

Safety Data Sheet

Material Name: Manganese Sulfate, Monohydrate

ID: C1-127

***** Section 1 - Chemical Product and Company Identification *****

Chemical Name: Manganese Sulfate, Monohydrate

Product Use: For Commercial Use

RESTRICTIONS on USE

NOT TO BE USED AS A PESTICIDE. THIS PRODUCT IS NOT TO BE USED IN VIOLATION OF ANY PATENTS. CHEM ONE LTD. DISCLAIMS ANY AND ALL WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR APPLICATION. IN NO EVENT SHALL CHEM ONE LTD. OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER INCLUDING DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LOSS OF BUSINESS PROFITS OR SPECIAL DAMAGES, EVEN IF CHEM ONE LTD. OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SO THE FOREGOING LIMITATION MAY NOT APPLY.

Supplier Information

Chem One Ltd.
14140 Westfair East Drive
Houston, Texas 77041-1104

Phone: (713) 896-9966

Fax: (713) 896-7540

Emergency # (800) 424-9300 or +1 (703) 527-3887

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

***** Section 2 - Hazards Identification *****

GHS HAZARD

Hazard Classes

Specific target organ toxicity repeated exposure

Chronic aquatic toxicity

Hazard Categories

Category 2

Category 3

Signal Word: Danger



Pictograms:

Hazard Statements

PHYSICAL HAZARDS:

None

HEALTH HAZARDS:

H373 May cause damage to organs through prolonged or repeated exposure

ENVIRONMENTAL HAZARDS:

H411 Toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS:

P102: Keep out of reach of children

P202: Do not handle until all safety precautions have been read and understood

P261: Avoid breathing dust

P264: Wash hands thoroughly after use

P280: Wear protective gloves, clothing and eye protection

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RESPONSE STATEMENTS:

P301 +310+ P331: IF SWALLOWED: USA Immediately call the National POISON CENTER at 800-222-1222. DO NOT induce vomiting
P303+P361+353: IF ON SKIN Take off immediately all contaminated clothing. Rinse skin with water
P304+340: IF INHALED, Remove to fresh air and keep comfortable for breathing
P305+P351: IF IN EYES rinse cautiously with water for at least 15 minutes
P306+P361: IF ON CLOTHING, Take off contaminated clothing
P330 Rinse mouth

STORAGE STATEMENTS:

None

DISPOSAL STATEMENTS:

P501: Dispose of content and/or container in accordance with local, regional, national or international regulations

***** Section 3 - Composition/information on Ingredients *****

CAS #	Component	Percent
10034-96-5	Manganese Sulfate Monohydrate	> 98%

CAS 7785-87-7 (anhydrous manganese sulfate) may also be used for "Manganese Sulfate".

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Manganese (7439-96-5), Manganese, elemental & inorganic compounds, as Mn, and Manganese fume, Mn

Synonyms: Sulfuric Acid, manganese (2+) salt (1:1), Monohydrate; Manganese mesosulfate; Manganous sulfate monohydrate.

***** Section 4 - First Aid Measures *****

Emergency Overview

Manganese Sulfate Monohydrate is a light gray to light pink solid in granular or powder form. The primary health hazard associated with this product is the potential for irritation of the eyes, skin, nose and other tissues that come in contact with dusts or particulates of this product. Inhalation overexposures may cause metal fume fever. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g. sulfur oxides and manganese). Emergency responders should wear proper personal protective equipment for the releases to which they are responding.

Hazard Statements

HARMFUL IF SWALLOWED. CAUSES IRRITATION TO EYES, SKIN, AND RESPIRATORY TRACT. HARMFUL IF INHALED. INHALATION OVEREXPOSURE CAN CAUSE METAL FUME FEVER. CHRONIC OVEREXPOSURE MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.

Potential Health Effects: Eyes

Exposure to particulates or solution of Manganese Sulfate Monohydrate may cause irritation of the eyes with symptoms such as stinging, tearing and redness. Prolonged contact may cause corneal injury and conjunctivitis.

Potential Health Effects: Skin

Manganese Sulfate Monohydrate can cause irritation of the skin, with symptoms such as reddening, discomfort and itching. Repeated skin contact may lead to dermatitis (red, cracked skin).

