

Safety Data Sheet

Material Name: Zinc Sulfate, Monohydrate

ID: C1-163

*** Section 1 - Identification ***

Part Number: Technical Grade – Granular, Prilled, and Powder Form, MAXIMO 360, 361, 362, 363, 364

Chemical Name: Zinc Sulfate, Monohydrate

Product Use: For Commercial Use

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Manufacturer: Zinc Nacional

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 – Hazard(s) identification ***

GHS HAZARD

Hazard Classes

Eye damage/irritation

Acute toxicity, oral

Acute aquatic toxicity

Chronic aquatic toxicity

Hazard Categories

Category 1

Category 4

Category 1

Category 1

Signal Word: Danger



Pictograms:

Hazard Statements

PHYSICAL HAZARDS:

None

HEALTH HAZARDS:

H302: Harmful if swallowed

H318: Causes serious eye damage

ENVIRONMENTAL HAZARDS:

H410: Very 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

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P264: Wash hands thoroughly after handling
P270: Do not eat, drink or smoke when using this product
P273: Avoid release to the environment
P280: Wear protective gloves, clothing and eye protection

RESPONSE STATEMENTS:

P301+P312+P330: IF SWALLOWED: Call a POISON CENTER /doctor if you feel unwell (USA National POISON CENTER 800-222-1222). Rinse mouth.
P304 + P340 IF INHALED: if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P310: Immediately call a POISON CENTER/doctor (USA National POISON CENTER 800-222-1222)
P391: Collect spillage

STORAGE STATEMENTS:

None

DISPOSAL STATEMENTS:

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

HAZARDS NOT OTHERWISE CLASSIFIED

No data available

*** Section 3 – Composition/Information on Ingredients ***

CAS #	Component	Concentration by weight
7446-19-7	Zinc Sulfate Monohydrate	> 96%

Synonyms: Sulfuric acid, zinc salt (1:1), monohydrate; Zinc mesosulfate (ZnH_2SO_5).

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Zinc sulfate (7733-02-0), Zinc compounds.

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

Emergency Overview

Zinc Sulfate Monohydrate is a white solid in granular or powder form. Harmful if swallowed. Causes serious eye damage. May cause irritation to the respiratory tract and skin.

Description of first aid measures:

In case of eye contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

In case of skin contact: If irritation should occur, wash gently and thoroughly with water and non-abrasive soap. If irritation persists, seek medical attention.

In case of 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.

If inhaled: 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.

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Symptoms and potential health effects:

Eyes: Dust or fumes cause serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin: Prolonged and/or repeated skin contact with this product may cause irritation/dermatitis. Symptoms may include redness, itching, swelling, and boils.

Ingestion: An excess of zinc salts can cause vomiting, burning sensation in the throat and stomach, followed by abdominal pain, bloody diarrhea, convulsions, changes in blood pressure and coma. Death may ensue after ingestion of a few grams, although the emetic effect of zinc sulfate (typically 0.6 to 2 g) makes severe poisoning unlikely. Human lethal doses of 180 mg/kg of ZnSO₄ (intermittently over 6 weeks) and 160 mg/kg have been reported.

Inhalation: Inhalation of this product may cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, an illness which lasts less than 48 hours. Symptoms are similar to those of the flu and include fever, chills, sweats, dry mouth, headache, nausea, vomiting, cough, muscle aches and pains, weakness, and difficulty breathing. These symptoms may also result from breathing finely divided dusts. Reversible loss of the sense of smell may occur, based on data from animal tests.

Notes to Physician and Special Treatment:

Provide general supportive measures.

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

Extinguishing Media

Zinc Sulfate Monohydrate is not flammable. Use extinguishing media suitable for surrounding fire.

Hazardous Combustion Products

When heated to decomposition this product emits toxic fumes of sulfur oxides and zinc oxides.

Fire Fighting Equipment/Instructions

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

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

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

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

Personal precautions

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

Methods and materials for containment and clean-up

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).

Small releases can be cleaned-up wearing 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. Do not allow the spilled product to enter public drainage system or open water courses. Place all spill residues in an appropriate container and seal. Thoroughly wash the area after a spill or leak clean-up.

Environmental precautions

Prevent spill rinsate from contamination of storm drains, sewers, soil or groundwater.

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*** 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. Do not cut, grind, weld, or drill near this container. Do not store this material in open or unlabeled containers. Limit quantity of material stored.

