

ZINC SULFATE HEPTAHYDRATE

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1. Product 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: 287.56

Chemical Formula: $ZnSO_4 \cdot 7H_2O$

Product Codes: CHEM-068 and others

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Zinc Sulfate	7733-02-0	100%	Yes

3. Hazards Identification

Emergency Overview

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

SAF-T-DATA^(tm) Ratings

Health Rating: 2 - Moderate (Life)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

Ingestion:

As with other soluble zinc salts, zinc sulfate may hydrolyze into acid if swallowed. Severe irritation and burns of the mouth, throat and digestive system may occur. Symptoms may include vomiting, stomach pain, increased pulse rate without blood pressure decrease, blood pressure decrease, acute pulmonary edema (fluid in the lungs), diarrhea, kidney damage, other

gastrointestinal disturbances and hemorrhagic pancreatitis. A fatality following ingestion of 10 grams has been reported.

Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact:

Irritant, can cause pain and redness, possible mechanical harm. May cause severe irritation.

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.

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.

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.

6. Accidental Release Measures

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. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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.

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 dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. 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.

9. Physical and Chemical Properties

Appearance:

Colorless crystals or granules.

Odor:

Odorless.

Solubility:

Soluble in water.

Specific Gravity:

1.97

pH:

ca. 4.5 Aqueous solution

% Volatiles by volume @ 21°C (70°F):

0

Boiling Point:

> 500°C (> 932°F) Decomposes.

Melting Point:

100°C (212°F) Loses all water at 280°C.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

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.

Conditions to Avoid:

Heat, moisture, incompatibles.

11. Toxicological Information

Hydrate: Oral rat LD50: 2150 mg/kg. Investigated as a mutagen.

For anhydrous zinc sulfate: oral rat LD50: 1710 mg/kg; Irritation, rabbit eye, standard Draize: 420 ug, moderate. Investigated as a tumorigen, mutagen, reproductive effector.

Ingredient	Cancer Lists		IARC Category
	Known	Anticipated	
Zinc Sulfate (7733-02-0)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

The LC50/96-hour values for fish are between 1 and 10 mg/l. This material is expected to be toxic to aquatic life.

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.

14. Transport Information

Not regulated.

15. Regulatory Information

Chemical Inventory Status - Part 1

Ingredient	TSCA	EC	Japan	Australia
Zinc Sulfate (7733-02-0)	Yes	Yes	Yes	Yes

Chemical Inventory Status - Part 2

Ingredient	Canada	Korea	DSL	NDSL	Phil.
Zinc Sulfate (7733-02-0)		Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

Ingredient	RQ	TPQ	SARA 302 List	SARA 313 Chemical Catg.
Zinc Sulfate (7733-02-0)	No	No	No	Zinc compound

Federal, State & International Regulations - Part 2

Ingredient	CERCLA	RCRA	TSCA
Zinc Sulfate (7733-02-0)	1000	261.33 No	8(d) No

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: None allocated.

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.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 0 Reactivity: 0

Label Hazard Warning:

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

Label Precautions:

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

Label First Aid:

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. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

Product Use:

Laboratory Reagent and Consumer Hobby

Revision Information:

No Changes.

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