. Ecological Information**

**Ecotoxicity:**

Components of this product have been identified as slightly toxic to aquatic life.

**Ecotoxicity - Freshwater Fish - Acute Toxicity Data**

Component:	Code:	Species:	Result:
Methanol	LC50	Oncorhynchus mykiss	19,000 mg/l; 96 hours
		Lepomis macrochirus	15,400 mg/l; 96 hours

**Ecotoxicity - Freshwater Crustacea - Acute Toxicity Data**

Component:	Code:	Species:	Result:
Methanol	EC50	Daphnia magna	24,500 mg/l; 48 hours
	EC100		10,000 mg/l; 24 hours

**Ecotoxicity - Freshwater Algae - Acute Toxicity Data**

Component:	Code:	Species:	Result:
Methanol	EC50	Scenedesmus capricornutum	22,000 mg/l; 96 hours

**Persistence and Degradability**

**Air:** This material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals.

**Soil:** This material is expected to readily biodegrade.

**Water:** This material is expected to readily biodegrade.

**12. Ecological Information (Continued)**

When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into groundwater.

**Photodegradation: (Methanol)**

No data available

**Volatility (Henry's Law constant): (Methanol)**

Partition coefficient n-octanol/water (log Kow) = -0.77

**Bioaccumulative potential**

**Bioaccumulation: (Methanol)**

Bioaccumulation Cyprinus Carpio (Carp) - 72 d at 20oC

Bioconcentration factor (BCF): 1.0

**Mobility in soil: (Methanol)**

**Distribution among environmental compartments:**

When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material is expected to leach into groundwater.

**Other adverse effects:**

When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

**13. Disposal Considerations**

Waste residues should be disposed of in approved waste facility according to Federal, State, and local regulations.

**14. Transportation Information**

**DOT (Department of Transportation) Information**

**UN Number:** Not regulated

**Proper Shipping Name:** Not regulated

**Hazard Class(es):** Not a DOT controlled material

**Identification Number:** Not applicable

**15. Regulatory Information**

**CERLA (Comprehensive Environment Response Compensation and Liability Act):**

Methanol 5000 Lbs.

**OSHA Hazard Communication Standard, 29 CFR 1910.1200:**

**Hazard Statement(s) - Physical:**

- H226 Flammable liquid and vapor
- H305 May be harmful if swallowed and enters airways
- H370 Causes damage to organs (- liver, kidneys, central nervous system and optic nerve)

**SARA Title III (Superfund Amendments and Reauthorization Act):**

- SARA 302 No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302
- SARA 313 Methanol is subject to the reporting levels established by SARA Title III, Section 313; Revision

**15. Regulatory Information (Continued)**

Date 1993-04-24

SARA 311/312 Acute Health Hazard


**TSCA (Toxic Substances Control Act):** All ingredients are listed/exempt

**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.

**16. Other Information**

**HMIS Hazard Rating:**

HEALTH	3	0 - Least	
FLAMMABILITY	1	1 - Slight	
REACTIVITY	0	2 - Moderate	
PERSONAL PROTECTION	X	3 - High	
		4 - Extreme	

**Revision Number/Effective Date:** Revision 1; 04/20/2015

**Reason for Issue:** GHS Standard Compliance

**Prepared By:** Nicole Wallens

**Approved By:** Bill Munsie, General Manager  
Craft Laboratories, Incorporated

**Disclaimer:**

The information contained herein 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 for use, handling, storage and disposal of this product are beyond the manufacturer's control, it is the user's responsibility both to determine safe conditions for use of this product and to assume liability for loss, injury, damage or expense arising from the product's improper use. No warranty, expressed or implied, regarding the product described herein shall be created by or inferred from any statement or omission in this SDS. Various government agencies may have specific regulations concerning the transportation, handling, storage, use or disposal of this product which may not be reflected in this SDS. The user should review these regulations to ensure full compliance.

# Safety Data Sheet: COOL-PLUS, MM

Supersedes Date 04/04/2013

Issuing Date 07/18/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** COOL-PLUS, MM  
**Recommended use** Corrosion inhibitor  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 0454  
**Chemical nature** Aqueous mixture  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Purple

**Physical State** Liquid

**Odor** Pungent

### GHS

#### Classification

##### Physical Hazards

Substances/mixtures corrosive to metal

Category 1

##### Health Hazard

Skin Corrosion/Irritation  
Serious Eye Damage/Eye Irritation  
Skin Sensitization  
Reproductive Toxicity

Category 1  
Category 1  
Category 1  
Category 1B

##### Other hazards

None

### Labeling

#### Signal Word

DANGER



#### Hazard Statements

H314 - Causes severe skin burns and eye damage  
H317 - May cause an allergic skin reaction  
H360 - May damage fertility or the unborn child  
H290 - May be corrosive to metals

#### Precautionary Statements

P202 - Do not handle until all safety precautions have been read and understood  
P280 - Wear protective gloves, protective clothing, eye protection and face protection.  
P264 - Wash face, hands and any exposed skin thoroughly after handling.  
P272 - Contaminated work clothing should not be allowed out of the workplace  
P260 - Do not breathe mist.  
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower  
P333 - If skin irritation or rash occurs get medical attention.  
P363 - Wash contaminated clothing 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.  
P310 - Immediately call a physician  
P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
P342 + P311 - If experiencing respiratory symptoms, call a physician  
P301+ P330 + F331 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Call a physician if unwell.  
P406 - Store in a corrosion-resistant container.  
P390 - Absorb spillage to prevent damage  
P501 - Dispose of contents and container in accordance with applicable regulations.

5 % of the mixture consists of ingredient(s) of unknown toxicity

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
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Sodium metaborate tetrahydrate	10555-76-7	3-7
Sodium mercaptobenzothiazole	2492-26-4	1-5
Sodium hydroxide	1310-73-2	0.1-1

**4. FIRST AID MEASURES**

<b>General advice</b>	Do not get in eyes, on skin or on clothing. Do not breathe mist.
<b>Eye Contact</b>	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention immediately.
<b>Skin Contact</b>	Remove immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately.
<b>Inhalation</b>	Move to fresh air. In case of shortness of breath, give oxygen. If breathing has stopped, apply artificial respiration. Get medical attention immediately.
<b>Ingestion</b>	Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person.
<b>Notes to physician</b>	The product causes burns of eyes, skin and mucous membranes. Control of circulatory system, shock therapy if needed. May cause sensitization of susceptible persons.

**5. FIRE-FIGHTING MEASURES**

<b>Flash Point</b>	Does not flash	<b>Method</b>	Seta closed cup
<b>Flammability Limits in Air % Hydrogen, by reaction with metals.</b>		<b>Upper</b>	75
		<b>Lower</b>	4
<b>Suitable Extinguishing Media</b>			
Carbon dioxide (CO2). Dry chemical. Water spray. Foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.			
<b>Specific hazards arising from the chemical</b>			
Contact with metals may evolve flammable hydrogen gas. Material can create slippery conditions.			
<b>Protective Equipment and Precautions for Firefighters</b>			
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.			
<b>NFPA</b>	Health 3	<b>Flammability</b>	1
<b>HMIS</b>	Health 3	<b>Flammability</b>	1
		<b>Instability</b>	0
		<b>Instability</b>	0

**6. ACCIDENTAL RELEASE MEASURES**

<b>Personal Precautions</b>	Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.
<b>Environmental Precautions</b>	Do not flush into surface water or sanitary sewer system.
<b>Methods for Containment</b>	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
<b>Methods for Cleaning Up</b>	Pick up and transfer to properly labeled containers.
<b>Neutralizing Agent</b>	Acetic acid, diluted.

**7. HANDLING AND STORAGE**

<b>Handling</b>	Do not get in eyes, on skin or on clothing. Do not breathe mist.
<b>Storage</b>	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Metal containers must be lined. Freezing will affect the physical condition but will not damage the material. Thaw and mix before using.
<b>Storage Temperature</b>	<b>Minimum</b> 50 °F / 10 °C
<b>Storage Conditions</b>	<b>Maximum</b> 120 °F / 49 °C
	<b>Indoor</b> X <b>Outdoor</b>
	<b>Heated</b> <b>Refrigerated</b>

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Sodium metaborate tetrahydrate	TWA: 2 mg/m <sup>3</sup>	No data available	No data available
Sodium hydroxide	Ceiling: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> Ceiling: 2 mg/m <sup>3</sup>

<b>Engineering Measures</b>	Ensure adequate ventilation, especially in confined areas. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.
<b>Personal Protective Equipment</b>	
<b>Eye/Face Protection</b>	Tightly fitting safety goggles. Face-shield.
<b>Skin Protection</b>	Wear suitable protective clothing, impervious gloves.
<b>Respiratory Protection</b>	In case of inadequate ventilation wear respiratory protection. When workers are facing

**General Hygiene Considerations** concentrations above the exposure limit they must use appropriate certified respirators. Wear protective gloves/clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Liquid	<b>Viscosity</b>	Non viscous
<b>Color</b>	Purple	<b>Odor</b>	Pungent
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Transparent
<b>pH</b>	11.9	<b>Specific Gravity</b>	1.12
<b>Evaporation Rate</b>	0.52 (Butyl acetate=1)	<b>Percent Volatile (Volume)</b>	91.7
<b>VOC Content (%)</b>	0	<b>VOC Content (g/L)</b>	0
<b>Vapor Pressure</b>	15.3 mmHg @ 70°F	<b>Vapor Density</b>	0.6 (Air = 1.0)
<b>Solubility</b>	Completely soluble	<b>n-Octanol/Water Partition</b>	No data available
<b>Melting Point/Range</b>	No data available	<b>Decomposition Temperature</b>	No data available
<b>Boiling Point/Range</b>	213 °F / 101 °C	<b>Flammability (solid, gas)</b>	No data available
<b>Flash Point</b>	Does not flash	<b>Method</b>	Seta closed cup
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	Hydrogen, by reaction with metals.	<b>Upper 75 Lower 4</b>	

**10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	None known
<b>Incompatible Products</b>	Strong oxidizing agents, Reducing agents, Acids, Bases.
<b>Hazardous Decomposition Products</b>	Carbon oxides, Nitrogen oxides (NOx), Sulfur oxides, Hydrogen, by reaction with metals.
<b>Possibility of Hazardous Reactions</b>	None under normal processing

**11. TOXICOLOGICAL INFORMATION**

**Product Information**

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	No information available
<b>Dermal LD50</b>	No information available
<b>Inhalation LC50</b>	
<b>Gas</b>	No information available
<b>Mist</b>	No information available
<b>Vapor</b>	No information available

**Principle Route of Exposure** Skin contact, Eye contact, Inhalation.  
**Primary Routes of Entry** Skin Absorption

**Acute Effects**  
**Eyes** Corrosive to the eyes and may cause severe damage including blindness.  
**Skin** Causes skin burns. May cause allergic skin reaction. May be absorbed through the skin in harmful amounts.  
**Inhalation** Harmful by inhalation. Causes burns.  
**Ingestion** If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

**Chronic Toxicity** Inhaled corrosive substances can lead to a toxic edema of the lungs. Contains a known or suspected reproductive toxin.

**Target Organ Effects** Immune system, Reproductive System, Respiratory system, Skin, Eyes.  
**Aggravated Medical Conditions** Respiratory disorders, Skin disorders.

**Component Information**

**Acute Toxicity**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Sodium mercaptobenzothiazole	= 750 mg/kg ( Rat )	> 1250 mg/kg ( Rabbit )	no data available	no data available	no data available
Sodium hydroxide	no data available	= 1350 mg/kg ( Rabbit )	no data available	no data available	no data available

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Sodium metaborate tetrahydrate	no data available	no data available	no data available	X	Testes
Sodium mercaptobenzothiazole	no data available	skin sensitization	no data available	no data available	Immune system
Sodium hydroxide	no data available	no data available	no data available	no data available	eyes, respiratory system, skin

**Carcinogenicity** There are no known carcinogenic chemicals in this product.

**12. ECOLOGICAL INFORMATION****Product Information** No information available.**Component Information**

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Sodium mercaptobenzothiazole	EC50 = 0.3 mg/L Pseudokirchneriella subcapitata 96 h	LC50 0.3 - 1.1 mg/L Oncorhynchus mykiss 96 h LC50 = 3.8 mg/L Lepomis macrochirus 96 h	no data available	EC50 1.9 - 5.1 mg/L Daphnia magna 48 h	-0.46
Sodium hydroxide	no data available	LC50 = 45.4 mg/L Oncorhynchus mykiss 96 h	no data available	no data available	N/A

**Persistence and Degradability** No information available.**Bioaccumulation** No information available.**Mobility** No information available.**13. DISPOSAL CONSIDERATIONS****Product Disposal** Dispose of in accordance with local regulations.**Container Disposal** Empty containers should be taken for local recycling, recovery, or waste disposal.**14. TRANSPORT INFORMATION****DOT**

**Proper Shipping Name** Corrosive liquid, basic, organic, n.o.s.  
**Hazard Class** 8  
**UN-No** UN3267  
**Packing Group** II  
**Description** UN3267, Corrosive liquid, basic, organic, n.o.s., (Sodium Mercaptobenzothiazole), 8, PG II

**TDG**

**Hazard Class** 8  
**UN-No** UN3267  
**Packing Group** II

**ICAO**

**UN-No** UN3267  
**Proper Shipping Name** Corrosive liquid, basic, organic, n.o.s.  
**Hazard Class** 8  
**Packing Group** II  
**Shipping Description** UN3267, Corrosive liquid, basic, organic, n.o.s., (Sodium Mercaptobenzothiazole), 8, PG II

**IATA**

**UN-No** UN3267  
**Proper Shipping Name** Corrosive liquid, basic, organic, n.o.s.  
**Hazard Class** 8  
**Packing Group** II  
**Shipping Description** UN3267, Corrosive liquid, basic, organic, n.o.s., (Sodium Mercaptobenzothiazole), 8, PG II

**IMDG/IMO**

**Proper Shipping Name** Corrosive liquid, basic, organic, n.o.s.  
**Hazard Class** 8  
**UN-No** UN3267  
**Packing Group** II  
**Shipping Description** UN3267, Corrosive liquid, basic, organic, n.o.s., (Sodium Mercaptobenzothiazole), 8, PG II

**15. REGULATORY INFORMATION****Inventories****TSCA** Complies**DSL** Complies**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 and Title 40 of the Code of Federal Regulations, Part 372.

**SARA 311/312 Hazardous Categorization**



<b>Acute Health Hazard</b> Yes	<b>Chronic Health Hazard</b> Yes	<b>Fire Hazard</b> No	<b>Sudden Release of Pressure Hazard</b> No	<b>Reactive Hazard</b> No
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**CERCLA**

<b>Component</b> Sodium hydroxide	<b>Hazardous Substances RQs</b> 1000 lb	<b>CERCLA EHS RQs</b> Not applicable
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**16. OTHER INFORMATION**

**Prepared By** Rachael Mohochi  
**Supersedes Date** 04/04/2013  
**Issuing Date** 07/18/2014  
**Reason for Revision** No information available.  
**Glossary** No information available.  
**List of References.** No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.



# Safety Data Sheet: DRI-LUBE PLUS AEROSOL, MM

Supersedes Date 06/28/2011

Issuing Date 02/14/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** DRI-LUBE PLUS AEROSOL, MM  
**Recommended use** Lubricant  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 5438  
**Chemical nature** Alcoholic solution  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Dark gray

**Physical State** Liquid

**Odor** Alcoholic

### GHS

#### Classification

##### Physical Hazards

Flammable aerosols  
Gases under pressure

Category 1  
Compressed Gas

##### Health Hazard

Aspiration Toxicity  
Acute Inhalation Toxicity - Gas  
Serious Eye Damage/Eye Irritation  
Reproductive Toxicity  
Specific target organ systemic toxicity (single exposure)  
Specific target organ systemic toxicity (repeated exposure)

Category 1  
Category 4  
Category 2  
Category 2  
Category 3  
Category 2

##### Other hazards

None

### Labeling

#### Signal Word

DANGER



#### Hazard Statements

H222 - Extremely flammable aerosol  
H332 - Harmful if inhaled  
H336 - May cause drowsiness or dizziness  
H319 - Causes serious eye irritation  
H305 - May be harmful if swallowed and enters airways  
H373 - May cause damage to organs through prolonged or repeated exposure  
H361 - Suspected of damaging fertility or the unborn child  
H280 - Contains gas under pressure; may explode if heated

#### Precautionary Statements

P210 - Keep away from heat, sparks, open flames or hot surfaces.  
P251 - Pressurized container: Do not pierce or burn, even after use  
P270 - Do not eat, drink or smoke when using this product  
P260 - Do not breathe vapor, mist or gas  
P271 - Use in a well-ventilated area.  
P280 - Wear protective gloves, protective clothing and eye protection.  
P264 - Wash face, hands and any exposed skin thoroughly after handling.  
P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
P312 - Call a physician if 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.  
P337 + P313 - If eye irritation persists, get medical attention.  
P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Call a physician if unwell.  
P403 - Store in a well-ventilated place  
P410 + P412 - Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122 °F  
P501 - Dispose of contents and container in accordance with applicable regulations.

2 % of the mixture consists of ingredient(s) of unknown toxicity

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Isopropyl alcohol	67-63-0	40-70
Butane	106-97-8	10-30
Propane	74-98-6	7-13
Molybdenum disulfide	1317-33-5	1-5
Ethylcellulose	9004-57-3	1-5
Pseudocumene	95-63-6	1-5
Urea	57-13-6	1-5
Petroleum naphtha, light aromatic	64742-95-6	1-5
1,3,5-Trimethylbenzene	108-67-8	0.1-1
Xylenes (o-, m-, p- isomers)	1330-20-7	0.1-1

**4. FIRST AID MEASURES**

**General advice** Avoid breathing vapors, mist, or gas. Avoid contact with skin, eyes and clothing.

**Eye Contact** Rinse thoroughly with plenty of water, also under the eyelids. Get medical attention if irritation develops and persists.

**Skin Contact** Wash off immediately with soap and plenty of water. Get medical attention if irritation develops and persists.

**Inhalation** If inhaled, remove to fresh air. Get medical attention if symptoms occur.

**Ingestion** Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person.

**Notes to physician** Aspiration hazard if swallowed - can enter lungs and cause damage. May be fatal if swallowed and enters airways.

**5. FIRE-FIGHTING MEASURES**

**Flash Point** 47 °F / 8 °C **Method** Seta closed cup

**Flammability Limits in Air % Mixture.** **Upper** 12.7 **Lower** 1.8

**Suitable Extinguishing Media**  
Water spray. Carbon dioxide (CO2). Foam. Dry chemical.

**Specific hazards arising from the chemical**  
Solvent vapors are heavier than air and may spread along floors, Vapors may ignite and explode. Flame extension: >36 inches / >91.4 cm and Burnback: 6 inch / 15 cm.

**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.

**Aerosol Level (NFPA 30B) -** 3

<b>NFPA</b>	<b>Health</b> 2	<b>Flammability</b> 4	<b>Instability</b> 0
<b>HMS</b>	<b>Health</b> 2	<b>Flammability</b> 4	<b>Instability</b> 0

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Remove all sources of ignition. Ensure adequate ventilation. Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.

**Environmental Precautions** Do not flush into surface water or sanitary sewer system.

**Methods for Containment** Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**Methods for Cleaning Up** Use clean non-sparking tools to collect absorbed material. Pick up and transfer to properly labeled containers.

**Neutralizing Agent** Not applicable.

**7. HANDLING AND STORAGE**

**Handling** Keep away from open flames, hot surfaces and sources of ignition. Avoid breathing vapors, mist or gas. Avoid contact with skin, eyes and clothing.

**Storage** Keep away from heat and sources of ignition.

<b>Storage Temperature</b>	<b>Minimum</b> 35 °F / 2 °C	<b>Maximum</b>	120 °F / 49 °C
<b>Storage Conditions</b>	<b>Indoor</b> X <b>Outdoor</b>	<b>Heated</b>	<b>Refrigerated</b>

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Isopropyl alcohol	TWA: 200 ppm STEL: 400 ppm	TWA: 400 ppm TWA: 980 mg/m <sup>3</sup>	IDLH: 2000 ppm STEL 500 ppm

			STEL 1225 mg/m <sup>3</sup> TWA: 400 ppm TWA: 980 mg/m <sup>3</sup>
Bulane	STEL: 1000 ppm	No data available	TWA: 800 ppm TWA: 1900 mg/m <sup>3</sup>
Propane	TWA: 1000 ppm	TWA: 1000 ppm TWA: 1800 mg/m <sup>3</sup>	IDLH: 2100 ppm TWA: 1000 ppm TWA: 1800 mg/m <sup>3</sup>
Molybdenum disulfide	TWA: 10 mg/m <sup>3</sup> TWA: 3 mg/m <sup>3</sup>	TWA: 15 mg/m <sup>3</sup>	IDLH: 5000 mg/m <sup>3</sup>
Ethylcellulose	No data available	No data available	No data available
Pseudocumene	No data available	No data available	TWA: 25 ppm TWA: 125 mg/m <sup>3</sup>
Urea	No data available	No data available	No data available
Petroleum naphtha, light aromatic	No data available	No data available	No data available
1,3,5-Trimethylbenzene	No data available	No data available	TWA: 25 ppm TWA: 125 mg/m <sup>3</sup>
Xylenes (o-, m-, p- isomers)	TWA: 100 ppm STEL: 150 ppm	TWA: 100 ppm TWA: 435 mg/m <sup>3</sup>	No data available

**Engineering Measures**  
**Personal Protective Equipment**  
**Eye/Face Protection**  
**Skin Protection**  
**Respiratory Protection**

Use with local exhaust ventilation. Ensure adequate ventilation, especially in confined areas.

**General Hygiene Considerations**

Safety glasses with side-shields.  
Wear suitable protective clothing, Impervious gloves.  
In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
Ensure that eyewash stations and safety showers are close to the workstation location. Remove and wash contaminated clothing before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Liquid	<b>Viscosity</b>	Slightly Viscous
<b>Color</b>	Dark gray	<b>Odor</b>	Alcoholic
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Opaque
<b>pH</b>	Not applicable	<b>Specific Gravity</b>	0.708
<b>Evaporation Rate</b>	51.5 (Butyl acetate=1)	<b>Percent Volatile (Volume)</b>	98.7
<b>VOC Content (%)</b>	95	<b>VOC Content (g/L)</b>	672
<b>Vapor Pressure</b>	1323 mmHg @ 70°F	<b>Vapor Density</b>	1.9 (Air = 1,0)
<b>Solubility</b>	Dispersible	<b>n-Octanol/Water Partition</b>	No data available
<b>Melting Point/Range</b>	No data available	<b>Decomposition Temperature</b>	No data available
<b>Boiling Point/Range</b>	180 °F / 82 °C	<b>Flammability (solid, gas)</b>	No data available
<b>Flash Point</b>	47 °F / 8 °C	<b>Method</b>	Seta closed cup
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	Mixture.	<b>Upper 12.7 Lower 1.8</b>	

**10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	Keep away from open flames, hot surfaces, and sources of ignition
<b>Incompatible Products</b>	Strong oxidizing agents, Acids, Bases, Aldehydes, Ketones, Halogenated hydrocarbon.
<b>Hazardous Decomposition Products</b>	Carbon oxides, Nitrogen oxides (NOx), Sulfur oxides.
<b>Possibility of Hazardous Reactions</b>	None under normal processing

**11. TOXICOLOGICAL INFORMATION**

**Product Information**

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	4,542.61
<b>Dermal LD50</b>	10,926.28
<b>Inhalation LC50</b>	
<b>Gas</b>	4,073.20
<b>Mist</b>	51.57
<b>Vapor</b>	91.98

<b>Principle Route of Exposure</b>	Inhalation, Skin contact, Eye contact.
<b>Primary Routes of Entry</b>	Inhalation, Skin Absorption.

**Acute Effects**

**Eyes**  
**Skin**  
**Inhalation**

Causes eye irritation.

May cause skin irritation. Repeated exposure may cause skin dryness or cracking.

May cause irritation of respiratory tract. Inhalation may cause central nervous system effects. May cause central nervous system depression. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

**Ingestion**

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Causes headache, drowsiness or other effects to the central nervous system. Aspiration hazard if swallowed - can enter lungs and cause damage. May be fatal if swallowed and enters airways.

**Chronic Toxicity**

Ingestion may cause lowering of blood pressure. Liver and kidney injuries may occur. Contains a known or suspected reproductive toxin.

**Target Organ Effects**

Respiratory system, Central nervous system, Liver, Kidney, Heart, Blood, Skin, Eyes, Bone, Ears.

**Aggravated Medical Conditions**

Respiratory disorders, Skin disorders, Liver disorders, Kidney disorders, Blood disorders.

Neurological disorders, Heart disease.

**Component Information**

**Acute Toxicity** None known

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Isopropyl alcohol	= 4396 mg/kg ( Rat )	= 12800 mg/kg ( Rabbit )	= 16000 ppm ( Rat ) 8 h	no data available	no data available
Butane	no data available	no data available	= 658 g/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available
Propane	no data available	no data available	= 658 mg/L ( Rat ) 4 h	no data available	no data available
Molybdenum disulfide	no data available	no data available	> 2820 mg/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available
Ethylcellulose	no data available	no data available	no data available	no data available	no data available
Pseudocumene	= 3400 mg/kg ( Rat )	> 3160 mg/kg ( Rabbit )	= 18 g/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available
Urea	14,300-15,000 mg/kg (rat)	no data available	no data available	no data available	no data available
Petroleum naphtha, light aromatic	no data available	> 2000 mg/kg ( Rabbit )	> 5.2 mg/L ( Rat ) 4 h = 3400 ppm ( Rat ) 4 h	no data available	no data available
1,3,5-Trimethylbenzene	no data available	no data available	= 24 g/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available
Xylenes (o-, m-, p- isomers)	= 4300 mg/kg ( Rat )	> 1700 mg/kg ( Rabbit )	= 47635 mg/L ( Rat ) 4 h	no data available	no data available

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Isopropyl alcohol	no data available	no data available	no data available	no data available	eyes, respiratory system, skin, liver, kidney, CNS
Butane	no data available	no data available	no data available	no data available	CNS, heart
Propane	no data available	no data available	no data available	no data available	CNS, heart
Molybdenum disulfide	no data available	no data available	no data available	no data available	respiratory system, kidneys, eyes, blood, bones, joints
Ethylcellulose	no data available	no data available	no data available	no data available	no data available
Pseudocumene	no data available	no data available	no data available	no data available	eyes, CNS, respiratory system, skin, blood, ears, heart
Urea	no data available	no data available	no data available	no data available	no data available
Petroleum naphtha, light aromatic	no data available	no data available	no data available	no data available	CNS
1,3,5-Trimethylbenzene	no data available	no data available	no data available	no data available	eyes, CNS, respiratory system, skin, blood, ears, heart
Xylenes (o-, m-, p- isomers)	no data available	no data available	yes	no data available	heart, lung, CNS, PNS, respiratory system, ears, liver, kidney

**Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Other
Isopropyl alcohol	not applicable	not applicable	not applicable	not applicable	not applicable
Butane	not applicable	not applicable	not applicable	not applicable	not applicable
Propane	not applicable	not applicable	not applicable	not applicable	not applicable
Molybdenum disulfide	not applicable	not applicable	not applicable	not applicable	not applicable
Ethylcellulose	not applicable	not applicable	not applicable	not applicable	not applicable
Pseudocumene	not applicable	not applicable	not applicable	not applicable	not applicable
Urea	not applicable	not applicable	not applicable	not applicable	not applicable
Petroleum naphtha, light aromatic	not applicable	not applicable	not applicable	not applicable	not applicable
1,3,5-Trimethylbenzene	not applicable	not applicable	not applicable	not applicable	not applicable
Xylenes (o-, m-, p- isomers)	not applicable	not applicable	not applicable	not applicable	not applicable

**12. ECOLOGICAL INFORMATION**

**Product Information** No information available.

**Component Information**

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Isopropyl alcohol	EC50 > 1000 mg/L Desmodesmus subspicatus 96 h EC50 > 1000 mg/L Desmodesmus subspicatus 72 h	LC50 = 9640 mg/L Pimephales promelas 96 h LC50 = 11130 mg/L Pimephales promelas 96 h LC50 > 1400000 µg/L Lepomis macrochirus 96 h	EC50 = 35390 mg/L 5 min	EC50= 13299 mg/L 48 h	0.05
Butane	no data available	no data available	no data available	no data available	2.89
Propane	no data available	no data available	no data available	no data available	2.3
Molybdenum disulfide	no data available	no data available	no data available	no data available	N/A
Ethylcellulose	no data available	no data available	no data available	no data available	N/A
Pseudocumene	no data available	LC50 7.19 - 8.28 mg/L Pimephales promelas 96 h	no data available	EC50= 6.14 mg/L 48 h	3.63
Urea	no data available	LC50 16200 - 18300 mg/L Poecilia reticulata 96 h	EC50 = 23914 mg/L 5 min	EC50> 10000 mg/L 24 h EC50= 3910 mg/L 48 h	-1.59
Petrolaum naphtha, light aromatic	no data available	LC50 = 9.22 mg/L Oncorhynchus mykiss 96 h	no data available	EC50= 6.14 mg/L 48 h	N/A
1,3,5-Trimethylbenzene	no data available	LC50 = 3.48 mg/L Pimephales promelas 96 h	no data available	EC50= 50 mg/L 24 h	N/A
Xylenes (o-, m-, p- isomers)	no data available	LC50 = 13.4 mg/L Pimephales promelas 96 h LC50 2.661 - 4.093 mg/L Oncorhynchus mykiss 96 h LC50 13.5 - 17.3 mg/L Oncorhynchus mykiss 96 h LC50 13.1 - 16.5 mg/L Lepomis macrochirus 96 h LC50 = 19 mg/L Lepomis macrochirus 96 h LC50 7.711 - 9.591 mg/L Lepomis macrochirus 96 h LC50 23.53 - 29.97 mg/L Pimephales promelas 96 h LC50 = 780 mg/L Cyprinus carpio 96 h LC50 > 780 mg/L Cyprinus carpio 96 h LC50 30.26 - 40.75 mg/L Poecilia reticulata 96 h	EC50 = 0.0084 mg/L 24 h	EC50= 3.82 mg/L 48 h LC50= 0.6 mg/L 48 h	2.77 - 3.15

**Persistence and Degradability** No information available.  
**Bioaccumulation** No information available.  
**Mobility** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal** Dispose of in accordance with local regulations.  
**Container Disposal** Contents under pressure. Do not puncture. Empty remaining contents. Empty containers should be taken for local recycling, recovery, or waste disposal.

**14. TRANSPORT INFORMATION**

**DOT**  
**Proper Shipping Name** Consumer commodity  
**Hazard Class** ORM-D  
**Description** Consumer commodity ,ORM-D,

**TDG**  
**Proper shipping name** Aerosols  
**Hazard Class** 2.1  
**UN-No** UN1950

**ICAO**  
**UN-No** UN1950  
**Proper Shipping Name** Aerosols  
**Hazard Class** 2.1  
**Shipping Description** Aerosols,UN1950 2.1 LTD. QTY.

**IATA**

UN-No UN1950  
 Proper Shipping Name Aerosols, flammable  
 Hazard Class 2.1  
 ERG Code 10L  
 Shipping Description UN1950,Aerosols, flammable,2.1 LTD. QTY.

**IMDG/IMO**

Proper Shipping Name Aerosols  
 Hazard Class 2  
 UN-No UN1950  
 EmS No. F-D, S-U  
 Shipping Description UN1950, Aerosols,2.1 LTD QTY.

**15. REGULATORY INFORMATION**

**Inventories**

TSCA Complies  
 DSL Complies

**U.S. 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

Component	CAS-No	Weight %	SARA 313 - Threshold Values
Isopropyl alcohol	67-63-0	40-70	1.0
Pseudocumene	95-63-6	1-5	1.0
Xylenes (o-, m-, p- isomers)	1330-20-7	0.1-1	1.0

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	Yes	Yes	Yes	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Isopropyl alcohol	Not applicable	Not applicable
Butane	Not applicable	Not applicable
Propane	Not applicable	Not applicable
Molybdenum disulfide	Not applicable	Not applicable
Ethylcellulose	Not applicable	Not applicable
Pseudocumene	Not applicable	Not applicable
Urea	Not applicable	Not applicable
Petroleum naphtha, light aromatic	Not applicable	Not applicable
1,3,5-Trimethylbenzene	Not applicable	Not applicable
Xylenes (o-, m-, p- isomers)	100 lb	Not applicable

**16. OTHER INFORMATION**

Prepared By Angela Hutson  
 Supersedes Date 06/28/2011  
 Issuing Date 02/14/2014  
 Reason for Revision No information available.  
 Glossary No information available.  
 List of References. No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.



## 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 Points, UA-MTX, UA-GFX, A36F, A54F.

**Product Use:** Abrasive materials used for cutting and grinding metals, 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:** March 31, 2015

## 2. HAZARD(S) IDENTIFICATION

As sold, this product is a manufactured article. During processing, dust generated has the following hazards:

**Classification:**

Physical	Health
Not Hazardous	Specific Target Organ Toxicity – Repeated Exposure Category 1 (Respiratory tract, teeth and bones) Carcinogen Category 2

**Labeling Elements:**



**Danger**

**Hazard statement(s)**

H351 Suspected of causing cancer by inhalation.  
H372 Causes damage to respiratory tract, teeth and bones 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.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P280 Wear eye protection.  
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
Aluminum Oxide	1344-28-1	0-95
Silicon Carbide	409-21-2	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
Titanium Dioxide	13463-67-7	0-5
Calcium Carbonate	1317-65-3	0-5
Aluminum Potassium Fluoride	14484-69-6	0-5
Iron Oxide	1309-37-1	0-5
Graphite	7782-42-5	0-5
Potassium Fluoroborate	14075-53-7	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. Suspected of causing cancer based on animal data. 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 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	5 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)
Silicon Carbide	3 mg/m3 TWA ACGIH TLV (respirable fraction) 10 mg/m3 TWA ACGIH TLV (inhalable fraction) 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 ACGIH TLV 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
Titanium Dioxide	10 mg/m3 TWA ACGIH TLV 15 mg/m3 TWA OSHA PEL (total dust)
Calcium Carbonate	15 mg/m3 TWA OSHA PEL (total dust) 5 mg/m3 TWA OSHA PEL (respirable fraction)

Aluminum Potassium Fluoride (as Al metal)	5 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
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
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

<b>Odor threshold:</b> Not applicable	<b>pH:</b> Not applicable
<b>Melting point/freezing point:</b> Not applicable	<b>Boiling Point:</b> Not applicable
<b>Flash point:</b> Not applicable	<b>Evaporation rate:</b> Not applicable
<b>Flammability (solid, gas):</b> Not combustible	
<b>Flammable limits: LEL:</b> Not applicable	<b>UEL:</b> Not applicable
<b>Vapor pressure:</b> Not applicable	<b>Vapor density:</b>
<b>Relative density:</b> Not applicable	<b>Solubility(ies):</b> Not soluble
<b>Partition coefficient: n-octanol/water:</b> Not applicable	<b>Auto-ignition temperature:</b> Not applicable
<b>Decomposition temperature:</b> Not applicable	<b>Viscosity:</b> 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:** 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.

### Numerical measures of toxicity:

Aluminum Oxide: LD50 Oral rat >5,000 mg/kg

Silicon Carbide: Oral rat LD50 >2000 mg/kg, Dermal rat LD50 >2000 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

Aluminum Potassium fluoride: LD50 oral rat 2150 mg/kg, LC50 inhalation rat > 3.4 mg/L, LD50 dermal rabbit > 2000 mg/kg.

Iron Oxide: LD50 oral rat > 10000 mg/kg

Graphite: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 2 mg/L

Potassium Fluoroborate: LD50 oral rat > 2000 mg/kg, LC50 inhalation rat > 5.3 mg/L

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity:

Aluminum Oxide: 96 hr LC50 Pimephales promelas 35 mg/L

Silicon Carbide: No data available

Zirconium Dioxide: 96 hr LC50 Danio rerio >100 mg/L, 48 hr EC50 daphnia magna >100 mg/L, 72 hr

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

Titanium Dioxide: 48 hr EC50 daphnia magna >500 mg/L

Calcium Carbonate: No data available

Aluminum Potassium fluoride: Brachydanio rerio LC50 > 10 mg/L/96h

Iron Oxide: No data available

Graphite: Danio rerio LC50 > 100 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:** 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.

