

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

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

Chemical Name: Magnesium Sulfate Heptahydrate, Technical Standard & USP Grades

Product Use: For Commercial Use

Synonyms: Magnesium sulfate, 7-hydrate; Epsom Salt

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 (703) 527-3887

General Comments: FOR COMMERCIAL USE ONLY; NOT TO BE USED AS A PESTICIDE.

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 - Composition / Information on Ingredients ***

CAS #	Component	Percent
10034-99-8	Magnesium Sulfate Heptahydrate	100

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Magnesium sulfate (7487-88-9).

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

*** Section 3 - Hazards Identification ***

Emergency Overview

Magnesium Sulfate Heptahydrate is an odorless, colorless to white solid in crystalline form. Contact may cause irritation to eye, skin, and respiratory system. Magnesium Sulfate Heptahydrate is not flammable or reactive. Thermal decomposition of Magnesium Sulfate Heptahydrate produces irritating vapors and toxic gases (e.g. sulfur oxides). Emergency responders should wear proper personal protective equipment for the releases to which they are responding.

Hazard Statements

Caution! May cause irritation to eyes, skin, and respiratory system. Avoid contact with eyes and prolonged contact with skin. Avoid breathing dusts. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation.

Potential Health Effects: Eyes

Exposure to particulates or solution of Magnesium Sulfate Heptahydrate may cause mild irritation of the eyes with symptoms such as stinging, tearing and redness.

Potential Health Effects: Skin

Magnesium Sulfate Heptahydrate can cause slight irritation of the skin, especially after prolonged exposures. Repeated skin contact may lead to dermatitis (red, cracked skin). Symptoms are generally alleviated when exposure ends.

Potential Health Effects: Ingestion

Ingestion of Magnesium Sulfate Heptahydrate (especially in large volumes) can cause symptoms which include vomiting, diarrhea, and nausea. If elimination is blocked by bowel blockage or other reasons, depression of the central nervous system, lack of reflexes and hypocalcemia can occur.

Potential Health Effects: Inhalation

Breathing dusts or particulates generated by Magnesium Sulfate Heptahydrate can lead to irritation of the nose, throat or respiratory system. Symptoms of such exposure could include coughing and sneezing. Symptoms are generally alleviated when exposure ends.

HMIS Ratings: Health Hazard: 1 Fire Hazard: 0 Physical Hazard: 0

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

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

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

First Aid: Eyes

Immediately flush eyes with large amounts of room temperature water, occasionally lifting the lower and upper lids, for at least 15 minutes. If symptoms persist after 15 minutes of irrigation, seek medical attention.

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, unless directed by medical personnel. 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

There is no specific antidote. Care is symptomatic and supportive.

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

Flash Point: Not applicable.

Method Used: Not applicable.

Upper Flammable Limit (UEL): Not applicable.

Lower Flammable Limit (LEL): Not applicable.

Auto Ignition: Not available.

Flammability Classification: Not applicable.

General Fire Hazards

Magnesium Sulfate Heptahydrate is not combustible, and does not contribute to the intensity of a fire. When involved in a fire, this material may decompose and produce irritating vapors, acrid smoke and toxic gases.

Hazardous Combustion Products

When heated to decomposition, this product may emit toxic fumes of sulfur oxides.

Extinguishing Media

Use methods for surrounding fire.

Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self-contained breathing apparatus.

NFPA Ratings: Health: 1 Fire: 0 Reactivity: 0 Other:

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

*** 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

Wear appropriate protective equipment and clothing during clean-up. Shovel the material into waste container. Thoroughly wash the area after a spill or leak clean-up. Avoid contamination of soil, and prevent spill residue from running to groundwater or storm drains.

Evacuation Procedures

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

Special Procedures

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

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

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

Handling Procedures

All employees who handle Magnesium Sulfate Heptahydrate 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. Keep containers closed--material is hygroscopic. 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 which 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. Wipe down area of use periodically to avoid the accumulation of dusts

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

Exposure Guidelines

A: General Product Information

No exposure guidelines have been established.

B: Component Exposure Limits

The exposure limits given are for Particulates Not Otherwise Classified.

ACGIH: 10 mg/m³ TWA (Inhalable fraction)
3 mg/m³ TWA (Respirable fraction)

OSHA: 15 mg/m³ TWA (Total dust)
5 mg/m³ TWA (Respirable fraction)

DFG MAKs 4 mg/m³ TWA (Inhalable fraction)
1.5 mg/m³ TWA (Respirable fraction)

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

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132). Please reference applicable regulations and standards for relevant details.