Potential Health Effects: Ingestion

Ingestion of Manganese Sulfate Monohydrate can cause nausea, vomiting, and abdominal cramps. Chronic ingestion of this product may cause systemic poisoning with symptoms similar to those described for chronic inhalation.

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*** Section 4 - First Aid Measures Continued ***

Potential Health Effects: Inhalation

Breathing dusts or particulates generated by Manganese Sulfate Monohydrate can lead to irritation of the nose, throat or respiratory system. Symptoms of such exposure could include coughing, sneezing, coughing and bronchitis. Repeated or prolonged exposure can cause metal fume fever, with resulting flu-like symptoms of chills and fever, sweating, and weakness. Chronic overexposure can also cause central nervous system effects including muscle weakness, speech impairment, insomnia, tremors and mental incapacity. Symptoms of such reaction can be delayed for several years.

First Aid: Eyes

In case of contact with eyes, rinse immediately with plenty of water for at least 20 minutes. Seek immediate medical attention if adverse effect occurs.

First Aid: Skin

Remove all contaminated clothing. For skin contact, wash thoroughly with soap and water for at least 20 minutes. Seek immediate medical attention if irritation develops or persists.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Have victim rinse mouth thoroughly with water, if conscious. Never give anything by mouth to a victim who is unconscious or having convulsions. Contact a physician or poison control center immediately.

First Aid: Inhalation

Remove source of contamination or move victim to fresh air. Apply artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult. Get immediate medical attention.

First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically.

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards

Manganese Sulfate Monohydrate is not combustible.

Hazardous Combustion Products

Manganese and sulfur oxide.

Extinguishing Media

Use methods for surrounding fire.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus. Cool containers with flooding quantities of water. If possible control runoff from fire control or dilution water to prevent environmental contamination.

NFPA Ratings: Health: 2 Fire: 0 Reactivity: 0 Other:

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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*** Section 6 - Accidental Release Measures ***

Containment Procedures

Stop the flow of material, if this can be done without risk. Contain the discharged material. . If sweeping of a contaminated area is necessary use a dust suppressant agent, which does not react with product (see Section 10 for incompatibility information).
Keep spilled material dry and away from moisture.

Clean-Up Procedures

Small releases can be cleaned-up using impervious gloves, goggles and suitable body protection. In case of a large spill (in which excessive dusts can be generated), clear the affected area, protect people, and respond with trained personnel. Place all spill residues in an appropriate container and seal. Thoroughly wash the area after a spill or leak clean-up. Prevent spill rinsate from contaminating of storm drains, sewers, soil or groundwater.

Evacuation Procedures

Evacuate the area promptly and keep upwind of the spilled material. Isolate the spill area to prevent people from entering. In case of large spills, follow all facility emergency response procedures.

Special Procedures

Remove soiled clothing and laundry before reuse. Avoid all skin contact with the spilled material. Have emergency equipment readily available.

*** Section 7 - Handling and Storage ***

Handling Procedures

All employees who handle this material should be trained to handle it safely. Do not breathe dust. Avoid all contact with skin and eyes. Use this product only with adequate ventilation. Wash thoroughly after handling.

Storage Procedures

Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Use corrosion-resistant structural materials, lighting, and ventilation systems in the storage area. Floors should be sealed to prevent absorption of this material. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers).

Empty containers may contain residual particulates; therefore, empty containers should be handled with care. Never store food, feed, or drinking water in containers that held this product. Keep this material away from food, drink and animal feed. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

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*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information

Follow the applicable exposure limits.

B: Component Exposure Limits

The exposure limits given are for Manganese, elemental & inorganic Compounds, as Mn (7439-96-5) or Manganese fume, as Mn.