### 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:** 8/24/12

**Date This Revision:** 3/31/15

**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.

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.

# Safety Data Sheet: HI-GEAR 20/20

Supersedes Date 06/02/2014

Issuing Date 08/20/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** HI-GEAR 20/20  
**Recommended use** Lubricant  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 4623  
**Chemical nature** Hydrocarbons  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone Inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Blue

**Physical State** Semi-Solid

**Odor** Characteristic

### GHS

#### Classification

##### Physical Hazards

None

##### Health Hazard

Specific target organ systemic toxicity (repeated exposure)

Category 2

##### Other hazards

None

### Labeling

#### Signal Word

WARNING



#### Hazard Statements

H371 - May cause damage to lungs through prolonged or repeated exposure if inhaled

#### Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling.  
P260 - Do not breathe mist.  
P271 - Use in a well-ventilated area.  
P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
P312 - Call a physician if unwell.  
P501 - Dispose of contents and container in accordance with applicable regulations.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Mineral oil	8012-95-1	15-40
Zinc oxide	1314-13-2	3-7
Zinc sulfide	1314-98-3	1-5

\*\*\*

## 4. FIRST AID MEASURES

### General advice

Avoid contact with skin, eyes and clothing. Avoid breathing mist.

### Eye Contact

Rinse thoroughly with plenty of water, also under the eyelids. Get medical attention if irritation develops and persists.

### Skin Contact

Wipe up with absorbent material (e.g. cloth, fleece). Wash off with soap and plenty of water. Get medical attention if irritation develops and persists. Wash contaminated clothing before re-use.

### Inhalation

If inhaled, remove to fresh air. Get medical attention if symptoms occur.

### Ingestion

Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention if symptoms occur.

### Notes to physician

Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

**Flash Point** 460 °F / 238 °C  
**Flammability Limits in Air %** No information available.  
**Suitable Extinguishing Media** Carbon dioxide (CO2). Dry chemical. Water spray. Foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
**Specific hazards arising from the chemical** Material can create slippery conditions.  
**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.

**NFPA** Health 1 **Flammability** 1 **Instability** 0  
**HMIS** Health 1 **Flammability** 1 **Instability** 0

**Method** Open cup  
**Upper** No data available **Lower** No data available

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.  
**Environmental Precautions** Do not flush into surface water or sanitary sewer system.  
**Methods for Containment** Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).  
**Methods for Cleaning Up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust)  
**Neutralizing Agent** Not applicable.

**7. HANDLING AND STORAGE**

**Handling** Avoid contact with skin, eyes and clothing. Avoid breathing mist.  
**Storage** Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.  
**Storage Temperature** **Minimum** 35 °F / 2 °C **Maximum** 120 °F / 49 °C  
**Storage Conditions** **Indoor** X **Outdoor** **Heated** **Refrigerated**

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Mineral oil	TWA: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>	2500 mg/m <sup>3</sup> STEL 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>
Zinc oxide	TWA: 2 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup> TWA: 15 mg/m <sup>3</sup>	500 mg/m <sup>3</sup> Ceiling: 15 mg/m <sup>3</sup> STEL 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>

**Engineering Measures** Ensure adequate ventilation, especially in confined areas. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.  
**Personal Protective Equipment**  
**Eye/Face Protection** Safety glasses with side-shields.  
**Skin Protection** For prolonged or repeated contact, use protective gloves with appropriate chemical resistance.  
**Respiratory Protection** In case of inadequate ventilation wear respiratory protection.  
**General Hygiene Considerations** Ensure that eyewash stations and safety showers are close to the workstation location. Wash contaminated clothing before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Semi-Solid	<b>Viscosity</b>	Viscous
<b>Color</b>	Blue	<b>Odor</b>	Characteristic
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Opaque
<b>pH</b>	Not applicable	<b>Specific Gravity</b>	0.940
<b>Evaporation Rate</b>	Not determined	<b>Percent Volatile (Volume)</b>	0
<b>VOC Content (%)</b>	0	<b>Vapor Pressure</b>	No information available
<b>Vapor Density</b>	Not applicable	<b>Solubility</b>	Negligible
<b>n-Octanol/Water Partition</b>	No data available	<b>Melting Point/Range</b>	No data available
<b>Decomposition Temperature</b>	No data available	<b>Boiling Point/Range</b>	No data available
<b>Flammability (solid, gas)</b>	No data available		



<b>Flash Point</b>	460 °F / 238 °C	<b>Method</b>	Open cup
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	No information available.	<b>Upper</b>	No data available
		<b>Lower</b>	No data available

### 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	None known
<b>Incompatible Products</b>	Strong oxidizing agents
<b>Hazardous Decomposition Products</b>	Carbon oxides, Nitrogen oxides (NOx), Oxides of phosphorus, Smoke, Zinc oxide fumes.
<b>Possibility of Hazardous Reactions</b>	None under normal processing

### 11. TOXICOLOGICAL INFORMATION

#### Product Information

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	No information available
<b>Dermal LD50</b>	No information available
<b>Inhalation LC50</b>	
<b>Gas</b>	No information available
<b>Mist</b>	No information available
<b>Vapor</b>	No information available

**Principle Route of Exposure** Skin contact, Eye contact, Inhalation.

**Primary Routes of Entry** None known

#### Acute Effects

**Eyes** May cause eye irritation.

**Skin** May cause skin irritation.

**Inhalation** May cause irritation of respiratory tract. (Mist). Zinc oxide fumes. Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

#### Chronic Toxicity

Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated inhalation may cause damage to the lungs.

#### Target Organ Effects

Respiratory system, Eyes, Skin.

#### Aggravated Medical Conditions

Skin disorders, Respiratory disorders.

#### Component Information

##### Acute Toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Mineral oil	no data available	no data available	= 2062 ppm ( Rat ) 4 h	no data available	no data available
Zinc oxide	> 5000 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Zinc sulfide	no data available	no data available	> 5040 mg/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Mineral oil	no data available	no data available	no data available	no data available	eyes, respiratory system, skin
Zinc oxide	no data available	no data available	no data available	no data available	respiratory system

#### Carcinogenicity

There are no known carcinogenic substances in this product.

### 12. ECOLOGICAL INFORMATION

#### Product Information

No information available.

#### Component Information

#### Persistence and Degradability

No information available.

#### Bioaccumulation

No information available.

#### Mobility

No information available.

### 13. DISPOSAL CONSIDERATIONS

#### Product Disposal

Dispose of in accordance with local regulations.

#### Container Disposal

Empty containers should be taken for local recycling, recovery, or waste disposal

**14. TRANSPORT INFORMATION**

DOT	Not regulated
TDG	Not regulated
ICAO	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated

**15. REGULATORY INFORMATION**

**Inventories**

**TSCA** Complies

**DSL** Complies

**U.S. 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

Component	CAS-No	Weight %	SARA 313 - Threshold Values
Zinc oxide	1314-13-2	3-7	1.0
Zinc sulfide	1314-98-3	1-5	1.0

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	Yes	No	No	No

**CERCLA**

**16. OTHER INFORMATION**

<b>Prepared By</b>	Adrienne McKee
<b>Supersedes Date</b>	06/02/2014
<b>Issuing Date</b>	08/20/2014
<b>Reason for Revision</b>	No information available.
<b>Glossary</b>	No information available.
<b>List of References</b>	No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.

# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** JET-LH® 78 MR®

**Product Size:** 1/4 in.

### Other means of identification

**SDS number:** 200000000630

### 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

#### Manufacturer/Supplier:

The Lincoln Electric Company  
22801 Saint Clair Avenue  
Cleveland, Ohio 44117 USA  
Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP  
179 Wicksteed Avenue  
Toronto, Ontario M4G 2B9 CANADA  
Phone: +1 (416) 421-2600

**Safety Data Sheet Questions:** [SDS@lincolnelectric.com](mailto:SDS@lincolnelectric.com)

**Arc Welding Safety Information:** [www.lincolnelectric.com/safety](http://www.lincolnelectric.com/safety)

### 24-Hour Emergency Response Telephone Numbers:

<u>Area</u>	<u>Telephone</u>
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), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

### Hazard Classification

SDS\_North America - 200000000630

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 Statement** 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**

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	60 - 100%
Limestone	1317-65-3	3 - 7%
Fluorides (as F)	16984-48-8	3 - 7%
Potassium silicate	1312-76-1	1 - 5%
Manganese	7439-96-5	1 - 5%
Silicon	7440-21-3	0.5 - 5%
Sodium silicate	1344-09-8	0.5 - 5%
Quartz	14808-60-7	0.1 - 1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - 1%
Aluminum oxide	1344-28-1	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:** Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with 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 welding fumes 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 welding fumes 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:** Welding hazards 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 welding fume or dust. 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 can ignite combustibles and flammable products. 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:** None known.

**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**

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.

**7. HANDLING AND STORAGE**

**Precautions for safe handling:**

Keep formation of airborne dusts to a minimum. 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](http://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](http://www.gpo.gov).

**Conditions for safe storage,  
including any incompatibilities:**

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control Parameters**

**Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Iron	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Limestone - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Limestone - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12 2010)
	PEL	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Potassium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Manganese - Fume. - as Mn	Ceiling	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Silicon - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Sodium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (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/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Total dust.	TWA	0.3 mg/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Carboxymethyl cellulose, sodium salt	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Aluminum oxide - Respirable	TWA	1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12



fraction.			2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 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
Limestone	TWA	10 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	TWAEV	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the

			Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)
	TWAEV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	CTT	20 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Fluorides (as F) - as F	CPT	2.5 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

Manganese - as Mn	CPT	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT	1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Silicon	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	20 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Biological Limit Values: US**

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEL (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEL (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)

**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 (2005)
	REL	5,000 ppm 9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
	Ceil_Time	200 ppm 229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
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 (2005)
	TWA	0.05 ppm		US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 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)
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 (2005)
	STEL		3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (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)

**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) (07 2009)
	TWA	5,000 ppm	9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN	30,000 ppm		Canada. Saskatchewan OELs

	ACL			(Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm	54,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm	29 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety

				Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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)
	TWAEV	0.1 ppm	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEV	0.3 ppm	0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm	0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)
	TWAEV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

**Additional exposure limits under the conditions of use: MEXICO**

Chemical Identity	Type	Exposure Limit Values		Source
Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Appropriate Engineering Controls**

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

**Individual protection measures, such as personal protective equipment**

- General information:** **Exposure Guidelines:** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® 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 potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. **Maximum Fume Exposure Guideline™ (MFEG)™** for this product (based on content of Manganese) is 0.5 mg/m<sup>3</sup>. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.
- Eye/face protection:** Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing 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, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact 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](http://www.aws.org).



## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Steel rod with extruded flux coating
<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Color:</b>	No data available.
<b>Odor:</b>	No data available.
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	Not applicable
<b>Vapor density:</b>	Not applicable
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	Not applicable

## 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	The product is non-reactive under normal conditions of use, storage and transport.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of Hazardous Reactions:</b>	No data available.
<b>Conditions to Avoid:</b>	Avoid heat or contamination.

**Incompatible Materials:** No data available.

**Hazardous Decomposition Products:**

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes 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 (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder'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.)

When the electrode 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 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 fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables 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.

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Ingestion:** Health injuries from ingestion are not known or expected under normal use.

**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.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation:** Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. 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.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
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
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

**Dermal**

**Product:** Not classified

**Inhalation**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m3
Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

**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:**

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):**  
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.

**Additional toxicological information under the conditions of use:**

**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): 1,300 mg/l

Nitrogen dioxide

LC 50 (Rat, 4 h): 88 ppm

Ozone

LC Lo (Human, 30 min): 50 ppm

## 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 EC50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l Intoxication  
Sodium silicate EC50 (Water flea (*Ceriodaphnia dubia*), 48 h): 22.94 - 49.01 mg/l  
Carboxymethyl cellulose, sodium salt EC50 (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:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**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: Not regulated.  
Special precautions for user: -

**IMDG**

UN Number:  
UN Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es)  
Class: NR  
Label(s): -  
EmS No.: -  
Packing Group: -  
Marine Pollutant: Not regulated.  
Special precautions for user: -

**IATA**

UN Number:  
Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es):  
Class: NR  
Label(s): -  
Packing Group: -  
Environmental Hazards: Not regulated.  
Special precautions for user: -  
Other information  
Passenger and cargo aircraft: Allowed.  
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: Not regulated.  
Special precautions for user: -

**15. REGULATORY INFORMATION**

**Canadian Controlled Products Regulations:** This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

**US Federal Regulations**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

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**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

**Chemical Identity**

**RQ**

Manganese Included in the regulation but with no data values. See regulation for further details.

**SARA 311/312 Hazardous Chemical**

<b>Chemical Identity</b>	<b>Threshold Planning Quantity</b>
Iron	10000 lbs
Limestone	10000 lbs
Fluorides (as F)	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs
Sodium silicate	10000 lbs
Quartz	10000 lbs
Carboxymethyl cellulose, sodium salt	10000 lbs
Aluminum oxide	10000 lbs

**SARA 313 (TRI Reporting)**

<b>Chemical Identity</b>	<b>Reporting threshold for other users</b>	<b>Reporting threshold for manufacturing and processing</b>
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**

Quartz                                      Carcinogenic.

**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.)

**US. New Jersey Worker and Community Right-to-Know Act**

Limestone                                  Listed  
 Manganese                                  Listed

**US. Massachusetts RTK - Substance List**

Limestone                                  Listed  
 Manganese                                  Listed  
 Quartz                                        Listed

**US. Pennsylvania RTK - Hazardous Substances**

Limestone                                  Listed  
 Manganese                                  Listed

**US. Rhode Island RTK**

Limestone                                  Listed  
 Manganese                                  Listed



**Inventory Status:**

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:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	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.
Australia AICS:	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.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.

**16. OTHER INFORMATION**

**Definitions:**

**The Maximum Fume Exposure Guideline™ (MFEG)™** is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m<sup>3</sup> which is the maximum recommended exposure limit for total welding fume. **The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.**

**The Maximum Dust Exposure Guideline™ (MDEG)™** is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is

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never greater than 10 mg/m<sup>3</sup> as this is the airborne exposure guideline for total particulate (total dust). **The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.**

**Revision Date:** 02/27/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand margin throughout this document.

**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](http://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.

# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** JET-LH® 78 MR®

**Product Size:** 3/16 in

### Other means of identification

**SDS number:** 200000000629

### 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

#### Manufacturer/Supplier:

The Lincoln Electric Company  
22801 Saint Clair Avenue  
Cleveland, Ohio 44117 USA  
Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP  
179 Wicksteed Avenue  
Toronto, Ontario M4G 2B9 CANADA  
Phone: +1 (416) 421-2600

**Safety Data Sheet Questions:** [SDS@lincolnelectric.com](mailto:SDS@lincolnelectric.com)

**Arc Welding Safety Information:** [www.lincolnelectric.com/safety](http://www.lincolnelectric.com/safety)

### 24-Hour Emergency Response Telephone Numbers:

<u>Area</u>	<u>Telephone</u>
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), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

### Hazard Classification

Not classified as hazardous according to applicable GHS hazard classification criteria.

### Label Elements

SDS\_North America - 200000000629

<b>Hazard Symbol:</b>	No symbol
<b>Signal Word:</b>	No signal word.
<b>Hazard Statement</b>	Not applicable
<b>Precautionary Statement</b>	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**

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	60 - 100%
Limestone	1317-65-3	3 - 7%
Fluorides (as F)	16984-48-8	3 - 7%
Potassium silicate	1312-76-1	1 - 5%
Manganese	7439-96-5	1 - 5%
Silicon	7440-21-3	0.5 - 5%
Sodium silicate	1344-09-8	0.5 - 5%
Quartz	14808-60-7	0.1 - 1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - 1%
Aluminum oxide	1344-28-1	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:** Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with 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 welding fumes 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 welding fumes 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:** Welding hazards 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 welding fume or dust. 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 can ignite combustibles and flammable products. 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:** None known.

**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**

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.

**7. HANDLING AND STORAGE**

**Precautions for safe handling:**

Keep formation of airborne dusts to a minimum. 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](http://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](http://www.gpo.gov).

**Conditions for safe storage,  
including any incompatibilities:**

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control Parameters**

**Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Iron	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Limestone - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Limestone - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12 2010)
	PEL	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Potassium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Manganese - Fume, - as Mn	Ceiling	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction, - as Mn	TWA	0.1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction, - as Mn	TWA	0.02 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Silicon - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction.	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Sodium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (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/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Total dust.	TWA	0.3 mg/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Carboxymethyl cellulose, sodium salt	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Aluminum oxide - Respirable fraction.	TWA	1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air



			Contaminants (29 CFR 1910.1000) (02 2006)
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**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) (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) (05 2009)
	15 MIN ACL	20 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	TWAEV	2.5 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)

	TWAEV	0.2 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Fluorides (as F) - as F	CPT	2.5 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT	0.2 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT	1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Silicon	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit

			Values (03 2000)
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**Biological Limit Values: US**

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEL (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEL (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)

**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 (2005)
Carbon monoxide	REL	5,000 ppm    9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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 (2005)
Nitrogen dioxide	Ceil_Time	200 ppm    229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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)
Ozone	STEL	1 ppm    1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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 (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Fume. - as Mn	TWA	0.10 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm	US. ACGIH Threshold Limit Values (03 2014)
	Ceiling	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

	REL	1 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)

**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/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm 9,000 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm 9,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm 54,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm 29 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)

	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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)	
	TWAEV	0.1 ppm      0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)	
	STEV	0.3 ppm      0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)	
	15 MIN ACL	0.15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)	
	8 HR ACL	0.05 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)	
	CEILING	0.1 ppm      0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)	
	TWA	0.20 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)	
	TWA	0.05 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)	
	TWA	0.08 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)	
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)	
Manganese - as Mn	TWA		0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)
	TWAEV		0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL		0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA		1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA		5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL		3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

**Additional exposure limits under the conditions of use: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
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Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Appropriate Engineering Controls**

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

**Individual protection measures, such as personal protective equipment**

**General information:**

**Exposure Guidelines:** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® 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 potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

**Maximum Fume Exposure Guideline™ (MFEG)™** for this product (based on content of Manganese) is 0.5 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.

**Eye/face protection:**

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing 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, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact

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](http://www.aws.org).

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance:</b>	Steel rod with extruded flux coating
<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Color:</b>	No data available.
<b>Odor:</b>	No data available.
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	Not applicable
<b>Vapor density:</b>	Not applicable
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	Not applicable



## 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	The product is non-reactive under normal conditions of use, storage and transport.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of Hazardous Reactions:</b>	No data available.
<b>Conditions to Avoid:</b>	Avoid heat or contamination.
<b>Incompatible Materials:</b>	No data available.
<b>Hazardous Decomposition Products:</b>	<p>Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes 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 (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder'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>When the electrode 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 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 fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables 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.</p>

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

<b>Ingestion:</b>	Health injuries from ingestion are not known or expected under normal use.
<b>Inhalation:</b>	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.
<b>Skin Contact:</b>	Arc rays can burn skin. Skin cancer has been reported.
<b>Eye contact:</b>	Arc rays can injure eyes.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation:** Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. 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.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
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
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

**Dermal**

**Product:** Not classified

**Inhalation**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m3
Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

**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:**

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):**  
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.

**Additional toxicological Information under the conditions of use:**

**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): 1,300 mg/l  
Nitrogen dioxide LC 50 (Rat, 4 h): 88 ppm  
Ozone LC Lo (Human, 30 min): 50 ppm

## 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 EC50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l Intoxication  
Sodium silicate EC50 (Water flea (*Ceriodaphnia dubia*), 48 h): 22.94 - 49.01 mg/l  
Carboxymethyl cellulose, sodium salt EC50 (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:

Discharge, treatment, or disposal may be subject to national, state, or local laws.

**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: Not regulated.  
Special precautions for user: -

**IMDG**

UN Number:  
UN Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es)  
Class: NR  
Label(s): -  
EmS No.: -  
Packing Group: -  
Marine Pollutant: Not regulated.  
Special precautions for user: -

**IATA**

UN Number:  
Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es):  
Class: NR  
Label(s): -  
Packing Group: -  
Environmental Hazards: Not regulated.  
Special precautions for user: -  
Other information  
Passenger and cargo aircraft: Allowed.  
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: Not regulated.  
Special precautions for user: -

**15. REGULATORY INFORMATION**

**Canadian Controlled Products Regulations:**

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

**US Federal Regulations**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

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**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

Chemical Identity	RQ
Manganese	Included in the regulation but with no data values. See regulation for further details.

**SARA 311/312 Hazardous Chemical**

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Limestone	10000 lbs
Fluorides (as F)	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs
Sodium silicate	10000 lbs
Quartz	10000 lbs
Carboxymethyl cellulose, sodium salt	10000 lbs
Aluminum oxide	10000 lbs

**SARA 313 (TRI Reporting)**

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
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**

Quartz Carcinogenic.

**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.)

**US. New Jersey Worker and Community Right-to-Know Act**

Limestone	Listed
Manganese	Listed

**US. Massachusetts RTK - Substance List**

Limestone	Listed
Manganese	Listed
Quartz	Listed

**US. Pennsylvania RTK - Hazardous Substances**

Limestone	Listed
Manganese	Listed

**US. Rhode Island RTK**

Limestone	Listed
Manganese	Listed

**Inventory Status:**

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:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	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.
Australia AICS:	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.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.

**16. OTHER INFORMATION**

**Definitions:**

The **Maximum Fume Exposure Guideline™ (MFEG)™** is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given

product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m<sup>3</sup> which is the maximum recommended exposure limit for total welding fume. **The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.**

**The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10 mg/m<sup>3</sup> as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.**

**Revision Date:** 03/23/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand margin throughout this document.

**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](http://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.



# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** JET-LH® 78 MR®  
**Product Size:** 5/32 in

### Other means of identification

**SDS number:** 200000000628

### 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

**Manufacturer/Supplier:**  
The Lincoln Electric Company  
22801 Saint Clair Avenue  
Cleveland, Ohio 44117 USA  
Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP  
179 Wicksteed Avenue  
Toronto, Ontario M4G 2B9 CANADA  
Phone: +1 (416) 421-2600

**Safety Data Sheet Questions:** [SDS@lincolnelectric.com](mailto:SDS@lincolnelectric.com)

**Arc Welding Safety Information:** [www.lincolnelectric.com/safety](http://www.lincolnelectric.com/safety)

### 24-Hour Emergency Response Telephone Numbers:

<u>Area</u>	<u>Telephone</u>
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), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

### Hazard Classification

Not classified as hazardous according to applicable GHS hazard classification criteria.

### Label Elements

SDS\_North America - 200000000628

<b>Hazard Symbol:</b>	No symbol
<b>Signal Word:</b>	No signal word.
<b>Hazard Statement</b>	Not applicable
<b>Precautionary Statement</b>	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**

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	60 - 100%
Limestone	1317-65-3	3 - 7%
Fluorides (as F)	16984-48-8	3 - 7%
Potassium silicate	1312-76-1	1 - 5%
Manganese	7439-96-5	1 - 5%
Silicon	7440-21-3	0.5 - 5%
Sodium silicate	1344-09-8	0.5 - 5%
Quartz	14808-60-7	0.1 - 1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - 1%
Aluminum oxide	1344-28-1	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:** Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with 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 welding fumes 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 welding fumes 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:** Welding hazards 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 welding fume or dust. 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 can ignite combustibles and flammable products. 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:** None known.

**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**

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.

**7. HANDLING AND STORAGE**

**Precautions for safe handling:**

Keep formation of airborne dusts to a minimum. 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](http://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](http://www.gpo.gov).

**Conditions for safe storage,  
including any incompatibilities:**

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control Parameters**

**Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Iron	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
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 (2005)
Limestone - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (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)
Potassium silicate	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
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 (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (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)
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 (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Sodium silicate	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values (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 - Total dust.	TWA	0.3 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 (2005)
Carboxymethyl cellulose, sodium salt	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air

			Contaminants (29 CFR 1910.1000) (02 2006)
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**Occupational Exposure Limits: CANADA**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	TWA	10 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Limestone - Total dust.	STEL	20 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m <sup>3</sup>	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/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	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 <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWAEV	2.5 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

	TWAEV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	CTT	20 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Fluorides (as F) - as F	CPT	2.5 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT	1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Silicon	CPT	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	20 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m3	Mexico. Occupational Exposure Limit



			Values (03 2000)
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**Biological Limit Values: US**

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEL (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEL (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)

**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 (2005)
	REL	5,000 ppm      9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
	Ceil_Time	200 ppm      229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
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 (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 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)
	Manganese - Fume. - as Mn	Ceiling	5 mg/m3

	REL	1 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (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)

**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) (07 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm 54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm 29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)

	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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)
	TWAEV	0.1 ppm      0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEV	0.3 ppm      0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm      0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m3 Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)
	TWAEV		0.2 mg/m3 Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL		0.2 mg/m3 Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		0.6 mg/m3 Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA		1 mg/m3 Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA		5 mg/m3 Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL		3 mg/m3 Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m3 Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m3 Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

**Additional exposure limits under the conditions of use: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
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Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Appropriate Engineering Controls**

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

**Individual protection measures, such as personal protective equipment**

**General information:**

**Exposure Guidelines:** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® 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 potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

**Maximum Fume Exposure Guideline™ (MFEG)™** for this product (based on content of Manganese) is 0.5 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.

**Eye/face protection:**

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing 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, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams.

Train the welder not to permit electrically live parts or electrodes to contact 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](http://www.aws.org).

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Steel rod with extruded flux coating
<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Color:</b>	No data available.
<b>Odor:</b>	No data available.
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	Not applicable
<b>Vapor density:</b>	Not applicable
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.

**Viscosity:** Not applicable

## 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:** No data available.

**Conditions to Avoid:** Avoid heat or contamination.

**Incompatible Materials:** No data available.

**Hazardous Decomposition Products:** Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes 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 (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder'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.)

When the electrode 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 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 fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables 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.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Ingestion:** Health injuries from ingestion are not known or expected under normal use.

**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.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation:** Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (Iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. 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.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
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
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

**Dermal**

**Product:** Not classified

**Inhalation**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m <sup>3</sup>
Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

**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:**

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):**  
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.

**Additional toxicological Information under the conditions of use:**

**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): 1,300 mg/l
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Acute hazards to the aquatic environment:

##### Fish

<b>Product:</b>	Not classified.
<b>Specified substance(s):</b>	
Sodium silicate	LC 50 (Western mosquitofish ( <i>Gambusia affinis</i> ), 96 h): 1,800 mg/l

##### Aquatic Invertebrates

<b>Product:</b>	Not classified.
<b>Specified substance(s):</b>	
Manganese	EC50 (Water flea ( <i>Daphnia magna</i> ), 48 h): 40 mg/l Intoxication
Sodium silicate	EC50 (Water flea ( <i>Ceriodaphnia dubia</i> ), 48 h): 22.94 - 49.01 mg/l
Carboxymethyl cellulose, sodium salt	EC50 (Water flea ( <i>Ceriodaphnia dubia</i> ), 48 h): 46.04 - 165.37 mg/l

#### Chronic hazards to the aquatic environment:

##### Fish

<b>Product:</b>	Not classified.
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##### Aquatic Invertebrates

<b>Product:</b>	Not classified.
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##### Toxicity to Aquatic Plants

<b>Product:</b>	Not classified.
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### Persistence and Degradability

#### Biodegradation

<b>Product:</b>	No data available.
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### Bioaccumulative Potential

#### Bioconcentration Factor (BCF)

<b>Product:</b>	No data available.
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#### 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:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**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: Not regulated.  
Special precautions for user: -

**IMDG**

UN Number:  
UN Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es)  
Class: NR  
Label(s): -  
EmS No.: -  
Packing Group: -  
Marine Pollutant: Not regulated.  
Special precautions for user: -

**IATA**

UN Number:  
Proper Shipping Name: NOT DG REGULATED  
Transport Hazard Class(es):  
Class: NR  
Label(s): -  
Packing Group: -  
Environmental Hazards: Not regulated.  
Special precautions for user: -  
Other information  
Passenger and cargo aircraft: Allowed.  
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: Not regulated.  
Special precautions for user: -

**15. REGULATORY INFORMATION**

**Canadian Controlled Products Regulations:** This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS

contains all required information.

**US Federal Regulations**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

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**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

**Chemical Identity**

**RQ**

Manganese Included in the regulation but with no data values. See regulation for further details.

**SARA 311/312 Hazardous Chemical**

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Limestone	10000 lbs
Fluorides (as F)	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs
Sodium silicate	10000 lbs
Quartz	10000 lbs
Carboxymethyl cellulose, sodium salt	10000 lbs
Aluminum oxide	10000 lbs

**SARA 313 (TRI Reporting)**

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
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**

Quartz Carcinogenic.

**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.)

**US. New Jersey Worker and Community Right-to-Know Act**

Limestone	Listed
Manganese	Listed

**US. Massachusetts RTK - Substance List**

Limestone	Listed
Manganese	Listed
Quartz	Listed

**US. Pennsylvania RTK - Hazardous Substances**

Limestone	Listed
Manganese	Listed

**US. Rhode Island RTK**

Limestone	Listed
Manganese	Listed

**Inventory Status:**

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:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	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.
Australia AICS:	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.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.

**16. OTHER INFORMATION**

**Definitions:**

**The Maximum Fume Exposure Guideline™ (MFEG)™ is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m<sup>3</sup> which is the maximum recommended exposure limit for total welding fume. The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.**

**The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10 mg/m<sup>3</sup> as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.**

**Revision Date:** 03/23/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand margin throughout this document.

**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](http://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.

# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** JET-LH® 78 MR®  
**Product Size:** 1/8 in

### Other means of identification

**SDS number:** 200000000627

### 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

**Manufacturer/Supplier:**  
The Lincoln Electric Company  
22801 Saint Clair Avenue  
Cleveland, Ohio 44117 USA  
Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP  
179 Wicksteed Avenue  
Toronto, Ontario M4G 2B9 CANADA  
Phone: +1 (416) 421-2600

**Safety Data Sheet Questions:** [SDS@lincolnelectric.com](mailto:SDS@lincolnelectric.com)

**Arc Welding Safety Information:** [www.lincolnelectric.com/safety](http://www.lincolnelectric.com/safety)

### 24-Hour Emergency Response Telephone Numbers:

<u>Area</u>	<u>Telephone</u>
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), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

### Hazard Classification

Not classified as hazardous according to applicable GHS hazard classification criteria.

### Label Elements

SDS\_North America - 200000000627

<b>Hazard Symbol:</b>	No symbol
<b>Signal Word:</b>	No signal word.
<b>Hazard Statement</b>	Not applicable
<b>Precautionary Statement</b>	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**



Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	60 - 100%
Limestone	1317-65-3	3 - 7%
Fluorides (as F)	16984-48-8	3 - 7%
Potassium silicate	1312-76-1	1 - 5%
Manganese	7439-96-5	1 - 5%
Silicon	7440-21-3	0.5 - 5%
Sodium silicate	1344-09-8	0.5 - 5%
Quartz	14808-60-7	0.1 - 1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - 1%
Aluminum oxide	1344-28-1	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:** Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with 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**

<b>Symptoms:</b>	Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.
<b>Hazards:</b>	Welding hazards 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 welding fume or dust. Refer to Section 11 for more information.

**Indication of immediate medical attention and special treatment needed**

<b>Treatment:</b>	Treat symptomatically.
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**5. FIRE-FIGHTING MEASURES**

<b>General Fire Hazards:</b>	As shipped, this product is nonflammable. However, welding arc and sparks can ignite combustibles and flammable products. 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.
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**Suitable (and unsuitable) extinguishing media**

<b>Suitable extinguishing media:</b>	As shipped, the product will not burn. In case of fire in the surroundings: use appropriate extinguishing agent.
<b>Unsuitable extinguishing media:</b>	None known.

<b>Specific hazards arising from the chemical:</b>	Welding arc and sparks can ignite combustibles and flammable products.
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**Special protective equipment and precautions for firefighters**

<b>Special fire fighting procedures:</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>Special protective equipment for fire-fighters:</b>	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**

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.

## **7. HANDLING AND STORAGE**

**Precautions for safe handling:**

Keep formation of airborne dusts to a minimum. 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](http://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](http://www.gpo.gov).

**Conditions for safe storage, including any incompatibilities:**

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control Parameters**

**Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Iron	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Limestone - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable fraction.	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Limestone - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Limestone - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12 2010)
	PEL	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Fluorides (as F) - Dust.	TWA	2.5 mg/m <sup>3</sup>	US. OSHA Table Z-2 (29 CFR 1910.1000) (02 2006)
Potassium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Manganese - Fume. - as Mn	Ceiling	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	REL	1 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Silicon - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable fraction	PFI	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Silicon - Respirable.	REL	5 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Silicon - Total	REL	10 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Sodium silicate	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (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/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Total dust.	TWA	0.3 mg/m <sup>3</sup>	US. OSHA Table Z-3 (29 CFR 1910.1000) (2000)
Quartz - Respirable dust.	REL	0.05 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Carboxymethyl cellulose, sodium salt	TWA	10 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values
Aluminum oxide - Respirable fraction.	TWA	1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m <sup>3</sup>	US. OSHA Table Z-1 Limits for Air

			Contaminants (29 CFR 1910.1000) (02 2006)
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**Occupational Exposure Limits: CANADA**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	TWA	10 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Limestone - Total dust.	STEL	20 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m <sup>3</sup>	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/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	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 <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWAEV	2.5 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

	TWAEV	0.2 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Fluorides (as F) - as F	CPT	2.5 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT	0.2 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT	1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Silicon	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit

			Values (03 2000)
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**Biological Limit Values: US**

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEL (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEL (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)

**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 (2005)
Carbon monoxide	REL	5,000 ppm      9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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 (2005)
Nitrogen dioxide	Ceil_Time	200 ppm      229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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)
Ozone	STEL	1 ppm      1.8 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	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 (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 ppm	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Fume. - as Mn	TWA	0.10 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.08 ppm	US. ACGIH Threshold Limit Values (03 2014)
	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 (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (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)

**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) (07 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEL	30,000 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR' ACI	5,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACI	30,000 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm 9,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm 54,000 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm 29 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)



	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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)
	TWAEV	0.1 ppm      0.2 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEV	0.3 ppm      0.6 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm      0.2 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA		0.2 mg/m <sup>3</sup> Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA		0.2 mg/m <sup>3</sup> Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWAEV		0.2 mg/m <sup>3</sup> Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL		0.2 mg/m <sup>3</sup> Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL		0.6 mg/m <sup>3</sup> Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA		1 mg/m <sup>3</sup> Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA		5 mg/m <sup>3</sup> Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL		3 mg/m <sup>3</sup> Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA		0.02 mg/m <sup>3</sup> Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA		0.1 mg/m <sup>3</sup> Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

**Additional exposure limits under the conditions of use: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
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Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Appropriate Engineering Controls**

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

**Individual protection measures, such as personal protective equipment**

**General information:**

**Exposure Guidelines:** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® 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 potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

**Maximum Fume Exposure Guideline™ (MFEG)™** for this product (based on content of Manganese) is 0.4 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.

**Eye/face protection:**

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing 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, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact

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](http://www.aws.org).

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Steel rod with extruded flux coating
<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Color:</b>	No data available.
<b>Odor:</b>	No data available.
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	Not applicable
<b>Vapor density:</b>	Not applicable
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.
<b>Viscosity:</b>	Not applicable

## 10. STABILITY AND REACTIVITY

<b>Reactivity:</b>	The product is non-reactive under normal conditions of use, storage and transport.
<b>Chemical Stability:</b>	Material is stable under normal conditions.
<b>Possibility of Hazardous Reactions:</b>	No data available.
<b>Conditions to Avoid:</b>	Avoid heat or contamination.
<b>Incompatible Materials:</b>	No data available.
<b>Hazardous Decomposition Products:</b>	<p>Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes 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 (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder'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>When the electrode 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 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 fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables 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.</p>

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

<b>Ingestion:</b>	Health injuries from ingestion are not known or expected under normal use.
<b>Inhalation:</b>	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.
<b>Skin Contact:</b>	Arc rays can burn skin. Skin cancer has been reported.
<b>Eye contact:</b>	Arc rays can injure eyes.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation:** Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. 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.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
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
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

**Dermal**

**Product:** Not classified

**Inhalation**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m3
Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

**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:**

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):**

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.

