

## Material Safety Data Sheet

Version 4.2

Revision Date 01/17/2012

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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Zinc sulfate heptahydrate

Product Number : Z0251

Brand : Sigma

Supplier : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

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2. HAZARDS IDENTIFICATION

## Emergency Overview

## OSHA Hazards

Target Organ Effect, Harmful by ingestion., Irritant

## Target Organs

Kidney, Pancreas, Liver, Lungs Kidney, Pancreas, Liver, Lungs

## GHS Classification

Acute toxicity, Oral (Category 4)

Serious eye damage (Category 1)

Acute aquatic toxicity (Category 1)

Chronic aquatic toxicity (Category 1)

## GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H302

Harmful if swallowed.

H318

Causes serious eye damage.

H410

Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273

Avoid release to the environment.

P280

Wear protective gloves/ eye protection/ face protection.

P305 + P351 + P338

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P501

Dispose of contents/ container to an approved waste disposal plant.

## HMIS Classification

Health hazard:

2

Chronic Health Hazard:

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**Flammability:** 0  
**Physical hazards:** 0

**NFPA Rating**

**Health hazard:** 2  
**Fire:** 0  
**Reactivity Hazard:** 0

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. Causes respiratory tract irritation.  
**Skin** Harmful if absorbed through skin. Causes skin irritation.  
**Eyes** Causes eye irritation.  
**Ingestion** Harmful if swallowed.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Formula :  $O_4SZn \cdot 7H_2O$   
Molecular Weight : 287.56 g/mol

Component		Concentration
<b>Zinc sulfate heptahydrate</b>		
CAS-No.	7446-20-0	-
EC-No.	231-793-3	
Index-No.	030-006-00-9	

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**4. FIRST AID MEASURES**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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**5. FIREFIGHTING MEASURES**

**Conditions of flammability**

Not flammable or combustible.

**Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Special protective equipment for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Borane/boron oxides, Zinc/zinc oxides

**Further information**

The product itself does not burn.

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**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

**Methods and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

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**7. HANDLING AND STORAGE****Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

**Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place.

Hygroscopic.

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Contains no substances with occupational exposure limit values.

**Personal protective equipment****Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	crystalline
Colour	white

**Safety data**

pH	4.0 - 6.0 at 50 g/l at 20 °C (68 °F)
Melting point/freezing point	Melting point/range: > 500 °C (> 932 °F)
Boiling point	no data available
Flash point	not applicable
Ignition temperature	no data available
Autoignition	no data available

temperature	
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	1.957 g/cm <sup>3</sup> at 20 °C (68 °F)
Water solubility	965 g/l at 20 °C (68 °F)
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

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## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

no data available

### Conditions to avoid

no data available

### Materials to avoid

Strong oxidizing agents

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Borane/boron oxides, Zinc/zinc oxides  
Other decomposition products - no data available

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

LD50 Oral - rat - 2,150 mg/kg

#### Inhalation LC50

no data available

#### Dermal LD50

no data available

#### Other information on acute toxicity

LD50 Intraperitoneal - rat - 200 mg/kg

### Skin corrosion/irritation

no data available

### Serious eye damage/eye irritation

Eyes - rabbit - Moderate eye irritation - Draize Test

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as

probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

### **Reproductive toxicity**

no data available

### **Teratogenicity**

no data available

### **Specific target organ toxicity - single exposure (Globally Harmonized System)**

no data available

### **Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

### **Aspiration hazard**

no data available

### **Potential health effects**

<b>Inhalation</b>	May be harmful if inhaled. Causes respiratory tract irritation.
<b>Ingestion</b>	Harmful if swallowed.
<b>Skin</b>	Harmful if absorbed through skin. Causes skin irritation.
<b>Eyes</b>	Causes eye irritation.

### **Signs and Symptoms of Exposure**

Zinc oxide dust or fume can irritate the respiratory tract. Prolonged skin contact can produce a severe dermatitis called oxide pox. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin., burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, airway resistance, Cardiovascular effects., pulmonary edema, congestive heart failure

### **Synergistic effects**

no data available

### **Additional Information**

RTECS: ZH5300000

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## **12. ECOLOGICAL INFORMATION**

### **Toxicity**

Toxicity to fish                      mortality LC50 - other fish - 1 - 10 mg/l - 96.0 h

### **Persistence and degradability**

no data available

### **Bioaccumulative potential**

no data available

### **Mobility in soil**

no data available

### **PBT and vPvB assessment**

no data available

### **Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

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### 13. DISPOSAL CONSIDERATIONS

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

#### Contaminated packaging

Dispose of as unused product.

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### 14. TRANSPORT INFORMATION

#### DOT (US)

UN number: 3077 Class: 9 Packing group: III  
Proper shipping name: Environmentally hazardous substances, solid, n.o.s. (Zinc sulfate heptahydrate)  
Reportable Quantity (RQ): 1000 lbs  
Marine pollutant: No  
Poison Inhalation Hazard: No

#### IMDG

UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F  
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc sulfate heptahydrate)  
Marine pollutant: No

#### IATA

UN number: 3077 Class: 9 Packing group: III  
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Zinc sulfate heptahydrate)

#### Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

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### 15. REGULATORY INFORMATION

#### OSHA Hazards

Target Organ Effect, Harmful by ingestion., Irritant

#### SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Zinc sulfate heptahydrate	7446-20-0	1993-04-24

#### SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

#### Massachusetts Right To Know Components

	CAS-No.	Revision Date
Zinc sulfate heptahydrate	7446-20-0	1993-04-24

#### Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Zinc sulfate heptahydrate	7446-20-0	1993-04-24

#### New Jersey Right To Know Components

	CAS-No.	Revision Date
Zinc sulfate heptahydrate	7446-20-0	1993-04-24

#### California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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## 16. OTHER INFORMATION

### **Further information**

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