ACGIH: 0.2 mg/m³ TWA (fume & manganese, elemental & inorganic compounds, as Mn)

Notice of Intended Change: 0.03 [respirable fraction] (fume & manganese, elemental & inorganic compounds, as Mn)

OSHA: 5 mg/m³ STEL, ceiling (fume & manganese, elemental & inorganic compounds, as Mn)

Vacated 1989 PEL: TWA = 1 mg/m³ (fume); STEL = 3 mg/m³ (fume)

DFG MAKs: 0.5 mg/m³ TWA, Ceiling,

Peak: 3•MAK, 15 minutes, average value, 1-hr interval (fume)

NIOSH: 1 mg/m³ TWA

3 mg/m³ STEL

500 mg/m³ IDLH

Engineering Controls

Use mechanical ventilation such as dilution and local exhaust. Use a corrosion-resistant ventilation system and exhaust directly to the outside. Supply ample air replacement. Provide dust collectors with explosion vents.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields or chemical goggles. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear impervious gloves. Nitrile, PVC, rubber or equivalent gloves are recommended. Wear long-sleeved shirt and trousers. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients), if applicable. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), and applicable U.S. State regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998). If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. The following NIOSH Guidelines for Manganese and Compounds (as Mn) are presented for further information.

Up to 10 mg/m³: Dust and mist respirator except single-use and quarter-mask respirator or SAR.

Up to 25 mg/m³: SAR operated in a continuous-flow mode, or powered air-purifying respirator with dust and mist filters.

Up to 50 mg/m³: Full-facepiece respirator with high-efficiency particulate filter(s), or SAR with a tight-fitting facepiece operated in a continuous-flow mode, or powered air-purifying respirator with tight-fitting facepiece and high-efficiency particulate filter, or full-facepiece SCBA, or full-facepiece SAR.

Up to 500 mg/m³: Positive pressure SAR.

NIOSH Guidelines for Manganese and Compounds (as Mn) [continued]:

Emergency or Planned Entry into Unknown Concentrations or IDLH Conditions: Positive pressure, full-facepiece SCBA, or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Escape: Full-facepiece respirator with high-efficiency particulate filter(s), or escape-type SCBA.

NOTE: The IDLH concentration for Manganese Compounds and fume (as Mn) is 500 mg/m³.

Personal Protective Equipment: General

Have an eyewash fountain and safety shower available in the work area. Wash hands thoroughly after handling material.

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Protective Clothing Pictograms:



Splash Goggles



Gloves



Protective Apron



Dust Respirator

*** Section 9 - Physical & Chemical Properties ***

Physical Properties: Additional Information

The data provided in this section are to be used for product safety handling purposes. Please refer to Product Data Sheets, Certificates of Conformity or Certificates of Analysis for chemical and physical data for determinations of quality and for formulation purposes.

Appearance:	Light gray or pink powder or granules	Odor:	Odorless
Physical State:	Solid	pH:	Slightly acidic in water
Vapor Pressure:	8 mm Hg (at 68 deg F)	Vapor Density:	Not applicable
Boiling Point:	Not available	Melting Point:	1292 deg F (700 deg C)
Solubility (H₂O):	Freely soluble in water	Specific Gravity:	2.95(H ₂ O = 1)
Freezing Point:	Not applicable	Particle Size:	All grades from 16-325 mesh (40% powder grade is > 325 mesh)
Softening Point:	Not applicable	Bulk Density:	All grades from 0.60-1.50 g/cm ³
Molecular Weight:	169.01	Chemical Formula:	MnSO ₄ •H ₂ O
Flash Point:	Not flammable	Method Used:	Not applicable
Upper Flammable Limit (UEL):	Not applicable	Lower Flammable Limit (LEL):	Not applicable
Auto Ignition:	Not applicable	Flammability Classification:	Not applicable
Rate of Burning:	Not applicable		

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable.

Chemical Stability: Conditions to Avoid

Avoid high temperatures, moisture, and incompatible materials.

Incompatibility

Manganese Sulfate, Monohydrate is incompatible with powdered metals, strong acids and strong oxidizing materials.

Hazardous Decomposition

Sulfur oxides and manganese.

Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

May cause eye, skin, nose, throat and respiratory tract irritation. Depending on the duration of contact, over-exposures can irritate or burn the eyes. If inhaled, irritation of the respiratory system can occur, with coughing and breathing difficulty.

Harmful if swallowed. Inhalation over-exposures may cause metal fume fever, with resulting flu-like symptoms.

Chronic: Long term skin overexposure to this product may lead to dermatitis (red, itchy skin). Chronic inhalation or ingestion overexposures can cause central nervous system effects including muscle weakness, impairment of speech, insomnia and incoordination. Chronic overexposure to this product may also cause kidney damage, changes in the liver and blood disorders.