**Additional toxicological Information under the conditions of use:**

**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): 1,300 mg/l
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

## 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 EC50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l Intoxication  
Sodium silicate EC50 (Water flea (*Ceriodaphnia dubia*), 48 h): 22.94 - 49.01 mg/l  
Carboxymethyl cellulose, sodium salt EC50 (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:

Discharge, treatment, or disposal may be subject to national, state, or local laws.



**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: Not regulated.  
 Special precautions for user: --

**IMDG**

UN Number:  
 UN Proper Shipping Name: NOT DG REGULATED  
 Transport Hazard Class(es)  
 Class: NR  
 Label(s): --  
 EmS No.:  
 Packing Group: --  
 Marine Pollutant: Not regulated.  
 Special precautions for user: --

**IATA**

UN Number:  
 Proper Shipping Name: NOT DG REGULATED  
 Transport Hazard Class(es):  
 Class: NR  
 Label(s): --  
 Packing Group: --  
 Environmental Hazards: Not regulated.  
 Special precautions for user: --  
 Other information  
 Passenger and cargo aircraft: Allowed.  
 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: Not regulated.  
 Special precautions for user: --

**15. REGULATORY INFORMATION**

**Canadian Controlled Products Regulations:**

This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS contains all required information.

**US Federal Regulations**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

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**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

<u>Chemical Identity</u>	<u>RQ</u>
Manganese	Included in the regulation but with no data values. See regulation for further details.

**SARA 311/312 Hazardous Chemical**

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
Iron	10000 lbs
Limestone	10000 lbs
Fluorides (as F)	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs
Sodium silicate	10000 lbs
Quartz	10000 lbs
Carboxymethyl cellulose, sodium salt	10000 lbs
Aluminum oxide	10000 lbs

**SARA 313 (TRI Reporting)**

<u>Chemical Identity</u>	<u>Reporting threshold for other users</u>	<u>Reporting threshold for manufacturing and processing</u>
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**

Quartz Carcinogenic.

**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.)

**US. New Jersey Worker and Community Right-to-Know Act**

Limestone	Listed
Manganese	Listed

**US. Massachusetts RTK - Substance List**

Limestone	Listed
Manganese	Listed
Quartz	Listed

**US. Pennsylvania RTK - Hazardous Substances**

Limestone	Listed
Manganese	Listed

**US. Rhode Island RTK**

Limestone	Listed
Manganese	Listed

**Inventory Status:**

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:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	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.
Australia AICS:	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.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.

**16. OTHER INFORMATION**

**Definitions:**

The **Maximum Fume Exposure Guideline™ (MFEGL™)** is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The **MFEGL™** is an estimate of the level of total welding fume exposure for a given

product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m<sup>3</sup> which is the maximum recommended exposure limit for total welding fume. **The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.**

**The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10 mg/m<sup>3</sup> as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.**

**Revision Date:** 03/23/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand margin throughout this document.

**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](http://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.

# SAFETY DATA SHEET

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** JET-LH® 78 MR®

**Product Size:** 3/32 in

### Other means of identification

**SDS number:** 200000000626

### 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

#### Manufacturer/Supplier:

The Lincoln Electric Company  
22801 Saint Clair Avenue  
Cleveland, Ohio 44117 USA  
Phone: +1 (216) 481-8100

The Lincoln Electric Company of Canada LP  
179 Wicksteed Avenue  
Toronto, Ontario M4G 2B9 CANADA  
Phone: +1 (416) 421-2600

**Safety Data Sheet Questions:** [SDS@lincolnelectric.com](mailto:SDS@lincolnelectric.com)

**Arc Welding Safety Information:** [www.lincolnelectric.com/safety](http://www.lincolnelectric.com/safety)

### 24-Hour Emergency Response Telephone Numbers:

<u>Area</u>	<u>Telephone</u>
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), OSHA Hazard Communication Standard (29 CFR 1910.1200) and the Canadian Controlled Products Regulations.

### Hazard Classification

Not classified as hazardous according to applicable GHS hazard classification criteria.

### Label Elements

SDS\_North America - 200000000626

<b>Hazard Symbol:</b>	No symbol
<b>Signal Word:</b>	No signal word.
<b>Hazard Statement</b>	Not applicable
<b>Precautionary Statement</b>	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**

Chemical Identity	CAS number	Content in percent (%)*
Iron	7439-89-6	60 - 100%
Limestone	1317-65-3	3 - 7%
Fluorides (as F)	16984-48-8	3 - 7%
Potassium silicate	1312-76-1	1 - 5%
Manganese	7439-96-5	1 - 5%
Silicon	7440-21-3	0.5 - 5%
Sodium silicate	1344-09-8	0.5 - 5%
Quartz	14808-60-7	0.1 - 1%
Carboxymethyl cellulose, sodium salt	9004-32-4	0.1 - 1%
Aluminum oxide	1344-28-1	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:** Unlikely due to form of product, except for granular materials. Avoid hand, clothing, food, and drink contact with 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 welding fumes 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 welding fumes 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:** Welding hazards 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 welding fume or dust. 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 can ignite combustibles and flammable products. 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:** None known.

**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**

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.

**7. HANDLING AND STORAGE**

**Precautions for safe handling:**

Keep formation of airborne dusts to a minimum. 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](http://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](http://www.gpo.gov).

**Conditions for safe storage,  
including any incompatibilities:**

Store in closed original container in a dry place. Store away from incompatible materials. Store in accordance with local/regional/national regulations.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Control Parameters**

**Occupational Exposure Limits: US**

Chemical Identity	Type	Exposure Limit Values	Source
Iron	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
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 (2005)
Limestone - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Fluorides (as F) - as F	TWA	2.5 mg/m3	US. ACGIH Threshold Limit Values (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)
Potassium silicate	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
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 (2005)
	STEL	3 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (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)
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 (2005)
Silicon - Total	REL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Sodium silicate	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Quartz - Respirable fraction.	TWA	0.025 mg/m3	US. ACGIH Threshold Limit Values (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 - Total dust.	TWA	0.3 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 (2005)
Carboxymethyl cellulose, sodium salt	TWA	10 mg/m3	US. ACGIH Threshold Limit Values
Aluminum oxide - Respirable fraction.	TWA	1 mg/m3	US. ACGIH Threshold Limit Values (12 2010)
	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
Aluminum oxide - Total dust.	PEL	15 mg/m3	US. OSHA Table Z-1 Limits for Air

			Contaminants (29 CFR 1910.1000) (02 2006)
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**Occupational Exposure Limits: CANADA**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	TWA	10 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Limestone - Total dust.	STEL	20 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)
	TWA	10 mg/m <sup>3</sup>	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/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	20 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Limestone - Total dust.	TWA	10 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Fluorides (as F) - as F	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	2.5 mg/m <sup>3</sup>	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 <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	TWAEV	2.5 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	2.5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	2.5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - as Mn	TWA	0.2 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.2 mg/m <sup>3</sup>	Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) (07 2007)

	TWAEV	0.2 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	15 MIN ACL	0.6 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Quartz - Respirable particles.	TWA	0.025 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
Quartz - Respirable fraction.	TWA	0.025 mg/m <sup>3</sup>	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/m <sup>3</sup>	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
Quartz - Respirable.	TWAEV	0.10 mg/m <sup>3</sup>	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
Quartz - Respirable fraction.	8 HR ACL	0.05 mg/m <sup>3</sup>	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Quartz - Respirable dust.	TWA	0.1 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)

**Occupational Exposure Limits: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
Limestone	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Fluorides (as F) - as F	CPT	2.5 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT	0.2 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT	1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	3 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Silicon	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	20 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Quartz	CPT	0.1 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit Values (03 2000)
Aluminum oxide	CPT	10 mg/m <sup>3</sup>	Mexico. Occupational Exposure Limit

			Values (03 2000)
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**Biological Limit Values: US**

Chemical Identity	Exposure Limit Values	Source
Fluorides (as F) (Fluoride: Sampling time: Prior to shift.)	2 mg/l (Urine)	ACGIH BEL (03 2013)
Fluorides (as F) (Fluoride: Sampling time: End of shift.)	3 mg/l (Urine)	ACGIH BEL (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)

**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 (2005)
	REL	5,000 ppm    9,000 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
	Ceil_Time	200 ppm    229 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
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 (2005)
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 (2005)
	TWA	0.05 ppm	US. ACGIH Threshold Limit Values (03 2014)
	TWA	0.20 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)
	Manganese - Fume. - as Mn	Ceiling	5 mg/m3

	REL	1 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
	STEL	3 mg/m <sup>3</sup>	US. NIOSH: Pocket Guide to Chemical Hazards (2005)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m <sup>3</sup>	US. ACGIH Threshold Limit Values (03 2014)

**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/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	5,000 ppm	9,000 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)
	STEL	30,000 ppm		Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2011)
	STEV	30,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	5,000 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	5,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	30,000 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	5,000 ppm	9,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	30,000 ppm	54,000 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Carbon monoxide	TWA	25 ppm	29 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2011)

	STEV	100 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	TWAEV	25 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	8 HR ACL	25 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	190 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	35 ppm	40 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	STEL	200 ppm	230 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Nitrogen dioxide	STEL	5 ppm	9.4 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	3 ppm	5.6 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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) (03 2012)
	STEV	5 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	TWAEV	3 ppm		Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	3 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	5 ppm		Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	TWA	3 ppm	5.6 mg/m <sup>3</sup>	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Ozone	STEL	0.3 ppm	0.6 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	TWA	0.1 ppm	0.2 mg/m <sup>3</sup>	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (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)
	TWAEV	0.1 ppm      0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	STEV	0.3 ppm      0.6 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (07 2010)
	15 MIN ACL	0.15 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	8 HR ACL	0.05 ppm	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	CEILING	0.1 ppm      0.2 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
	TWA	0.20 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.05 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.08 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
	TWA	0.10 ppm	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - as Mn	TWA	0.2 mg/m3	Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) (07 2009)
	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)
	TWAFV	0.2 mg/m3	Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents) (11 2010)
	8 HR ACL	0.2 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
	15 MIN ACL	0.6 mg/m3	Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21) (05 2009)
Manganese - Fume. - as Mn	TWA	1 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Dust. - as Mn	TWA	5 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Fume. - as Mn	STEL	3 mg/m3	Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) (12 2008)
Manganese - Respirable fraction. - as Mn	TWA	0.02 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)
Manganese - Inhalable fraction. - as Mn	TWA	0.1 mg/m3	Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act) (03 2014)

**Additional exposure limits under the conditions of use: MEXICO**

Chemical Identity	Type	Exposure Limit Values	Source
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Carbon dioxide	CPT	5,000 ppm	9,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT	15,000 ppm	27,000 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Carbon monoxide	CTT	400 ppm	400 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	50 ppm	55 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Nitrogen dioxide	CTT	5 ppm	10 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CPT	3 ppm	6 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Ozone	P	0.1 ppm	0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - as Mn	CPT		0.2 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
Manganese - Fume. - as Mn	CPT		1 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)
	CTT		3 mg/m3	Mexico. Occupational Exposure Limit Values (03 2000)

**Appropriate Engineering Controls**

**Ventilation:** Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. **Keep exposure as low as possible.**

**Individual protection measures, such as personal protective equipment**

**General information:**

**Exposure Guidelines:** Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) are values published by the American Conference of Government Industrial Hygienists (ACGIH). ACGIH Statement of Positions Regarding the TLVs® and BEIs® 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 potential fume constituents of health interest. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists.

**Maximum Fume Exposure Guideline™ (MFEG)™** for this product (based on content of Manganese) is 0.5 mg/m3. This exposure guideline is calculated using the most conservative value of the ACGIH TLV or OSHA PEL for the stated substance.

**Eye/face protection:**

Wear helmet or use face shield with filter lens shade number 12 or darker for open arc processes. No specific lens shade recommendation for submerged arc processes. Shield others by providing 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, sparks and electrical shock. See Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams.

Train the welder not to permit electrically live parts or electrodes to contact 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](http://www.aws.org).

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Steel rod with extruded flux coating
<b>Physical state:</b>	Solid
<b>Form:</b>	Solid
<b>Color:</b>	No data available.
<b>Odor:</b>	No data available.
<b>Odor threshold:</b>	No data available.
<b>pH:</b>	Not applicable
<b>Melting point/freezing point:</b>	No data available.
<b>Initial boiling point and boiling range:</b>	No data available.
<b>Flash Point:</b>	Not applicable
<b>Evaporation rate:</b>	Not applicable
<b>Flammability (solid, gas):</b>	No data available.
<b>Upper/lower limit on flammability or explosive limits</b>	
<b>Flammability limit - upper (%):</b>	No data available.
<b>Flammability limit - lower (%):</b>	No data available.
<b>Explosive limit - upper (%):</b>	No data available.
<b>Explosive limit - lower (%):</b>	No data available.
<b>Vapor pressure:</b>	Not applicable
<b>Vapor density:</b>	Not applicable
<b>Relative density:</b>	No data available.
<b>Solubility(ies)</b>	
<b>Solubility in water:</b>	No data available.
<b>Solubility (other):</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>Auto-ignition temperature:</b>	No data available.
<b>Decomposition temperature:</b>	No data available.

**Viscosity:** Not applicable

## 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:** No data available.

**Conditions to Avoid:** Avoid heat or contamination.

**Incompatible Materials:** No data available.

**Hazardous Decomposition Products:** Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes 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 (such as paint, plating, or galvanizing), the number of welders and the volume of the worker area, the quality and amount of ventilation, the position of the welder'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.)

When the electrode 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 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 fume of consumables or base metals which contain chromium. Gaseous and particulate fluoride may be in the welding fume of consumables 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.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

**Ingestion:** Health injuries from ingestion are not known or expected under normal use.

**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.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation:** Short-term (acute) overexposure to welding fumes 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 welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. 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.

**Information on toxicological effects**

**Acute toxicity (list all possible routes of exposure)**

**Oral**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
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
Sodium silicate	LD 50 (Rat): 1.1 g/kg
Carboxymethyl cellulose, sodium salt	LD 50 (Rat): 2,700 mg/kg

**Dermal**

**Product:** Not classified

**Inhalation**

<b>Product:</b>	Not classified
<b>Specified substance(s):</b>	
Carboxymethyl cellulose, sodium salt	LC 50 (Rat, 4 h): 5,800 mg/m <sup>3</sup>
Aluminum oxide	LC 50 (Rat, 1 h): 7.6 mg/l

**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:**

Quartz	Overall evaluation: 1. Carcinogenic to humans.
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**US. National Toxicology Program (NTP) Report on Carcinogens:**  
Quartz Known To Be Human Carcinogen.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):**  
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.

**Additional toxicological information under the conditions of use:**

**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): 1,300 mg/l
Nitrogen dioxide	LC 50 (Rat, 4 h): 88 ppm
Ozone	LC Lo (Human, 30 min): 50 ppm

## 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 EC50 (Water flea (*Daphnia magna*), 48 h): 40 mg/l Intoxication  
Sodium silicate EC50 (Water flea (*Ceriodaphnia dubia*), 48 h): 22.94 - 49.01 mg/l  
Carboxymethyl cellulose, sodium salt EC50 (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:** Discharge, treatment, or disposal may be subject to national, state, or local laws.

**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: Not regulated.  
 Special precautions for user: -

**IMDG**

UN Number:  
 UN Proper Shipping Name: NOT DG REGULATED  
 Transport Hazard Class(es)  
     Class: NR  
     Label(s): -  
     EmS No.: -  
 Packing Group: -  
 Marine Pollutant: Not regulated.  
 Special precautions for user: -

**IATA**

UN Number:  
 Proper Shipping Name: NOT DG REGULATED  
 Transport Hazard Class(es):  
     Class: NR  
     Label(s): -  
 Packing Group: -  
 Environmental Hazards: Not regulated.  
 Special precautions for user: -  
     Other information  
         Passenger and cargo aircraft: Allowed.  
         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: Not regulated.  
 Special precautions for user: -

**15. REGULATORY INFORMATION**

**Canadian Controlled Products Regulations:** This product has been classified according to the hazard criteria of the Canadian Controlled Products Regulations, Section 33, and the MSDS

contains all required information.

**US Federal Regulations**

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**

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**

Acute (Immediate)  Chronic (Delayed)  Fire  Reactive  Pressure Generating

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

Chemical Identity	RQ
Manganese	Included in the regulation but with no data values. See regulation for further details.

**SARA 311/312 Hazardous Chemical**

Chemical Identity	Threshold Planning Quantity
Iron	10000 lbs
Limestone	10000 lbs
Fluorides (as F)	10000 lbs
Potassium silicate	10000 lbs
Manganese	10000 lbs
Silicon	10000 lbs
Sodium silicato	10000 lbs
Quartz	10000 lbs
Carboxymethyl cellulose, sodium salt	10000 lbs
Aluminum oxide	10000 lbs

**SARA 313 (TRI Reporting)**

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing
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**

Quartz Carcinogenic.



**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.)

**US. New Jersey Worker and Community Right-to-Know Act**

Limestone	Listed
Manganese	Listed

**US. Massachusetts RTK - Substance List**

Limestone	Listed
Manganese	Listed
Quartz	Listed

**US. Pennsylvania RTK - Hazardous Substances**

Limestone	Listed
Manganese	Listed

**US. Rhode Island RTK**

Limestone	Listed
Manganese	Listed

**Inventory Status:**

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:	One or more components are not listed or are exempt from listing.
Canada NDSL Inventory:	One or more components are not listed or are exempt from listing.
Philippines PICCS:	One or more components are not listed or are exempt from listing.
US TSCA Inventory:	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.
Australia AICS:	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.
New Zealand Inventory of Chemicals:	One or more components are not listed or are exempt from listing.

**16. OTHER INFORMATION**

**Definitions:**

**The Maximum Fume Exposure Guideline™ (MFEG)™ is a guideline limit for total welding fume exposure for a specific consumable product which may be used by employers to manage worker exposure to welding fume where that product is used. The MFEG™ is an estimate of the level of total welding fume exposure for a given product above which the exposure limit for one of the fume constituents may be exceeded. The exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U.S. OSHA Permissible Exposure Limit (PEL) whichever limit is lower. The MFEG™ never exceeds 5 mg/m<sup>3</sup> which is the maximum recommended exposure limit for total welding fume. The MFEG™ is intended to serve as a general guideline to assist in the management of workplace exposure to welding fume and does not replace the regular measurement and analysis of worker exposure to individual welding fume constituents.**

**The Maximum Dust Exposure Guideline™ (MDEG)™ is provided to assist with the management of workplace exposures where granular solid welding products or other materials are being utilized. It is derived from relevant compositional data and estimates the lowest level of total airborne dust exposure, for a given product, at which some specific constituent might potentially exceed its individual exposure limit. The specific exposure limits referenced are the American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV®) and the U. S. OSHA Permissible Exposure Limit (PEL), which ever value is the lowest. The MDEG™ is never greater than 10 mg/m<sup>3</sup> as this is the airborne exposure guideline for total particulate (total dust). The MDEG™ is intended to serve as a general guideline to assist in the management of workplace exposure and does not replace the regular measurement and analysis of worker exposure to individual airborne dust constituents.**

**Revision Date:** 03/23/2015

Most recent revision(s) are noted by the bold, double bars in the left-hand margin throughout this document.

**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](http://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.



# SAFETY DATA SHEET

SDS ID NO.: 0191MAR019  
Revision Date: 05/27/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Marafluid 4 Transmission & Drive Train Fluid

**Synonym:** Marafluid 4; SAE 30 Marafluid 4; SAE 50 Marafluid 4; 10W Marafluid 4  
**Chemical Family:** Hydrocarbon Mixture

**Recommended Use:** Transmission fluid.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
**539 South Main Street**  
**Findlay, OH 45840**

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation	Category 2A
Reproductive toxicity	Category 2
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

#### **Hazards Not Otherwise Classified (HNOC)**

Not applicable

### Label elements

#### **EMERGENCY OVERVIEW**

#### **Warning**

Causes serious eye irritation  
Suspected of damaging fertility or the unborn child  
Harmful to aquatic life with long lasting effects



**Appearance** Brown liquid
**Physical State** Liquid
**Odor** Petroleum

**Precautionary Statements - Prevention**

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Wear protective gloves/protective clothing/eye protection/face protection  
Wash hands and any possibly exposed skin thoroughly after handling  
Avoid release to the environment

**Precautionary Statements - Response**

IF exposed or concerned: 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

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Not applicable

**Additional Information**

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Lube oil is a complex mixture of highly refined lubricating base stocks and additives.

**Composition Information:**

Name	CAS Number	Weight %
Zinc Alkyl Dithiophosphate	68649-42-3	1-5
p-Dodecylphenol	104-43-8	0.1-1

### 4. FIRST AID MEASURES

**First Aid Measures**

**General advice** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

**Inhalation:** Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If symptoms occur get medical attention.

**Skin Contact:** Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).

**Eye Contact:** Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention.

**Ingestion:** Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

**Most important signs and symptoms, both short-term and delayed with overexposure**

**Adverse Effects:** Causes eye irritation. Symptoms may include redness, itching, and inflammation. May cause skin irritation and/or dermatitis. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

**Indication of any immediate medical attention and special treatment needed**

**NOTES TO PHYSICIAN:** SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

**Special protective equipment and precautions for firefighters**

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 1 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

- Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
- Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.
- Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.
- Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be **SERIOUS SURGICAL EMERGENCIES** (See First Aid Section 4).

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
Zinc Alkyl Dithiophosphate 68649-42-3	-	-	-	-
p-Dodecylphenol 104-43-8	-	-	-	-

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

<b>Respiratory protection:</b>	Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.
<b>Hygiene measures:</b>	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical State</b>	Liquid
<b>Appearance</b>	Brown Liquid
<b>Color</b>	Brown
<b>Odor</b>	Petroleum
<b>Odor Threshold</b>	No available data.

<u>Property</u>	<u>Values (Method)</u>
<b>Melting Point / Freezing Point</b>	No available data.
<b>Initial Boiling Point / Boiling Range</b>	No available data.
<b>Flash Point</b>	> 200 °C / > 392 °F (Cleveland Open-Cup)
<b>Evaporation Rate</b>	No available data.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	
Upper Flammability Limit:	No available data.
Lower Flammability Limit:	No available data.
<b>Vapor Pressure</b>	No available data.
<b>Vapor Density</b>	No available data.
<b>Specific Gravity / Relative Density</b>	0.874-0.89
<b>Water Solubility</b>	No available data.
<b>Solubility in other solvents</b>	No available data.
<b>Partition Coefficient</b>	No available data.
<b>Decomposition temperature:</b>	No available data.
<b>pH:</b>	No available data.
<b>Autoignition Temperature</b>	No available data.
<b>Kinematic Viscosity</b>	42-170 mm <sup>2</sup> /s @ 40°C / 104°F (ASTM D445)
<b>Dynamic Viscosity</b>	No available data.
<b>Explosive Properties</b>	No available data.
<b>Softening Point</b>	No available data.
<b>VOC Content (%)</b>	1.3 (w/w)
<b>Density</b>	No available data.
<b>Bulk Density</b>	Not applicable.

## 10. STABILITY AND REACTIVITY

<b><u>Reactivity</u></b>	The product is non-reactive under normal conditions.
<b><u>Chemical stability</u></b>	Stable under recommended storage conditions.
<b><u>Possibility of hazardous reactions</u></b>	None under normal processing.
<b><u>Hazardous polymerization</u></b>	Will not occur.
<b><u>Conditions to avoid</u></b>	Sources of heat or ignition.
<b><u>Incompatible materials</u></b>	Strong oxidizing agents.

Hazardous decomposition products

None known under normal conditions of use.

**11. TOXICOLOGICAL INFORMATION**

Potential short-term adverse effects from overexposures

- Inhalation** Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
- Eye contact** Irritating to eyes. May cause reddening and tearing.
- Skin contact** May cause skin irritation. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
- Ingestion** May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Zinc Alkyl Dithiophosphate 68649-42-3	-	-	-
p-Dodecylphenol 104-43-8	-	-	-

Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

Adverse effects related to the physical, chemical and toxicological characteristics

- Signs & Symptoms** Causes eye irritation. Symptoms may include redness, itching, and inflammation. Contact may cause skin dermatitis and/or irritation. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
- Sensitization** Not expected to be a skin or respiratory sensitizer.
- Mutagenic effects** None known.

Carcinogenicity Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Zinc Alkyl Dithiophosphate 68649-42-3	Not Listed	Not Listed	Not Listed	Not Listed
p-Dodecylphenol 104-43-8	Not Listed	Not Listed	Not Listed	Not Listed

- Reproductive toxicity** Suspected of damaging fertility or the unborn child.
- Specific Target Organ Toxicity (STOT) - single exposure** Not classified.
- Specific Target Organ Toxicity (STOT) - repeated exposure** Not classified.
- Aspiration hazard** Not classified.

**12. ECOLOGICAL INFORMATION**

- Ecotoxicity Harmful to aquatic life with long lasting effects.



Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Zinc Alkyl Dithiophosphate 68649-42-3	-	96-hr LC50 = 1-5 mg/L Fathead minnow (static)	-	48-hr EC50 = 1.0-1.5 mg/L Daphnia magna
p-Dodecylphenol 104-43-8	-	96-hr LC50 = 0.14 mg/L Cutthroat trout	-	-

**Persistence and degradability** No information available.

**Bioaccumulation** Contains component(s) with the potential to bioaccumulate.

**Mobility in soil** No information available.

**Other adverse effects** No information available.

### 13. DISPOSAL CONSIDERATIONS

**Description of Waste Residues**  
No information available.

**Safe Handling of Wastes**  
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**  
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**  
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

### 14. TRANSPORT INFORMATION

**DOT (49 CFR 172.101):**  
 UN Proper shipping name: Not Regulated  
 UN/Identification No: Not applicable  
 Transport Hazard Class(es): Not applicable  
 Packing group: Not applicable

**TDG (Canada):**  
 UN Proper shipping name: Not Regulated  
 UN/Identification No: Not applicable  
 Transport Hazard Class(es): Not applicable  
 Packing group: Not applicable

### 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Zinc Alkyl Dithiophosphate	NA

p-Dodecylphenol	NA
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**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Zinc Alkyl Dithiophosphate	NA
p-Dodecylphenol	NA

**SARA:** The following EPA hazard categories apply to this product:

Acute Health Hazard

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Zinc Alkyl Dithiophosphate	1.0 % de minimis concentration
p-Dodecylphenol	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Zinc Alkyl Dithiophosphate**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: SN 3012
- Pennsylvania Right-To-Know: Environmental hazard
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: 100 lb Annual usage threshold
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.
- New Jersey - Environmental Hazardous Substances List: SN 3012 TPQ: 500 lb (Category Code N982. Includes any unique chemical substance that contains the named metal as part of that chemical structure)
- Illinois - Toxic Air Contaminants: Not Listed.
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

**p-Dodecylphenol**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.

New Jersey - Environmental Hazardous Substances List: Not Listed.  
Illinois - Toxic Air Contaminants: Not Listed.  
New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Zinc Alkyl Dithiophosphate	D2B	1%



**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Prepared By:** Toxicology and Product Safety  
**Revision Date:** 05/27/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0163MAR019  
Revision Date: 05/22/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Multipower-3 Motor Oil  
**Synonym:** Multipower-3 Heavy Duty Motor Oil; 10W Multipower-3 HD Motor Oil; 20W Multipower-3 HD Motor Oil; 30 Multipower-3 HD Motor Oil; 40 Multipower-3 HD Motor Oil; 50 Multipower 3 HD Motor Oil  
**Chemical Family:** Motor/Lube Oil  
**Recommended Use:** Engine Oil.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
539 South Main Street  
Findlay, OH 45840

**SDS information:** 1-419-421-3070  
**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

#### **Hazards Not Otherwise Classified (HNOC)**

Not applicable

### Label elements

#### EMERGENCY OVERVIEW

No known significant effects or critical hazards.

**Appearance** Brown Liquid

**Physical State** Liquid

**Odor** Petroleum

#### **Precautionary Statements - Prevention**

Not applicable

#### **Precautionary Statements - Response**

Not applicable

**Precautionary Statements - Storage**  
Not applicable

**Precautionary Statements - Disposal**  
Not applicable

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Motor oil is a complex mixture of highly refined lubricating oil base stocks and additives.

#### Composition Information:

There are no 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

#### First Aid Measures

- General advice** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
- Inhalation:** Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms occur get medical attention.
- Skin Contact:** Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse.
- Eye Contact:** Immediately flush eyes with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.
- Ingestion:** Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

#### Most important signs and symptoms, both short-term and delayed with overexposure

- Adverse Effects:** May cause eye irritation. May cause skin irritation and/or dermatitis. Symptoms may include redness, itching, and inflammation. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

#### Indication of any immediate medical attention and special treatment needed

- NOTES TO PHYSICIAN:** Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

#### **Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

#### **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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

Sensitivity to Mechanical Impact No.  
Sensitivity to Static Discharge No.

**Special protective equipment and precautions for firefighters**

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 1 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

**Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.

**Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.

**Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. In testing, thorough washing has been found to prevent the development of skin cancer from used motor oil exposure. Avoid excessive skin contact. Exercise good personal hygiene including the removal and washing of soiled clothing and destroy used motor oil contaminated leather shoes/boots.

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

- Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.
- Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.
- Personal protective equipment**
- Eye protection:** Use goggles or face-shield if the potential for splashing exists.
- Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.
- Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.
- Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

<b>Physical State</b>	Liquid
<b>Appearance</b>	Brown Liquid
<b>Color</b>	Brown
<b>Odor</b>	Petroleum
<b>Odor Threshold</b>	No available data.

<b><u>Property</u></b>	<b><u>Values (Method)</u></b>
<b>Melting Point / Freezing Point</b>	No available data.
<b>Initial Boiling Point / Boiling Range</b>	No available data.
<b>Flash Point</b>	> 200 °C / > 392 °F (Cleveland Open-Cup)
<b>Evaporation Rate</b>	No available data.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	
<b>Upper Flammability Limit:</b>	No available data.
<b>Lower Flammability Limit:</b>	No available data.
<b>Vapor Pressure</b>	No available data.
<b>Vapor Density</b>	No available data.
<b>Specific Gravity / Relative Density</b>	0.855-0.895
<b>Water Solubility</b>	No available data.
<b>Solubility in other solvents</b>	No available data.
<b>Partition Coefficient</b>	No available data.
<b>Decomposition temperature:</b>	No available data.
<b>pH:</b>	No available data.
<b>Autoignition Temperature</b>	No available data.
<b>Kinematic Viscosity</b>	> 20 mm <sup>2</sup> /s @ 40°C / 104°F (ASTM D445)
<b>Dynamic Viscosity</b>	No available data.
<b>Explosive Properties</b>	No available data.
<b>Softening Point</b>	No available data.
<b>VOC Content (%)</b>	0.0065 (w/w)
<b>Density</b>	No available data.
<b>Bulk Density</b>	Not applicable.



## 10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

### Potential short-term adverse effects from overexposures

<b>Inhalation</b>	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
<b>Eye contact</b>	Exposure to vapor or contact with liquid may cause mild eye irritation.
<b>Skin contact</b>	May cause skin irritation. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
<b>Ingestion</b>	May cause irritation of the mouth, throat and gastrointestinal tract.

### Acute Toxicological data

No information available.

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

**USED MOTOR OIL:** Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. The combustion process produces compounds (polycyclic aromatic hydrocarbons) in motor oils that increase with use and are responsible for the cancer induction. Thorough washing has been found to prevent the development of skin cancer on animals from used motor oil exposure.

**ZDDP:** Zinc dialkyldithiophosphate (ZDDP) additives are primarily eye and/or skin irritants or corrosives with low acute toxicity via oral, dermal, and inhalation routes of exposure and are not skin sensitizers. In laboratory repeat dose studies by the dermal and oral routes, ZDDPs cause effects only at high doses, primarily due to irritation, in a manner similar to other irritating materials. The weight-of-evidence of genotoxicity testing indicates that ZDDPs are not mutagenic and do not cause larger chromosomal effects.

### Adverse effects related to the physical, chemical and toxicological characteristics

<b>Signs &amp; Symptoms</b>	May cause eye irritation. Contact may cause skin dermatitis and/or irritation. Symptoms may include redness, itching, and inflammation. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
<b>Sensitization</b>	Not expected to be a skin or respiratory sensitizer.

Mutagenic effects	None known.
Carcinogenicity	None known.
Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	Not classified.
Specific Target Organ Toxicity (STOT) - repeated exposure	Not classified.
Aspiration hazard	Not classified.

**12. ECOLOGICAL INFORMATION**

<u>Ecotoxicity</u>	No information available.  Used motor and/or lube oils can be toxic to birds and fish.
<u>Persistence and degradability</u>	Not expected to be readily biodegradable.
<u>Bioaccumulation</u>	Contains component(s) with the potential to bioaccumulate.
<u>Mobility in soil</u>	No information available.
<u>Other adverse effects</u>	No information available.

**13. DISPOSAL CONSIDERATIONS**

**Description of Waste Residues**  
No information available.

**Safe Handling of Wastes**  
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**  
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**  
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

**14. TRANSPORT INFORMATION**

<b>DOT (49 CFR 172.101):</b>	
UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable
<b>TDG (Canada):</b>	
UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

## 15. REGULATORY INFORMATION

### US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

### EPA Superfund Amendment & Reauthorization Act (SARA):

**SARA Section 302:** This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

**SARA:** The following EPA hazard categories apply to this product:  
None

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

### State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

**NOTE:** Uncontrolled product according to WHMIS classification criteria.

## 16. OTHER INFORMATION

**Prepared By:** Toxicology and Product Safety  
**Revision Date:** 05/22/2015

### Revision Note:

#### 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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0201MAR019  
Revision Date: 05/22/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Multipower-3 Plus Motor Oil  
**Synonym:** Multipower-3 Plus 15W-40 Motor Oil; Multipower-3 Plus 30 Motor Oil; Multipower-3 Heavy Duty 15W-40 Plus Motor Oil; Multipower-3 Heavy Duty 30 Plus Motor Oil  
**Chemical Family:** Motor/Lube Oil  
**Recommended Use:** Engine Oil.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
539 South Main Street  
Findlay, OH 45840

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation

Category 2A

#### **Hazards Not Otherwise Classified (HNOC)**

Not applicable

### Label elements

#### EMERGENCY OVERVIEW

#### **Warning**

Causes serious eye irritation



Appearance Brown Liquid

Physical State Liquid

Odor Petroleum

**Precautionary Statements - Prevention**

Wash hands and any possibly exposed skin thoroughly after handling  
Wear eye/face protection

**Precautionary Statements - 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

**Precautionary Statements - Storage**

Not applicable

**Precautionary Statements - Disposal**

Not applicable

**Additional Information**

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Motor oil is a complex mixture of highly refined lubricating oil base stocks and additives.

**Composition Information:**

Name	CAS Number	Weight %
Petroleum Distillates, Hydrotreated Heavy Paraffinic	64742-54-7	10-30
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isonctyl) esters, zinc salts	113706-15-3	1-5
Dinonyl diphenylamine	36878-20-3	1-5
Butene, homopolymer	9003-29-6	1-5
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	84605-20-9	1-5

**4. FIRST AID MEASURES**

**First Aid Measures**

**General advice**

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

**Inhalation:**

Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms occur get medical attention.

**Skin Contact:**

Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse.

**Eye Contact:**

Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention.

**Ingestion:** Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

**Most important signs and symptoms, both short-term and delayed with overexposure**

**Adverse Effects:** Causes eye irritation. Symptoms may include redness, itching, and inflammation. May cause skin irritation and/or dermatitis. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

**Indication of any immediate medical attention and special treatment needed**

**NOTES TO PHYSICIAN:** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

**Sensitivity to Mechanical Impact** No.

**Sensitivity to Static Discharge** No.

**Special protective equipment and precautions for firefighters**

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 2 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

**Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.

**Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.

**Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. In testing, thorough washing has been found to prevent the development of skin cancer from used motor oil exposure. Avoid excessive skin contact. Exercise good personal hygiene including the removal and washing of soiled clothing and destroyed used motor oil contaminated leather shoes/boots.

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
Petroleum Distillates, Hydrotreated Heavy Paraffinic 64742-54-7	Mineral oil, highly/severely refined, inhalable fraction 5 mg/m <sup>3</sup> TWA	-	-	-
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts 113706-15-3	-	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-	-
Butene, homopolymer 9003-29-6	-	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	-	-	-	-

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

**Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.



**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Brown Liquid
Color	Brown
Odor	Petroleum
Odor Threshold	No available data.

