

School Material Safety Data Sheet

Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855



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ZINC SULFATE

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SECTION 1. INTRODUCTORY INFORMATION

MATERIAL NAME AND FORMULA: ZINC SULFATE; ZnSO_4 or $\text{ZnSO}_4 \cdot 7(\text{H}_2\text{O})$

SYNONYMS: Zinc Vitriol, White Vitriol

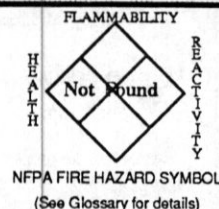
CAS NUMBER: ZnSO_4 , 7733-02-0; $\text{ZnSO}_4 \cdot 7(\text{H}_2\text{O})$, 7446-20-0

INGREDIENTS: Zinc Sulfate, 56-100%; Water 0-44% (water present as a hydrate)

MANUFACTURERS: Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.

DESCRIPTION: This is the anhydrous (1:1) zinc salt of sulfuric acid. Also available as mono- or heptahydrate. Colorless or white crystals, powder or granules with a metallic taste. Odorless.

PRELIMINARY INFORMATION: This material is toxic if ingested and can be irritating on contact partially due to its acidity. Zinc sulfate is noncombustible. It is a chemical reagent with a variety of applications in a chemistry lab.



SECTION 2. USE AND STORAGE INFORMATION

- PRELIMINARY PLANNING CONSIDERATIONS -

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- For safety, contact lenses should not be worn in the laboratory; soft lenses may absorb and all lenses may concentrate irritants. Particles may adhere to contact lenses and cause corneal damage.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Zinc sulfate hydrolyzes in water to produce an acidic solution that can be corrosive.
- Facilities and containers for use of this material should be acid-corrosion resistant.

- USAGE PRECAUTIONS AND PROCEDURES -

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- After working with this material, always wash hands and face before eating, drinking, or smoking.
- No smoking in storage or use area.
- Avoid creating airborne dust conditions.
- Avoid contact of ZnSO_4 with body tissues.
- Do not breathe the dust or ingest this material.

-- ADDITIONAL INFORMATION --

- Zinc sulfate is stable in closed containers under normal storage and handling conditions.
- Material does not polymerize.
- Hydrated salts will lose water upon heating (see sect. 7).

-- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family instead to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs.
- Store with compatible materials on sturdy shelving.
- No smoking in storage or use area.

SECTION 3. SPILLS AND DISPOSAL PROCEDURES

IF MATERIAL IS SPILLED:

- Cleanup personnel should have protection against inhalation of dusts or mist and eye or skin contact.
- Sweep up or otherwise pick up dry spilled material, avoiding dust generation. Cover liquid (solution) spills with soda ash or sodium bicarbonate; scoop up slurry.
- Place dry material or slurry in appropriate container (with lid) for later disposal.

DISPOSAL OF SMALL QUANTITIES:

- Neutralize with soda ash or sodium bicarbonate for disposal. Bury dried sludge in an approved landfill, regulations permitting. Flush supernatant (after neutralizing with 6M HCl) to drain with large excess of water if regulations permit.

DISPOSAL OF LARGER AMOUNTS: Contact a licensed disposal company.

*** FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL ***

SECTION 4: HEALTH HAZARDS

Zinc sulfate is not listed as a carcinogen by OSHA, IARC, or NTP.

- No TLV established.

- Human, Oral, TD_{Lo} : 45mg/kg/7D-C Toxic effects: GI tract
- Rat, Oral: LD_{Lo} : 2200 mg/kg

- The acidity of zinc sulfate can be a contact hazard.

- Excessive inhalation of dust or mist from solutions can irritate the mucous membranes of the upper respiratory tract and lungs.

- Repeated or prolonged contact of this material or its solutions with the skin is irritating and can be damaging.

- A fatality has been reported after ingestion of 10 grams.

- Thermal degradation products (ZnO fume and sulfur oxides) can be an inhalation hazard.

SECTION 5: FIRST AID PROCEDURES**Eye contact:**

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.*

Skin contact:

- Flush affected area with large amounts of water.
- Flush affected area with large amounts of water and wash with soap.
- Remove contaminated clothing promptly.
- Get medical help when area of skin exposure is large or if irritation persists.*

Inhalation:

- Remove victim to fresh air; restore and/or support breathing as necessary. Keep victim at rest.
- Get medical help for coughing or breathing difficulty.*

Ingestion:

- Get prompt medical attention.*
 - Give several glasses of milk or water to drink to dilute.
 - Never give anything by mouth to a person who is unconscious or convulsing. Gastric lavage indicated if spontaneous vomiting has not occurred.
- Physician note: Antidote: calcium disodium edatate. Treatment for hypotension has been recommended.

* Get medical help (in school, paramedic, or community) for further treatment, observation, and support after first aid.

SECTION 6: FIRE PROCEDURES AND DATA

- Sealed containers of this material may rupture from decomposition at high temperature. (Hydrated materials will generate pressure at lower temperatures).
- Material dissolves in water to produce an acidic solution.
- Extinguishing media: Use media appropriate to surrounding fire conditions. (Dry chemical or CO_2 has been recommended.)
- For major fires, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

THERMAL DECOMPOSITION PRODUCTS: Oxides of sulfur and zinc oxide fume (above 1112°F [600°C]).

FLASH POINT AND METHOD(S) ... Nonflammable

AUTOIGNITION TEMPERATURE... Nonflammable

FLAMMABILITY LIMITS IN AIR (vol. %) :

SECTION 7: PHYSICAL DATA

SOLUBILITY IN WATER (@ 20°C) ... Soluble (all forms)

SPECIFIC GRAVITY (25°/4°C) ... 1.96 ($A^*=3.54$)

MELTING POINT ... 212°F (100°C) (A^* : dec. >1112°F [>600°C])

MOLECULAR WEIGHT ... 287.6 ($A^*=161.4$) ($M=179.4$)

DEHYDRATION ... 536°F (280°C) (-7H₂O) (M^* : 457°F (>238°C) [-H₂O])

Note: All data is for ZnSO₄·7H₂O unless otherwise noted. (A^* =Anhydrous form; M^* =monohydrate)

DATA SOURCES: Genium's Industrial MSDS #96 (10/81) and references 1, 4-7, 10, 39, 49, 82, 509, 511.
(see glossary for titles)

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Approvals:

Author

Indust. Hygiene/Safety

Medical Review

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