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

Exposure Guidelines

Component Exposure Limits

ACGIH, OSHA, and NIOSH have not developed exposure limits for any of this product's components.

Component	CAS #	Value	Type/Regulation
Particulates Not Otherwise Classified	N/A	15 mg/m ³	OSHA – TWA (total dust)
		5 mg/m ³	OSHA – TWA (respirable fraction)
		4 mg/m ³	DFG MAKs – TWA (inhalable fraction)
		1.5 mg/m ³	DFG MAKs – 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.

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 (or goggles). . If necessary, refer to U.S. OSHA 29 CFR 1910.133.

Personal Protective Equipment: Skin

Wear impervious gloves, boots and coveralls to avoid skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138.

Personal Protective Equipment: Respiratory

No specific guidelines are available. If airborne concentrations are above the applicable exposure limits, use NIOSH-approved respiratory protection. An approved dust and mist air-purifying respirator may be adequate. 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).

Personal Protective Equipment: General

Wash hands thoroughly after handling material. Do not eat, drink or smoke in work areas. Have a safety shower or eye-wash fountain available.

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Protective Clothing Pictograms:



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

Physical Properties:

Physical State:	Solid
Appearance:	White
Odor:	Odorless
Odor Threshold:	Not determined
pH:	5.5 (saturated solution)
Melting Point/Range:	212 °F (100 °C)
Boiling Point/Range:	Not applicable
Flash Point:	Not applicable
Evaporation Rate:	Not applicable
Flammability:	Not flammable
Flammability/Explosive Limits:	Not applicable
Vapor Pressure:	Practically zero
Vapor Density:	Not applicable
Specific Gravity:	3.2 g/cm ³ (20 °C)
Solubility in Water:	Soluble
Partition Coefficient:	Not determined
Autoignition Temperature:	Not applicable
Decomposition Temperature:	1256 °F (680 °C) (zinc sulfate)
Viscosity:	Not applicable
Chemical Formula:	ZnH ₂ SO ₅
Molecular Weight:	179.40
Softening Point:	Not determined
Particle Size:	Not determined
Bulk Density:	60 – 65 lbs/ft ³ (powder) 95 – 100 lbs/ft ³ (prilled) 93 – 98 lbs/ft ³ (granular)
Heat of Combustion:	Not determined

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.

*** Section 10 - Stability & Reactivity ***

Chemical Stability

Stable.

Conditions to Avoid:

High temperatures, moisture, and incompatible materials.

Incompatible Materials:

Incompatible with lead, calcium, and strontium salts, borax, alkali carbonates and hydroxides, and tannins.

Hazardous Decomposition Products:

When heated to decomposition this product emits toxic fumes of sulfur oxides and zinc oxides (at temperatures greater than 500 deg C)

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Hazardous Polymerization

Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision. Prolonged and/or repeated skin contact may cause irritation/dermatitis. Symptoms may include redness, itching, swelling, and boils. Ingestion may produce gastrointestinal symptoms of nausea, cramps, diarrhea, and vomiting. Ingestion of large amounts may cause anemia, acute pulmonary edema, gastric erosion, renal damage, decrease in blood pressure, increase in pulse rate, and possibly death. Since zinc sulfate is an emetic (can induce vomiting), severe poisoning is probably unlikely. Inhalation of this product may cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, an illness which lasts less than 48 hours. Symptoms are similar to those of the flu and include fever, chills, sweats, dry mouth, headache, nausea, vomiting, cough, muscle aches and pains, weakness, and difficulty breathing. These symptoms may also result from breathing finely divided dusts. Chronic exposure to large quantities of zinc sulfate, monohydrate dust or fumes may cause dermatitis, boils, conjunctivitis, and gastrointestinal disturbances.

B: Component Analysis

Zinc Sulfate Monohydrate (7446-19-7)

Route of Exposure	Test Type and Value
Oral:	LD ₅₀ (rat) = 574 mg/kg
Inhalation:	Not determined
Dermal:	LD ₅₀ (rat) = > 2000 mg/kg

Carcinogenicity

A: General Product Information

No human data available. In rabbits, injections of the anhydrous form of zinc sulfate under the skin produced tumors. Zinc sulfate did not cause tumors in animals by oral, dermal, or inhalation routes. There is no evidence that zinc sulfate is a human carcinogen.