<u>Property</u>	<u>Values (Method)</u>
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	No available data.
Flash Point	> 220 °C / > 428 °F (Cleveland Open-Cup)
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	No available data.
Lower Flammability Limit:	No available data.
Vapor Pressure	No available data.
Vapor Density	No available data.
Specific Gravity / Relative Density	0.876-0.88
Water Solubility	No available data.
Solubility in other solvents	No available data.
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	No available data.
Autoignition Temperature	No available data.
Kinematic Viscosity	118 mm <sup>2</sup> /s @ 40°C / 104°F (ASTM D445)
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	14.9 (w/w)
Density	No available data.
Bulk Density	Not applicable.

## 10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

### Potential short-term adverse effects from overexposures

<b>Inhalation</b>	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
<b>Eye contact</b>	Irritating to eyes. May cause reddening and tearing.
<b>Skin contact</b>	May cause skin irritation. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
<b>Ingestion</b>	May cause irritation of the mouth, throat and gastrointestinal tract.

**Acute Toxicological data**

Name	Oral LD50	Dermal LD50	Inhalation LC50
Petroleum Distillates, Hydrotreated Heavy Paraffinic 64742-54-7	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.5 mg/l (Rat) 4 h
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoctyl) esters, zinc salts 113706-15-3	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-
Butene, homopolymer 9003-29-6	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	-	-	-

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

USED MOTOR OIL: Lifetime, continuous skin contact with used motor oils has caused skin cancer in laboratory tests. The combustion process produces compounds (polycyclic aromatic hydrocarbons) in motor oils that increase with use and are responsible for the cancer induction. Thorough washing has been found to prevent the development of skin cancer on animals from used motor oil exposure.

ZDDP: Zinc dialkyldithiophosphate (ZDDP) additives are primarily eye and/or skin irritants or corrosives with low acute toxicity via oral, dermal, and inhalation routes of exposure and are not skin sensitizers. In laboratory repeat dose studies by the dermal and oral routes, ZDDPs cause effects only at high doses, primarily due to irritation, in a manner similar to other irritating materials. The weight-of- evidence of genotoxicity testing indicates that ZDDPs are not mutagenic and do not cause larger chromosomal effects.

**Adverse effects related to the physical, chemical and toxicological characteristics**

**Signs & Symptoms** Causes eye irritation. Symptoms may include redness, itching, and inflammation. Contact may cause skin dermatitis and/or irritation. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

**Sensitization** Not expected to be a skin or respiratory sensitizer.

**Mutagenic effects** None known.

**Carcinogenicity** Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
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Petroleum Distillates, Hydrotreated Heavy Paraffinic 64742-54-7	Mineral oil, poorly/mildly refined Suspected Human Carcinogen (A2) Mineral oil, highly/severely refined, inhalable fraction Not Classifiable (A4)	Mineral oil, untreated or mildly treated Carcinogenic to humans (1) Mineral oil, highly refined Not Classifiable (3)	Mineral oil, poorly/mildly refined Known to be human carcinogen	Not Listed
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts 113706-15-3	Not Listed	Not Listed	Not Listed	Not Listed
Dinonyl diphenylamine 36878-20-3	Not Listed	Not Listed	Not Listed	Not Listed
Butene, homopolymer 9003-29-6	Not Listed	Not Listed	Not Listed	Not Listed
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	Not Listed	Not Listed	Not Listed	Not Listed

**Reproductive toxicity** None known.

**Specific Target Organ Toxicity (STOT) - single exposure** Not classified.

**Specific Target Organ Toxicity (STOT) - repeated exposure** Not classified.

**Aspiration hazard** Not classified.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

Used motor and/or lube oils can be toxic to birds and fish.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Petroleum Distillates, Hydrotreated Heavy Paraffinic 64742-54-7	-	96-hr LC50 = 5000 mg/L Rainbow trout	-	48-hr EC50 = 1000 mg/L Daphnia magna
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isoocetyl) esters, zinc salts 113706-15-3	-	-	-	-
Dinonyl diphenylamine 36878-20-3	-	-	-	-
Butene, homopolymer 9003-29-6	-	-	-	-
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs. 84605-20-9	-	-	-	-

**Persistence and degradability** Not expected to be readily biodegradable.

**Bioaccumulation** Contains component(s) with the potential to bioaccumulate.

**Mobility in soil** No information available.

**Other adverse effects** No information available.

### 13. DISPOSAL CONSIDERATIONS

**Description of Waste Residues**

No information available.

**Safe Handling of Wastes**

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

### 14. TRANSPORT INFORMATION

**DOT (49 CFR 172.101):**

<b>UN Proper shipping name:</b>	Not Regulated
<b>UN/Identification No:</b>	Not applicable
<b>Transport Hazard Class(es):</b>	Not applicable
<b>Packing group:</b>	Not applicable

**TDG (Canada):**

<b>UN Proper shipping name:</b>	Not Regulated
<b>UN/Identification No:</b>	Not applicable
<b>Transport Hazard Class(es):</b>	Not applicable
<b>Packing group:</b>	Not applicable

### 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b):	This product and/or its components are listed on the TSCA Chemical Inventory.
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**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Petroleum Distillates, Hydrotreated Heavy Paraffinic	NA
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	NA
Dinonyl diphenylamine	NA
Butene, homopolymer	NA
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	NA

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Petroleum Distillates, Hydrotreated Heavy Paraffinic	NA

Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	NA
Dinonyl diphenylamine	NA
Butene, homopolymer	NA
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	NA

**SARA:** The following EPA hazard categories apply to this product:

Acute Health Hazard

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Petroleum Distillates, Hydrotreated Heavy Paraffinic	None
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	None
Dinonyl diphenylamine	None
Butene, homopolymer	None
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Petroleum Distillates, Hydrotreated Heavy Paraffinic**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Carcinogen
- New Jersey - Environmental Hazardous Substances List: Not Listed.
- Illinois - Toxic Air Contaminants: Present
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

**Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: Not Listed.
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.

New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Dinonyl diphenylamine	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Butene, homopolymer	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Amines, polyethylenepoly-, reaction products with succinic anhydride polyisobutenyl derivs.	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.

New York - Reporting of Releases Part 597 - List of Hazardous Substances:

Not Listed.

**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Phosphorodithioic acid, mixed O,O-bis(sec-Bu and isooctyl) esters, zinc salts	D2B	1%
Butene, homopolymer	Uncontrolled product according to WHMIS classification criteria	



**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Prepared By** Toxicology and Product Safety  
**Revision Date:** 05/22/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.







# SAFETY DATA SHEET

SDS ID NO.: 0168MAR019  
Revision Date: 05/22/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Multi-purpose DM Automatic Transmission Fluid

**Synonym:** Marathon Multipurpose Automatic Transmission Fluid; Marathon Dexron-III/Mercon Automatic Transmission Fluid; Marathon Dexron-II Automatic Transmission Fluid; Marathon Dexron-III/Mercon Automatic Transmission Fluid; Marathon Multi-purpose ATF; Marathon Dexron ATF; Marathon Mercon ATF

**Chemical Family:** Hydrocarbon Mixture

**Recommended Use:** Automatic transmission fluid.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
539 South Main Street  
Findlay, OH 45840

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

#### **Hazards Not Otherwise Classified (HNOC)**

Not applicable

### Label elements

#### EMERGENCY OVERVIEW

No known significant effects or critical hazards.

**Appearance** Red Liquid

**Physical State** Liquid

**Odor** Petroleum

#### **Precautionary Statements - Prevention**

Not applicable

#### **Precautionary Statements - Response**

Not applicable

**Precautionary Statements - Storage**  
Not applicable

**Precautionary Statements - Disposal**  
Not applicable

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Automatic Transmission Fluid (ATF) is a complex mixture of highly refined lubricating oil base stocks and additives.

**Composition Information:**

Name	CAS Number	Weight %
Distillates (petroleum), hydrotreated light	64742-47-8	1-5

**4. FIRST AID MEASURES**

First Aid Measures

- General advice** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
- Inhalation:** Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If symptoms occur get medical attention.
- Skin Contact:** Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).
- Eye Contact:** Immediately flush eyes with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.
- Ingestion:** Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

Most important signs and symptoms, both short-term and delayed with overexposure

**Adverse Effects:** Preexisting skin conditions and respiratory disorders may be aggravated by exposure to components of this product.

Indication of any immediate medical attention and special treatment needed

**NOTES TO PHYSICIAN:** SKIN: Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge No.

**Special protective equipment and precautions for firefighters**

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 1 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

- Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so.
- Protective Equipment:** Use personal protection measures as recommended in Section 8.
- Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.
- Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.
- Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.
- Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

**7. HANDLING AND STORAGE**

- Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.  
  
High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELS:	OSHA - Vacated PELs	NIOSH IDLH
Distillates (petroleum), hydrotreated light 64742-47-8	200 mg/m <sup>3</sup> TWA (total hydrocarbon vapor) Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

**Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Information on basic physical and chemical properties

<b>Physical State</b>	Liquid
<b>Appearance</b>	Red Liquid
<b>Color</b>	Red
<b>Odor</b>	Petroleum
<b>Odor Threshold</b>	No available data.

<u>Property</u>	<u>Values (Method)</u>
<b>Melting Point / Freezing Point</b>	No available data.
<b>Initial Boiling Point / Boiling Range</b>	No available data.
<b>Flash Point</b>	> 180 °C / > 356 °F (Cleveland Open-Cup)
<b>Evaporation Rate</b>	No available data.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	
<b>Upper Flammability Limit:</b>	No available data.
<b>Lower Flammability Limit:</b>	No available data.

Vapor Pressure	No available data.
Vapor Density	No available data.
Specific Gravity / Relative Density	0.849-0.859
Water Solubility	No available data.
Solubility in other solvents	No available data.
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	No available data.
Autoignition Temperature	No available data.
Kinematic Viscosity	≥ 29 mm <sup>2</sup> /s @ 40°C / 104°F (ASTM D445)
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	No available data.
Density	No available data.
Bulk Density	Not applicable.

## 10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

<b>Inhalation</b>	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
<b>Eye contact</b>	Exposure to vapor or contact with liquid may cause mild eye irritation.
<b>Skin contact</b>	Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
<b>Ingestion</b>	May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Distillates (petroleum), hydrotreated light 64742-47-8	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

Adverse effects related to the physical, chemical and toxicological characteristics

<b>Signs &amp; Symptoms</b>	Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
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**Sensitization** Not expected to be a skin or respiratory sensitizer.

**Mutagenic effects** None known.

**Carcinogenicity** Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Distillates (petroleum), hydrotreated light 64742-47-8	Not Listed	Not Listed	Not Listed	Not Listed

**Reproductive toxicity** None known.

**Specific Target Organ Toxicity (STOT) - single exposure** Not classified.

**Specific Target Organ Toxicity (STOT) - repeated exposure** Not classified.

**Aspiration hazard** Not classified.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity** No information available.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Distillates (petroleum), hydrotreated light 64742-47-8	-	96-hr LC50 = 2.2 mg/l Bluegill	-	-

**Persistence and degradability** No information available.

**Bioaccumulation** No information available.

**Mobility in soil** No information available.

**Other adverse effects** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Description of Waste Residues**  
No information available.

**Safe Handling of Wastes**  
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**  
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**  
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

**14. TRANSPORT INFORMATION**

DOT (49 CFR 172.101):

UN Proper shipping name: Not Regulated  
 UN/Identification No: Not applicable  
 Transport Hazard Class(es): Not applicable  
 Packing group: Not applicable

**TDG (Canada):**  
 UN Proper shipping name: Not Regulated  
 UN/Identification No: Not applicable  
 Transport Hazard Class(es): Not applicable  
 Packing group: Not applicable

**15. REGULATORY INFORMATION**

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Distillates (petroleum), hydrotreated light	NA

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Distillates (petroleum), hydrotreated light	NA

**SARA:** The following EPA hazard categories apply to this product:  
 None

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Distillates (petroleum), hydrotreated light	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

Distillates (petroleum), hydrotreated light

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.

New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

**NOTE:** Uncontrolled product according to WHMIS classification criteria.

## 16. OTHER INFORMATION

**Prepared By** Toxicology and Product Safety  
**Revision Date:** 05/22/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0173MAR019  
Revision Date: 05/22/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Multi-Purpose Gear Compound  
**Synonym:** Marathon Multi-Purpose Gear Compound; Multipurpose Gear Compound; 571 Multi-Purpose Gear Compound; 573 Multi-Purpose Gear Compound; 80W-90 Multi-Purpose Gear Compound; 85W-140 Multi-Purpose Gear Compound  
**Chemical Family:** Motor/Lube Oil  
**Recommended Use:** Gear Oil.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
539 South Main Street  
Findlay, OH 45840

**SDS information:** 1-419-421-3070  
**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin sensitization	Category 1
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

**Hazards Not Otherwise Classified (HNOC)**  
Not applicable

### Label elements

#### EMERGENCY OVERVIEW

#### **Warning**

May cause an allergic skin reaction  
Harmful to aquatic life with long lasting effects



**Appearance** Yellow Liquid

**Physical State** Liquid

**Odor** Petroleum

**Precautionary Statements - Prevention**

Avoid breathing mist/vapors/spray  
Contaminated work clothing should not be allowed out of the workplace  
Wear protective gloves  
Avoid release to the environment

**Precautionary Statements - Response**

IF ON SKIN: Wash with plenty of soap and water  
If skin irritation or rash occurs: Get medical attention  
Wash contaminated clothing before reuse

**Precautionary Statements - Storage**

Not applicable

**Precautionary Statements - Disposal**

Dispose of contents/container at an approved waste disposal plant

**Additional Information**

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Lube oil is a complex mixture of highly refined lubricating base stocks and additives.

**Composition Information:**

Name	CAS Number	Weight %
Long-chain alkyl amine	NOT AVAILABLE	0.1-1
Long-chain alkenyl amine	NOT AVAILABLE	0.1-1

**4. FIRST AID MEASURES**

**First Aid Measures**

**General advice**

In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

**Inhalation:**

Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). If symptoms occur get medical attention.

**Skin Contact:**

Wash skin with plenty of soap and water. Remove contaminated clothing. Get medical attention if irritation or rash occurs. Wash contaminated clothing and clean shoes before reuse.

**Eye Contact:** Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.

**Ingestion:** Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

**Most important signs and symptoms, both short-term and delayed with overexposure**

**Adverse Effects:** May cause skin irritation and/or rash. Symptoms may include redness, itching, and inflammation. Contact with eyes may cause irritation. May cause redness and pain. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.

**Indication of any immediate medical attention and special treatment needed**

**NOTES TO PHYSICIAN:** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**  
For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**  
Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**  
Sensitivity to Mechanical Impact No.  
Sensitivity to Static Discharge No.

**Special protective equipment and precautions for firefighters**  
Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 2 Flammability 1 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

**Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.

**Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.

**Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
Long-chain alkyl amine NOT AVAILABLE	-	-	-	-
Long-chain alkenyl amine NOT AVAILABLE	-	-	-	-

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.

**Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

**Physical State** Liquid  
**Appearance** Yellow Liquid  
**Color** Yellow  
**Odor** Petroleum

<b>Odor Threshold</b>	No available data.
<b>Property</b>	<b>Values (Method)</b>
Melting Point / Freezing Point	No available data.
Initial Boiling Point / Boiling Range	No available data.
Flash Point	> 185 °C / > 365 °F (Cleveland Open-Cup)
Evaporation Rate	No available data.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%)	
Upper Flammability Limit:	No available data.
Lower Flammability Limit:	No available data.
Vapor Pressure	No available data.
Vapor Density	No available data.
Specific Gravity / Relative Density	0.855-0.905
Water Solubility	No available data.
Solubility in other solvents	No available data.
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	No available data.
Autoignition Temperature	No available data.
Kinematic Viscosity	> 130 mm <sup>2</sup> /s @ 40°C / 104°F (ASTM D445)
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	46.8 (w/w)
Density	No available data.
Bulk Density	Not applicable.

**10. STABILITY AND REACTIVITY**

<b>Reactivity</b>	The product is non-reactive under normal conditions.
<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>Possibility of hazardous reactions</b>	None under normal processing.
<b>Hazardous polymerization</b>	Will not occur.
<b>Conditions to avoid</b>	Sources of heat or ignition.
<b>Incompatible materials</b>	Strong oxidizing agents.
<b>Hazardous decomposition products</b>	None known under normal conditions of use.

**11. TOXICOLOGICAL INFORMATION**

**Potential short-term adverse effects from overexposures**

<b>Inhalation</b>	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
<b>Eye contact</b>	Exposure to vapor or contact with liquid may cause mild eye irritation.
<b>Skin contact</b>	May cause skin irritation. May cause an allergic skin reaction. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
<b>Ingestion</b>	May cause irritation of the mouth, throat and gastrointestinal tract.

**Acute Toxicological data**

Name	Oral LD50	Dermal LD50	Inhalation LC50
Long-chain alkyl amine NOT AVAILABLE	-	-	-
Long-chain alkenyl amine NOT AVAILABLE	-	-	-

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

**Adverse effects related to the physical, chemical and toxicological characteristics**

**Signs & Symptoms** May cause irritation. Symptoms may include redness, itching, and inflammation. Rash. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

**Sensitization** May cause sensitization by skin contact. Not expected to be a respiratory sensitizer.

**Mutagenic effects** None known

**Carcinogenicity** Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Long-chain alkyl amine NOT AVAILABLE	Not Listed	Not Listed	Not Listed	Not Listed
Long-chain alkenyl amine NOT AVAILABLE	Not Listed	Not Listed	Not Listed	Not Listed

**Reproductive toxicity** None known.

**Specific Target Organ Toxicity (STOT) - single exposure** Not classified.

**Specific Target Organ Toxicity (STOT) - repeated exposure** Not classified.

**Aspiration hazard** Not classified.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity** Harmful to aquatic life with long lasting effects.

Used motor and/or lube oils can be toxic to birds and fish.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Long-chain alkyl amine NOT AVAILABLE	-	-	-	-
Long-chain alkenyl amine NOT AVAILABLE	-	-	-	-

**Persistence and degradability** No information available.

**Bioaccumulation** No information available.

**Mobility in soil** No information available.

**Other adverse effects** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Description of Waste Residues**  
No information available.

**Safe Handling of Wastes**  
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**  
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**  
Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

**14. TRANSPORT INFORMATION**

**DOT (49 CFR 172.101):**  
**UN Proper shipping name:** Not Regulated  
**UN/Identification No:** Not applicable  
**Transport Hazard Class(es):** Not applicable  
**Packing group:** Not applicable

**TDG (Canada):**  
**UN Proper shipping name:** Not Regulated  
**UN/Identification No:** Not applicable  
**Transport Hazard Class(es):** Not applicable  
**Packing group:** Not applicable

**15. REGULATORY INFORMATION**

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Long-chain alkyl amine	NA
Long-chain alkenyl amine	NA

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Long-chain alkyl amine	NA
Long-chain alkenyl amine	NA

**SARA:** The following EPA hazard categories apply to this product:

Acute Health Hazard

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Long-chain alkyl amine	None
Long-chain alkenyl amine	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

Long-chain alkyl amine

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

Long-chain alkenyl amine

Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.

**Canada DSL/NDSL Inventory:**

This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:**

"This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Long-chain alkyl amine	D2B	1%
Long-chain alkenyl amine	D2B	1%





NOTE: Not Applicable.

## 16. OTHER INFORMATION

Prepared By Toxicology and Product Safety  
Revision Date: 05/22/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0279MAR019  
Revision Date: 05/14/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum No. 2 Low Sulfur Diesel Dyed 500 ppm Sulfur Max  
**Synonym:** Diesel No. 2 Dyed 500 ppm Sulfur Max; No. 2 Diesel, Non-Road Use, Dyed; No. 2 Diesel Dyed 500 ppm Sulfur Max; No. 2 NR 500 Diesel Dyed; No. 2 Diesel Dyed (0.05% Sulfur Max)  
**Chemical Family:** Complex Hydrocarbon Substance  
**Recommended Use:** Fuel.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
539 South Main Street  
Findlay, OH 45840

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### OSHA Regulatory Status

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

#### Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid

### Label elements

#### EMERGENCY OVERVIEW

Danger

**FLAMMABLE LIQUID AND VAPOR**

May accumulate electrostatic charge and ignite or explode

May be fatal if swallowed and enters airways

Harmful if inhaled

Causes skin irritation

Suspected of causing cancer

May cause drowsiness or dizziness

May cause damage to organs (thymus, liver, bone marrow) through prolonged or repeated exposure

Toxic to aquatic life with long lasting effects



**Appearance** Red Liquid

**Physical State** Liquid

**Odor** Slight Hydrocarbon

**Precautionary Statements - 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 only non-sparking tools

Use explosion-proof electrical/ventilating/lighting/equipment

Take precautionary measures against static discharge

Do not breathe mist/vapors/spray

Use only outdoors or in a well-ventilated area

Wear protective gloves/protective clothing/eye protection/face protection

Wash hands and any possibly exposed skin thoroughly after handling

Avoid release to the environment

**Precautionary Statements - Response**

IF exposed or concerned: Get medical attention

IF ON SKIN (or Hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

If skin irritation occurs: Get medical attention

Wash contaminated clothing before reuse

IF INHALED: Remove victim 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 or doctor

Do NOT induce vomiting

In case of fire: Use water spray, fog or regular foam for extinction

Collect spillage

**Precautionary Statements - Storage**

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

Keep cool

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container at an approved waste disposal plant

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

No. 2 Diesel is a complex mixture of paraffins, cycloparaffins, olefins, and aromatic hydrocarbons having hydrocarbon chain lengths predominately in the range of eleven to twenty carbons. May contain a trace amount of benzene (<0.01%). May contain small amounts of red dye and additives (<0.15%) which are not considered hazardous at the concentrations used.

**Composition Information:**

Name	CAS Number	Weight %
No. 2 Diesel Fuel	68476-34-6	50-100
Kerosine, Petroleum	8008-20-6	0-50
Fuels, Diesel, C9-18-Alkane Branched and Linear	1159170-26-9	0-5
Alkanes, C10-C20 branched and linear	928771-01-1	0-5
Naphthalene	91-20-3	0.01-0.5

**4. FIRST AID MEASURES**

**First Aid Measures**

**General advice** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).

**Inhalation:** Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

**Skin Contact:** Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).  
  
Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.

**Eye Contact:** Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. GET IMMEDIATE MEDICAL ATTENTION.

**Ingestion:** Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.

**Most important signs and symptoms, both short-term and delayed with overexposure**

**Adverse Effects:** Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Delayed: Dry skin and possible irritation with repeated or prolonged exposure.

**Indication of any immediate medical attention and special treatment needed**

**NOTES TO PHYSICIAN:**

**SKIN:** Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be **SERIOUS SURGICAL EMERGENCIES**.

**INGESTION:** This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**Unsuitable extinguishing media**

Do not use straight water streams to avoid spreading fire.

**Specific hazards arising from the chemical**

This product has been determined to be a flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

**Sensitivity to Mechanical Impact No.**

**Sensitivity to Static Discharge Yes.**

**Special protective equipment and precautions for firefighters**

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

**NFPA:**

Health 1

Flammability 2

Instability 0

Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:**

Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. All contaminated surfaces will be slippery.

**Protective Equipment:**

Use personal protection measures as recommended in Section 8.

**Emergency Procedures:**

Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:**

Avoid release to the environment. Avoid subsoil penetration.

**Methods and materials for containment:**

Contain liquid with sand or soil.

**Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Use only non-sparking tools. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
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No. 2 Diesel Fuel 68476-34-6	100 mg/m <sup>3</sup> TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Kerosine, Petroleum 8008-20-6	200 mg/m <sup>3</sup> TWA Skin - potential significant contribution to overall exposure by the cutaneous route	-	-	-
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	-	-
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m <sup>3</sup>	10 ppm TWA 50 mg/m <sup>3</sup> TWA 15 ppm STEL 75 mg/m <sup>3</sup> STEL	250 ppm

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required in an enclosed area or with inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

**Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

<b>Physical State</b>	Liquid
<b>Appearance</b>	Red Liquid
<b>Color</b>	Red
<b>Odor</b>	Slight Hydrocarbon
<b>Odor Threshold</b>	No available data.

<b>Property</b>	<b>Values (Method)</b>
<b>Melting Point / Freezing Point</b>	No available data.
<b>Initial Boiling Point / Boiling Range</b>	204-338 °C / 400-640 °F
<b>Flash Point</b>	54-88 °C / 130-190 °F
<b>Evaporation Rate</b>	No available data.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	



Upper Flammability Limit:	5.0
Lower Flammability Limit:	0.7
Vapor Pressure	1-10 mm Hg @ 20°C
Vapor Density	4-5
Specific Gravity / Relative Density	C.A. 0.8
Water Solubility	No available data.
Solubility in other solvents	Negligible
Partition Coefficient	No available data.
Decomposition temperature:	No available data.
pH:	Not applicable
Autoignition Temperature	336 °C / 637 °F
Kinematic Viscosity	1.9-3.4 @ 40°C
Dynamic Viscosity	No available data.
Explosive Properties	No available data.
Softening Point	No available data.
VOC Content (%)	10%
Density	6.76 lbs/gal
Bulk Density	Not applicable.

## 10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	The material is stable at 70°F, 760 mmHg pressure.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Excessive heat, sources of ignition, open flame.
<u>Incompatible materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

### Potential short-term adverse effects from overexposures

<b>Inhalation</b>	Harmful if inhaled. Inhalation of high vapor concentrations may cause irritation of the respiratory system. May cause drowsiness or dizziness.
<b>Eye contact</b>	Causes mild eye irritation.
<b>Skin contact</b>	Irritating to skin. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.
<b>Ingestion</b>	May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

### Acute Toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
No. 2 Diesel Fuel 68476-34-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	>1 - <5 mg/L (Rat) 4 h
Kerosine, Petroleum 8008-20-6	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.28 mg/L (Rat) 4 h

Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	>1 - <5 mg/l (Rat) 4 h
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	>1 - <5 mg/l (Rat) 4 h
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m <sup>3</sup> (Rat) 1 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

**MIDDLE DISTILLATES, PETROLEUM:** Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

**MIDDLE DISTILLATES WITH CRACKED STOCKS:** Light cracked distillates have been shown to be carcinogenic in animal tests and have tested positive with in vitro genotoxicity tests. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased fetal resorptions at maternally toxic doses. Dermal exposure to high concentrations resulted in severe skin irritation with weight loss and some mortality. Inhalation exposure to high concentrations resulted in respiratory tract irritation, lung changes/infiltration/accumulation, and reduction in lung function.

**ISOPARAFFINS:** Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

**NAPHTHALENE:** Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

**DIESEL EXHAUST:** The combustion of diesel fuels produces gases including carbon monoxide, carbon dioxide, oxides of nitrogen and/or sulfur, and hydrocarbons that can be irritating and hazardous with overexposure. Long-term occupational overexposure to diesel exhaust and diesel exhaust particulate matter has been associated with an increased risk of respiratory disease, including lung cancer, and is characterized as a "known human carcinogen" by the International Agency for Research on Cancer (IARC), as "a reasonably anticipated human carcinogen" by the National Toxicology Program, and as "likely to be carcinogenic to humans" by the EPA, based upon animal and occupational exposure studies. However, uncertainty exists with these classifications because of deficiencies in the supporting occupational exposure/epidemiology studies, including reliable exposure estimates. Lifetime animal inhalation studies with pulmonary overloading exposure concentrations of diesel exhaust emissions have produced tumors and other adverse health effects. However, in more recent long-term animal inhalation studies of diesel exhaust emissions, no increase in tumor incidence and in fact a substantial reduction in adverse health effects along with significant reductions in the levels of hazardous material emissions were observed and are associated with fuel composition alterations coupled with new technology diesel engines.

Adverse effects related to the physical, chemical and toxicological characteristics

**Signs & Symptoms**

Nausea, vomiting, signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.

**Sensitization** Not expected to be a skin or respiratory sensitizer.

**Mutagenic effects** None known.

**Carcinogenicity** Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
No. 2 Diesel Fuel 08470-34-0	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Kerosine, Petroleum 8008-20-6	Confirmed animal carcinogen (A3)	Not Classifiable (3)	Not Listed	Not Listed
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	Not Listed	Not Listed	Not Listed	Not Listed
Alkanes, C10-C20 branched and linear 928771-01-1	Not Listed	Not Listed	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

**Reproductive toxicity** None known.

**Specific Target Organ Toxicity (STOT) - single exposure** Central nervous system.

**Specific Target Organ Toxicity (STOT) - repeated exposure** Thymus. Liver. Bone marrow.

**Aspiration hazard** May be fatal if swallowed or vomited and enters airways.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
No. 2 Diesel Fuel 68476-34-6	-	96-hr LC50 = 35 mg/l Fathead minnow (flow-through)	-	48-hr EL50 = 6.4 mg/l Daphnia magna
Kerosine, Petroleum 8008-20-6	72-hr EL50 = 5.0-11 mg/l Algae	96-hr LL50 = 18-25 mg/l Fish	-	48-hr EL50 = 1.4-21 mg/l Invertebrates
Fuels, Diesel, C9-18-Alkane Branched and Linear 1159170-26-9	-	-	-	-
Alkanes, C10-C20 branched and linear 928771-01-1	-	-	-	-
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

**Persistence and degradability** Expected to be inherently biodegradable.

**Bioaccumulation** Has the potential to bioaccumulate.

**Mobility in soil** May partition into air, soil and water.

**Other adverse effects** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Description of Waste Residues**

This material may be a flammable liquid waste.

**Safe Handling of Wastes**

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

**Disposal of Wastes / Methods of Disposal**

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

**14. TRANSPORT INFORMATION**

**DOT (49 CFR 172.101):**

<b>UN Proper shipping name:</b>	Fuel Oil, No. 2
<b>UN/Identification No:</b>	NA 1993
<b>Transport Hazard Class(es):</b>	3
<b>Packing group:</b>	III

**TDG (Canada):**

<b>UN Proper shipping name:</b>	Fuel Oil, No. 2
<b>UN/Identification No:</b>	NA 1993
<b>Transport Hazard Class(es):</b>	3
<b>Packing group:</b>	III

**15. REGULATORY INFORMATION**

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
No. 2 Diesel Fuel	NA
Kerosine, Petroleum	NA
Fuels, Diesel, C9-18-Alkane Branched and Linear	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	NA

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
No. 2 Diesel Fuel	NA
Kerosine, Petroleum	NA

Fuels, Diesel, C9-18-Alkane Branched and Linear	NA
Alkanes, C10-C20 branched and linear	NA
Naphthalene	100 lb final RQ 45.4 kg final RQ

**SARA:** The following EPA hazard categories apply to this product:

- Acute Health Hazard
- Fire Hazard
- Chronic Health Hazard

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
No. 2 Diesel Fuel	None
Kerosine, Petroleum	None
Fuels, Diesel, C9-18-Alkane Branched and Linear	None
Alkanes, C10-C20 branched and linear	None
Naphthalene	0.1 % de minimis concentration

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**No. 2 Diesel Fuel**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: SN 2444
- Pennsylvania Right-To-Know: Not Listed.
- Massachusetts Right-To Know: Not Listed.
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.
- New Jersey - Environmental Hazardous Substances List: SN 2444 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
- Illinois - Toxic Air Contaminants: Not Listed.
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

**Kerosine, Petroleum**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: SN 1091
- Pennsylvania Right-To-Know: Present
- Massachusetts Right-To Know: Present
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Not Listed.

New Jersey - Environmental Hazardous Substances List:	SN 1091 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Fuels, Diesel, C9-18-Alkane Branched and Linear	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Alkanes, C10-C20 branched and linear	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed.
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Not Listed.
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
Naphthalene	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)

Illinois - Toxic Air Contaminants  
 New York - Reporting of Releases Part 597 -  
 List of Hazardous Substances:

Present  
 100 lb RQ (air); 1 lb RQ (land/water)

**Canada DSL/NDL Inventory:** This product contains the following component(s) that are listed on the Non-Domestic Substance List (NDL): CAS# 1159170-26-9

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
No. 2 Diesel Fuel	B3,D2A,D2B	0.1%
Kerosine, Petroleum	B3,D2B	1%
Fuels, Diesel, C9-18-Alkane Branched and Linear	B3,D2A,D2B	0.1%
Alkanes, C10-C20 branched and linear	B3,D2A,D2B	0.1%
Naphthalene	B4,D2A	0.1%



**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Prepared By:** Toxicology and Product Safety  
**Revision Date:** 05/14/2015

**Revision Note:**  
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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0127MAR019  
Revision Date: 05/14/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Regular Unleaded Gasoline

**Synonym:** Conventional Regular Unleaded Gasoline  
**Chemical Family:** Complex Hydrocarbon Substance

**Recommended Use:** Fuel.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
**539 South Main Street**  
**Findlay, OH 45840**

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### OSHA Regulatory Status

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 1
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
Aspiration toxicity	Category 1
Acute aquatic toxicity	Category 2
Chronic aquatic toxicity	Category 2

#### Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid

### Label elements

#### EMERGENCY OVERVIEW

#### Danger

EXTREMELY FLAMMABLE LIQUID AND VAPOR  
May accumulate electrostatic charge and ignite or explode

May be fatal if swallowed and enters airways  
Causes skin irritation  
May cause genetic defects  
May cause cancer  
Suspected of damaging fertility or the unborn child  
May cause respiratory irritation  
May cause drowsiness or dizziness  
Toxic to aquatic life with long lasting effects



**Appearance** Clear or Colored Liquid

**Physical State** Liquid

**Odor** Strong Hydrocarbon

**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  
Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Wear protective gloves/protective clothing/eye protection/face protection  
Do not eat, drink or smoke when using this product  
Do not breathe mist/vapors/spray  
Use only outdoors or in a well-ventilated area  
Wash hands thoroughly after handling  
Avoid release to the environment

**Precautionary Statements - Response**

IF exposed or concerned: Get medical attention  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
If skin irritation occurs: Get medical attention  
Wash contaminated clothing before reuse  
IF INHALED: Remove victim 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 or doctor  
Do NOT induce vomiting  
In case of fire: Use water spray, fog or regular foam for extinction

**Precautionary Statements - Storage**

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

**Precautionary Statements - Disposal**

Dispose of contents/container at an approved waste disposal plant

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Gasoline is a complex combination of hydrocarbons consisting of paraffins, cycloparaffins, aromatic and olefinic hydrocarbons having molecular chains ranging in length from four to ten carbons. May contain small amounts of dye and other additives (>0.02%) which are not considered hazardous at the concentrations used.

**Composition Information:**

Name	CAS Number	Weight %
Gasoline	86290-81-5	100
Toluene	108-88-3	1-15
Xylene (mixed isomers)	1330-20-7	2-10
1,2,4-Trimethylbenzene	95-63-6	1-5
Benzene	71-43-2	0.5-3.5
n-Hexane	110-54-3	0-3
Ethylbenzene	100-41-4	0.5-2.0
Naphthalene	91-20-3	0.1-0.5

**4. FIRST AID MEASURES**

**First Aid Measures**

- General advice** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
- Inhalation:** Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. **GET IMMEDIATE MEDICAL ATTENTION.**
- Skin Contact:** Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. May be absorbed through the skin in harmful amounts. Get medical attention if irritation persists. Any injection injury from high pressure equipment should be evaluated immediately by a physician as potentially serious (See NOTES TO PHYSICIAN).  
  
Place contaminated clothing in closed container until cleaned or discarded. If clothing is to be laundered, inform the person performing the operation of contaminant's hazardous properties. Destroy contaminated, non-chemical resistant footwear.
- Eye Contact:** Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.
- Ingestion:** Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. **GET IMMEDIATE MEDICAL ATTENTION.**

**Most important signs and symptoms, both short-term and delayed with overexposure**

- Adverse Effects:** Acute: Headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue. Delayed: Dry skin and possible irritation with repeated or prolonged exposure.

**Indication of any immediate medical attention and special treatment needed**

**NOTES TO PHYSICIAN:**

**INHALATION:** This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

**SKIN:** Leaks or accidents involving high-pressure equipment may inject a stream of material through the skin and initially produce an injury that may not appear serious. Only a small puncture wound may appear on the skin surface but, without proper treatment and depending on the nature, original pressure, volume, and location of the injected material, can compromise blood supply to an affected body part. Prompt surgical debridement of the wound may be necessary to prevent irreversible loss of function and/or the affected body part. High pressure injection injuries may be **SERIOUS SURGICAL EMERGENCIES**.