B: Component Analysis - LD₅₀/LC₅₀

Manganese (7439-96-5):

Oral-rat LD₅₀ = 9 g/kg

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*** Section 11 – Toxicological Information Continued ***

C: Component Analysis - TDLo/LDLo

Manganese Sulfate Monohydrate (10034-96-5):

TDLo (Oral-Rat) 42 gm/kg/14 days-continuous: Liver: changes in liver weight; Blood: changes in other cell count (unspecified), changes in leukocyte (WBC) count; TDLo (Oral-Rat) 28437 mg/kg/13 weeks-continuous: Lungs, Thorax, or Respiration: changes in lung weight; Blood: changes in leukocyte (WBC) count; Nutritional and Gross Metabolic: weight loss or decreased weight gain; TDLo (Oral-Mouse) 546 gm/kg/13 weeks-continuous: Liver: changes in liver weight; Blood: pigmented or nucleated red blood cells, other changes; TDLo (Oral-Mouse) 1314 gm/kg/2 years-continuous: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Endocrine: thyroid tumors; TDLo (Oral-Mouse) 513 mg/kg: male 5 day(s) pre-mating: Reproductive: Paternal Effects: spermatogenesis (incl. genetic material, sperm morphology, motility, and count)

Carcinogenicity

A: General Product Information

There was equivocal evidence of carcinogenic activity of Manganese Sulfate, Monohydrate in male and female mice, based on the marginally increased incidences of thyroid gland follicular cell adenoma and the significantly increased incidences of follicular cell hyperplasia.

B: Component Carcinogenicity

Manganese & inorganic Compounds as Mn and Manganese fume, as Mn (7439-96-5)

EPA: EPA-D (Not Classifiable as to Human Carcinogenicity - inadequate human and animal evidence of carcinogenicity or no data available)

Epidemiology

Workers in plants having high levels of manganese dust showed high incidence of respiratory disease, and pathologic changes included epithelial necrosis with symptoms similar to Parkinson's disease and rigidity of facial expression.

Neurotoxicity

Manganese Sulfate, Monohydrate is a neurotoxin. Combination of ingestion and inhalation can incur harmful effects on the central nervous system. Symptoms may include leg cramps, tremors, difficult walking, poor coordination, memory loss, questionable judgment and unstable emotions.

Mutagenicity

Manganese Sulfate, Monohydrate was active for gene conversion and mutations in *S. cerevisiae*, and for inducing translocations, in Cytogenetic analysis, Sperm Morphology and Sister chromatid exchange in mice.

Mutation in Microorganisms (Yeast-*Saccharomyces cerevisiae*) 40 $\mu\text{mol/L}$; Gene Conversion and Mitotic Recombination (Yeast-*Saccharomyces cerevisiae*) 40 $\mu\text{mol/L}$; Micronucleus Test (Oral-Mouse) 205 mg/kg/24 hours-continuous; Cytogenetic Analysis (Oral-Mouse) 718 mg/kg/7 days-continuous; Cytogenetic Analysis (Hamster-Ovary) 180 mg/L; Sperm Morphology (Oral-Mouse) 513 mg/kg/5 days-continuous; Sister Chromatid Exchange (Hamster-Ovary) 5 mg/L

Teratogenicity

Tests in mice produced spermatogenesis (including genetic material, sperm morphology, motility and count) in mice.

Other Toxicological Information

Workers exposed to airborne manganese have had a higher incidence of pneumonia. Victims of manganese poisoning have reported impotence and decreased sexual desire.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

B: Ecotoxicity:

Toxic to fish and aquatic organisms

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*** Section 12 - Ecological Information Continued ***

Environmental Fate:

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow to enter waters, waste water, or soil.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

As shipped, this product is not considered a hazardous waste by EPA.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions

All wastes must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

*** Section 14 - Transportation Information ***

NOTE: The shipping classification information in this section (Section 14) is meant as a guide to the overall classification of the product. However, transportation classifications may be subject to change with changes in package size. Consult shipper requirements under I.M.O., I.C.A.O. (I.A.T.A.) and 49 CFR to assure regulatory compliance.

US DOT Information

Shipping Name: Not applicable.