B: Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Mutagenicity

No data available for zinc sulfate, monohydrate. However the anhydrous and heptahydrate forms tested positive in several in vivo and in vitro tests. In vitro assays of human lymphocytes indicate that zinc salts may cause chromosomal aberrations. Mice were fed a diet containing 0.5% zinc salts. Chromosomal aberrations were noted in the bone marrow cells of the 50% of mice which survived 30 days.

Teratogenicity

No reproductive data for the monohydrate in humans or experimental animals. The anhydrous form caused developmental toxicity when administered orally to rats and when injected into hamsters. The heptahydrate affected male fertility when given in very high doses to rats and mice, and also affected the fallopian tubes in female mice. Zinc is required during pregnancy, but high doses of zinc salt have produced teratogenic effects. These doses may cause maternal death.

Other Toxicological Information

Repeated intratesticular injection of zinc salt has produced testicular tumors. Zinc sulfate causes relaxation of the blood vessels, in tests involving cats and dogs.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

Zinc products are harmful to aquatic life at low concentrations. Zinc poisoning causes inflamed gills in fish.

B: Aquatic Toxicity

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No ecotoxicity data are available for Zinc Sulfate Monohydrate. The following data are available for the anhydrous form of Zinc Sulfate:

Toxicity to fish:	LC ₅₀ = 13 ppm (cichlid, 96 h)
	Lethal = 0.3 mg/L (stickleback, 120 h, as Zn)
	LC ₅₀ = 4.76 mg/L (<i>Salmo gairdneri</i> (rainbow trout), 48 h, hard water, continuous flow)
	LC ₅₀ = 4.6 ppm (<i>Salmo gairdneri</i> (rainbow trout), 96 h, fresh water)
	TL _m = 29 mg/L (<i>Anguilla japonica</i> (Japanese eel), 24 h)
	TL _m = 11 mg/L (<i>Anguilla japonica</i> (Japanese eel), 96 h)
	TL _m = 2.37 mg/L (<i>Noemacheilus montanus</i> , 24 h)
	TL _m = 1.50 ppm (<i>Noemacheilus montanus</i> , 48 h)
	TL _m = 0.62 ppm (<i>Noemacheilus montanus</i> , 96 h)
	LC ₅₀ = 300 mg/L (<i>Lebistes reticulatus</i> , male, 96 h)
	LC ₅₀ = 278 mg/L (<i>Lebistes reticulatus</i> , female, 96 h)
	LC ₅₀ = 65 mg/L (<i>Labeo rohita</i> , 96 h, freshwater, small fish, static renewal)
	LC ₅₀ = 77.5 mg/L (<i>Labeo rohita</i> , 96 h, freshwater, large fish, static renewal)
Toxicity to crustaceans	LC ₅₀ = 741.3 ppm (<i>Scylla serrata</i> , 24 h, static bioassays)
	LC ₅₀ = 645.7 ppm (<i>Scylla serrata</i> , 48 h, static bioassays)
	LC ₅₀ = 489.8 ppm (<i>Scylla serrata</i> , 72 h, static bioassays)
	LC ₅₀ = 398.1 ppm (<i>Scylla serrata</i> , 96 h, static bioassays)
Toxicity to invertebrates:	Not determined
Toxicity to algae:	Not determined
Toxicity to bacteria:	Not determined

Additional information: A low but significant mortality has been found among rainbow trout exposed continuously for 4 months to constant concentrations of 0.3 of the 7-day LC₅₀. Laboratory studies of avoidance reactions have shown that Atlantic salmon and rainbow trout may avoid concentrations of zinc in soft water that are 0.14-0.01 of the 7-day LC₅₀; Avoidance reactions have also been observed at 0.35-0.43 of the 7-day LC₅₀ by migrating Atlantic salmon in a river polluted with copper and zinc; Carp and goldfish show avoidance of 0.3-0.45 of lethal concentrations under laboratory conditions; Maximum allowable toxicant concentration (MATC) for fathead minnow 0.032-18. Application factor for extrapolating 96-hour TL₅₀ data 0.03-0.02; Daphnids suffered decreased reproduction when exposed to 0.102 ppm Zn for 3 weeks as did fathead minnows exposed to 0.18 ppm for 10 months. Freshwater should not exceed 0.003 of the 96 hour LC₅₀ and marine waters 0.01 of the 96 hour LC₅₀

Persistence and degradability

Zinc compounds are persistent in aquatic environments.