**INGESTION:** This material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO2, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

**Unsuitable extinguishing media**

Do not use straight water streams to avoid spreading fire.

**Specific hazards arising from the chemical**

This product has been determined to be an extremely flammable liquid per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Vapors may travel along the ground or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback can occur along vapor trail. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

**Sensitivity to Mechanical Impact** No.  
**Sensitivity to Static Discharge** Yes.

**Special protective equipment and precautions for firefighters**

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Avoid using straight water streams. Water may be ineffective in extinguishing low flash point fires, but can be used to cool exposed surfaces. Avoid excessive water spray application. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 3 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

**Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:** Avoid release to the environment. Avoid subsoil penetration.

**Methods and materials for containment:** Contain liquid with sand or soil.

**Methods and materials for cleaning up:** Use suitable absorbent materials such as vermiculite, sand, or clay to clean up residual liquids. Recover and return free product to proper containers. When recovering free liquids ensure all equipment is grounded and bonded. Use only non-sparking tools.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** NEVER SIPHON THIS PRODUCT BY MOUTH. Use appropriate grounding and bonding practices. Static accumulating flammable liquid. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking. Avoid repeated and prolonged skin contact. Use personal protection measures as recommended in Section 8. Use only non-sparking tools. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

Hydrocarbons are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering, pumping at high flow rates or loading and transfer operations. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic chemical vapors or mists from process equipment operating under elevated temperature and pressure, or sudden ingress of air into vacuum equipment may result in ignition of vapors or mists without the presence of obvious ignition sources. Nozzle spouts must be kept in contact with the containers or tank during the entire filling operation.

Portable containers should never be filled while in or on a motor vehicle or marine craft. Containers should be placed on the ground. Static electric discharge can ignite fuel vapors when filling non-grounded containers or vehicles on trailers. The nozzle spout must be kept in contact with the container before and during the entire filling operation. Use only approved containers.

A buildup of static electricity can occur upon re-entry into a vehicle during fueling especially in cold or dry climate conditions. The charge is generated by the action of dissimilar fabrics (i.e., clothing and upholstery) rubbing across each other as a person enters/exits the vehicle. A flash fire can result from this discharge if sufficient flammable vapors are present. Therefore, do not get back in your vehicle while refueling.

Cellular phones and other electronic devices may have the potential to emit electrical charges (sparks). Sparks in potentially explosive atmospheres (including fueling areas such as gas stations) could cause an explosion if sufficient flammable vapors are present. Therefore, turn off cellular phones and other electronic devices when working in potentially explosive atmospheres or keep devices inside your vehicle during refueling.

High-pressure injection of any material through the skin is a serious medical emergency even though the small entrance wound at the injection site may not initially appear serious. These injection injuries can occur from high-pressure equipment such as paint spray or grease or guns, fuel injectors, or pinhole leaks in hoses or hydraulic lines and should all be considered serious. High pressure injection injuries may be SERIOUS SURGICAL EMERGENCIES (See First Aid Section 4).

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Name	ACGIH TLV	OSHA PELs:	OSHA - Vacated PELs	NIOSH IDLH
Gasoline 86290-81-5	300 ppm TWA 500 ppm STEL	-	300 ppm TWA 900 mg/m <sup>3</sup> TWA 500 ppm STEL 1500 mg/m <sup>3</sup> STEL	-
Toluene 108-88-3	20 ppm TWA	TWA: 200 ppm Ceiling: 300 ppm	100 ppm TWA 375 mg/m <sup>3</sup> TWA 150 ppm STEL 560 mg/m <sup>3</sup> STEL	500 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m <sup>3</sup>	100 ppm TWA 435 mg/m <sup>3</sup> TWA 150 ppm STEL 655 mg/m <sup>3</sup> STEL	900 ppm
1,2,4-Trimethylbenzene 95-63-6	25 ppm TWA	-	25 ppm TWA 125 mg/m <sup>3</sup> TWA	-
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028) TWA: 1 ppm STEL: 5 ppm (see 29 CFR 1910.1028)	25 ppm Ceiling 1 ppm TWA 5 ppm STEL	500 ppm
n-Hexane 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m <sup>3</sup>	50 ppm TWA 180 mg/m <sup>3</sup> TWA	1100 ppm
Ethylbenzene 100-41-4	20 ppm TWA	TWA: 100 ppm TWA: 435 mg/m <sup>3</sup>	100 ppm TWA 435 mg/m <sup>3</sup> TWA 125 ppm STEL 545 mg/m <sup>3</sup> STEL	800 ppm
Naphthalene 91-20-3	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm TWA: 50 mg/m <sup>3</sup>	10 ppm TWA 50 mg/m <sup>3</sup> TWA 15 ppm STEL 75 mg/m <sup>3</sup> STEL	250 ppm

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

**Skin and body protection:** Use nitrile rubber, viton or PVA gloves for repeated or prolonged skin exposure. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

**Respiratory protection:** Approved organic vapor chemical cartridge or supplied air respirators should be worn for exposures to any components exceeding the established exposure limits. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.

**Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

<b>Physical State</b>	Liquid
<b>Appearance</b>	Clear or Colored Liquid
<b>Color</b>	Clear or Colored
<b>Odor</b>	Strong Hydrocarbon
<b>Odor Threshold</b>	No available data.

<u>Property</u>	<u>Values (Method)</u>
<b>Melting Point / Freezing Point</b>	No available data.
<b>Initial Boiling Point / Boiling Range</b>	32-225 °C / 90-437 °F
<b>Flash Point</b>	-45.5 °C / -50 °F
<b>Evaporation Rate</b>	No available data.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	
<b>Upper Flammability Limit:</b>	7.6
<b>Lower Flammability Limit:</b>	1.4
<b>Vapor Pressure</b>	403-776 mm Hg@ 100°F
<b>Vapor Density</b>	3-4
<b>Specific Gravity / Relative Density</b>	0.70-0.77
<b>Water Solubility</b>	Negligible
<b>Solubility in other solvents</b>	No available data.
<b>Partition Coefficient</b>	2.13-4.5
<b>Decomposition temperature:</b>	No available data.
<b>pH:</b>	Not applicable
<b>Autoignition Temperature</b>	C.A. 257 °C / 495 °F
<b>Kinematic Viscosity</b>	No available data.
<b>Dynamic Viscosity</b>	No available data.
<b>Explosive Properties</b>	No available data.
<b>Softening Point</b>	No available data.
<b>VOC Content (%)</b>	100%
<b>Density</b>	5.9-6.3 lbs/gal
<b>Bulk Density</b>	Not applicable.

## 10. STABILITY AND REACTIVITY

<b><u>Reactivity</u></b>	The product is non-reactive under normal conditions.
<b><u>Chemical stability</u></b>	The material is stable at 70°F, 760 mmHg pressure.
<b><u>Possibility of hazardous reactions</u></b>	None under normal processing.
<b><u>Hazardous polymerization</u></b>	Will not occur.
<b><u>Conditions to avoid</u></b>	Excessive heat, sources of ignition, open flame.
<b><u>Incompatible materials</u></b>	Strong oxidizing agents.
<b><u>Hazardous decomposition products</u></b>	None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

### Potential short-term adverse effects from overexposures

<b>Inhalation</b>	Irritating to the respiratory system. May cause drowsiness or dizziness. Breathing high concentrations of this material in a confined space or by intentional abuse can cause irregular heartbeats which can cause death.
<b>Eye contact</b>	Causes mild eye irritation.

**Skin contact**

Causes skin irritation. Effects may become more serious with repeated or prolonged contact. May be absorbed through the skin in harmful amounts.

**Ingestion**

May be fatal if swallowed or vomited and enters airways. May cause irritation of the mouth, throat and gastrointestinal tract.

**Acute Toxicological data**

Name	Oral LD50	Dermal LD50	Inhalation LC50
Gasoline 86290-81-5	14000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.2 mg/L (Rat) 4 h
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
1,2,4-Trimethylbenzene 95-63-6	3280 mg/kg (Rat)	> 3160 mg/kg (Rabbit)	18,000 mg/m <sup>3</sup> (Rat) 4 h
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
n-Hexane 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Ethylbenzene 100-41-4	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h
Naphthalene 91-20-3	490 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 340 mg/m <sup>3</sup> (Rat) 1 h

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**



**BENZENE:** Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer and other diseases of the blood forming organs including Acute Myelogenous Leukemia (AML), and Aplastic Anemia (AA), an often fatal disease. Some studies suggest overexposure to benzene may also be associated with Myelodysplastic Syndrome (MDS). Findings from a case control study of workers exposed to benzene was reported during the 2009 Benzene Symposium in Munich included an increase in Acute Myeloid Leukemias and Non-Hodgkins Lymphoid Neoplasms (NHLN) of the subtype follicular lymphoma (FL) in some occupational categories. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of AA have been reported in the offspring of persons severely overexposed to benzene. Studies in laboratory animals indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and minor skeletal variations. Benzene has been classified as a proven human carcinogen by OSHA and a Group 1 (Carcinogenic to Humans) material by IARC. The current proposed IARC classification for benzene is summarized as follows: Sufficient evidence for Acute Myeloid Leukemia; limited evidence for Acute Lymphatic Leukemia, Chronic Lymphatic Leukemia, Non-Hodgkin Lymphoma, and Multiple Myeloma.

**NAPHTHAS:** In a large epidemiological study on over 15,000 employees at several petroleum refineries and amongst residents located near these refineries, no increased risk of kidney cancer was observed in association with gasoline exposures (a similar material). In a similar study, no increased risk of kidney cancer was observed among petroleum refinery workers, but there was a slight trend in the incidence of kidney cancers among service station employees, especially after a 30-year latency period. Altered mental state, drowsiness, peripheral motor neuropathy, irreversible brain damage (so-called Petrol Sniffer's Encephalopathy), delirium, seizures, and sudden death have been reported from repeated overexposure to some hydrocarbon solvents, naphthas, and gasoline.

**ISOPARAFFINS:** Studies in laboratory animals have shown that long-term exposure to similar materials (isoparaffins) can cause kidney damage and kidney cancer in male laboratory rats. However, in-depth research indicates that these findings are unique to the male rat, and that these effects are not relevant to humans.

**TOLUENE:** Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Abuse of toluene at high concentrations (e.g., glue sniffing and solvent abuse) has been associated with adverse effects on the liver, kidney and nervous system, and can cause CNS depression, cardiac arrhythmias, and death. Studies of workers indicate longterm exposure may be related to impaired color vision and hearing. Some studies of workers suggest longterm exposure may be related to neurobehavioral and cognitive changes. Some of these effects have been observed in laboratory animals following repeated exposure to high levels of toluene. Several studies of workers suggest longterm exposure may be related to small increases in spontaneous abortions and changes in some gonadotropic hormones. However, the weight of evidence does not indicate toluene is a reproductive hazard to humans. Studies in laboratory animals indicate some changes in reproductive organs following high levels of exposure, but no significant effects on mating performance or reproduction were observed. Case studies of persons abusing toluene suggest isolated incidences of adverse effects on the fetus including birth defects. Findings in laboratory animals have been largely negative. Positive findings include small increases in minor skeletal and visceral malformations and developmental delays following very high levels of maternal exposure. Studies of workers indicate long-term exposure may be related to effects on the liver, kidney and blood, but these appear to be limited to changes in serum enzymes and decreased leukocyte counts. Adverse effects on the liver, kidney, thymus and nervous system were observed in animal

studies following very high levels of exposure. The relevance of these findings to humans is not clear at this time.

**ETHYLBENZENE:** Findings from a 2-year inhalation study in rodents conducted by NTP were as follows: Effects were observed only at the highest exposure level (750 ppm). At this level the incidence of renal tumors was elevated in male rats (tubular carcinomas) and female rats (tubular adenomas). The incidence of tumors was also elevated in male mice (alveolar and bronchiolar carcinomas) and female mice (hepatocellular carcinomas). IARC has classified ethyl benzene as "possibly carcinogenic to humans" (Group 2B). Studies in laboratory animals indicate some evidence of post-implantation deaths following high levels of maternal exposure. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals indicate limited evidence of renal malformations, resorptions, and developmental delays following high levels of maternal exposure with evidence of maternal toxicity. The relevance of these findings to humans is not clear at this time. Studies in laboratory animals have demonstrated evidence of ototoxicity (hearing loss) following exposure levels as low as 300 ppm for 5 days. Studies in laboratory animals indicate some evidence of adverse effects on the liver, kidney, thyroid, and pituitary gland.

**XYLENES, ALL ISOMERS:** Overexposure to xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Effects may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Effects from Prolonged or Repeated Exposure: Impaired neurological function was reported in workers exposed to solvents including xylene. Studies in laboratory animals have shown evidence of impaired hearing following high levels of exposure. Studies in laboratory animals suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure with evidence of maternal toxicity. The relevance of these observations to humans is not clear at this time. Adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

**C9 AROMATIC HYDROCARBONS:** A developmental inhalation study was conducted in laboratory mice. Increased implantation losses, reduced fetal weights, delayed ossification and an increased incidence of cleft palate were observed at the highest exposure level (1,500 ppm). This exposure level was extremely toxic to pregnant female mice (44% mortality). Reduced fetal body weights were also observed at 500 ppm. A multi-generation reproduction inhalation study was conducted in laboratory rats. Reductions in pup weights, pup weight gain, litter size, and pup survival were observed at 1,500 ppm, an exposure level at which significant maternal toxicity was observed. Reduced pup weight gain was also observed at 500 ppm.

**NAPHTHALENE:** Severe jaundice, neurotoxicity (kornicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays have been negative. A few studies have shown chromosomal effects (elevated levels of Sister Chromatid Exchange or chromosomal aberrations) in vitro. Naphthalene has been classified as Possibly Carcinogenic to Humans (2B) by IARC, based on findings from studies in laboratory animals.

**N-HEXANE:** Long-term or repeated exposure to n-hexane can cause peripheral nerve

damage. Initial symptoms are numbness of the fingers and toes. Also, motor weakness can occur in the digits, but may also involve muscles of the arms, thighs and forearms. The onset of these symptoms may be delayed for several months to a year after the beginning of exposure. Testicular atrophy and partial to full loss of the germ cell line were observed in sub-chronic high-dose inhalation studies of laboratory rodents. These effects appeared irreversible. Rodent reproduction studies have shown evidence of reduced fetal weight but no frank malformations.

**PENTANES:** Studies of pentane isomers in laboratory animals indicate exposure to extremely high levels (roughly 10 vol.%) may induce cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

**CARBON MONOXIDE:** is a chemical asphyxiant with no warning properties (such as odor). At 400-500 ppm for 1 hour headache and dyspnea may occur. If activity is increased, symptoms of overexposure may include nausea, irritability, increased respiration, tinnitus, sweating, chest pain, confusion, impaired judgement, dizziness, weakness, drowsiness, ataxia, irregular heart beat, cyanosis and pallor. Levels in excess of 1000 ppm can result in collapse, loss of consciousness, respiratory failure and death. Extremely high concentrations (12,800 ppm) can cause immediate unconsciousness and death in 1-3 minutes. Repeated anoxia can lead to central nervous system damage and peripheral neuropathy, with loss of sensation in the fingers, amnesia, and mental deterioration and possible congestive heart failure. Damage may also occur to the fetus, lung, liver, kidney, spleen, cardiovascular system and other organs.

**COMBUSTION ENGINE EXHAUST:** Chronic inhalation studies of gasoline engine exhaust in mice, rats and hamsters did not produce any carcinogenic effects. Condensates/extracts of gasoline engine exhaust produced an increase in tumors compared to controls when testing by skin painting, subcutaneous injection, intratracheal instillation or implantation into the lungs.

Adverse effects related to the physical, chemical and toxicological characteristics

**Signs & Symptoms** Nausea, vomiting, signs of nervous system depression: headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue.

**Sensitization** Not expected to be a skin or respiratory sensitizer.

**Mutagenic effects** May cause genetic defects.

**Carcinogenicity** Cancer designations are listed in the table below.

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Gasoline 86290-81-5	Confirmed animal carcinogen (A3)	Possibly Carcinogenic (2B)	Not Listed	Not Listed
Toluene 108-88-3	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
Xylene (mixed isomers) 1330-20-7	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
1,2,4-Trimethylbenzene 95-63-6	Not Listed	Not Listed	Not Listed	Not Listed
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen
n-Hexane 110-54-3	Not Listed	Not Listed	Not Listed	Not Listed
Ethylbenzene 100-41-4	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Not Listed	Not Listed
Naphthalene 91-20-3	Confirmed animal carcinogen (A3)	Possible human carcinogen (2B)	Reasonably anticipated to be a human carcinogen	Not Listed

**Reproductive toxicity** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity (STOT) - single exposure** Respiratory system. Central nervous system.

**Specific Target Organ Toxicity (STOT) - repeated exposure** Not classified.

**Aspiration hazard** May be fatal if swallowed or vomited and enters airways.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity** This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Gasoline 86290-81-5	72-hr EC50 = 56 mg/l Algae	96-hr LC50 = 11 mg/l Rainbow trout (static)	-	48-hr LC50 = 7.6 mg/l Daphnia magna
Toluene 108-88-3	72-hr EC50 = 12.5 mg/l Algae	96-hr LC50 ≤ 10 mg/l Rainbow trout	-	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)
Xylene (mixed isomers) 1330-20-7	72-hr EC50 = 11 mg/l Algae	96-hr LC50 = 8 mg/l Rainbow trout	-	48-hr LC50 = 3.82 mg/l Daphnia magna
1,2,4-Trimethylbenzene 95-63-6	-	96-hr LC50 = 7.19-8.28 mg/l Fathead minnow (flow-through)	-	48-hr EC50 = 6.14 mg/L Daphnia magna
Benzene 71-43-2	72-hr EC50 = 29 mg/l Algae	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	-	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)
n-Hexane 110-54-3	-	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Ethylbenzene 100-41-4	72-hr EC50 = 1.7-7.6 mg/l Algae	96-hr LC50 = 4 mg/L Rainbow trout	-	48-hr EC50 = 1-4 mg/L Daphnia magna
Naphthalene 91-20-3	-	96-hr LC50 = 0.91-2.82 mg/l Rainbow trout (static) 96-hr LC50 = 1.99 mg/l Fathead minnow (static)	-	48-hr LC50 = 1.6 mg/l Daphnia magna

**Persistence and degradability** Expected to be inherently biodegradable.

**Bioaccumulation** Has the potential to bioaccumulate.

**Mobility in soil** May partition into air, soil and water.

**Other adverse effects** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Description of Waste Residues**  
This material may be a flammable liquid waste.

**Safe Handling of Wastes**  
Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

**Disposal of Wastes / Methods of Disposal**  
The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

**14. TRANSPORT INFORMATION**

**DOT (49 CFR 172.101):**

UN Proper shipping name: Gasoline  
 UN/Identification No: UN 1203  
 Transport Hazard Class(es): 3  
 Packing group: II

**TDG (Canada):**

UN Proper shipping name: Gasoline  
 UN/Identification No: UN 1203  
 Transport Hazard Class(es): 3  
 Packing group: II

**15. REGULATORY INFORMATION**

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Gasoline	NA
Toluene	NA
Xylene (mixed isomers)	NA
1,2,4-Trimethylbenzene	NA
Benzene	NA
n-Hexane	NA
Ethylbenzene	NA
Naphthalene	NA

**SARA Section 304:** This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Gasoline	NA
Toluene	1000 lb final RQ 454 kg final RQ
Xylene (mixed isomers)	100 lb final RQ 45.4 kg final RQ
1,2,4-Trimethylbenzene	NA
Benzene	10 lb final RQ 4.54 kg final RQ
n-Hexane	5000 lb final RQ 2270 kg final RQ
Ethylbenzene	1000 lb final RQ 454 kg final RQ

Naphthalene	100 lb final RQ 45.4 kg final RQ
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**SARA:** The following EPA hazard categories apply to this product:

- Acute Health Hazard
- Chronic Health Hazard
- Fire Hazard

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Gasoline	None
Toluene	1.0 % de minimis concentration
Xylene (mixed isomers)	1.0 % de minimis concentration
1,2,4-Trimethylbenzene	None
Benzene	0.1 % de minimis concentration
n-Hexane	1.0 % de minimis concentration
Ethylbenzene	0.1 % de minimis concentration
Naphthalene	0.1 % de minimis concentration

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Gasoline**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Not Listed.
- New Jersey Right-To-Know: SN 0957
- Pennsylvania Right-To-Know: Present
- Massachusetts Right-To Know: Present
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Not Listed.
- Michigan Critical Materials Register List: Not Listed.
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Carcinogen; Flammable - third degree
- New Jersey - Environmental Hazardous Substances List: SN 0957 TPQ: 10000 lb (Under N.J.A.C. 7:1G, environmental hazardous substances in mixtures such as gasoline or new and used petroleum oil may be reported under these categories)
- Illinois - Toxic Air Contaminants: Present
- New York - Reporting of Releases Part 597 - List of Hazardous Substances: Not Listed.

**Toluene**

- Louisiana Right-To-Know: Not Listed.
- California Proposition 65: Developmental toxicity, initial date 1/1/91  
Female reproductive toxicity, initial date 8/7/09
- New Jersey Right-To-Know: SN 1866
- Pennsylvania Right-To-Know: Environmental hazard
- Massachusetts Right-To Know: Present
- Florida Substance List: Not Listed.
- Rhode Island Right-To-Know: Toxic (skin); Flammable (skin)
- Michigan Critical Materials Register List: 100 lb Annual usage threshold
- Massachusetts Extraordinarily Hazardous Substances: Not Listed.
- California - Regulated Carcinogens: Not Listed.
- Pennsylvania RTK - Special Hazardous Substances: Not Listed.
- New Jersey - Special Hazardous Substances: Flammable - third degree; Teratogen

New Jersey - Environmental Hazardous Substances List:	SN 1866 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
<b>Xylene (mixed isomers)</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 2014
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold all isomers
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
<b>1,2,4-Trimethylbenzene</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1929
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Not Listed.
New Jersey - Environmental Hazardous Substances List:	Not Listed.
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed.
<b>Benzene</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 2/27/87 Developmental toxicity, initial date 12/26/97 Male reproductive toxicity, initial date 12/26/97
New Jersey Right-To-Know:	SN 0197
Pennsylvania Right-To-Know:	Environmental hazard; Special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin); Carcinogen (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Carcinogen; Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Present
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197 TPQ: 500 lb

Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	10 lb RQ (air); 1 lb RQ (land/water)
<b>n-Hexane</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Not Listed.
New Jersey Right-To-Know:	SN 1340
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1340 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1 lb RQ (air); 1 lb RQ (land/water)
<b>Ethylbenzene</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 6/11/04
New Jersey Right-To-Know:	SN 0851
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen; flammable - Third degree
New Jersey - Environmental Hazardous Substances List:	SN 0851 TPQ: 500 lb
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
<b>Naphthalene</b>	
Louisiana Right-To-Know:	Not Listed.
California Proposition 65:	Carcinogen, initial date 4/19/02
New Jersey Right-To-Know:	SN 1322 SN 3758
Pennsylvania Right-To-Know:	Environmental hazard Present (particulate)
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed.
California - Regulated Carcinogens:	Not Listed.
Pennsylvania RTK - Special Hazardous Substances:	Not Listed.
New Jersey - Special Hazardous Substances:	Carcinogen
New Jersey - Environmental Hazardous Substances List:	SN 1322 TPQ: 500 lb (Reportable at the de minimis quantity of >0.1%)
Illinois - Toxic Air Contaminants	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 1 lb RQ (land/water)



**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Gasoline	B2,D2A,D2B	0.1%
Toluene	B2,D2A,D2B	0.1%
Xylene (mixed isomers)	B2,D2A,D2B	m-, o-isomers 1.0%; p-isomer 0.1%
1,2,4-Trimethylbenzene	B3	1
Benzene	B2,D2A,D2B	0.1%
n-Hexane	B2,D2A,D2B	1%
Ethylbenzene	B2,D2A,D2B	0.1%
Naphthalene	B4,D2A	0.1%



**NOTE:** Not Applicable.

**16. OTHER INFORMATION**

**Prepared By** Toxicology and Product Safety  
**Revision Date:** 05/14/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.





# SAFETY DATA SHEET

SDS ID NO.: 0183MAR019  
Revision Date: 05/22/2015

## 1. IDENTIFICATION

**Product Name:** Marathon Petroleum Super Maraplex EP-2  
**Synonym:** Super Maraplex® EP-2 Grease; Maraplex EP 2 Grease;  
**Chemical Family:** Petroleum Based Grease  
**Recommended Use:** Lubricating Grease.  
**Use Restrictions:** All others.

**Supplier Name and Address:**  
**MARATHON PETROLEUM COMPANY LP**  
**539 South Main Street**  
**Findlay, OH 45840**

**SDS information:** 1-419-421-3070

**Emergency Telephone:** 1-877-627-5463

## 2. HAZARD IDENTIFICATION

### Classification

#### **OSHA Regulatory Status.**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

#### **Hazards Not Otherwise Classified (HNOC)**

Not applicable

### Label elements

#### EMERGENCY OVERVIEW

No known significant effects or critical hazards.

**Appearance** Red Semi-solid

**Physical State** Semi-Solid

**Odor** Petroleum

#### **Precautionary Statements - Prevention**

Not applicable

#### **Precautionary Statements - Response**

Not applicable

#### **Precautionary Statements - Storage**

Not applicable

**Precautionary Statements - Disposal**  
Not applicable

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Maralube® Moly grease is a complex mixture of highly refined, high viscosity, lubricating oil base stock with a lithium complex soap thickener.

#### Composition Information:

There are no 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

#### First Aid Measures

<b>General advice</b>	In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
<b>Inhalation:</b>	Remove to fresh air and keep at rest in a position comfortable for breathing. If symptoms occur get medical attention.
<b>Skin Contact:</b>	Wash skin with plenty of soap and water. If irritation or other symptoms occur get medical attention. Wash contaminated clothing and clean shoes before reuse.
<b>Eye Contact:</b>	Immediately flush eyes with plenty of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Gently remove contacts while flushing. Get medical attention if irritation persists.
<b>Ingestion:</b>	Rinse mouth out with water. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. If symptoms develop, seek medical attention.

#### Most important signs and symptoms, both short-term and delayed with overexposure

<b>Adverse Effects:</b>	May cause eye irritation. May cause skin irritation and/or dermatitis. Symptoms may include redness, itching, and inflammation. Preexisting skin conditions and/or respiratory disorders may be aggravated by exposure to this product.
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#### Indication of any immediate medical attention and special treatment needed

<b>NOTES TO PHYSICIAN:</b>	Treat symptomatically.
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### 5. FIRE-FIGHTING MEASURES

#### **Suitable extinguishing media**

For small fires, Class B fire extinguishing media such as CO<sub>2</sub>, dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

#### **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 not combustible per the OSHA Hazard Communication Standard, but will ignite and burn at temperatures exceeding the flash point.

**Hazardous combustion products**

Smoke, carbon monoxide, and other products of incomplete combustion.

**Explosion data**

**Sensitivity to Mechanical Impact** No.

**Sensitivity to Static Discharge** No.

**Special protective equipment and precautions for firefighters**

Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Use water spray to cool exposed surfaces from as far a distance as possible. Keep run-off water out of sewers and water sources.

**NFPA:** Health 1 Flammability 1 Instability 0 Special Hazards -

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions:** Keep public away. Isolate and evacuate area. Shut off source if safe to do so. All contaminated surfaces will be slippery.

**Protective Equipment:** Use personal protection measures as recommended in Section 8.

**Emergency Procedures:** Advise authorities and National Response Center (800-424-8802) if the product has entered a water course or sewer. Notify local health and pollution control agencies, if appropriate.

**Environmental precautions:** Avoid release to the environment.

**Methods and materials for containment:** Prevent further leakage or spillage if safe to do so.

**Methods and materials for cleaning up:** Cover with absorbent materials such as sand or clay. Shovel or sweep up material and place in a designated, labeled waste container.

**7. HANDLING AND STORAGE**

**Safe Handling Precautions:** Avoid contact with skin, eyes and clothing. Do not swallow. Avoid breathing vapors or mists. Use good personal hygiene practices. Wash thoroughly after handling. Use personal protection measures as recommended in Section 8. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Refer to applicable EPA, OSHA, NFPA and consistent state and local requirements.

**Storage Conditions:** Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Store away from incompatible materials.

**Incompatible materials** Strong oxidizing agents.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Notes:** The manufacturer has voluntarily elected to provide exposure limits contained in OSHA's 1989 air contaminants standard in its SDSs, even though certain of those exposure limits were vacated in 1992.

**Engineering measures:** Local or general exhaust required when using at elevated temperatures that generate vapors or mists.

**Personal protective equipment**

**Eye protection:** Use goggles or face-shield if the potential for splashing exists.

- Skin and body protection:** Wear neoprene, nitrile or PVA gloves to prevent skin contact. Glove suitability is based on workplace conditions and usage. Contact the glove manufacturer for specific advice on glove selection and breakthrough times. Wear appropriate protective clothing.
- Respiratory protection:** Use an approved organic vapor chemical cartridge or supplied air respirators when material produces vapors that exceed permissible exposure limits or excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134. Self-contained breathing apparatus should be used for fire fighting.
- Hygiene measures:** Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Physical State</b>	Semi-Solid
<b>Appearance</b>	Red Semi-solid
<b>Color</b>	Red
<b>Odor</b>	Petroleum
<b>Odor Threshold</b>	No available data.

<u>Property</u>	<u>Values (Method)</u>
<b>Melting Point / Freezing Point</b>	> 260 °C / > 500 °F
<b>Initial Boiling Point / Boiling Range</b>	> 316 °C / > 600 °F
<b>Flash Point</b>	No available data.
<b>Evaporation Rate</b>	< 1 (ether (anhydrous) = 1)
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Flammability Limit in Air (%)</b>	
<b>Upper Flammability Limit:</b>	No available data.
<b>Lower Flammability Limit:</b>	No available data.
<b>Vapor Pressure</b>	<0.13 kPa (<1 mm Hg) [room temperature]
<b>Vapor Density</b>	> 1 (Air = 1)
<b>Specific Gravity / Relative Density</b>	0.91
<b>Water Solubility</b>	Partially soluble in water
<b>Solubility in other solvents</b>	No available data
<b>Partition Coefficient</b>	No available data.
<b>Decomposition temperature:</b>	No available data.
<b>pH:</b>	No available data.
<b>Autoignition Temperature</b>	No available data.
<b>Kinematic Viscosity</b>	No available data.
<b>Dynamic Viscosity</b>	No available data.
<b>Explosive Properties</b>	No available data.
<b>Softening Point</b>	No available data.
<b>VOC Content (%)</b>	No available data.
<b>Density</b>	No available data.
<b>Bulk Density</b>	Not applicable.

## 10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.

Conditions to avoid

Sources of heat or ignition.

Incompatible materials

Strong oxidizing agents.

Hazardous decomposition products

None known under normal conditions of use.

## 11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	Overheating may produce vapors which may cause respiratory irritation, dizziness and nausea.
Eye contact	Exposure to vapor or contact with liquid may cause mild eye irritation.
Skin contact	May cause skin irritation. Prolonged or repeated exposure may cause dermatitis, folliculitis or oil acne.
Ingestion	May cause irritation of the mouth, throat and gastrointestinal tract.

Acute Toxicological data

No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

This product is considered to have a low order of acute and chronic oral and dermal toxicity.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs & Symptoms	May cause eye irritation. Contact may cause skin dermatitis and/or irritation. Symptoms may include redness, itching, and inflammation. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.
Sensitization	Not expected to be a skin or respiratory sensitizer.
Mutagenic effects	None known.
Carcinogenicity	None known.
Reproductive toxicity	None known.
Specific Target Organ Toxicity (STOT) - single exposure	Not classified.
Specific Target Organ Toxicity (STOT) - repeated exposure	Not classified.
Aspiration hazard	Not classified.

## 12. ECOLOGICAL INFORMATION

Ecotoxicity

No information available.

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility in soil No information available.

Other adverse effects No information available.

### 13. DISPOSAL CONSIDERATIONS

**Description of Waste Residues**

No information available.

**Safe Handling of Wastes**

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required.

**Disposal of Wastes / Methods of Disposal**

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

**Methods of Contaminated Packaging Disposal**

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

### 14. TRANSPORT INFORMATION

**DOT (49 CFR 172.101):**

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

**TDG (Canada):**

UN Proper shipping name:	Not Regulated
UN/Identification No:	Not applicable
Transport Hazard Class(es):	Not applicable
Packing group:	Not applicable

### 15. REGULATORY INFORMATION

**US Federal Regulatory Information:**

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory.

**EPA Superfund Amendment & Reauthorization Act (SARA):**

**SARA Section 302:** This product does not contain any component(s) included on EPA's Extremely Hazardous Substance (EHS) List.

**SARA Section 304:** This product does not contain any component(s) identified as an EHS or a CERCLA Hazardous substance, which in case of a spill or release may be subject to SARA reporting requirements.

**SARA:** The following EPA hazard categories apply to this product:

None

**SARA Section 313:** This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).



**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Canada DSL/NDSL Inventory:** This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

**Canadian Regulatory Information:** "This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations."

**NOTE:** Uncontrolled product according to WHMIS classification criteria.

## 16. OTHER INFORMATION

**Prepared By** Toxicology and Product Safety  
**Revision Date:** 05/22/2015

**Revision Note:**

**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 is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not 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.



Product Name: MOBIL DTE OIL HEAVY  
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## SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

**Product Name:** MOBIL DTE OIL HEAVY  
**Product Description:** Base Oil and Additives  
**Product Code:** 201560501580, 600189-00, 970106  
**Intended Use:** Turbine oil

#### COMPANY IDENTIFICATION

**Supplier:** EXXON MOBIL CORPORATION  
22777 Springwoods Village Parkway  
Spring, TX. 77389 USA

**24 Hour Health Emergency:** 609-737-4411  
**Transportation Emergency Phone:** 800-424-9300 or 703-527-3887 CHEMTREC  
**Product Technical Information:** 800-662-4525  
**MSDS Internet Address:** <http://www.exxon.com>, <http://www.mobil.com>

### SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

#### Other hazard information:

**HAZARD NOT OTHERWISE CLASSIFIED (HNOC):** None as defined under 29 CFR 1910.1200.

#### PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

#### HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

#### ENVIRONMENTAL HAZARDS

No significant hazards.

<b>NFPA Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0
<b>HMIS Hazard ID:</b>	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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<b>SECTION 3</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
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This material is defined as a mixture.

**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
2,6-DI-TERT-BUTYLPHENOL	128-39-2	0.1 - < 1%	H315, H319(2A), H400(M factor 1), H410(M factor 1)

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>
------------------	---------------------------

**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.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
------------------	-------------------------------

**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**

Product Name: MOBIL DTE OIL HEAVY

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**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:** Incomplete combustion products, Smoke, Fume, Sulfur oxides, Oxides of carbon, Aldehydes

## FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >215°C (419°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 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,

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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.

### 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/m<sup>3</sup> - ACGIH TLV (inhalable fraction), 5 mg/m<sup>3</sup> - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

### 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.

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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.

**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.

<b>SECTION 9</b>	<b>PHYSICAL AND CHEMICAL PROPERTIES</b>
------------------	---

**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):** 0.879  
**Flammability (Solid, Gas):** N/A  
**Flash Point [Method]:** >215°C (419°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)  
**Decomposition Temperature:** N/D  
**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

Product Name: MOBIL DTE OIL HEAVY  
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**pH:** N/A  
**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5  
**Solubility in Water:** Negligible  
**Viscosity:** 98.5 cSt (98.5 mm<sup>2</sup>/sec) at 40 °C | 9.9 cSt (9.9 mm<sup>2</sup>/sec) at 100°C  
**Oxidizing Properties:** See Hazards Identification Section.

**OTHER INFORMATION**

**Freezing Point:** N/D  
**Melting Point:** N/A  
**Pour Point:** -18°C (0°F)  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
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**REACTIVITY:** See sub-sections below.

