MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer..............:         Preparation Date.: 11/9/99
    EM SCIENCE
    A Division of EM Industries
    P.O. Box 70
    480 Democrat Road
    Gibbstown, N.J. 08027

Information Phone Number.: 856-423-6300
Hours: Mon. to Fri. 8:30-5
Chemtrec Emergency Number: 800-424-9300
Hours: 24 hrs a day

Catalog Number(s):
ZX0105  ZX0107  8883  ZX0112  00888161  0088816C

Product Name:
Zinc Sulfate

Synonyms:
Zinc Sulfate Heptahydrate

Chemical Family:
Metal Salt

Formula:
ZnSO₄·7H₂O

Molecular Weight:
287.56

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Appr %</th>
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</thead>
<tbody>
<tr>
<td>Zinc Sulfate</td>
<td>7446-20-0</td>
<td>100%</td>
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</table>
EMERGENCY OVERVIEW
MAY BE HARMFUL IF SWALLOWED.
IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.

Appearance:
Colorless to white odorless crystals or powder

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Symptoms of Exposure:
May be harmful if swallowed. Irritating to skin, mucous membranes, respiratory tract, lungs. Irritating to the eyes; may cause eye damage with prolonged contact. Contact with open skin may cause ulceration, therefore make sure that any cut skin is bandaged before handling material.

Medical Cond. Aggravated by Exposure:
Pre-existing skin or respiratory disorders.

Routes of Entry:
Inhalation, ingestion or skin contact.

Carcinogenicity:
The material is not listed (IARC, NTP, OSHA) as cancer causing agent.

4. FIRST AID MEASURES

Emergency First Aid:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
Skin: Immediately flush thoroughly with large amounts of water.
Eyes: Immediately flush thoroughly with water for at least 15 minutes.
Inhalation: Remove to fresh air; give artificial respiration if breathing has stopped.
Ingestion: Get immediate medical attention; if conscious, give water freely.
Remove contaminated clothing and wash before reuse.

5. FIRE FIGHTING MEASURES

Flash Point (F): None
Flammable Limits LEL (%): N/A
Flammable Limits UEL (%): N/A
Extinguishing Media:
Fire Fighting Procedures:
Wear self-contained breathing apparatus and protective clothing.

Fire & Explosion Hazards:
Thermal decomposition produces toxic fumes.

6. ACCIDENTAL RELEASE MEASURES

Spill Response:
Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under Exposure / Personal Protection. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Take up and containerize for proper disposal as described under Disposal. Comply with Federal, State, and local regulations on reporting releases. Refer to Regulatory Information for reportable quantity and other regulatory data.

7. HANDLING AND STORAGE

Handling & Storage:
Keep container tightly closed. Store in a cool, dry, well-ventilated area. Do not breathe dust. Do not get in eyes, on skin, or on clothing. Retained residue may make empty containers hazardous; use caution!

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure. Material should be handled or transferred in an approved fume hood or with equivalent ventilation. Protective gloves should be worn to prevent skin contact (Neoprene or equivalent) Safety glasses with side shields must be worn at all times. Impervious protective clothing should be worn to prevent skin contact.

Work/Hygenic Practices:
Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

EXPOSURE GUIDELINES

OSHA - PEL:

TWA          STEL          CL
Zinc Sulfate

ACGIH - TLV:

<table>
<thead>
<tr>
<th>Component</th>
<th>PPM</th>
<th>MG/M3</th>
<th>PPM</th>
<th>MG/M3</th>
<th>PPM</th>
<th>MG/M3</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc Sulfate</td>
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</table>

If there are no exposure limit numbers listed in the Exposure Guidelines chart, this indicates that no OSHA or ACGIH exposure limits have been established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (C 760 mmHg) : 500C Decomposes
Melting Point (C) : 100C
Specific Gravity (H2O = 1) : 1.97
Vapor Pressure (mm Hg) : N/A
Percent Volatile by vol (%): N/A
Vapor Density (Air = 1) : N/A
Evaporation Rate (BuAc = 1): <1
Solubility in Water (%): Soluble
Appearance :
Colorless to white odorless crystals or powder

10. STABILITY AND REACTIVITY

Stability: Yes

Hazardous Polymerization:
Does not occur

Hazardous Decomposition:
ZnO, SOx

Conditions to Avoid:
Extreme heat

Materials To Avoid:

(X) Water
(X) Acids
11. TOXICOLOGICAL INFORMATION

Toxicity Data

orl-rat LD50: 2150 mg/kg

Toxicological Findings:
Test on laboratory animals indicate material may produce adverse mutagenic and reproductive effects.
Cited in Registry of Toxic Effects of Chemical Substances (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA Waste Numbers:

Treatment:
Material does not have an EPA Waste number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name:
Environmentally Hazardous Substance, Solid, n.o.s. (Zinc Sulfate)

DOT ID Number:
UN3077

14. REGULATORY INFORMATION

TSCA Statement:
This product is a "Mixture". The CAS numbers of all components are listed on the TSCA Inventory.
**Component** | **EHS (302)** | **EHS TPQ (lbs)** | **RQ (lbs)**
---|---|---|---
**Zinc Sulfate**

**Component** | **OSHA Floor List** | **SARA 313** | **DeMinimis for SARA 313 (%)**
---|---|---|---
**Zinc Sulfate**

If there is no information listed on the regulatory information chart, this indicates that the chemical is not covered by the specific regulation listed.

**15. OTHER INFORMATION**

**Comments:**
None

**NFPA Hazard Ratings:**

Health : 2  
Flammability : 0  
Reactivity : 0  
Special Hazards :

**Revision History:**  6/1/82  10/1/83  10/27/87  12/14/89  3/1/91  12/11/92  8/10/93  2/4/97  5/12/98

|  = Revised Section

N/A = Not Available

N/E = None Established

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