



Titanium, Mineral & Chemicals

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MSDS (Material Safety Data Sheet)

Zinc Sulfate Monohydrate (ZnSO4.H2O)

Section 1 : Product and Company Identification

Synonyms: Sulfuric acid, zinc salt (1:1) heptahydrate; Zinc vitriol, heptahydrate; Zinc sulfate, heptahydrate

CAS No.: 7733-02-0 (Anhydrous) 7446-20-0 (heptahydrate)

Molecular Weight: 179.37

Chemical Formula: ZnSO4.H2O

HS Number : 2833 26 0000

Product Codes:

TMC Co., Ltd

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Creation date : Feb. 15. 2002

Section 2 : Composition/Information on Ingredients

Component : Zinc sulfate

CAS number : 7733-02-0

EC Number (EINECS) : 231-793-3

EC Index Number : 030-006-00-9

Percentage : 100.0 %

Hazardous : Yes

Section 3 : Hazards Identification

EMERGENCY OVERVIEW

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

NFPA Ratings (Scale 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

EC Classification (Assigned):

Xi Irritant, R 36/38, EC Classification may be inconsistent with independently-researched data.

Color : colorless, white

Physical Form: crystals, powder

Odor: odorless

Major Health Hazards: respiratory tract burns, skin burns, eye burns, mucous membrane burns

POTENTIAL HEALTH EFFECTS:

INHALATION:

Short Term Exposure: burns.

Long Term Exposure: same as effects reported in short term exposure.

SKIN CONTACT:

Short Term Exposure : burns.

Long Term Exposure : same as effects reported in short term exposure.

EYE CONTACT:

Short Term Exposure : burns.

Long Term Exposure : same as effects reported in short term exposure.

INGESTION:

Short Term Exposure : burns.

Long Term Exposure : same as effects reported in short term exposure.

CHRONIC EXPOSURE: Chronic exposure may cause fatigue, slow tendon reflexes
Intestinal inflammation (with bleeding), diarrhea, blood effects, central nervous system depression, tremors and paralysis of the extremities. Repeated skin or eye contact can cause skin and eye effects.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired respiratory function may be more susceptible to the effects of the substance

CARCINOGEN STATUS:

OSHA: N

NTP: N

IARC: N

Section 4 : First Aid Measures

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: If swallowed, give several glasses of water to drink. Vomiting may occur spontaneously, but DO NOT INDUCE! Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact: Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

ANTIDOTE:calcium disodium edetate / dextrose, intravenous; calcium disodium edetate/procaine, intramuscular.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider gastric lavage.

Section 5 : Fire Fighting Measures

Fire: Not considered to be a fire hazard.

Explosion: Sealed containers may rupture when heated.

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Use water carefully as material will react with water to form acidic solution. Water spray may be used to keep fire exposed containers cool.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Zinc sulfate can decompose at high temperatures to form toxic oxides, sulfur and zinc oxide as well as water vapor. Sealed containers of this material may rupture at moderate temperatures (release of water vapor). Forms acidic solutions in water.

Section 6 : Accidental Release Measures

Soil Release:Dig holding area such as lagoon, pond or pit for containment. Cover with plastic sheet or tarp to minimize spreading and protect from contact with water.

Water Release:Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash). Neutralize. Collect spilled material using mechanical equipment.

Occupational Release:Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Material dissolves in water to form an acidic solution.

Section 7 : Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Material dissolves in water to form an acidic solution. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Section 8 : Exposure Controls/Personal Protection

Airborne Exposure Limits: None established.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Clothing: Wear appropriate chemical resistant clothing.

Gloves: Wear appropriate chemical resistant gloves.

Section 9 : Physical and Chemical Properties

Appearance: Colorless crystals or granules.

Odor: Odorless.

Color: colorless, white

Solubility: Soluble in water.

Molecular Weight: 179.37

Molecular Formula: ZnSO₄.H₂O

Specific Gravity: 1.97

pH: ca. 4.5 Aqueous solution

% Volatiles by volume @ 21C (70F): 0

Boiling Point: > 500C (> 932F) Decomposes.

Melting Point: 100C (212F) Loses all water at 280C.

Vapor Density (Air=1): No information found.

Vapor Pressure (mm Hg): No information found.

Evaporation Rate (BuAc=1): No information founded

Decomposition point: 1112 F (600 C)

Vapor Pressure: 60 mmHg @ 700 C

Coefficient of Water/Oil Distribution: Not available

Solvent Solubility: Soluble: methanol, glycerol

Slightly Soluble: alcohol

Section 10 : Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.

Reactivity: Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition. Dangerous gases may accumulate in confine
explode on contact with combustible materials.

Polymerization: Will not polymerize.

Hazardous Decomposition Products: Oxides of sulfur and oxides of zinc. Reacts with water to form sulfuric acid.

Hazardous Polymerization: Will not occur.

Incompatibilities: Lead, calcium, strontium salts, borax, alkali carbonates and hydroxides, silver protein and tannins.

Section 11 : Toxicological Information

Irritation Data: 420 ug eyes-rabbit moderate.

Toxicity Data: 1710 mg/kg oral-rat LD50.

Local Effects: cosive: inhalation, skin, eye, ingestion.

Acute Toxicity Level: Merately Toxic: ingestion.

Tumorigenic Data: Available.

Mutagenic Data: Available.

Reproductive Effects Data: Available.

Section 12 : Ecological Information

Ecotoxicity Data: FISH TOXICITY: 660 ug/L 96 hour(s) LC50 (Mortality) Fathead minnow(Pimephales promelas).

Invertebrate Toxicity: 560 ug/L 48 hour(s) EC50 (Immobilization) Water flea(Daphnia magna).

Algal Toxicity: <550 ug/L 48 hour(s) NOEC (Growth) Giant kelp (Macrocystis pyrifera).

Phytotoxicity: 1000 ug/L 7 month(s) (Population Growth) Duckweed (Lemna perpusilla).

Other Toxicity: 2100 ug/L 96 hour(s) LC50 (Mortality) Frog (Rana hexadactyla).

Fate and Transport: BIOCONCENTRATION: 1753 ug/L 3 hour(s) BCFD (Residue) Green algae (Pediastrum tetras) 35500 ug/L.

Environmental Summary: Highly toxic to aquatic life.

Section 13 : Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

Section 14 : Transport Information

U.S. DOT 49 CFR 172.101. SHIPPING NAME-UN NUMBER; HAZARD CLASS; PACKING GROUP; LABEL:

Corrosive solids, n.o.s. (zinc sulfate)-UN1759; 8; II; CORROSIVE

Section 15 : Regulatory Information

TSCA	TSCA	Japan	Australia	Korea	DSL	NDSL	Phil
Yes	yes	yes	yes	yes	yes	no	yes

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No SARA 311/312:Acute: Yes Chronic: No Fire: No Pressure: No Reactivity: No(Pure / Solid)

Australian Hazchem Code: No information found.

Poison Schedule: S6

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Section 16 : Other Information

MSDS SUMMARY OF CHANGES