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

**INFORMATION ON TOXICOLOGICAL EFFECTS**

<b>Hazard Class</b>	<b>Conclusion / Remarks</b>
<b>Inhalation</b>	
Acute 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.
<b>Ingestion</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
<b>Skin</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
<b>Sensitization</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
<b>Aspiration:</b> Data available.	Not expected to be an aspiration hazard. Based on



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	physico-chemical properties of the material.
<b>Germ Cell Mutagenicity:</b> No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
<b>Carcinogenicity:</b> No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
<b>Reproductive Toxicity:</b> No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

## OTHER INFORMATION

### 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.

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.

### 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

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**Marine Pollutant:** No

**AIR (IATA):** Not Regulated for Air Transport

## SECTION 15

## REGULATORY INFORMATION

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**OSHA HAZARD COMMUNICATION STANDARD:** This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

**Listed or exempt from listing/notification on the following chemical inventories:** AICS, DSL, IECSC, 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
PHOSPHORODITHOIC ACID, O,O-DI C1-14-ALKYL ESTERS, ZINC SALTS (2:1) (ZDDP)	68649-42-3	15
ZINC DITHIOPHOSPHATE	68649-42-3	15

--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**

N/D = Not determined, N/A = Not applicable

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

H315: Causes skin irritation; Skin Corr/Irritation, Cat 2

H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A

H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Updates made in accordance with implementation of GHS requirements.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2007096XUS (1013599)

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Product Name: MOBIL SHC 624  
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## SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

**Product Name:** MOBIL SHC 624  
**Product Description:** Synthetic Base Stocks and Additives  
**Product Code:** 201560500510, 602920-00, 970382  
**Intended Use:** Circulating/gear oil

#### COMPANY IDENTIFICATION

**Supplier:** EXXON MOBIL CORPORATION  
22777 Springwoods Village Parkway  
Spring, TX. 77389 USA

**24 Hour Health Emergency** 609-737-4411  
**Transportation Emergency Phone** 800-424-9300 or 703-527-3887 CHEMTREC  
**Product Technical Information** 800-662-4525  
**MSDS Internet Address** <http://www.exxon.com>, <http://www.mobil.com>

### SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

#### Other hazard information:

**HAZARD NOT OTHERWISE CLASSIFIED (HNOC):** None as defined under 29 CFR 1910.1200.

#### PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

#### HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

#### ENVIRONMENTAL HAZARDS

No significant hazards.

<b>NFPA Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0
<b>HMS Hazard ID:</b>	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.

Product Name: MOBIL SHC 624  
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<b>SECTION 3</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
------------------	---

This material is defined as a mixture.

**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
1-DECENE, HOMOPOLYMER HYDROGENATED	68037-01-4	60 - < 70%	H304
TRIPHENYL PHOSPHATE	115-86-6	0.1 - < 1%	H400(M factor 1), H410(M factor 1)

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>
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**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.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
------------------	-------------------------------

**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**

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**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:** Incomplete combustion products, Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides

## FLAMMABILITY PROPERTIES

**Flash Point [Method]:** >210°C (410°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 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.

### 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

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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.

## STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers.

<b>SECTION 8</b>	<b>EXPOSURE CONTROLS / PERSONAL PROTECTION</b>
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## EXPOSURE LIMIT VALUES

**Exposure limits/standards (Note: Exposure limits are not additive)**

Substance Name	Form	Limit / Standard		NOTE	Source
1-DECENE, HOMOPOLYMER HYDROGENATED	Aerosols (thoracic fraction)	TWA	5 mg/m3	N/A	ExxonMobil
TRIPHENYL PHOSPHATE		TWA	3 mg/m3	N/A	OSHA Z1
TRIPHENYL PHOSPHATE		TWA	3 mg/m3	N/A	ACGIH

**Exposure limits/standards for materials that can be formed when handling this product:** When mists/aerosols can occur the following are recommended: 5 mg/m<sup>3</sup> - ACGIH TLV (inhalable fraction), 5 mg/m<sup>3</sup> - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

## 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.



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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.

**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:** Orange

**Odor:** Characteristic

**Odor Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 0.85

**Flammability (Solid, Gas):** N/A

**Flash Point [Method]:** >210°C (410°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)

**Decomposition Temperature:** N/D

**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

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pH: N/A  
 Log Pow (n-Octanol/Water Partition Coefficient): > 3.5  
 Solubility in Water: Negligible  
 Viscosity: 32 cSt (32 mm<sup>2</sup>/sec) at 40 °C  
 Oxidizing Properties: See Hazards Identification Section.

## OTHER INFORMATION

Freezing Point: N/D  
 Melting Point: N/A  
 Pour Point: -48°C (-54°F)

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
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**REACTIVITY:** See sub-sections below.

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

### INFORMATION ON TOXICOLOGICAL EFFECTS

<b>Hazard Class</b>	<b>Conclusion / Remarks</b>
<b>Inhalation</b>	
Acute 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.
<b>Ingestion</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
<b>Skin</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
<b>Sensitization</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
<b>Aspiration:</b> Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.

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<b>Germ Cell Mutagenicity:</b> No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
<b>Carcinogenicity:</b> No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
<b>Reproductive Toxicity:</b> No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

## OTHER INFORMATION

### Contains:

Synthetic base oils: Not expected to cause significant health effects under conditions of normal use, based on laboratory studies with the same or similar materials. Not mutagenic or genotoxic. Not sensitizing in test animals and humans.

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.

Material -- Not expected to demonstrate chronic toxicity to aquatic organisms.

### 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.

## ECOLOGICAL DATA

### Ecotoxicity

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Test	Duration	Organism Type	Test Results
Aquatic - Acute Toxicity	96 hour(s)	Oncorhynchus mykiss	LL50 1003 mg/l: data for similar materials
Aquatic - Chronic Toxicity	21 day(s)	Daphnia magna	NOELR 1 mg/l: data for similar materials

## 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

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**Marine Pollutant:** No

**AIR (IATA):** Not Regulated for Air Transport

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<b>SECTION 15</b>	<b>REGULATORY INFORMATION</b>
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**OSHA HAZARD COMMUNICATION STANDARD:** This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

**Listed or exempt from listing/notification on the following chemical inventories:** TSCA  
**Special Cases:**

Inventory	Status
AICS	Restrictions Apply

**PRODUCT REGISTRATION STATUS:** USA

**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
PHENOL, 4,4-METHYLENEBIS(2,6-BIS(1,1-DIMETHYLETHYL)-	118-82-1	5

--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

<b>SECTION 16</b>	<b>OTHER INFORMATION</b>
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N/D = Not determined, N/A = Not applicable

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

- H304: May be fatal if swallowed and enters airways; Aspiration, Cat 1
- H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
- H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

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Updates made in accordance with implementation of GHS requirements.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2007950XUS (1013326)

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## SAFETY DATA SHEET

### SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

**Product Name:** MOBILGEAR 600 XP 150  
**Product Description:** Base Oil and Additives  
**Product Code:** 201560401215, 613620-00, 97AE98  
**Intended Use:** Gear oil

#### COMPANY IDENTIFICATION

**Supplier:** EXXON MOBIL CORPORATION  
22777 Springwoods Village Parkway  
Spring, TX. 77389 USA  
**24 Hour Health Emergency** 609-737-4411  
**Transportation Emergency Phone** 800-424-9300 or 703-527-3887 CHEMTREC  
**Product Technical Information** 800-662-4525  
**MSDS Internet Address** <http://www.exxon.com>, <http://www.mobil.com>

### SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

#### Other hazard information:

**HAZARD NOT OTHERWISE CLASSIFIED (HNOC):** None as defined under 29 CFR 1910.1200.

#### PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

#### HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

#### ENVIRONMENTAL HAZARDS

No significant hazards.

<b>NFPA Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0
<b>HMIS Hazard ID:</b>	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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<b>SECTION 3</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
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This material is defined as a mixture.

**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
LONG-CHAIN ALKYL AMINE		0.1 - < 0.25%	H302, H311, H317, H330(2), H314(1B), H373, H400(M factor 1), H410(M factor 1)

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>
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**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.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
------------------	-------------------------------

**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



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## 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:** Oxides of carbon, Aldehydes, Sulfur oxides, Smoke, Fume, Incomplete combustion products

## 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 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

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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.

### 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/m<sup>3</sup> - ACGIH TLV (inhalable fraction), 5 mg/m<sup>3</sup> - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

### 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:

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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.

**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

**Flammability (Solid, Gas):** N/A

**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)

**Decomposition Temperature:** N/D

**Vapor Density (Air = 1):** > 2 at 101 kPa

**Vapor Pressure:** < 0.013 kPa (0.1 mm Hg) at 20 °C

Product Name: MOBILGEAR 600 XP 150  
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**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:** 150 cSt (150 mm<sup>2</sup>/sec) at 40 °C | 14.7 cSt (14.7 mm<sup>2</sup>/sec) at 100°C  
**Oxidizing Properties:** See Hazards Identification Section.

**OTHER INFORMATION**

**Freezing Point:** N/D  
**Melting Point:** N/A  
**Pour Point:** -9°C (16°F)  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
-------------------	---------------------------------

**REACTIVITY:** See sub-sections below.

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

**INFORMATION ON TOXICOLOGICAL EFFECTS**

<b>Hazard Class</b>	<b>Conclusion / Remarks</b>
<b>Inhalation</b>	
Acute 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.
<b>Ingestion</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
<b>Skin</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
<b>Sensitization</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.

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<b>Aspiration:</b> Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
<b>Germ Cell Mutagenicity:</b> No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
<b>Carcinogenicity:</b> No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
<b>Reproductive Toxicity:</b> No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

## OTHER INFORMATION

### 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.

The following ingredients are cited on the lists below: None.

#### --REGULATORY LISTS SEARCHED--

1 = NTP CARC

3 = IARC 1

5 = IARC 2B

2 = NTP SUS

4 = IARC 2A

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.

### 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

Product Name: MOBILGEAR 600 XP 150

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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

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**Marine Pollutant:** No

**AIR (IATA):** Not Regulated for Air Transport

Product Name: MOBILGEAR 600 XP 150  
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<b>SECTION 15</b>	<b>REGULATORY INFORMATION</b>
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**OSHA HAZARD COMMUNICATION STANDARD:** This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

**Listed or exempt from listing/notification on the following chemical inventories:** AICS, DSL, 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:** None.

--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

<b>SECTION 16</b>	<b>OTHER INFORMATION</b>
-------------------	--------------------------

N/D = Not determined, N/A = Not applicable

**KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):**

- H302: Harmful if swallowed; Acute Tox Oral, Cat 4
- H311: Toxic in contact with skin; Acute Tox Dermal, Cat 3
- H314(1B): Causes severe skin burns and eye damage; Skin Corr/Irritation, Cat 1B
- H317: May cause allergic skin reaction; Skin Sensitization, Cat 1
- H330(2): Fatal if inhaled; Acute Tox Inh, Cat 2
- H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2
- H400: Very toxic to aquatic life; Acute Env Tox, Cat 1
- H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

Updates made in accordance with implementation of GHS requirements.

Product Name: MOBILGEAR 600 XP 150

Revision Date: 20 Mar 2015

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The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

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PPEC: A

DGN: 7077871XUS (1012016)

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Product Name: MOBILGEAR 600 XP 220

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## SAFETY DATA SHEET

### SECTION 1

### PRODUCT AND COMPANY IDENTIFICATION

#### PRODUCT

**Product Name:** MOBILGEAR 600 XP 220

**Product Description:** Base Oil and Additives

**Product Code:** 201560401220, 613638-00, 97AE99

**Intended Use:** Gear oil

#### COMPANY IDENTIFICATION

**Supplier:**

**EXXON MOBIL CORPORATION**

22777 Springwoods Village Parkway

Spring, TX. 77389 USA

**24 Hour Health Emergency**

609-737-4411

**Transportation Emergency Phone**

800-424-9300 or 703-527-3887 CHEMTREC

**Product Technical Information**

800-662-4525

**MSDS Internet Address**

<http://www.exxon.com>, <http://www.mobil.com>

### SECTION 2

### HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

#### Other hazard information:

**HAZARD NOT OTHERWISE CLASSIFIED (HNOC):** None as defined under 29 CFR 1910.1200.

#### PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

#### HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

#### ENVIRONMENTAL HAZARDS

No significant hazards.

<b>NFPA Hazard ID:</b>	Health: 0	Flammability: 1	Reactivity: 0
<b>HMIS Hazard ID:</b>	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.

Product Name: MOBILGEAR 600 XP 220

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<b>SECTION 3</b>	<b>COMPOSITION / INFORMATION ON INGREDIENTS</b>
------------------	---

This material is defined as a mixture.

**Hazardous Substance(s) or Complex Substance(s) required for disclosure**

Name	CAS#	Concentration*	GHS Hazard Codes
LONG-CHAIN ALKYL AMINE		0.1 - < 0.25%	H302, H311, H317, H330(2), H314(1B), H373, H400(M factor 1), H410(M factor 1)

\* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

<b>SECTION 4</b>	<b>FIRST AID MEASURES</b>
------------------	---------------------------

**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.

<b>SECTION 5</b>	<b>FIRE FIGHTING MEASURES</b>
------------------	-------------------------------

**EXTINGUISHING MEDIA**

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight Streams of Water

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## 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:** Oxides of carbon, Incomplete combustion products, Aldehydes, Smoke, Fume, Sulfur oxides

## 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 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.

### 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/m<sup>3</sup> - ACGIH TLV (inhalable fraction), 5 mg/m<sup>3</sup> - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

### 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:

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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.

**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):** 0.894

**Flammability (Solid, Gas):** N/A

**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)

**Decomposition Temperature:** N/D

**Vapor Density (Air = 1):** > 2 at 101 kPa

**Vapor Pressure:** < 0.013 kPa (0.1 mm Hg) at 20 °C

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**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:** 220 cSt (220 mm<sup>2</sup>/sec) at 40 °C | 19 cSt (19 mm<sup>2</sup>/sec) at 100°C  
**Oxidizing Properties:** See Hazards Identification Section.

## OTHER INFORMATION

**Freezing Point:** N/D  
**Melting Point:** N/A  
**Pour Point:** -9°C (16°F)  
**DMSO Extract (mineral oil only), IP-346:** < 3 %wt

<b>SECTION 10</b>	<b>STABILITY AND REACTIVITY</b>
-------------------	---------------------------------

**REACTIVITY:** See sub-sections below.

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Excessive heat. High energy sources of ignition.

**MATERIALS TO AVOID:** Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**POSSIBILITY OF HAZARDOUS REACTIONS:** Hazardous polymerization will not occur.

<b>SECTION 11</b>	<b>TOXICOLOGICAL INFORMATION</b>
-------------------	----------------------------------

### INFORMATION ON TOXICOLOGICAL EFFECTS

<b>Hazard Class</b>	<b>Conclusion / Remarks</b>
<b>Inhalation</b>	
Acute 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.
<b>Ingestion</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
<b>Skin</b>	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
<b>Eye</b>	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
<b>Sensitization</b>	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.

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<b>Aspiration:</b> Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
<b>Germ Cell Mutagenicity:</b> No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
<b>Carcinogenicity:</b> No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
<b>Reproductive Toxicity:</b> No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
<b>Lactation:</b> No end point data for material.	Not expected to cause harm to breast-fed children.
<b>Specific Target Organ Toxicity (STOT)</b>	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

## OTHER INFORMATION

### 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.

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.

### 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

Product Name: MOBILGEAR 600 XP 220

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**LAND (DOT):** Not Regulated for Land Transport

**LAND (TDG):** Not Regulated for Land Transport

**SEA (IMDG):** Not Regulated for Sea Transport according to IMDG-Code

**Marine Pollutant:** No

**AIR (IATA):** Not Regulated for Air Transport



Product Name: MOBILGEAR 600 XP 220

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## REGULATORY INFORMATION

**OSHA HAZARD COMMUNICATION STANDARD:** This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

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4 = OSHA Z	9 = TSCA 12b	14 = LA RTK	19 = RI RTK
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Code key: CARC=Carcinogen; REPRO=Reproductive

## SECTION 16

## OTHER INFORMATION

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H317: May cause allergic skin reaction; Skin Sensitization, Cat 1

H330(2): Fatal if inhaled; Acute Tox Inh, Cat 2

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

H400: Very toxic to aquatic life; Acute Env Tox, Cat 1

H410: Very toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 1

### THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Updates made in accordance with implementation of GHS requirements.

Product Name: MOBILGEAR 600 XP 220

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PPEC: A

DGN: 7077874XUS (1012017)

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**SECTION: 1. Product and company identification**

**1.1. Product Identifier**

Product form : Substance  
 Name : Oxygen, compressed  
 CAS No : 7782-44-7  
 Formula : O<sub>2</sub>  
 Other means of identification : Oxygen, Compressed; MediPure Oxygen; Aviator's Breathing Oxygen, USP

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

Use of the substance/mixture : Medical applications.  
 Industrial use. Use as directed.

**1.3. Details of the supplier of the safety data sheet**

Praxair, Inc.  
 39 Old Ridgebury Road  
 Danbury, CT 06810-5113 - USA  
 T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146  
[www.praxair.com](http://www.praxair.com)

**1.4. Emergency telephone number**

Emergency number : Onsite Emergency: 1-800-645-4633

CHEMTREC, 24hr/day 7days/week — Within USA: 1-800-424-9300, Outside USA: 001-703-527-3887 (collect calls accepted, Contract 17729)

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification (GHS-US)**

Ox. Gas 1 H270  
 Compressed gas H280

**2.2. Label elements**

**GHS-US labeling**

Hazard pictograms (GHS-US)



GHS03

GHS04

Signal word (GHS-US)

: DANGER

Hazard statements (GHS-US)

: H270 - MAY CAUSE OR INTENSIFY FIRE; OXIDIZER  
 H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

Precautionary statements (GHS-US)

: P202 - Do not handle until all safety precautions have been read and understood  
 P220 - Keep/Store away from combustible materials, clothing  
 P244 - Keep reduction valves/valves and fittings free from oil and grease  
 P271+P403 - Use and store only outdoors or in a well-ventilated place.  
 P370+P376 - In case of fire: Stop leak if safe to do so  
 CGA-PG05 - Use a back flow preventive device in the piping.  
 CGA-PG20+CGA-PG10 - Use only with equipment of compatible materials of construction and rated for cylinder pressure.  
 CGA-PG22 - Use only with equipment cleaned for oxygen service.  
 CGA-PG21 - Open valve slowly.  
 CGA-PG06 - Close valve after each use and when empty.  
 CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

# Oxygen, compressed

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according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

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### 2.3. Other hazards

Other hazards not contributing to the classification : Breathing 80 percent or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain, and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and central nervous system (CNS) effects, resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness, and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

### 2.4. Unknown acute toxicity (GHS US)

No data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Name	Product Identifier	%
Oxygen, compressed (Main constituent)	(CAS No) 7782-44-7	100

### 3.2. Mixture

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after Inhalation : Remove victim to uncontaminated area. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately. Get immediate medical attention.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

### 4.2. Most important symptoms and effects, both acute and delayed

No additional information available

### 4.3. Indication of any immediate medical attention and special treatment needed

None.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (e.g., safety shower) is the preferred extinguishing media for clothing fires.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.

Reactivity : No reactivity hazard other than the effects described in sub-sections below.

### 5.3. Advice for firefighters

Firefighting instructions : High-pressure, oxidizing gas.

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.

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- Specific methods** : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
- Stop flow of product if safe to do so.
- Use water spray or fog to knock down fire fumes if possible.
- Other information** : Heat of fire can build pressure in container and cause it to rupture. Containers are equipped with a pressure relief device. (Exceptions may exist where authorized by DOT.) No part of the container should be subjected to a temperature higher than 125°F (52°C). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures** : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Ensure adequate air ventilation. Eliminate ignition sources. Evacuate area. Try to stop release. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

##### 6.1.1. For non-emergency personnel

No additional information available

##### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

Try to stop release.

#### 6.3. Methods and material for containment and cleaning up

No additional information available

#### 6.4. Reference to other sections

See also sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Precautions for safe handling** : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

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### 7.2. Conditions for safe storage, including any incompatibilities

#### Storage conditions

- : Store only where temperature will not exceed 125°F (52°C). Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g., NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

**OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE:** When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Oxygen, compressed (7782-44-7)	
ACGIH	Not established
USA OSHA	Not established

### 8.2. Exposure controls

#### Appropriate engineering controls

- : Avoid oxygen rich (>23.5%) atmospheres. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Gas detectors should be used when oxidizing gases may be released. Oxygen detectors should be used when asphyxiating gases may be released. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities.

#### Hand protection

- : Wear working gloves when handling gas containers.

#### Eye protection

- : Wear safety glasses with side shields.

#### Skin and body protection

- : As needed for welding, wear hand, head, and body protection to help prevent injury from radiation and sparks. (See ANSI Z49.1.) At a minimum, this includes welder's gloves and protective goggles, and may include arm protectors, aprons, hats, and shoulder protection as well as substantial clothing.

#### Respiratory protection

- : None necessary.

#### Thermal hazard protection

- : None necessary.

#### Environmental exposure controls

- : None necessary.

#### Other information

- : Consider the use of flame resistant safety clothing. Wear safety shoes while handling containers.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Colorless gas.
Molecular mass	: 32 g/mol
Color	: Colorless.
Odor	: No odor warning properties.
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available



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Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: -219 °C (-362°F)
Freezing point	: No data available
Boiling point	: -183 °C (-297°F)
Flash point	: Not applicable.
Critical temperature	: -118.6 °C (-181.48°F)
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Critical pressure	: 50.4 bar (731.4 psia)
Relative vapor density at 20 °C	: 0.0827 lb/ft <sup>3</sup> (1.325 kg/m <sup>3</sup> ) absolute vapor density at 70°F/21.1°C, 1 atm
Relative density	: 1.1
Density	: 1.4289 kg/m <sup>3</sup> (at 21.1 °C)
Relative gas density	: 1.1
Solubility	: Water: 39 mg/l
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable.
Oxidizing properties	: Oxidizer.
Explosion limits	: No data available

### 9.2. Other Information

Gas group	: Compressed gas
Additional information	: Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Violently oxidizes organic material.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Keep equipment free from oil and grease. Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion. May react violently with combustible materials. May react violently with reducing agents.

### 10.6. Hazardous decomposition products

None.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified
----------------	------------------

# Oxygen, compressed

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Skin corrosion/irritation	:	Not classified
		pH: Not applicable.
Serious eye damage/irritation	:	Not classified
		pH: Not applicable.
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

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

#### 12.2. Persistence and degradability

Oxygen, compressed (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

#### 12.3. Bioaccumulative potential

Oxygen, compressed (7782-44-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

#### 12.4. Mobility in soil

Oxygen, compressed (7782-44-7)	
Mobility in soil	No data available
Ecology - soil	No ecological damage caused by this product.

#### 12.5. Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : No known effects from this product.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods : May be vented to atmosphere in a well ventilated place. Do not discharge into any place where its accumulation could be dangerous.

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

### SECTION 14: Transport information

In accordance with DOT

Transport document description : UN1072 Oxygen, compressed, 2.2

UN-No.(DOT) : UN1072

Proper Shipping Name (DOT) : Oxygen, compressed

Transport hazard class(es) (DOT) : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115



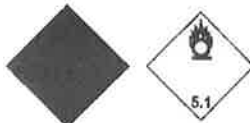
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Hazard labels (DOT) : 2.2 - Non-flammable gas  
 5.1 - Oxidizer



DOT Special Provisions (49 CFR 172.102) : 110 - Fire extinguishers transported under UN1044 may include installed actuating cartridges (cartridges, power device of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the aggregate quantity of deflagrating (propellant) explosives does not exceed 3.2 grams per extinguishing unit.  
 A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft.

### Additional information

Emergency Response Guide (ERG) Number : 122 (UN1072)

Other information : No supplementary information available.

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.

### Transport by sea

UN-No. (IMDG) : 1072  
 Proper Shipping Name (IMDG) : OXYGEN, COMPRESSED  
 Class (IMDG) : 2 - Gases  
 MFAG-No : 122

### Air transport

UN-No.(IATA) : 1072  
 Proper Shipping Name (IATA) : Oxygen, compressed  
 Class (IATA) : 2  
 Civil Aeronautics Law : Gases under pressure/Gases nonflammable nontoxic under pressure

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

<b>Oxygen, compressed (7782-44-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
SARA Section 311/312 Hazard Classes	Sudden release of pressure hazard Fire hazard

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory.

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) 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.

### 15.2. International regulations

#### CANADA

<b>Oxygen, compressed (7782-44-7)</b>
Listed on the Canadian DSL (Domestic Substances List)



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### EU-Regulations

<b>Oxygen, compressed (7782-44-7)</b>
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

### 15.2.2. National regulations

<b>Oxygen, compressed (7782-44-7)</b>
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)

### 15.3. US State regulations

<b>Oxygen, compressed(7782-44-7)</b>	
U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No
State or local regulations	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

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer and/or reproductive toxicity

## SECTION 16: Other information

Revision date : 5/11/2015 12:00:00 AM

Other information : When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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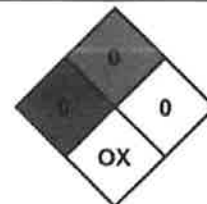
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- |                      |   |
|----------------------|---|
| NFPA health hazard   | : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials. |
| NFPA fire hazard     | : 0 - Materials that will not burn.   |
| NFPA reactivity      | : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.              |
| NFPA specific hazard | : OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.       |



### HMIS III Rating

- |              |  |
|--------------|--|
| Health       | : 0 Minimal Hazard - No significant risk to health |
| Flammability | : 0 Minimal Hazard                                 |
| Physical     | : 3 Serious Hazard                                 |

SDS US (GHS HazCom 2012) - Praxair

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*





## SAFETY DATA SHEET

### Section 1: IDENTIFICATION

#### 1.1 PRODUCT IDENTIFIER

**Product Name:** PB Penetrating Catalyst (Aerosol)  
**Product Code:** 16-PB, 8-PB, 8-PBS, PBTS, 20-PB

#### 1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

**Use:** Lubricant

#### 1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

**Name/Address:** The Blaster Corporation  
8500 Sweet Valley Drive  
Valley View, Ohio 44125 – USA

**Telephone Number:** T (216) 901-5800  
F (216) 901-5801

#### 1.4 EMERGENCY TELEPHONE NUMBER

**Emergency Telephone Number:** CHEMTREC: (800) 424-9300  
**Date of Preparation:** May 26, 2014 **Version #:** 1.0

### Section 2: HAZARD(S) IDENTIFICATION

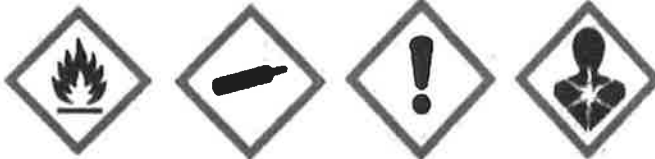
#### 2.1 CLASSIFICATION OF THE CHEMICAL ACCORDING TO OSHA HAZCOM 2012

##### Hazard class

Flammable Aerosol 2  
Gases Under Pressure (Dissolved Gas)  
Serious Eye Irritation 2A  
Carcinogenicity 2  
Aspiration Hazard 1

#### 2.2 LABEL ELEMENTS ACCORDING TO OSHA HAZCOM 2012

##### Hazard Pictogram:



**Signal Word:** Danger

**Hazard Statement:** Flammable aerosol. Contains gas under pressure; may explode if heated. Causes serious eye irritation. Suspected of causing cancer. May be fatal if swallowed and enters airways.

**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. Wash hands thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.



### SAFETY DATA SHEET

**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. If eye irritation persists: Get medical advice/attention. If swallowed: Immediately call a poison center or doctor. Do NOT induce vomiting.

**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, national and international regulations.

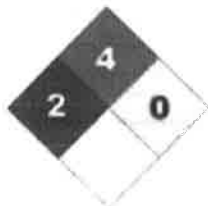
#### 2.3 ADDITIONAL INFORMATION

**Hazards not otherwise classified:** Not applicable.

8 % of the mixture consists of ingredient(s) of unknown acute toxicity.

This product is a hazardous chemical as defined by NOM-018-STPS-2000.

**Mexico Classification:**



**Blue = Health Red = Flammability Yellow = Reactivity White = Special**

**Hazard Rating:** 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

#### Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

##### 3.1 MIXTURES

Ingredient	UN #	H / F/ R / *	CAS No	Wt. %
Distillates (petroleum), hydrotreated light	Not available	Not available	64742-47-8	50 - 60
Solvent naphtha (petroleum), heavy aromatic	UN1270	Not available	64742-94-5	20 - 30
Distillates (petroleum), hydrotreated heavy naphthenic	Not available	Not available	64742-52-5	20 - 30
Carbon dioxide	UN1013	1/0/0	124-38-9	1 - 5
Naphthalene	UN1334/ UN2304	2/2/0	91-20-3	2 - 3
Dinonylphenol, ethoxylated, phosphated	Not available	Not available	39464-64-7	0.5 - 1.5

The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

\* Per NOM-018-STPS-2000





## SAFETY DATA SHEET

### Section 4: FIRST- AID MEASURES

#### 4.1 DESCRIPTION OF THE FIRST AID MEASURE

- Eye:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. If irritation persists, get medical attention.
- Skin:** In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.
- Inhalation:** If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
- Ingestion:** If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

#### 4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

- Eye:** Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
- Skin:** May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
- Inhalation:** May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.
- Ingestion:** May cause respiratory tract irritation.

#### 4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

- Note to Physicians:** Symptoms may not appear immediately.
- Specific Treatments:** In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

### Section 5: FIRE-FIGHTING MEASURES

#### 5.1 EXTINGUISHING MEDIA

- Suitable Extinguishing Media:** Dry chemical, carbon dioxide or foam.
- Unsuitable Extinguishing Media:** Water may be ineffective for extinguishing fire.

#### 5.2 SPECIAL HAZARDS ARISING FROM THE CHEMICAL

- Products of Combustion:** May include, and are not limited to: oxides of carbon, hydrocarbons.

#### 5.3 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS

Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Cool closed containers exposed to fire with water. Do not use a solid water stream as it may scatter and spread fire. Containers may explode when heated.



# SAFETY DATA SHEET

## Section 6: ACCIDENTAL RELEASE MEASURES

### 6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Eliminate sources of ignition.

### 6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING - UP

**Methods for Containment:** Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

**Methods for Cleaning-Up:** Scoop up material and place in a disposal container. Vapors may be heavier than air and may travel along the ground to a distant ignition source and flash back. Provide ventilation.

## Section 7: HANDLING AND STORAGE

### 7.1 PRECAUTIONS FOR SAFE HANDLING

**Handling:** Keep away from sources of ignition. - No smoking. Avoid contact with skin and eyes. Avoid breathing dust/fume/gas/mist/vapours/spray. Do not swallow. When using do not eat, drink or smoke. Do not spray on an open flame or other ignition source. Use only outdoors or in a well-ventilated area. Pressurized container: Do not pierce or burn, even after use. (See section 8)

**General Hygiene Advice:** Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

### 7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

**Storage:** Keep locked up and out of reach of children. Do not expose to temperatures exceeding 50 °C/ 122 °F. Store in dry, cool, well-ventilated area. (See section 10)

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 CONTROL PARAMETERS

#### Exposure Guidelines

Ingredient	Occupational Exposure Limits	
	OSHA-PEL	ACGIH-TLV
Distillates (petroleum), hydrotreated light	100 ppm	200 mg/m <sup>3</sup>
Solvent naphtha (petroleum), heavy aromatic	Not available.	Not available.
Distillates (petroleum), hydrotreated heavy naphthenic	5 mg/m <sup>3</sup> (mist)	5 mg/m <sup>3</sup> (mist)
Carbon dioxide	5000 ppm; 9000 mg/m <sup>3</sup>	5000 ppm
Naphthalene	10 ppm; 50 mg/m <sup>3</sup>	10 ppm
Dinonylphenol, ethoxylated, phosphated	Not available.	Not available.





## SAFETY DATA SHEET

### 8.2 EXPOSURE CONTROLS

**Engineering Controls:** Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

### 8.3 INDIVIDUAL PROTECTIVE MEASURES

**Personal Protective Equipment:**

**Eye/Face Protection:** Safety glasses with side-shields.

**Skin Protection:**

**Hand Protection:** Wear chemically resistant protective gloves.

**Body Protection:** Wear suitable protective clothing.

**Respiratory Protection:** A NIOSH approved respirator is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. 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 Health and Safety Measures:** Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices. Ensure that eyewash stations and safety showers are close to the workstation location.

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## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Viscous / Oily.
<b>Color:</b>	Orange.
<b>Odor:</b>	Heavy aromatic.
<b>Odor Threshold:</b>	Not available.
<b>Physical State:</b>	Gas/pressurized liquid.
<b>pH:</b>	Not available.
<b>Melting Point/Freezing Point:</b>	Not available.
<b>Initial Boiling Point and Boiling Range:</b>	177.8 °C (352 °F)
<b>Flash Point:</b>	65.6 °C (150 °F)
<b>Evaporation Rate:</b>	<1 (n-butyl acetate = 1)
<b>Flammability:</b>	Flammable.
<b>Lower Flammability/Explosive Limit:</b>	Not available.
<b>Upper Flammability/Explosive Limit:</b>	Not available.
<b>Vapor Pressure:</b>	Not available.
<b>Vapor Density:</b>	>1 (Air = 1)
<b>Relative Density/Specific Gravity:</b>	0.91 (Water = 1)
<b>Solubility:</b>	Negligible.



## SAFETY DATA SHEET

<b>Partition coefficient: n-octanol/water:</b>	Not available.
<b>Auto-ignition Temperature:</b>	Not available.
<b>Decomposition Temperature:</b>	Not available.
<b>Viscosity:</b>	Not available.
<b>Oxidizing Properties:</b>	Not available.
<b>Explosive Properties:</b>	Not available.
<b>VOC Content:</b>	< 25%
<b>Flame Projection:</b>	0 cm
<b>Heat of Combustion:</b>	45.8 kJ/g

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### Section 10: STABILITY AND REACTIVITY

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#### 10.1 REACTIVITY

No dangerous reaction known under conditions of normal use.

#### 10.2 CHEMICAL STABILITY

Stable under normal storage conditions. Flammable aerosol. Contents under pressure. Container may explode if heated. Do not puncture. Do not burn.

#### 10.3 POSSIBILITY OF HAZARDOUS REACTIONS

No dangerous reaction known under conditions of normal use.

#### 10.4 CONDITIONS TO AVOID

Heat. Incompatible materials. Sources of ignition. Excessive water.

#### 10.5 INCOMPATIBLE MATERIALS

Strong oxidizing agents. Strong reducing agents. Moisture.

#### 10.6 HAZARDOUS DECOMPOSITION PRODUCTS

May include, and are not limited to: oxides of carbon, hydrocarbons.

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### Section 11: TOXICOLOGICAL INFORMATION

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#### 11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

**Likely Routes of Exposure:** Skin contact, eye contact, inhalation, and ingestion.

**Symptoms related to physical/chemical/toxicological characteristics:**

- Eye:** Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
- Skin:** May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
- Ingestion:** May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.
- Inhalation:** May cause respiratory tract irritation.



## SAFETY DATA SHEET

**Acute Toxicity:**

Ingredient	IDLH	LC50	LD50
Distillates (petroleum), hydrotreated light	Not available.	Inhalation >5.2 mg/L 4h rat	Oral >5000 mg/kg, rat; Dermal >2000 mg/kg, rabbit
Solvent naphtha (petroleum), heavy aromatic	Not available.	Inhalation >5.28 mg/L 4h, rat	Oral >5000 mg/kg, rat; Dermal >2000 mg/kg, rabbit
Distillates (petroleum), hydrotreated heavy naphthenic	Not available.	Inhalation >5.0 mg/L 4h, rat	Oral >5000 mg/kg, rat; Dermal >5000 mg/kg, rabbit
Carbon dioxide	40000 ppm	Not available.	Not available.
Naphthalene	250 ppm	Not available.	Oral 490 mg/kg, rat; Dermal >2500 mg/kg, rat; Dermal >20 g/kg, rabbit
Dinonylphenol, ethoxylated, phosphated	Not available.	Not available.	Not available.

Calculated overall Chemical Acute Toxicity Values		
LC50 (inhalation)	LD50 (oral)	LD50 (dermal)
> 5 mg/L 4h, rat	> 2000 mg/kg, rat	> 2000 mg/kg, rabbit

Ingredient	Chemical Listed as Carcinogen or Potential Carcinogen (NTP, IARC, OSHA, ACGIH, CP65)*
Distillates (petroleum), hydrotreated light	Not listed.
Solvent naphtha (petroleum), heavy aromatic	Not listed.
Distillates (petroleum), hydrotreated heavy naphthenic	Not listed.
Carbon dioxide	Not listed.
Naphthalene	G-A4, I-2B, N-2, CP65
Dinonylphenol, ethoxylated, phosphated	Not listed.