Bioaccumulative potential

Zinc compounds are accumulated by some organisms but are not considered to be bioconcentrative.

Mobility in soil

Not determined

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

Material, if discarded, is not expected to be a characteristic hazardous waste under RCRA.

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. 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.

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*** Section 14 – Transport 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 49 CFR, IATA and IMDG to assure regulatory compliance.



US DOT 49 CFR 100-185 Revised October 24, 2014 Information

UN/NA #: UN 3077

Shipping Name: Environmentally Hazardous Substance, solid, n.o.s. (Zinc sulfate monohydrate)

Hazard Class: 9

Packing Group: III

Required Label(s): Class 9

Special Provisions: 8,146, 335,B54, B120, IB8, IP3, T1, TP33

Packaging: Bulk 172.240

RQ Quantity: For a single package greater than the RQ of 1,000 lbs (454 kg), this product is regulated.

Marking: Marine Pollutant when shipping ground greater than 882 pounds single container or any quantity by water

Please refer to the most recent edition of the “International Air Transport Association (IATA)” Regulations

Please refer to the most recent Amendment of the “International Maritime Dangerous Goods (IMDG) Code”

*** 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):

Zinc Sulfate Monohydrate (7446-19-7)

SARA 302 (EHS TPQ) There are no specific Threshold Planning Quantities for Zinc Sulfate Monohydrate.

SARA 313: form R reporting required for 1.0% de minimus concentration (related to Zinc compounds)

CERCLA: final RQ = 1000 pounds (454 kg) (related to Zinc sulfate)

C: Sara 311/312 Tier II Hazard Ratings:

Component	CAS #	Fire Hazard	Reactivity Hazard	Pressure Hazard	Immediate Health Hazard	Chronic Health Hazard
Zinc Sulfate Monohydrate	7446-19-7	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 substances lists:

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Component	CAS #	CA	FL	MA	MN	NJ	PA
Zinc Sulfate Monohydrate (¹ related to Zinc sulfate)	7446-19-7	Yes¹	No	Yes¹	No	Yes¹	Yes¹

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

This product contains trace amounts of lead, mercury and cadmium. WARNING. This product contains trace amounts of chemical compounds that are known to the State of California to cause cancer or reproductive harm.

Other Regulations

A: General Product Information

Zinc Sulfate Monohydrate is not on the TSCA inventory; as a hydrate of a listed compound, it is exempt from listing.

B: Component Analysis - Inventory

Component	CAS #	TSCA
Zinc Sulfate Monohydrate	7446-19-7	Exempted

*** * * 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

Contact: Chem One Ltd

Contact Phone: (713)-896-9966

Revision Log

08/18/00 10:50 AM SEP Changed company name, Sect 1 and 16, from Corporation to Ltd.
8/21/00 8:45 pm HDF Added CA Prop Statement regarding trace amounts of lead, cadmium and mercury, Sect 14.
06/02/01 9:31 AM HDF Checked exposure limits; made changes to Sect 9; overall review; add SARA 311/312 Haz Ratings.
08/20/01 6:12 PM CLJ Add Shipments by Air information to Section 14, Changed contact to Sue, non-800 Chemtrec Num.
09/30/03 10:15 PM HDF General review of entire MSDS. Up-graded Section 3 Health Hazard information, HMIS categories. Up-dated exposure limits to Section 8. Addition of current toxicity data to Section 11. Up-dated 14 Transportation Information.
06/22/05 4:42pm SEP Update IATA Section 14
09/05/06 4:52 PM SEP Updated DOT Bulk Bags, Section 14
10/23/07 2:51 pm SEP Updated IATA Section 14
10/15/08 10:56 AM DLY Changed Chem One Physical Address, Section 1
09/18/09 MMK Updated Section 14 limited and excepted quantities and exceptions
10/31/2014 GHS revision all sections

Revised By:

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

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09/27/2018 Melanie Koch removed IMDG and IATA specific shipping information and added a refer to latest edition statement.

And added NFPA section no other changes were made.

05/15/2019 Revised Sections 2, 4, 5, 9, and 11.

04/20/20 Revised Section 2 per manufacturer

04/09/21 Modified format. Revised Section 15 information.

CHEM ONE LIMITED