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields (or goggles) and a face shield. If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear appropriate work gloves for type of operation. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

None required where adequate ventilation conditions exist. If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), 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).

Personal Protective Equipment: General

Use good hygiene practices when handling this material including changing and laundering work clothing after use. Have a safety shower or eye-wash fountain available. Wash hands thoroughly after handling material. Do not eat, drink, or smoke in work areas.

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

*** 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: Colorless to white crystals	Odor: Odorless
Physical State: Solid	pH: 7 (34% soln at 20 deg C)
Vapor Pressure: 8 mm Hg @ 68 deg F	Vapor Density: Not applicable
Boiling Point: Not Applicable	Freezing/Melting Point: 118.4 deg F (48.1 deg C)
Solubility (H2O): 34 g/mL at 20 deg c	Specific Gravity: 1.7 (H2O = 1)
Softening Point: Not applicable	Particle Size: Standard: 0.1-2mm, Fine crystals 0.8mm
	Bulk Density: Standard: 0.95 g/cm ³ , Fine crystals: 0.92 g/cm ³
Sublimation Point: Not Applicable	Volatility: Not Applicable
Molecular Weight: 246.48	Heat of Combustion: Not Applicable
Octanol/H2O Coefficient: Not Applicable	Evaporation Rate: Not applicable
Saturated Vapor Concentration: Not Applicable	Chemical Formula: MgSO ₄ · 7H ₂ O

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

Chemical Stability

Under normal conditions of temperature and pressure, Magnesium Sulfate Heptahydrate is stable. Loses some moisture on exposure to dry air at room temperature.

Chemical Stability: Conditions to Avoid

Avoid high temperatures, excessive heat, incompatible materials and air (material is hygroscopic).

Incompatibility

Ethoxy ethyl alcohols, arsenates, phosphates, tartrates, lead, barium, strontium and calcium, strong oxidizers.

Hazardous Decomposition

When heated to decomposition, this product may emit toxic sulfur oxides.

Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute Toxicity

A: General Product Information

Acute exposure may cause mild skin and eye irritation. Gastrointestinal absorption may cause acute magnesium poisoning. Symptoms include flushing, sweating, low blood pressure, depression of reflexes, flaccid paralysis, hypothermia, circulatory collapse, and depression of CNS and heart function. Excessive long-term ingestion of this product may cause also cause magnesium poisoning with symptoms described above.

B: Component Analysis - LD50/LC50

No information available.

B: Component Analysis - TDLo/LDLo

TDLo (Oral-Man) 183 mg/kg/4 hours-intermittent: Gastrointestinal: hypermotility, diarrhea; LDLo (Intraduodenal-Woman) 5344 mg/kg

Carcinogenicity

A: General Product Information

No information available.

B: Component Carcinogenicity

Magnesium Sulfate Heptahydrate is not listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Epidemiology

No information available.

Neurotoxicity

No information available.

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

*** Section 11 - Toxicological Information (Continued) ***

Mutagenicity

No information available.

Teratogenicity

No information available.

Other Toxicological Information

None.

*** Section 12 - Ecological Information ***

Ecotoxicity

No information available.

Environmental Fate

No potential for food chain concentration.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

As shipped, product is not considered a hazardous waste by the EPA. You must test your waste using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for wastes of Magnesium Sulfate Heptahydrate.

Disposal Instructions

Dispose of in accordance with all applicable Federal, State or provincial, and local regulations.

*** 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 Regulated

Hazard Class: Not Classified

UN/NA #: Not Classified

Packing Group: None

Required Label(s): None

50th Edition International Air Transport Association (IATA):

For Shipments by Air transport: This information applies to air shipments both within the U.S. and for shipments originating in the U.S., but being shipped to a different country.