\* See Section 15 for more information.

**11.2 DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT- AND LONG-TERM EXPOSURE**

- Skin Corrosion/Irritation:** Based on available data, the classification criteria are not met.
- Serious Eye Damage/Irritation:** Causes serious eye irritation.
- Respiratory Sensitization:** Based on available data, the classification criteria are not met.
- Skin Sensitization:** Based on available data, the classification criteria are not met.
- STOT-Single Exposure:** Based on available data, the classification criteria are not met.
- Chronic Health Effects:**
  - Carcinogenicity:** Possible carcinogen.
  - Germ Cell Mutagenicity:** Based on available data, the classification criteria are not met.
- Reproductive Toxicity:**
  - Developmental:** Based on available data, the classification criteria are not met.
  - Fertility:** Based on available data, the classification criteria are not met.
- STOT-Repeated Exposure:** Based on available data, the classification criteria are not met.
- Aspiration Hazard:** May be fatal if swallowed and enters airways.





# SAFETY DATA SHEET

Other Information: Not available.

## Section 12: ECOLOGICAL INFORMATION

### 12.1 ECOTOXICITY

Acute/Chronic Toxicity: May cause long-term adverse effects in the aquatic environment.

### 12.2 PERSISTENCE AND DEGRADABILITY

Not available.

### 12.3 BIOACCUMULATIVE POTENTIAL

Bioaccumulation: Not available.

### 12.4 MOBILITY IN SOIL

Not available.

### 12.5 OTHER ADVERSE EFFECTS

Not available.

## Section 13: DISPOSAL CONSIDERATIONS

### 13.1 WASTE TREATMENT METHODS

Disposal Method: This material must be disposed of in accordance with all local, state, provincial, and federal regulations. The generation of waste should be avoided or minimized wherever possible.

Other disposal recommendations: Flammable vapours may accumulate in the container. Do not incinerate empty containers.

## Section 14: TRANSPORT INFORMATION

### 14.1 UN NUMBER

DOT	NOM-004-SCT2-1994
UN1950	UN1950

### 14.2 UN PROPER SHIPPING NAME

DOT	NOM-004-SCT2-1994
AEROSOLS, flammable, limited quantities	AEROSOLS, flammable, limited quantities

### 14.3 TRANSPORT HAZARD CLASS (ES)

DOT	NOM-004-SCT2-1994
2.1	2.1

### 14.4 PACKING GROUP

DOT	NOM-004-SCT2-1994
Not applicable.	Not applicable.



# SAFETY DATA SHEET

### 14.5 ENVIRONMENTAL HAZARDS

Not available.

### 14.6 TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE

Not available.

### 14.7 SPECIAL PRECAUTIONS FOR USER

Do not handle until all safety precautions have been read and understood. The Blaster Corporation does not recommend shipping their aerosol products by air.

## Section 15: REGULATORY INFORMATION

### 15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/ LEGISLATIONS SPECIFIC FOR THE CHEMICAL

**US:** SDS prepared pursuant to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

**Mexico:** SDS prepared pursuant to NOM-018-STPS-2000.

SARA Title III				
Ingredient	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313
Distillates (petroleum), hydrotreated light	Not listed.	Not listed.	Not listed.	Not listed.
Solvent naphtha (petroleum), heavy aromatic	Not listed.	Not listed.	Not listed.	Not listed.
Distillates (petroleum), hydrotreated heavy naphthenic	Not listed.	Not listed.	Not listed.	Not listed.
Carbon dioxide	Not listed.	Not listed.	Not listed.	Not listed.
Naphthalene	Not listed.	Not listed.	100	313
Dinonylphenol, ethoxylated, phosphated	Not listed.	Not listed.	Not listed.	Not listed.

### State Regulations

#### California Proposition 65:

This product contains a chemical known to the State of California to cause cancer.

#### Global Inventories:

Ingredient	USA TSCA
Distillates (petroleum), hydrotreated light	Yes.
Solvent naphtha (petroleum), heavy aromatic	Yes.
Distillates (petroleum), hydrotreated heavy naphthenic	Yes.
Carbon dioxide	Yes.
Naphthalene	Yes.
Dinonylphenol, ethoxylated, phosphated	Yes.



# SAFETY DATA SHEET

NFPA-National Fire Protection Association:	
Health:	2
Fire:	4
Reactivity:	0
HMIS-Hazardous Materials Identification System:	
Health:	2*
Fire:	4
Physical Hazard:	0

Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

### SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

- CP65 California Proposition 65**
- OSHA (O) Occupational Safety and Health Administration.**
- ACGIH (G) American Conference of Governmental Industrial Hygienists.**
  - A1 - Confirmed human carcinogen.
  - A2 - Suspected human carcinogen.
  - A3 - Animal carcinogen.
  - A4 - Not classifiable as a human carcinogen.
  - A5 - Not suspected as a human carcinogen.
- IARC (I) International Agency for Research on Cancer.**
  - 1 - The agent (mixture) is carcinogenic to humans.
  - 2A - The agent (mixture) is probably carcinogenic to humans; there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.
  - 2B - The agent (mixture) is possibly carcinogenic to humans; there is limited evidence of carcinogenicity in humans in the absence of sufficient evidence of carcinogenicity in experimental animals.
  - 3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.
  - 4 - The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.
- NTP (N) National Toxicology Program.**
  - 1 - Known to be carcinogens.
  - 2 - Reasonably anticipated to be carcinogens.

### Section 16: OTHER INFORMATION

Date of Preparation: May 26, 2014

Version: 1.0

Revision Date: May 26, 2014

**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.

**Prepared by:** Nexreg Compliance Inc.  
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**Prepared for:** The Blaster Corporation

## End of Safety Data Sheet



# Safety Data Sheet: PREMALUBE

Supersedes Date 10/25/2013

Issuing Date 04/18/2014

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** PREMALUBE  
**Recommended use** Lubricant  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 4464  
**Chemical nature** Petroleum oil blend  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Black

**Physical State** Grease

**Odor** Oily

### GHS

#### Classification

##### Physical Hazards

None

##### Health Hazard

Serious Eye Damage/Eye Irritation

Category 2B

##### Other hazards

None

#### Labeling

##### Signal Word

WARNING

##### Hazard Statements

H315 - Causes skin irritation

##### Precautionary Statements

P264 - Wash face, hands and any exposed skin thoroughly after handling.  
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 attention.

15 % of the mixture consists of ingredient(s) of unknown toxicity

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	64742-52-5	60-100
Calcium carbonate	1317-65-3	7-13
Aluminum benzoate fatty acid complex	82980-54-9	5-10
Tricalcium phosphate	1306-06-5	1-5
Styrene-Ethylene/Propylene Block Copolymer	68648-89-5	1-5
Molybdenum disulfide	1317-33-5	1-5

## 4. FIRST AID MEASURES

#### General advice

Avoid contact with skin, eyes and clothing.

#### Eye Contact

Rinse thoroughly with plenty of water, also under the eyelids. Get medical attention if irritation develops and persists.

#### Skin Contact

Wipe up with absorbent material (e.g. cloth, fleece). Wash off immediately with soap and plenty of water. Get medical attention if irritation develops and persists. Wash contaminated clothing before re-use.

#### Inhalation

If inhaled, remove to fresh air. Get medical attention if symptoms occur.

#### Ingestion

Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention if symptoms occur. Rinse mouth.

#### Notes to physician

Treat symptomatically

## 5. FIRE-FIGHTING MEASURES

**Flash Point**

450 °F / 232 °C

**Method**

Open cup

**Flammability Limits in Air %** No information available. **Upper** No data available **Lower** No data available

**Suitable Extinguishing Media**

Water spray. Foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Specific hazards arising from the chemical**

Material can create slippery conditions.

**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.

<b>NFPA</b>	<b>Health 1</b>	<b>Flammability 1</b>	<b>Instability 0</b>
<b>HMS</b>	<b>Health 1</b>	<b>Flammability 1</b>	<b>Instability 0</b>

### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.
<b>Environmental Precautions</b>	Do not flush into surface water or sanitary sewer system.
<b>Methods for Containment</b>	Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
<b>Methods for Cleaning Up</b>	Pick up and transfer to properly labeled containers.
<b>Neutralizing Agent</b>	Not applicable.

### 7. HANDLING AND STORAGE

<b>Handling</b>	Avoid contact with skin, eyes and clothing. Avoid breathing vapors or mists.
<b>Storage</b>	Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.
<b>Storage Temperature</b>	<b>Minimum</b> 10 °F / -12 °C <b>Maximum</b> 150 °F / 66 °C
<b>Storage Conditions</b>	<b>Indoor</b> X <b>Outdoor</b> X <b>Heated</b> <b>Refrigerated</b>

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	TWA: 5 mg/m <sup>3</sup> ; STEL: 10 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>	No data available
Calcium carbonate	No data available	TWA: 15 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	TWA: 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>
Aluminum benzoate fatty acid complex	No data available	No data available	No data available
Tricalcium phosphate	No data available	No data available	No data available
Styrene-Ethylene/Propylene Block Copolymer	No data available	No data available	No data available
Molybdenum disulfide	TWA: 10 mg/m <sup>3</sup> TWA: 3 mg/m <sup>3</sup>	TWA: 15 mg/m <sup>3</sup>	No data available

<b>Engineering Measures</b>	Ensure adequate ventilation, especially in confined areas.
<b>Personal Protective Equipment</b>	
<b>Eye/Face Protection</b>	Safety glasses with side-shields.
<b>Skin Protection</b>	For prolonged or repeated contact, use protective gloves with appropriate chemical resistance.
<b>Respiratory Protection</b>	In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
<b>General Hygiene Considerations</b>	Ensure that eyewash stations and safety showers are close to the workstation location. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Grease	<b>Viscosity</b>	Semi-Solid
<b>Color</b>	Black	<b>Odor</b>	Oily
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Textured black paste
<b>pH</b>	Not applicable	<b>Specific Gravity</b>	0.93
<b>Evaporation Rate</b>	0 (BuAc = 1)	<b>Percent Volatile (Volume)</b>	0
<b>VOC Content (%)</b>	0	<b>VOC Content (g/L)</b>	0
<b>Vapor Pressure</b>	<0.01 mmHg @ 70°F	<b>Vapor Density</b>	11.3 (Air = 1.0)
<b>Solubility</b>	Negligible	<b>n-Octanol/Water Partition</b>	No data available
<b>Melting Point/Range</b>	No data available	<b>Decomposition Temperature</b>	No data available
<b>Boiling Point/Range</b>	475 °F / 246 °C	<b>Flammability (solid, gas)</b>	No data available
<b>Flash Point</b>	450 °F / 232 °C	<b>Method</b>	Open cup
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	No information available.	<b>Upper</b>	No data available <b>Lower</b> No data available



**10. STABILITY AND REACTIVITY****Chemical Stability  
Conditions to Avoid**

Stable. Hazardous polymerization does not occur.  
Extremes of temperature and direct sunlight, Keep away from open flames, hot surfaces, and sources of ignition.

**Incompatible Products  
Hazardous Decomposition Products  
Possibility of Hazardous Reactions**

Strong oxidizing agents, Acids.  
Carbon oxides, Sulfur oxides, Oxides of phosphorus.  
None under normal processing

**11. TOXICOLOGICAL INFORMATION****Product Information**

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

Oral LD50	500.00
Dermal LD50	2,002.00
Inhalation LC50	
Gas	No information available
Mist	108.00
Vapor	No information available

**Principle Route of Exposure** Eye contact, Skin contact.  
**Primary Routes of Entry** Eye contact

**Acute Effects**

**Eyes** May cause eye irritation.  
**Skin** May cause skin irritation.  
**Inhalation** Low hazard for usual industrial or commercial handling.  
**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

**Chronic Toxicity** Prolonged skin contact may defat the skin and produce dermatitis. Kidney injury may occur.

**Target Organ Effects** Respiratory system, Kidney, Eyes, Blood, Bone.

**Aggravated Medical Conditions** Respiratory disorders, Skin disorders, Kidney disorders, Blood disorders.

**Component Information****Acute Toxicity**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	> 5000 mg/kg ( Rat )	> 5000 mg/kg (Rabbit)	no data available	no data available	no data available
Calcium carbonate	= 6450 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Aluminum benzoate fatty acid complex	no data available	no data available	no data available	no data available	no data available
Tricalcium phosphate	no data available	no data available	no data available	no data available	no data available
Styrene-Ethylene/Propylene Block Copolymer	no data available	no data available	no data available	no data available	no data available
Molybdenum disulfide	no data available	no data available	> 2820 mg/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	no data available	no data available	no data available	no data available	no data available
Calcium carbonate	no data available	no data available	no data available	no data available	eyes, respiratory system, skin
Aluminum benzoate fatty acid complex	no data available	no data available	no data available	no data available	no data available
Tricalcium phosphate	no data available	no data available	no data available	no data available	no data available
Styrene-Ethylene/Propylene Block Copolymer	no data available	no data available	no data available	no data available	no data available
Molybdenum disulfide	no data available	no data available	no data available	no data available	respiratory system, kidneys, eyes, blood, bones, joints

**Carcinogenicity**

Component	ACGIH	IARC	NTP	OSHA	Other
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	not applicable	not applicable	not applicable	not applicable	not applicable
Calcium carbonate	not applicable	not applicable	not applicable	not applicable	not applicable
Aluminum benzoate fatty acid complex	not applicable	not applicable	not applicable	not applicable	not applicable
Tricalcium phosphate	not applicable	not applicable	not applicable	not applicable	not applicable

Styrene-Ethylene/Propylene Block Copolymer	not applicable	not applicable	not applicable	not applicable	not applicable
Molybdenum disulfide	not applicable	not applicable	not applicable	not applicable	not applicable

**12. ECOLOGICAL INFORMATION**

**Product Information** No information available.

**Component Information**

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	no data available	LC50 > 5000 mg/L Oncorhynchus mykiss 96 h	no data available	1000: 48 h Daphnia magna mg/L EC50	N/A
Calcium carbonate	no data available	no data available	no data available	no data available	N/A
Aluminum benzoate fatty acid complex	no data available	no data available	no data available	no data available	N/A
Tricalcium phosphate	no data available	no data available	no data available	no data available	N/A
Styrene-Ethylene/Propylene Block Copolymer	no data available	no data available	no data available	no data available	N/A
Molybdenum disulfide	no data available	no data available	no data available	no data available	N/A

**Persistence and Degradability** No information available.  
**Bioaccumulation** No information available.  
**Mobility** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal** Dispose of in accordance with local regulations.  
**Container Disposal** Empty containers should be taken for local recycling, recovery, or waste disposal.

**14. TRANSPORT INFORMATION**

DOT Not regulated  
 TDG Not regulated  
 ICAO Not regulated  
 IATA Not regulated  
 IMDG/IMO Not regulated

**15. REGULATORY INFORMATION**

**Inventories**  
 TSCA Complies  
 DSL Does not Comply  
 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 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	Yes	No	No	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Petroleum distillates, hydrotreated heavy naphthenic (<3% DMSO extractable)	Not applicable	Not applicable
Calcium carbonate	Not applicable	Not applicable
Aluminum benzoate fatty acid complex	Not applicable	Not applicable
Tricalcium phosphate	Not applicable	Not applicable
Styrene-Ethylene/Propylene Block Copolymer	Not applicable	Not applicable
Molybdenum disulfide	Not applicable	Not applicable

**16. OTHER INFORMATION**

<b>Prepared By</b>	Adrienne McKee
<b>Supersedes Date</b>	10/25/2013
<b>Issuing Date</b>	04/18/2014
<b>Reason for Revision</b>	No information available.
<b>Glossary</b>	No Information available.
<b>List of References.</b>	No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.



# Safety Data Sheet: PUREWASH SYSTEMS POWER CLEAN, MM

Supersedes Date 05/27/2011

Issuing Date 11/04/2013

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** PUREWASH SYSTEMS POWER CLEAN, MM  
**Recommended use** Cleaning agent  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 4435  
**Chemical nature** solid  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** White

**Physical State** Powder

**Odor** Odorless

### GHS

#### Classification

##### Physical Hazards

Substances/mixtures corrosive to metal

Category 1

##### Health Hazard

Acute Oral Toxicity

Category 4

Acute Inhalation Toxicity - Dusts and Mists

Category 4

Skin Corrosion/Irritation

Category 1

Serious Eye Damage/Eye Irritation

Category 1

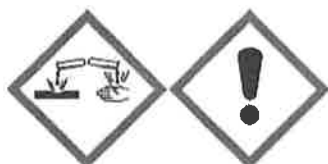
##### Other hazards

None

### Labeling

#### Signal Word

**DANGER**



#### Hazard Statements

H314 - Causes severe skin burns and eye damage

H332 - Harmful if inhaled

H302 - Harmful if swallowed

H290 - May be corrosive to metals

#### Precautionary Statements

P280 - Wear protective gloves, protective clothing, eye protection and face protection.

P270 - Do not eat, drink or smoke when using this product

P264 - Wash face, hands and any exposed skin thoroughly after handling.

P260 - Do not breathe dust

P271 - Use in a well-ventilated area.

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water or shower

P332 + P313 - If skin irritation occurs, get medical 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.

P310 - Immediately call a physician

P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

P312 - Call a physician if unwell.

P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Call a physician if unwell.

P406 - Store in a corrosion-resistant container.

P501 - Dispose of contents and container in accordance with applicable regulations.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
Sodium metasilicate	6834-92-0	30-60
Sodium carbonate	497-19-8	10-30

**4. FIRST AID MEASURES**

**General advice** Do not get in eyes, on skin or on clothing. Do not breathe dust.  
**Eye Contact** Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get medical attention immediately.  
**Skin Contact** Remove immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately.  
**Inhalation** Move to fresh air. If breathing has stopped, apply artificial respiration. In case of shortness of breath, give oxygen. Get medical attention immediately.  
**Ingestion** Drink 1 or 2 glasses of water. Do NOT induce vomiting. Get medical attention immediately. Never give anything by mouth to an unconscious person. Rinse mouth.  
**Notes to physician** The product causes burns of eyes, skin and mucous membranes. Control of circulatory system, shock therapy if needed.

**5. FIRE-FIGHTING MEASURES**

**Flash Point** > 201 °F / > 94 °C  
**Flammability Limits in Air** % Hydrogen, by reaction with metals. **Method** Seta closed cup  
**Upper** 75 **Lower** 4  
**Suitable Extinguishing Media**  
 Water spray. Carbon dioxide (CO2). Foam. Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
**Specific hazards arising from the chemical**  
 Contact with metals may evolve flammable hydrogen gas. Material can create slippery conditions.  
**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.  
**NFPA** Health 3 **Flammability** 1 **Instability** 0  
**HMS** Health 3 **Flammability** 1 **Instability** 0

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions.  
**Environmental Precautions** Do not flush into surface water or sanitary sewer system.  
**Methods for Containment** Cover powder spill with plastic sheet or tarp to minimize spreading.  
**Methods for Cleaning Up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust)  
**Neutralizing Agent** Acetic acid, diluted

**7. HANDLING AND STORAGE**

**Handling** Do not get in eyes, on skin or on clothing. Do not breathe dust.  
**Storage** Store in original container. Keep container tightly closed in a dry and well-ventilated place. Metal containers must be lined.  
**Storage Temperature** **Minimum** 40 °F / 4 °C **Maximum** 120 °F / 49 °C  
**Storage Conditions** **Indoor** X **Outdoor** **Heated** **Refrigerated**

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Sodium metasilicate	No data available	No data available	No data available
Sodium carbonate	No data available	No data available	No data available

**Engineering Measures** Ensure adequate ventilation, especially in confined areas.  
**Personal Protective Equipment**  
**Eye/Face Protection** Tightly fitting safety goggles. Face-shield.  
**Skin Protection** Wear suitable protective clothing, Impervious gloves.  
**Respiratory Protection** In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
**General Hygiene Considerations** Wear protective gloves/clothing. Ensure that eyewash stations and safety showers are close to the workstation location. Remove and wash contaminated clothing before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Physical State** Powder **Viscosity** Solid  
**Color** White **Odor** Odorless  
**Odor Threshold** Not applicable **Appearance** Opaque  
**pH** (3 % solution) 11.2 **Specific Gravity** 0.896

<b>Bulk Density (lb/cu ft)</b>	56	<b>Evaporation Rate</b>	Not applicable
<b>Percent Volatile (Volume)</b>	0	<b>VOC Content (%)</b>	0
<b>VOC Content (g/L)</b>	0	<b>Vapor Pressure</b>	0 mmHg @ 70°F
<b>Vapor Density</b>	0	<b>Solubility</b>	Completely soluble
<b>n-Octanol/Water Partition</b>	No data available	<b>Melting Point/Range</b>	No data available
<b>Decomposition Temperature</b>	No data available	<b>Boiling Point/Range</b>	> 212 °F / > 100 °C
<b>Flammability (solid, gas)</b>	No data available	<b>Method</b>	Seta closed cup
<b>Flash Point</b>	> 201 °F / > 94 °C		
<b>Autoflignition Temperature</b>			
<b>Flammability Limits in Air %</b>	Hydrogen, by reaction with metals. Upper 75 Lower 4		

### 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Stable. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	Avoid dust formation, Protect from moisture.
<b>Incompatible Products</b>	Acids, Contact with metals liberates hydrogen gas, Halogenated hydrocarbon.
<b>Hazardous Decomposition Products</b>	Carbon oxides, Sodium oxides.
<b>Possibility of Hazardous Reactions</b>	None under normal processing

### 11. TOXICOLOGICAL INFORMATION

#### Product Information

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	838.05
<b>Dermal LD50</b>	No information available
<b>Inhalation LC50</b>	
<b>Gas</b>	No information available
<b>Mist</b>	No information available
<b>Vapor</b>	No information available

**Principle Route of Exposure** Skin contact, Eye contact, Inhalation.  
**Primary Routes of Entry** None known

#### Acute Effects

<b>Eyes</b>	Corrosive to the eyes and may cause severe damage including blindness.
<b>Skin</b>	Causes skin burns.
<b>Inhalation</b>	Harmful by inhalation. Causes burns.
<b>Ingestion</b>	Ingestion causes burns of the upper digestive and respiratory tracts.

**Chronic Toxicity** Harmful if inhaled and may cause delayed lung injury.

**Target Organ Effects** Eyes, Skin, Respiratory system.

**Aggravated Medical Conditions** Skin disorders, Respiratory disorders.

#### Component Information

##### Acute Toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Sodium metasilicate	= 600 mg/kg ( Rat )	no data available	no data available	no data available	no data available
Sodium carbonate	= 4090 mg/kg ( Rat )	no data available	= 2300 mg/m <sup>3</sup> ( Rat ) 2 h	no data available	no data available

##### Chronic Toxicity

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Sodium metasilicate	no data available	no data available	no data available	no data available	no data available
Sodium carbonate	no data available	no data available	no data available	no data available	no data available

##### Carcinogenicity

There are no known carcinogenic chemicals in this product.

Component	ACGIH	IARC	NTP	OSHA	Other
Sodium metasilicate	not applicable	not applicable	not applicable	not applicable	not applicable
Sodium carbonate	not applicable	not applicable	not applicable	not applicable	not applicable

### 12. ECOLOGICAL INFORMATION

#### Product Information

No information available.

#### Component Information

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Sodium metasilicate	no data available	LC50 = 210 mg/L Brachydanio rerio 96 h	no data available	EC50= 216 mg/L 96 h	N/A
Sodium carbonate	EC50 = 242 mg/L Nitzschia 120 h	LC50 = 300 mg/L Lepomis macrochirus 96 h	no data available	EC50= 265 mg/L 48 h	N/A

	LC50 310 - 1220 mg/L Pimephales promelas 96 h		
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**Persistence and Degradability** No information available.  
**Bioaccumulation** No information available.  
**Mobility** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal** Dispose of in accordance with local regulations.  
**Container Disposal** Empty containers should be taken for local recycling, recovery, or waste disposal.

**14. TRANSPORT INFORMATION**

**DOT**  
**Proper Shipping Name** Disodium trioxosilicate  
**Hazard Class** 8  
**UN-No** UN3253  
**Packing Group** III  
**Description** UN3253, Disodium trioxosilicate, 8, PG III

**TDG**  
**Proper shipping name** Disodium trioxosilicate (Mixture)  
**Hazard Class** 8  
**UN-No** UN3253  
**Packing Group** III

**ICAO**  
**UN-No** UN3253  
**Proper Shipping Name** Disodium trioxosilicate  
**Hazard Class** 8  
**Packing Group** III  
**Shipping Description** UN3253, Disodium trioxosilicate, 8, PG III

**IATA**  
**UN-No** UN3253  
**Proper Shipping Name** Disodium trioxosilicate  
**Hazard Class** 8  
**Packing Group** III  
**ERG Code** 8L  
**Shipping Description** UN3253, Disodium trioxosilicate, 8, PG III

**IMDG/IMO**  
**Proper Shipping Name** Disodium trioxosilicate  
**Hazard Class** 8  
**UN-No** UN3253  
**Packing Group** III  
**EmS No.** F-A, S-B  
**Shipping Description** UN3253, Disodium trioxosilicate, 8, PG III

**15. REGULATORY INFORMATION**

**Inventories**  
**TSCA** Complies  
**DSL** Complies

**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 and Title 40 of the Code of Federal Regulations, Part 372.

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	No	No	No	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium metasilicate	Not applicable	Not applicable
Sodium carbonate	Not applicable	Not applicable



**16. OTHER INFORMATION**

<b>Prepared By</b>	Angela Hutson
<b>Supersedes Date</b>	05/27/2011
<b>Issuing Date</b>	11/04/2013
<b>Reason for Revision</b>	No information available.
<b>Glossary</b>	No information available.
<b>List of References.</b>	No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this document 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 as 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 material or in any process, unless specified in the text.





# SAFETY DATA SHEET

## 1. Identification

**Product identifier** QD® Contact Cleaner

**Other means of identification**

**Product code** 02130, 02130-6

**Recommended use** Electronic cleaner

**Recommended restrictions** None known.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufactured or sold by:**

**Company name** CRC Industries, Inc.

**Address** 885 Louis Dr.  
Warminster, PA 18974 US

**Telephone**

**General Information** 215-674-4300

**Technical Assistance** 800-521-3168

**Customer Service** 800-272-4620

**24-Hour Emergency (CHEMTREC)** 800-424-9300 (US)  
703-527-3887 (International)

**Website** www.crcindustries.com

## 2. Hazard(s) identification

**Physical hazards** Flammable aerosols Category 1  
Gases under pressure Liquefied gas

**Health hazards** Reproductive toxicity (fertility) 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, acute hazard Category 2  
Hazardous to the aquatic environment, long-term hazard Category 2

**OSHA defined hazards** Not classified.

**Label elements**



**Signal word** Danger

**Hazard statement** Extremely flammable aerosol. Contains gas under pressure; may explode if heated. May be fatal if swallowed and enters airways. May cause drowsiness or dizziness. Suspected of damaging fertility. May cause damage to organs (central nervous system, eyes, skin, upper respiratory tract) through prolonged or repeated exposure. Toxic to aquatic life. 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. Do not spray on an open flame or other ignition source. Do not apply while equipment is energized. Pressurized container: Do not pierce or burn, even after use. Extinguish all flames, pilot lights and heaters. Vapors will accumulate readily and may ignite. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Do not breathe gas. Do not breathe mist or vapor. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

### Response

If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If exposed or concerned: Get medical attention. Collect spillage.

### Storage

Store in a well-ventilated place. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.

### Disposal

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

### Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

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## 3. Composition/information on ingredients

### Mixtures

Chemical name	Common name and synonyms	CAS number	%
Naphtha (petroleum), hydrotreated light		64742-49-0	60 - 70
1,1-Difluoroethane	HFC-152a	75-37-6	20 - 30
n-Hexane		110-54-3	3 - 5
2,2,4-Trimethylpentane		540-84-1	1 - 3
Isopropyl alcohol		67-63-0	1 - 3
2,2-Dimethylbutane		75-83-2	< 0.2
2-Methylpentane		107-83-5	< 0.2

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

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## 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

Rinse skin with water/shower. Get medical attention if irritation develops and persists.

### Eye contact

Rinse with water. 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. Aspiration may cause pulmonary edema and pneumonitis. Prolonged exposure may cause chronic effects.

### Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

### General information

IF exposed or concerned: Get medical advice/attention. 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.

---

## 5. Fire-fighting measures

### Suitable extinguishing media

Water fog. Foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

### Unsuitable extinguishing media

None known.

<b>Specific hazards arising from the chemical</b>	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
<b>Fire-fighting equipment/instructions</b>	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
<b>General fire hazards</b>	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Remove all possible sources of ignition in the surrounding area. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Do not breathe the mist or vapor. Do not breathe gas. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Stop the flow of material, if this is without risk. 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.
<b>Environmental precautions</b>	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases. Use appropriate containment to avoid environmental contamination.

## 7. Handling and storage

<b>Precautions for safe handling</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. 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. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Do not breathe mist or vapor. Do not breathe gas. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. 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. For product usage instructions, please see the product label.
<b>Conditions for safe storage, including any incompatibilities</b>	Level 3 Aerosol.  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. Avoid spark promoters. These alone may be insufficient to remove static electricity. 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
2,2,4-Trimethylpentane (CAS 540-84-1)	PEL	2350 mg/m <sup>3</sup>
Isopropyl alcohol (CAS 67-63-0)	PEL	500 ppm
		980 mg/m <sup>3</sup>
n-Hexane (CAS 110-54-3)	PEL	400 ppm
		1800 mg/m <sup>3</sup> 500 ppm

#### US. ACGIH Threshold Limit Values

Components	Type	Value
2,2-Dimethylbutane (CAS 75-83-2)	STEL	1000 ppm
	TWA	500 ppm
2-Methylpentane (CAS 107-83-5)	STEL	1000 ppm
	TWA	500 ppm
Isopropyl alcohol (CAS 67-63-0)	STEL	400 ppm
	TWA	200 ppm
n-Hexane (CAS 110-54-3)	TWA	50 ppm

#### US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
2,2,4-Trimethylpentane (CAS 540-84-1)	Ceiling	1800 mg/m <sup>3</sup>
	TWA	385 ppm 350 mg/m <sup>3</sup> 75 ppm
2,2-Dimethylbutane (CAS 75-83-2)	Ceiling	1800 mg/m <sup>3</sup>
	TWA	510 ppm 350 mg/m <sup>3</sup> 100 ppm
2-Methylpentane (CAS 107-83-5)	Ceiling	1800 mg/m <sup>3</sup>
	TWA	510 ppm 350 mg/m <sup>3</sup> 100 ppm
Isopropyl alcohol (CAS 67-63-0)	STEL	1225 mg/m <sup>3</sup>
	TWA	500 ppm 980 mg/m <sup>3</sup> 400 ppm
n-Hexane (CAS 110-54-3)	TWA	180 mg/m <sup>3</sup> 50 ppm

#### US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
1,1-Difluoroethane (CAS 75-37-6)	TWA	2700 mg/m <sup>3</sup>
		1000 ppm

### Biological limit values

#### ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
Isopropyl alcohol (CAS 67-63-0)	40 mg/l	Acetone	Urine	*

**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
n-Hexane (CAS 110-54-3)	0.4 mg/l	2,5-Hexanedione, without hydrolysis	Urine	*

\* - 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**

n-Hexane (CAS 110-54-3)

Can be absorbed through the skin.

**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****Eye/face protection**

Wear safety glasses with side shields (or goggles).

**Skin protection****Hand protection**

Wear protective gloves such as: Nitrile. Polyvinyl chloride (PVC). Viton®.

**Other**

Wear suitable protective clothing. Use of an impervious apron is recommended.

**Respiratory protection**

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

**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**

Aerosol.

**Color**

Clear. Colorless.

**Odor**

Alcoholic.

**Odor threshold**

Not available.

**pH**

Not available.

**Melting point/freezing point**

-127.3 °F (-88.5 °C) estimated

**Initial boiling point and boiling range**

123 °F (50.6 °C) estimated

**Flash point**

< 0 °F (< -17.8 °C) Tag Closed Cup

**Evaporation rate**

Very fast.

**Flammability (solid, gas)**

Not available.

**Upper/lower flammability or explosive limits****Flammability limit - lower (%)**

0.9 % estimated

**Flammability limit - upper (%)**

12 % estimated

**Vapor pressure**

2141.3 hPa estimated

**Vapor density**

> 1 (air = 1)

**Relative density**

0.72 estimated

**Solubility (water)**

Negligible.

<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	489.2 °F (254 °C) estimated
<b>Decomposition temperature</b>	Not available.
<b>Viscosity (kinematic)</b>	Not available.
<b>Percent volatile</b>	100 % estimated

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Heat, flames and sparks. Contact with incompatible materials.
<b>Incompatible materials</b>	Strong oxidizing agents. Strong acids.
<b>Hazardous decomposition products</b>	Carbon oxides.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Ingestion</b>	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.
<b>Inhalation</b>	May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
<b>Skin contact</b>	No adverse effects due to skin contact are expected.
<b>Eye contact</b>	Direct contact with eyes may cause temporary irritation.

**Symptoms related to the physical, chemical and toxicological characteristics**  
 May cause drowsiness and dizziness. Headache. Nausea, vomiting. Aspiration may cause pulmonary edema and pneumonitis.

### Information on toxicological effects

**Acute toxicity** May be fatal if swallowed and enters airways. Narcotic effects.

Product	Species	Test Results
QD® Contact Cleaner		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	2807.0864 mg/kg estimated
<i>Inhalation</i>		
LC50	Rat	29004.0918 ppm, 4 hours estimated 29.3555 mg/l, 4 hours estimated
<i>Oral</i>		
LD50	Rat	21091.707 mg/kg estimated

\* Estimates for product may be based on additional component data not shown.

<b>Skin corrosion/irritation</b>	Prolonged skin contact may cause temporary irritation.
<b>Serious eye damage/eye irritation</b>	Direct contact with eyes may cause temporary irritation.
<b>Respiratory sensitization</b>	Not available.
<b>Skin sensitization</b>	This product is not expected to cause skin sensitization.
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	Suspected of damaging fertility.
<b>Specific target organ toxicity - single exposure</b>	May cause drowsiness and dizziness.



<b>Specific target organ toxicity - repeated exposure</b>	May cause damage to organs through prolonged or repeated exposure: Central nervous system. Eyes. Skin. Upper respiratory tract.
<b>Aspiration hazard</b>	May be fatal if swallowed and enters airways. If aspirated into lungs during swallowing or vomiting, may cause chemical pneumonia, pulmonary injury or death.
<b>Chronic effects</b>	Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure.

## 12. Ecological information

**Ecotoxicity** Toxic to aquatic life with long lasting effects.

Product	Species	Test Results
QD® Contact Cleaner		
<b>Aquatic</b>		
Fish	LC50	1703.5929 mg/l, 96 hours estimated
<b>Components</b>	<b>Species</b>	<b>Test Results</b>
Isopropyl alcohol (CAS 67-63-0)		
<b>Aquatic</b>		
<i>Acute</i>		
Crustacea	EC50	7550 - 13299 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas) 3200 mg/l, 96 hours
n-Hexane (CAS 110-54-3)		
<b>Aquatic</b>		
Fish	LC50	Fathead minnow (Pimephales promelas) 2.101 - 2.981 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)**

1,1-Difluoroethane	0.75
2,2,4-Trimethylpentane	5.18
2,2-Dimethylbutane	3.82
2-Methylpentane	3.74
Isopropyl alcohol	0.05
n-Hexane	3.9

**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 of waste from residues / unused products** If discarded, this product is considered a RCRA ignitable waste, D001. 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 in accordance with all applicable regulations.

**Hazardous waste code** D001: Waste Flammable material with a flash point <140 F

**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**

<b>UN number</b>	UN1950
<b>UN proper shipping name</b>	Aerosols, flammable, Limited Quantity
<b>Transport hazard class(es)</b>	
<b>Class</b>	2.1
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	2.1
<b>Packing group</b>	Not applicable.