Hazard Class: Not applicable

UN/NA #: Not applicable

Packing Group: Not applicable

Required Label(s): Not applicable

RQ Quantity: Not applicable

55th Edition International Air Transport Association (IATA):

For Shipments by Air transport: not considered hazardous.

International Maritime Organization (I.M.O.) Classification

I.M.O. Classification: not considered hazardous under IMDG/ I.M.O. regulations.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

No additional information.

B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4):

SARA 313: Category code N450 (as Manganese compounds) for reporting under Section 313.

CERCLA: There is no RQ assigned to this broad class (Manganese compounds), although the class is a CERCLA hazardous substance.

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Manganese Sulfate Monohydrate	10034-96-5	No	No	No	Yes	Yes

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*** Section 15 - Regulatory Information Continued ***
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State Regulations

A: General Product Information

California Proposition 65

Manganese Sulfate, Monohydrate is not on the California Proposition 65 chemical lists.

B: Component Analysis - State

Manganese Sulfate Monohydrate appears on one or more of the following state hazardous substance lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Manganese Sulfate Monohydrate	10034-96-5	No	No	No	No	No	No
Manganese and compounds	N/A	Yes	No	No	Yes	No	No
Manganese	7439-96-5	Yes	Yes	Yes	Yes	Yes	Yes

Other Regulations

A: General Product Information

No other information available.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Manganese Sulfate Monohydrate	10034-96-5	No	No	No

As a hydrate of a listed compound, Manganese Sulfate Monohydrate is not required to be listed on the TSCA or DSL Inventories.

C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Manganese Sulfate Monohydrate	10034-96-5	1%

ANSI LABELING (Z129.1): WARNING! HARMFUL IF SWALLOWED. CAUSES SKIN AND EYE IRRITATION. HARMFUL IF INHALED. INHALATION OVEREXPOSURE CAN CAUSE METAL FUME FEVER. CHRONIC OVEREXPOSURES CAN CAUSE CENTRAL NERVOUS SYSTEM EFFECTS. Keep from contact with clothing. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH/MSHA-approved respiratory protection, as appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Sweep up material. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

*** Section 16 - Other Information ***

Other Information

Chem One Ltd. ("Chem One") shall not be responsible for the use of any information, product, method, or apparatus herein presented ("Information"), and you must make your own determination as to its suitability and completeness for your own use, for the protection of the environment, and for health and safety purposes. You assume the entire risk of relying on this Information. In no event shall Chem One be responsible for damages of any nature whatsoever resulting from the use of this product or products, or reliance upon this Information. By providing this Information, Chem One neither can nor intends to control the method or manner by which you use, handle, store, or transport Chem One products. If any materials are mentioned that are not Chem One products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed. Chem One makes no representations or warranties, either express or implied of merchantability, fitness for a particular purpose or of any other nature regarding this information, and nothing herein waives any of Chem One's conditions of sale. This information could include technical inaccuracies or typographical errors. Chem One may make improvements and/or changes in the product (s) and/or the program (s) described in this information at any time. If you have any questions, please contact us at Tel. 713-896-9966 or E-mail us at Safety@chemone.com.

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***** Section 16 - Other Information Continued *****

Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration

Contact: Sue Palmer-Koleman, PhD

Contact Phone: (713) 896-9966

Revision log

08/04/00 4:44 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.
05/14/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review; add SARA 311/312 Haz Ratings..
08/20/01 1:45 PM CLJ Add Shipments by Air information to Section 14, Changed contact to Sue, non-800 Chemtrec Num.
09/16/03 8:45 PM HDF General review of entire MSDS. Up-graded Section 3 Health Hazard information, HMIS categories. Up-dated exposure limits in Section 8. Added new toxicity data available in Section 11. Up-Dated Section 14 Transportation Information.
05/03/04 4:40 PM SEP Added CAS 7785-87- , Section 2.
06/22/05 3:18PM SEP Update IATA Section 14
10/18/07 4:17PM SEP Updated IATA Section 14
10/15/08 8:58 AM DLY Changed Chem One Physical Address, Section 1
12/07/10 3:58 pm SEP Update IATA
1/16/2015 GHS Revision all sections
This is the end of MSDS # C1-127

Revised By:

SJC Compliance Education, Inc.
16516 El Camino Real Suite 417
Houston TX 77062