UN/NA #: UN 3077

Proper Shipping Name: Environmentally Hazardous Substance, solid, n.o.s. (Magnesium Sulfate Heptahydrate)

Hazard Class: 9 (Miscellaneous Dangerous Goods)

Packing Group: III

Passenger & Cargo Aircraft Packing Instruction: 911

Passenger & Cargo Aircraft Maximum Net Quantity: 400 kg

Limited Quantity Packing Instruction (Passenger & Cargo Aircraft): Y911

Limited Quantity Maximum Net Quantity (Passenger & Cargo Aircraft): 30 kg G

Cargo Aircraft Only Packing Instruction: 911

Cargo Aircraft Only Maximum Net Quantity: 400 kg

Excepted Quantities: E1

Special Provisions: A97, A158

ERG Code: 9L

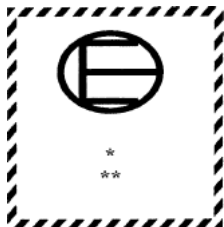
Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

Limited Quantity Shipments: Shipments for air must be marked with the Proper Shipping Name Environmentally Hazardous Substance, solid, n.o.s. (Magnesium Sulfate Heptahydrate) and shall be marked with the UN Number (3077) preceded by the letters "UN", placed within a diamond. The width of the line forming the diamond shall be at least 2 mm; the number shall be at least 6 mm high. The total weight of each outer packaging cannot exceed 30 kg.

Excepted Quantities: The maximum quantity of this material per inner receptacle is limited to 30 g per receptacle and the aggregate quantity of this material per completed package does not exceed 1kg. The inner receptacles must be securely packed in an intermediate packaging with cushioning material to prevent movement in the inner receptacles and packed in a strong outer box with a gross mass not to exceed 29kg. The completed package must meet a drop test. The requirements are found in 2.7.6.1. The package must not be opened or otherwise altered until it is no longer in commerce. For air transportation no shipping paper is required. The package must be legibly marked with the following marking:



NOTE: The "*" must be replaced by the primary hazard class, or when assigned, the division of each of the hazardous materials contained in the package. The "**" must be replaced by the name of the shipper or consignee if not shown elsewhere on the package. The symbol shall be not less than 100 mm x 100 mm and must be durable and clearly visible.

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

Magnesium Sulfate Heptahydrate is not regulated under I.M.O.

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

None.

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).

Magnesium Sulfate Heptahydrate (10034-99-8)

CERCLA: Final RQ = Not Applicable

SARA 302 (EHS TPQ) There are no specific Threshold Planning Quantities for Magnesium Sulfate Heptahydrate. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs. (4,540 kg) therefore applies, per 40 CFR 370.20.

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Magnesium Sulfate Heptahydrate	10034-99-8	No	No	No	Yes	No

State Regulations

A: General Product Information

Other state regulations may apply.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substance lists:

Component	CAS #	CA	FL	MA	MN	NJ	PA
Magnesium Sulfate Heptahydrate	10034-99-8	No	No	No	No	No	No

Other Regulations

A: General Product Information

Not determined.

B: Component Analysis - Inventory

Component	CAS #	TSCA	DSL	EINECS
Magnesium Sulfate Heptahydrate	10034-99-8	Yes	Yes	Yes

C: Component Analysis - WHMIS IDL

Magnesium Sulfate Heptahydrate is not identified under the Canadian Hazardous Products Act Ingredient Disclosure List.

Material Safety Data Sheet

Material Name: Magnesium Sulfate Heptahydrate (Epsom Salt)

ID: CL-126

Component	CAS #	Minimum Concentration
Magnesium Sulfate Heptahydrate	10034-99-8	No disclosure limit

ANSI Labeling (Z129.1):

CAUTION! MAY CAUSE RESPIRATORY SYSTEM, SKIN AND EYE IRRITATION. HARMFUL IF INGESTED OR INHALED OR BY PROLONGED OR REPEATED SKIN CONTACT. Avoid contact with skin, eyes, or clothing. Do not taste or swallow. Avoid breathing dusts and particulates. 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:** Absorb spill with inert 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.

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; WHMIS = Workplace Hazardous Materials Information System

Contact: Sue Palmer-Koleman, PhD

Contact Phone: (713) 896-9966

Revision log

08/04/00 4:42 PM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd; added "7H20" to chemical formula in Sect 9.

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 1:35 PM CLJ Add Shipments by Air information to Section 14, Changed contact to Sue, non-800 Chemtrec Num.

06/07/03: 9:45 PM HDF General review and up-date of entire MSDS. Up-graded Section 8 to include PNOC exposure limits.

Up-date of HMIS categories. Up-date of Section 8. Addition of toxicological data Section 11. Up-date of Section 14.

06/22/05 3:14 PM SEP Update IATA Section 14

10/18/07 4:10 PM SEP Updated IATA Section 14

10/15/08 8:49 AM DLY Changed Chem One Physical Address, Section 1

12/03/2010 4:01 PM SEP Update IATA

This is the end of MSDS # CL-126