**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**Special provisions** N82  
**Packaging exceptions** 306  
**Packaging non bulk** None  
**Packaging bulk** None

#### IATA

**UN number** UN1950  
**UN proper shipping name** Aerosols, flammable, Limited Quantity  
**Transport hazard class(es)**  
**Class** 2.1  
**Subsidiary risk** -  
**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.  
**Cargo aircraft only** Allowed.

#### IMDG

**UN number** UN1950  
**UN proper shipping name** AEROSOLS, LIMITED QUANTITY, MARINE POLLUTANT  
**Transport hazard class(es)**  
**Class** 2  
**Subsidiary risk** -  
**Packing group** Not applicable.  
**Environmental hazards**  
**Marine pollutant** Yes  
**EmS** F-D, S-U  
**Special precautions for user** Read safety instructions, SDS and emergency procedures before handling.  
**General information** IMDG Regulated Marine Pollutant.

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## 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.

#### SARA 304 Emergency release notification

Not regulated.

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

n-Hexane (CAS 110-54-3)

#### CERCLA Hazardous Substance List (40 CFR 302.4)

2,2,4-Trimethylpentane (CAS 540-84-1)

n-Hexane (CAS 110-54-3)

#### CERCLA Hazardous Substances: Reportable quantity

2,2,4-Trimethylpentane (CAS 540-84-1) 1000 LBS

n-Hexane (CAS 110-54-3) 5000 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

#### Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

2,2,4-Trimethylpentane (CAS 540-84-1)

n-Hexane (CAS 110-54-3)

#### Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

1,1-Difluoroethane (CAS 75-37-6)

**Safe Drinking Water Act (SDWA)** Not regulated.

**Food and Drug Administration (FDA)** Not regulated.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Section 311/312** Immediate Hazard - Yes  
**Hazard categories** Delayed Hazard - Yes  
Fire Hazard - Yes  
Pressure Hazard - Yes  
Reactivity Hazard - No

**SARA 302 Extremely hazardous substance** No

**US state regulations**

**US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)**

Not listed.

**US. New Jersey Worker and Community Right-to-Know Act**

2,2,4-Trimethylpentane (CAS 540-84-1)  
2,2-Dimethylbutane (CAS 75-83-2)  
2-Methylpentane (CAS 107-83-5)  
1,1-Difluoroethane (CAS 75-37-6)  
Isopropyl alcohol (CAS 67-63-0)  
n-Hexane (CAS 110-54-3)

**US. Massachusetts RTK - Substance List**

1,1-Difluoroethane (CAS 75-37-6)  
2,2,4-Trimethylpentane (CAS 540-84-1)  
Isopropyl alcohol (CAS 67-63-0)  
n-Hexane (CAS 110-54-3)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Isopropyl alcohol (CAS 67-63-0)  
2,2,4-Trimethylpentane (CAS 540-84-1)  
2,2-Dimethylbutane (CAS 75-83-2)  
2-Methylpentane (CAS 107-83-5)  
n-Hexane (CAS 110-54-3)

**US. Rhode Island RTK**

1,1-Difluoroethane (CAS 75-37-6)  
2,2,4-Trimethylpentane (CAS 540-84-1)  
n-Hexane (CAS 110-54-3)

**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.

**Volatile organic compounds (VOC) regulations**

**EPA**

**VOC content (40 CFR 51.100(s))** 74.3 %

**Consumer products (40 CFR 59, Subpt. C)** Not regulated

**State**

**Consumer products** This product is regulated as an Electronic Cleaner. This product is compliant for use in all 50 states.

**VOC content (CA)** 74.3 %

**VOC content (OTC)** 74.3 %

**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)	Yes

Country(s) or region	Inventory name	On inventory (yes/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, including date of preparation or last revision

<b>Issue date</b>	09-29-2014
<b>Prepared by</b>	Allison Cho
<b>Version #</b>	01
<b>Further information</b>	CRC # 957
<b>HMIS® ratings</b>	Health: 1* Flammability: 4 Physical hazard: 0 Personal protection: B
<b>NFPA ratings</b>	Health: 1 Flammability: 4 Instability: 0

**NFPA ratings**



**Disclaimer**

CRC 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 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. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.

# Safety Data Sheet: QWIK-START AEROSOL, MM

Supersedes Date 10/22/2012

Issuing Date 08/06/2013

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** QWIK-START AEROSOL, MM  
**Recommended use** Fuel additive  
**Information on Manufacturer**  
CERTIFIED LABS, DIV. OF NCH CORP.  
BOX 152170  
IRVING, TEXAS 75015

**Product Code** 5009  
**Chemical nature** Flammable Aerosol  
**Emergency Telephone Number**  
CHEMTREC® 800-424-9300  
**Telephone inquiry**  
972-579-2477

## 2. HAZARD IDENTIFICATION

**Color** Colorless

**Physical State** Liquid

**Odor** solvent

### GHS

#### Classification

##### Physical Hazards

Flammable aerosols  
Gases under pressure

Category 1  
Compressed Gas

##### Health Hazard

Aspiration Toxicity  
Acute Oral Toxicity  
Acute Inhalation Toxicity - Gas  
Acute Inhalation Toxicity - Dusts and Mists  
Skin Corrosion/Irritation  
Serious Eye Damage/Eye Irritation  
Specific target organ systemic toxicity (single exposure)

Category 1  
Category 4  
Category 2  
Category 2  
Category 2  
Category 2A  
Category 3

##### Other hazards

None

### Labeling

#### Signal Word

DANGER



#### Hazard Statements

H222 - Extremely flammable aerosol  
H330 - Fatal if inhaled  
H315 - Causes skin irritation  
H319 - Causes serious eye irritation H302 - Harmful if swallowed H304 - May be fatal if swallowed and enters airways  
H336 - May cause drowsiness or dizziness  
H373 - May cause damage to organs through prolonged or repeated exposure  
H280 - Contains gas under pressure; may explode if heated

#### Precautionary Statements

P210 - Keep away from heat, sparks, open flames or hot surfaces.  
P251 - Pressurized container: Do not pierce or burn, even after use  
P280 - Wear protective gloves, protective clothing and eye protection,  
P260 - Do not breathe vapor, mist or gas  
P271 - Use in a well-ventilated area.  
P285 - In case of inadequate ventilation wear respiratory protection  
P270 - Do not eat, drink or smoke when using this product  
P264 - Wash face, hands and any exposed skin thoroughly after handling.  
P304 + P340 - IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
P310 - Immediately call a physician  
P302+ P352 - IF ON SKIN: Wash with plenty of soap and water  
P332 + P313 - If skin irritation occurs, get medical attention.  
P362 - Take off contaminated clothing and wash 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 attention.  
P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a physician if unwell.  
P410 + P403 - Protect from sunlight. Store in a well-ventilated place  
P235 - Keep cool  
P501 - Dispose of contents and container in accordance with applicable regulations.

9 % of the mixture consists of ingredient(s) of unknown toxicity

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Component	CAS-No	Weight %
Heptane (n-)	142-82-5	30-60
Ethyl ether	60-29-7	30-60
Carbon dioxide	124-38-9	3-7

**4. FIRST AID MEASURES**

**General advice** Avoid breathing vapors, mist, or gas. Avoid contact with skin, eyes and clothing.

**Eye Contact** Rinse thoroughly with plenty of water, also under the eyelids. Get medical attention if irritation develops and persists.

**Skin Contact** Wash off immediately with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists. Wash contaminated clothing before re-use.

**Inhalation** Move to fresh air. In case of shortness of breath, give oxygen. If breathing has stopped, apply artificial respiration. Get medical attention immediately.

**Ingestion** Clean mouth with water and afterwards drink plenty of water

**Notes to physician** Aspiration hazard if swallowed - can enter lungs and cause damage. May be fatal if swallowed and enters airways.

**5. FIRE-FIGHTING MEASURES**

**Flash Point** < -56 °F / < -49 °C **Method** Tag closed cup

**Flammability Limits in Air %** Solvent mixture. **Upper** 36.0 **Lower** 1.1

**Suitable Extinguishing Media** Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Specific hazards arising from the chemical** Extremely flammable. Solvent vapors are heavier than air and may spread along floors. Vapors may ignite and explode. Flame extension: >18 inches / >45 cm and Burnback: >6 inch / >15 cm.

**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.

**Aerosol Level (NFPA 30B) -** 3

**NFPA** Health 2 **Flammability** 4 **Instability** 0

**HMIS** Health 2 **Flammability** 4 **Instability** 0

**6. ACCIDENTAL RELEASE MEASURES**

**Personal Precautions** Use personal protective equipment. Remove all sources of ignition. Ensure adequate ventilation. Prevent further leakage or spillage if safe to do so. Material can create slippery conditions

**Environmental Precautions** Do not flush into surface water or sanitary sewer system.

**Methods for Containment** Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**Methods for Cleaning Up** Use clean non-sparking tools to collect absorbed material. Pick up and transfer to properly labeled containers.

**Neutralizing Agent** Not applicable.

**7. HANDLING AND STORAGE**

**Handling** Avoid breathing vapors, mist or gas. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition.

**Storage** Keep away from heat and sources of ignition. Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place.

**Storage Temperature** **Minimum** 0 °F / -18 °C **Maximum** 100 °F / 38 °C

**Storage Conditions** **Indoor** X **Outdoor** **Heated** **Refrigerated**

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Exposure Guidelines**

Component	ACGIH TLV	OSHA PEL	NIOSH
Heptane (n-)	TWA: 400 ppm STEL: 500 ppm	TWA: 500 ppm TWA: 2000 mg/m <sup>3</sup>	IDLH: 750 ppm Ceiling: 440 ppm Ceiling: 1800 mg/m <sup>3</sup>  TWA: 85 ppm TWA: 350 mg/m <sup>3</sup>

Ethyl ether	TWA: 400 ppm STEL: 500 ppm	TWA: 400 ppm TWA: 1200 mg/m <sup>3</sup>	IDLH: 1900 ppm
Carbon dioxide	TWA: 5000 ppm STEL: 30000 ppm	TWA: 5000 ppm TWA: 9000 mg/m <sup>3</sup>	IDLH: 40000 ppm STEL 30000 ppm STEL 54000 mg/m <sup>3</sup> TWA: 5000 ppm TWA: 9000 mg/m <sup>3</sup>

**Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

**Personal Protective Equipment**

- Eye/Face Protection
- Skin Protection
- Respiratory Protection

Safety glasses with side-shields.  
Wear suitable protective clothing. Impervious gloves.  
In case of inadequate ventilation wear respiratory protection. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
Remove and wash contaminated clothing before re-use.

**General Hygiene Considerations**

Remove and wash contaminated clothing before re-use.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Liquid	<b>Viscosity</b>	Non viscous
<b>Color</b>	Colorless	<b>Odor</b>	solvent
<b>Odor Threshold</b>	Not applicable	<b>Appearance</b>	Transparent
<b>pH</b>	Not applicable	<b>Specific Gravity</b>	< 1
<b>Evaporation Rate</b>	>1 (BuAc = 1)	<b>Percent Volatile (Volume)</b>	95
<b>VOC Content (%)</b>	>90	<b>VOC Photoreactive (Y/N)</b>	Yes
<b>Vapor Pressure</b>	4137 mmHg @ 70°F	<b>Vapor Density</b>	>1 (air = 1)
<b>Solubility</b>	Negligible	<b>n-Octanol/Water Partition</b>	No data available
<b>Melting Point/Range</b>	No data available	<b>Decomposition Temperature</b>	No data available
<b>Boiling Point/Range</b>	No data available	<b>Flammability (solid, gas)</b>	No data available
<b>Flash Point</b>	< -56 °F / < -49 °C	<b>Method</b>	Tag closed cup
<b>Autoignition Temperature</b>	No information available.		
<b>Flammability Limits in Air %</b>	Solvent mixture.	<b>Upper 36.0 Lower 1.1</b>	

**10. STABILITY AND REACTIVITY**

<b>Chemical Stability</b>	Stable under normal conditions. Hazardous polymerization does not occur.
<b>Conditions to Avoid</b>	Extremes of temperature and direct sunlight, Keep away from open flames, hot surfaces, and sources of ignition.
<b>Incompatible Products</b>	Strong oxidizing agents
<b>Hazardous Decomposition Products</b>	Carbon oxides, Nitrogen oxides (NOx).
<b>Possibility of Hazardous Reactions</b>	None under normal processing

**11. TOXICOLOGICAL INFORMATION**

**Product Information**

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 3, 2009):

<b>Oral LD50</b>	No information available
<b>Dermal LD50</b>	No information available
<b>Inhalation LC50</b>	
<b>Gas</b>	No information available
<b>Mist</b>	No information available
<b>Vapor</b>	No information available

<b>Principle Route of Exposure</b>	Inhalation, Skin contact, Eye contact.
<b>Primary Routes of Entry</b>	Inhalation, Skin Absorption.

**Acute Effects**

<b>Eyes</b>	Causes eye irritation.
<b>Skin</b>	May cause skin irritation. May be absorbed through the skin in harmful amounts.
<b>Inhalation</b>	May cause irritation of respiratory tract. Inhalation may cause central nervous system effects. May cause central nervous system depression. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

**Ingestion**  
Irritating to mouth, throat, and stomach. May cause central nervous system effects such as headache, dizziness, weakness, staggering gait, nausea, blurred vision, excitation, and in extreme cases, coma or death. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Aspiration hazard if swallowed - can enter lungs and cause damage. May be fatal if swallowed and enters airways. Repeated and prolonged exposure to solvents may cause brain and nervous system damage.

**Chronic Toxicity**

**Target Organ Effects**

Eyes, Skin, Heart, Respiratory system, Central nervous system, Cardiovascular system.

**Aggravated Medical Conditions** Respiratory disorders, Skin disorders, Neurological disorders, Heart disease.

**Component Information**

**Acute Toxicity**

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation	Draize Test	Other
Heptane (n-)	no data available	= 3000 mg/kg ( Rabbit )	= 103 g/m <sup>3</sup> ( Rat ) 4 h	no data available	no data available
Ethyl ether	no data available	no data available	no data available	no data available	no data available
Carbon dioxide	no data available	no data available	no data available	no data available	no data available

**Chronic Toxicity**

Component	Mutagenicity	Sensitization	Developmental Toxicity	Reproductive Toxicity	Target Organ Effects
Heptane (n-)	no data available	no data available	no data available	no data available	skin, CNS, respiratory system, heart
Ethyl ether	no data available	no data available	no data available	no data available	eyes, CNS, respiratory system, skin
Carbon dioxide	no data available	no data available	no data available	no data available	respiratory system, CVS

**Carcinogenicity**

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	ACGIH	IARC	NTP	OSHA	Other
Heptane (n-)	not applicable	not applicable	not applicable	not applicable	not applicable
Ethyl ether	not applicable	not applicable	not applicable	not applicable	not applicable
Carbon dioxide	not applicable	not applicable	not applicable	not applicable	not applicable

**12. ECOLOGICAL INFORMATION**

**Product Information**

No information available.

**Component Information**

Component	Toxicity to Algae	Toxicity to Fish	Microtox	Water Flea	log Pow
Heptane (n )	no data available	LC50 = 375.0 mg/L Cichlid fish 96 h	no data available	EC50> 10 mg/L 24 h	4.66
Ethyl ether	no data available	LC50 = 2560 mg/L Pimephales promelas 96 h LC50 > 10000 mg/L Lepomis macrochirus 96 h	EC50 = 5600 mg/L 15 min	EC50= 165 mg/L 24 h	0.82
Carbon dioxide	no data available	no data available	no data available	no data available	N/A

**Persistence and Degradability**

No information available.

**Bioaccumulation**

No information available.

**Mobility**

No information available.

**13. DISPOSAL CONSIDERATIONS**

**Product Disposal**

Dispose of in accordance with local regulations.

**Container Disposal**

Contents under pressure. Do not puncture. Empty remaining contents. Empty containers should be taken for local recycling, recovery, or waste disposal.

**14. TRANSPORT INFORMATION**

**DOT**

**Proper Shipping Name** Consumer Commodity  
**Hazard Class** ORM-D

**TDG**

**Hazard Class** TDG  
2.1  
**UN-No** UN1950

**ICAO**

**UN-No** ICAO  
UN1950  
**Proper Shipping Name** Aerosols, Flammable  
**Hazard Class** 2.1  
**Shipping Description** UN1950, Aerosols, 2.1, LTD QTY

**IATA**

**UN-No** IATA  
UN1950  
**Proper Shipping Name** Aerosols, Flammable  
**Hazard Class** 2.1  
**Shipping Description** UN1950, Aerosols, 2.1, LTD QTY



<b>IMDG/IMO</b>	IMDG/IMO
<b>Proper Shipping Name</b>	Aerosols, Flammable
<b>Hazard Class</b>	2.1
<b>UN-No</b>	UN1950
<b>Shipping Description</b>	UN1950, Aerosols, 2.1, LTD QTY

**15. REGULATORY INFORMATION**

**Inventories**

<b>TSCA</b>	Complies
<b>DSL</b>	Complies

**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 Hazardous Categorization**

Acute Health Hazard	Chronic Health Hazard	Fire Hazard	Sudden Release of Pressure Hazard	Reactive Hazard
Yes	Yes	Yes	Yes	No

**CERCLA**

Component	Hazardous Substances RQs	CERCLA EHS RQs
Heptane (n-)	Not applicable	Not applicable
Ethyl ether	100 lb	Not applicable
Carbon dioxide	Not applicable	Not applicable

**16. OTHER INFORMATION**

<b>Prepared By</b>	Angela Hutson
<b>Supersedes Date</b>	10/22/2012
<b>Issuing Date</b>	08/06/2013
<b>Reason for Revision</b>	No information available.
<b>Glossary</b>	No information available.
<b>List of References</b>	No information available.

**CERTIFIED LABS, DIV. OF NCH CORP.** assumes no responsibility for personal injury or property damage caused by the use, storage, or disposal of the product in a manner not recommended on the product label. Users assume all risks associated with such unrecommended use, storage or disposal of the product. The information provided on this MSDS 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 as 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 material or in any process, unless specified in the text.



# Road Runner

## Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations  
Revision Date: 10/21/2014

Version: 1.0

### SECTION 1: IDENTIFICATION

#### 1.1. Product Identifier

**Product Form:** Mixture

**Product Name:** Road Runner

**Synonyms:** Road Runner Ice Melting Compound Contains a Proprietary Combination of Sodium Chloride, Calcium Chloride, and Magnesium Chloride.

#### 1.2. Intended Use of the Product

Melting Ice

#### 1.3. Name, Address, and Telephone of the Responsible Party

**Company**  
Scotwood Industries, Inc.  
12980 Metcalf Ave. STE 240  
Overland Park, Kansas 66213

Office: (913) 851-3500  
Toll Free: (800) 844-2022  
Fax: (913) 851-3377

#### 1.4. Emergency Telephone Number

**Emergency Number** : (800)-844-2022 (Monday – Friday 8:00am-5:00pm CST)

### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1. Classification of the Substance or Mixture

##### Classification (GHS-US)

Eye Irrit. 2A H319

#### 2.2. Label Elements

##### GHS-US Labeling

##### Hazard Pictograms (GHS-US)



GHS07

##### Signal Word (GHS-US)

: Warning

##### Hazard Statements (GHS-US)

: H319 - Causes serious eye irritation.

##### Precautionary Statements (GHS-US)

: P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.  
P280 - Wear protective gloves, protective clothing, eye protection, face protection, respiratory protection.  
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.

#### 2.3. Other Hazards

**Other Hazards:** Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. When heated to decomposition, emits irritating fumes. Corrosive to metals upon prolonged contact. Contact with water causes an exothermic heat reaction, which may cause significant temperature rise.

#### 2.4. Unknown Acute Toxicity (GHS-US)

No data available

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Sodium chloride	(CAS No) 7647-14-5	Proprietary	Not classified
Magnesium chloride	(CAS No) 7786-30-3	Proprietary	Not classified
Calcium chloride	(CAS No) 10043-52-4	Proprietary	Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319

The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.

# Road Runner

## Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases: 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:** When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention if breathing difficulty persists.

**First-aid Measures After Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation persists. Wash contaminated clothing before reuse.

**First-aid Measures After Eye Contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

**First-aid Measures After Ingestion:** Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

#### 4.2. Most important symptoms and effects, both acute and delayed

**Symptoms/Injuries:** Causes eye irritation.

**Symptoms/Injuries After Inhalation:** May cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** Skin contact with large amounts of dust may cause mechanical irritation.

**Symptoms/Injuries After Eye Contact:** Causes eye irritation.

**Symptoms/Injuries After Ingestion:** Ingestion is likely to be harmful or have adverse effects.

#### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

### SECTION 5: FIRE-FIGHTING MEASURES

#### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Use extinguishing media appropriate for surrounding fire.

**Unsuitable Extinguishing Media:** Do not use a heavy water stream. Use of heavy stream of water may spread fire.

#### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Not considered flammable but may burn at high temperatures.

**Explosion Hazard:** Product is not explosive.

**Reactivity:** When heated to decomposition, emits irritating fumes.

#### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** Use water spray or fog for cooling exposed containers.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

**Other information:** Do not allow run-off from fire fighting to enter drains or water courses.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Avoid breathing (dust, fumes). Avoid all contact with skin, eyes, or clothing.

##### 6.1.1. For Non-emergency Personnel

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**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. Avoid release to the environment.

#### 6.3. Methods and Material for Containment and Cleaning Up

**For Containment:** Contain and collect as any solid.

**Methods for Cleaning Up:** Clear up spills immediately and dispose of waste safely. Recover the product by vacuuming, shoveling or sweeping. Contact competent authorities after a spill.

#### 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

**Additional Hazards When Processed:** When heated to decomposition, emits irritating fumes. Contact with water causes an exothermic heat reaction, which may cause significant temperature rise.

# Road Runner

## Safety Data Sheet

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**Precautions for Safe Handling:** Do not breathe vapors, mist, spray.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product. Wash hands and forearms thoroughly after handling.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations.

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep/Store away from extremely high or low temperatures, direct sunlight, heat, ignition sources, incompatible materials.

**Incompatible Products:** Strong acids. Strong bases. Strong oxidizers. Reactive metals.

### 7.3. Specific End Use(s) Melting Ice

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

No Occupational Exposure Limits (OELs) have been established for this product or its chemical components.

### 8.2. Exposure Controls

#### Appropriate Engineering Controls

: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure all national/local regulations are observed. Ensure adequate ventilation, especially in confined areas.

#### Personal Protective Equipment

: Protective goggles. Protective clothing. Gloves.



#### Materials for Protective Clothing

: Chemically resistant materials and fabrics. Corrosionproof clothing.

#### Hand Protection

: Wear chemically resistant protective gloves.

#### Eye Protection

: Chemical goggles or face shield.

#### Skin and Body Protection

: Wear suitable protective clothing.

#### Respiratory Protection

: Not required under normal conditions of use.

#### Other Information

: When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: White dry Granules
Odor	: Minimal Odor
Odor Threshold	: No data available
pH	: No data available
Evaporation rate	: No data available
Melting Point	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20 °C	: No data available
Relative Density	: No data available
Specific Gravity	: 2.076
Solubility	: 317 gpl @ 0° C (32°F)
Partition coefficient: n-octanol/water	: No data available
Viscosity	: No data available

# Road Runner

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According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 9.2. Other Information No additional information available

## SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:** When heated to decomposition, emits irritating fumes.
- 10.2 Chemical Stability:** Stable under normal conditions.
- 10.3 Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.
- 10.4 Conditions to Avoid:** Direct sunlight. Extremely high or low temperatures. Incompatible materials.
- 10.5 Incompatible Materials:** Strong acids. Strong bases. Strong oxidizers. Reactive metals.
- 10.6 Hazardous Decomposition Products:** Hydrogen chloride. Chlorine. Sodium oxides. Oxides of magnesium. Oxides of calcium.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information On Toxicological Effects

**Acute Toxicity:** Not classified

Sodium chloride (7647-14-5)	
LD50 Oral Rat	3 g/kg
LC50 Inhalation Rat	> 42 g/m <sup>3</sup> (Exposure time: 1 h)
Magnesium chloride (7786-30-3)	
LD50 Oral Rat	2800 mg/kg
LD50 Dermal Rat	> 2000 mg/kg
Calcium chloride (10043-52-4)	
LD50 Oral Rat	1000 mg/kg
LD50 Dermal Rat	2630 mg/kg

**Skin Corrosion/Irritation:** Not classified

**Serious Eye Damage/Irritation:** Causes serious eye irritation.

**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/Injuries After Inhalation:** May cause respiratory irritation.

**Symptoms/Injuries After Skin Contact:** Skin contact with large amounts of dust may cause mechanical irritation.

**Symptoms/Injuries After Eye Contact:** Causes eye irritation.

**Symptoms/Injuries After Ingestion:** Ingestion is likely to be harmful or have adverse effects.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

Sodium chloride (7647-14-5)	
LC50 Fish 1	5560 (5560 - 6080) mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [flow-through])
EC50 Daphnia 1	1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	12946 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 2	340.7 (340.7 - 469.2) mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
Magnesium chloride (7786-30-3)	
LC50 Fish 1	1970 - 3880 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	140 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
Calcium chloride (10043-52-4)	
LC50 Fish 1	10650 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 Daphnia 1	2400 mg/l (Exposure time: 48 h - Species: Daphnia magna)

**12.2. Persistence and Degradability** No additional information available

**12.3. Bioaccumulative Potential**

Road Runner	
Bioaccumulative Potential	Not established.

# Road Runner

## Safety Data Sheet

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>Sodium chloride (7647-14-5)</b>	
BCF fish 1	(no bioaccumulation)
<b>Calcium chloride (10043-52-4)</b>	
BCF fish 1	(no bioaccumulation)

**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 of waste material in accordance with all local, regional, national, and international regulations.

### SECTION 14: TRANSPORT INFORMATION

**14.1 In Accordance with DOT** Not regulated for transport

**14.2 In Accordance with IMDG** Not regulated for transport

**14.3 In Accordance with IATA** Not regulated for transport

### SECTION 15: REGULATORY INFORMATION

**15.1 US Federal Regulations**

<b>Road Runner</b>	
<b>SARA Section 311/312 Hazard Classes</b>	Immediate (acute) health hazard
<b>Sodium chloride (7647-14-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Magnesium chloride (7786-30-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>Calcium chloride (10043-52-4)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

**15.2 US State Regulations**

<b>Sodium chloride (7647-14-5)</b>	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	
<b>Magnesium chloride (7786-30-3)</b>	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	
<b>Calcium chloride (10043-52-4)</b>	
U.S. - Texas - Effects Screening Levels - Long Term	
U.S. - Texas - Effects Screening Levels - Short Term	

### SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

<b>Revision date</b>	: 10/21/2014
<b>Other Information</b>	: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200. The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.

**GHS Full Text Phrases:**

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
H302	Harmful if swallowed
H319	Causes serious eye irritation

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

SDS US (GHS HazCom) - US





**1. PRODUCT AND COMPANY IDENTIFICATION**

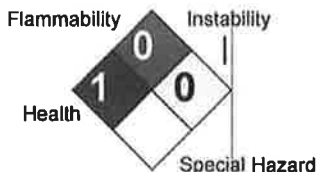
**Product Code:** 980-0050  
**Product Name:** Thaw Master  
**Company Name:** Eau Claire Coop Oil Company  
P.O. Box 837  
Eau Claire, WI 54702  
  
**Emergency Contact:** Chemtrec (800)424-9300  
**Information:** Product Related (715)876-6422  
  
**Part Number:** 980-0100, 980-0500, 980-1000, 980-2000

**2. HAZARDS IDENTIFICATION**

**Serious Eye Damage/Eye Irritation, Category 2A**



**GHS Signal Word:** Warning  
**GHS Hazard Phrases:** Causes serious eye irritation.  
**GHS Precaution Phrases:** Wash hands thoroughly after handling.  
Wear protective gloves/protective clothing/eye protection/face protection.  
**GHS Response Phrases:** 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.  
**GHS Storage and Disposal Phrases:** No phrases apply.  
**Hazard Rating System:**



**Potential Health Effects  
(Acute and Chronic):**

**Inhalation:** May be harmful if inhaled.  
**Skin Contact:** May cause skin irritation. May be harmful if absorbed through the skin.  
**Eye Contact:** Contact with eyes may cause severe irritation, and possible eye burns.  
**Ingestion:** May cause irritation of the digestive tract. May be harmful if swallowed.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

CAS #	Hazardous Components (Chemical Name)	Concentration
7647-14-5	Sodium chloride	85 - 96 %
10043-52-4	Calcium chloride	3.0 - 10 %
7791-18-6	Magnesium chloride	1.0 - 10 %

### 4. FIRST AID MEASURES

**Emergency and First Aid**

**Procedures:** Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear. Get medical aid immediately.

**In Case of Inhalation:** Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear. Get medical aid immediately.

**In Case of Skin Contact:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Get medical aid. Wash clothing before reuse.

**In Case of Eye Contact:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation develops, get medical aid.

**In Case of Ingestion:** Get medical aid if irritation or symptoms occur. Never give anything by mouth to an unconscious person.

**Note to Physician:** Treat symptomatically and supportively.

### 5. FIRE FIGHTING MEASURES

**Flash Pt:** No data.

**Explosive Limits:** LEL: No data. UEL: No data.

**Autoignition Pt:** No data.

**Suitable Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Fire Fighting Instructions:** Wear appropriate protective clothing to prevent contact with skin and eyes. Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. May be combustible at high temperatures. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Material will not burn.

**Flammable Properties and Hazards:** No data available.

### 6. ACCIDENTAL RELEASE MEASURES

**Steps To Be Taken In Case Material Is Released Or Spilled:** Use proper personal protective equipment as indicated in Section 8. Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment. Clean up spills immediately, observing precautions in the Protective Equipment section.

### 7. HANDLING AND STORAGE

**Precautions To Be Taken in Handling:** Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Wash thoroughly after handling. Keep container tightly closed. Do not get on skin or in eyes. Do not ingest or inhale. Wash clothing before reuse. Always use cool water when dissolving calcium chloride. Heat evolved is significant.

**Precautions To Be Taken in Storing:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CAS #	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
7647-14-5	Sodium chloride	PEL: Nuisance Dust:15 mg/m3 Total; 5mg/m3 Respirable	TLV: Nuisance Dust:10 mg/m3 Inhalable; 3 mg/m3 Respirable	No data.
10043-52-4	Calcium chloride	PEL: Nuisance Dust:15 mg/m3 Total; 5mg/m3 Respirable	TLV: Nuisance Dust:10 mg/m3 Inhalable; 3 mg/m3 Respirable	No data.
7791-18-6	Magnesium chloride	No data.	No data.	No data.

**Respiratory Equipment (Specify Type):** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

**Eye Protection:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Protective Gloves:** Wear appropriate protective gloves to prevent skin exposure.

**Other Protective Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Engineering Controls (Ventilation etc.):** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Good general ventilation should be sufficient to control airborne levels.

**Work/Hygienic/Maintenance Practices:** Wash promptly with soap and water if skin becomes contaminated. Change work clothing daily if there is any possibility of contamination.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical States:**  Gas  Liquid  Solid

**Appearance and Odor:** Appearance: Lime Green. Crystals.

**Melting Point:** No data.

**Boiling Point:** No data.

**Autoignition Pt:** No data.

**Flash Pt:** No data.

**Explosive Limits:** LEL: No data. UEL: No data.

**Specific Gravity (Water = 1):** No data.

**Vapor Pressure (vs. Air or mm Hg):** No data.

**Vapor Density (vs. Air = 1):** No data.

**Evaporation Rate:** No data.

**Solubility in Water:** No data.

**Percent Volatile:** No data.

### 10. STABILITY AND REACTIVITY

**Stability:** Unstable  Stable

**Conditions To Avoid - Instability:** High temperatures, Incompatible materials, dust generation, Exposure to moist air or water.

**Incompatibility - Materials To Avoid:** Metals. Strong oxidizing agents, Strong acids, bromine trifluoride, nitrogen compounds, Furan-2-peroxycarboxylic acid. Solutions attack some metals. attacks metals in the presence of moisture.

**Hazardous Decomposition Or Byproducts:** Hydrogen chloride, sodium oxide. Calcium oxide, chlorine.

**Possibility of Hazardous Reactions:** Will occur  Will not occur

**Conditions To Avoid - Hazardous Reactions:** No data available.

**11. TOXICOLOGICAL INFORMATION**

**Toxicological Information:** Epidemiology: The only adverse effect noted from occupational exposures have been mild nasal irritation with exposure to high dust levels and hypertension.  
 Teratogenicity: No information available. Reproductive Effects: No information found.  
 Neurotoxicity: Mutagenic effects have occurred in experimental animals.  
 CAS# 7647-14-5: Sodium chloride:  
 Acute toxicity, LD50, Oral, Rat, 3000. MG/KG.  
**Carcinogenicity/Other Information:** Results:  
 Skin and Appendages: Skin: After systemic exposure: Dermatitis, other.  
 Acute toxicity, LD50, Skin, Rabbit, 10000. MG/KG.  
 Results:  
 Behavioral: Tetany.  
 Lungs, Thorax, or Respiration: Dyspnea.  
 Gastrointestinal: Changes in structure or function of salivary glands.  
 Acute toxicity, LC50, Inhalation, Rat, 42000. MG/M3, 60 M.  
 Results:  
 Skin and Appendages: Skin: After systemic exposure: Dermatitis, other.  
 Nutritional and Gross Metabolic: Changes in: Ca.  
 CAS# 10043-52-4: Calcium chloride:  
 Acute toxicity, LD50, Dermal, Rabbit, 5000. MG/KG.  
 Results:  
 Behavioral: Changes in psychophysiological tests.  
 CAS# 7791-18-6: Magnesium chloride:  
 Acute toxicity, LD50, Oral, Rat, 8100. MG/KG.  
 Results:  
 Kidney, Ureter, Bladder: Changes in tubules (including acute renal failure, acute tubular necrosis).  
 Related to Chronic Data - death.  
 CAS# 7647-14-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65. CAS# 10043-52-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65. CAS# 7791-18-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.  
 CAS# 7786-30-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.  
**Carcinogenicity:** NTP? No IARC Monographs? No OSHA Regulated? No

CAS #	Hazardous Components (Chemical Name)	NTP	IARC	ACGIH	OSHA
7647-14-5	Sodium chloride	n.a.	n.a.	n.a.	n.a.
10043-52-4	Calcium chloride	n.a.	n.a.	n.a.	n.a.
7791-18-6	Magnesium chloride	n.a.	n.a.	n.a.	n.a.

**12. ECOLOGICAL INFORMATION**

**General Ecological Information:** Environmental: No information available.  
 Physical: No information available.  
 Other: Do not empty into drains.

**13. DISPOSAL CONSIDERATIONS**

**Waste Disposal Method:** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.  
RCRA P-Series: None listed.  
RCRA U-Series: None listed.

**14. TRANSPORT INFORMATION**

**GHS Classification:** Serious Eye Damage/Eye Irritation, Category 2A - Warning! Causes serious eye irritation

**LAND TRANSPORT (US DOT):**

**DOT Proper Shipping Name:** Not Regulated.  
**DOT Hazard Class:**  
**UN/NA Number:**

**LAND TRANSPORT (Canadian TDG):**

**TDG Shipping Name:** Not Regulated.

**15. REGULATORY INFORMATION**

CAS #	Hazardous Components (Chemical Name)	Other US EPA or State Lists
7647-14-5	Sodium chloride	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No; CA TAC, Title 8: No; WI Air: No
10043-52-4	Calcium chloride	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No; CA TAC, Title 8: No; WI Air: No
7791-18-6	Magnesium chloride	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No; CA TAC, Title 8: No; WI Air: No

**16. OTHER INFORMATION**

**Revision Date:** 12/26/2013  
**Additional Information About No data available.**

**This Product:**

**Company Policy or**

**Disclaimer:**

This Safety Data Sheet (SDS) is to be used as a reference to address the safe handling of the product. All statements, technical information and recommendations contained herein are to the best of our knowledge, reliable and accurate. This SDS is not intended to make any representation as to how the product will perform when used as intended. Nothing in this SDS is intended to be a representation or warranty by the manufacturer with regard to accuracy, safety, usefulness, technical information, materials, techniques, or practices. This product is sold "AS IS" and nothing in this SDS should be deemed to be a representation or warranty of any injury, loss, or damage of any kind sustained by, or arise from, the use of this product.

