



Material Safety Data Sheet

1. IDENTIFICATION

PRODUCT NAME: H₂- Ferrous Sulfate

CHEMICAL NAME/SYNONYMS: Iron (II) Sulfate, Iron Vitriol, Copperas

CHEMICAL FAMILY: Iron salt solution

CHEMICAL FORMULA: FeSO₄

For emergencies call Chemtrec at 1-800-424-9300

2. HAZARD(S) IDENTIFICATION

ROUTES OF ENTRY: Inhalation, ingestion and skin contact.

SKIN, EYE & RESPIRATORY IRRITATION: Yes

CARCINOGENICITY: **NTP:** No data found **IARC:** No data found

OSHA: No data found

SIGNS OR SYMPTOMS OF EXPOSURE:

INHALATION: Inhalation of mist may cause coughing and labored breathing.

SKIN: Short duration contact may cause skin irritation. Prolonged contact may cause dermatitis and burns. Highly toxic by intravenous route.

INGESTION: Oral ingestion may produce mild to moderately severe oral and esophageal burns, with mild to severe stomach burns. Deposition of excess iron may occur, which could lead to liver cirrhosis and fibrosis of the pancreas. Other complications may include somnolence, diarrhea, irregular heart beat and vomiting blood.

EYES: Exposure results in pain lacrimation, corneal erosions, photophobia and possibly blindness.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS REGISTRY #	PEL	TLV	% BY WEIGHT
Ferric Sulfate FeSO ₄	7720-78-7	1mg/m ³	1mg/m ³	14 - 30
Sulfuric Acid H ₂ SO ₄	7664-93-9	1mg/m ³	1mg/m ³	2 - .5
Water H ₂ O		N/A	N/A	69.5 - 86

4. FIRST-AID MEASURES

INHALATION: Remove from affected area and give oxygen/artificial respiration if needed. Seek medical attention for breathing difficulty.

INGESTION: DO NOT INDUCE VOMITING.

Do not give bicarbonate to neutralize. Activated charcoal is of no value. Passing a nasogastric tube into the stomach is controversial at this time. Irrigate all affected areas with copious amounts of water. Immediately dilute with 4 to 8 oz. of milk or water in adults and 2 to 4 oz. in children. Seek immediate medical attention. Perform saline catharsis. Evaluate for esophopharyngeal and gastric burns. In severe cases of gastrointestinal necrosis, surgical consultation should be obtained.

LABORATORY: Obtain baseline CBC and electrolytes, if needed.

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EYE EXPOSURE: Exposed eyes should be irrigated with copious amounts of water for at least 15 minutes. If irritation, lacrimation, swelling or photophobia persist, the patient should be taken to a health care facility.

DERMAL EXPOSURE: Remove contaminated clothing and wash thoroughly with copious amounts of soap and water for 15 minutes. A physician may need to be seen.

5. FIRE-FIGHTING MEASURES

FLASH POINT (METHOD USED): None
FLAMMABLE LIMITS: Non-Flammable
EXTINGUISHING MEDIA: Dry Chemical, Water Spray or Carbon Dioxide
SPECIAL FIRE FIGHTING PROCEDURES: Use water spray or foam in large fire. Wear self contained breathing apparatus.
UNUSUAL FIRE & EXPLOSION HAZARDS: Dangerous and irritating sulfur dioxide fumes may be present in fire involving this substance.
NFPA CODES: HEALTH: 2 FIRE: 0 REACTIVITY: 0 SPECIAL HAZARD: CORROSIVE
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE OF RELEASE: Neutralize with Sodium Bicarbonate or Soda Ash. Transfer to an EPA approved container. When neutralized dispose of in accordance with local, state or federal environmental regulations. Dike spill to prevent run-off onto public land or waterways. Follow Response Guide #171 in DOT Emergency Response Guide Book 1996. In Canada emergency response assistance can be obtained by calling CANUTEC at 613-996-6666 (CERCLA RQ is 1000 lbs.)

Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, as required under 40 CFR 302.6, when there is a release of this hazardous substance in an amount equal to or greater than its reportable quantity of 1000 lbs. or 454 kg. The toll free telephone number of the NRC in Canada and the US is 800-424-8802. Serious penalties are prescribed for failing to make the required notifications. Calling CHEMTREC does not constitute compliance with this requirement. Only a phone call to the NRC satisfies these reporting requirements.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING & STORAGE: Keep containers closed and away from light. Protect containers against physical damage. Keep carboys from shifting during transport. Be sure carboys are loaded in accordance with DOT regulations. Product may be safely stored in fiberglass, plastics (PE, PP, PVC, ABS, FRP).

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

RESPIRATORY PROTECTION: If vapors or mists are excessive, wear a NIOSH/MSHA approved respirator for protection against acid gases with a dust or mist pre-filter.

EYE PROTECTION: Splashing can occur, wear full face shield, especially if pH is below 3.0. In any case, safety glasses or chemical goggles should be worn. An eye wash station and emergency shower should be readily available.

OTHER PROTECTIVE CLOTHING: Use rubber gloves, apron and shoe covers. Polyethylene, Saranex, Butyl and natural rubber have been shown having greater breakthrough resistance than neoprene or PVC when exposed to sulfuric acids. Wash protective equipment after completing work. Check with your supplier for additional test data before making your choice.

PRECAUTIONARY LABELING: Warning!! Irritant!! May cause eyes, nose, and mucous membranes. Do not inhale dusts or mists. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

H2- Ferrous Sulfate**9. PHYSICAL AND CHEMICAL PROPERTIES**

BOILING POINT:	220° – 235° F
FREEZING POINT:	23° F (at 5% FE concentration)
VAPOR PRESSURE:	Nil
VAPOR DENSITY (AIR = 1):	Not applicable (liquid)
SPECIFIC GRAVITY:	1.15 - 1.3
EVAPORATION RATE (ETHER = 1):	Greater than 1
SOLUBILITY IN WATER:	Very Soluble, Hygroscopic
PH:	.1 – 3.7
APPEARANCE AND ODOR:	Green solution, slight odor

10. STABILITY AND REACTIVITY

STABILITY: Normally stable; however, known to react violently with arsenic trioxide, or sodium nitrate.

INCOMPATIBILITIES: Materials to avoid. Corrosive metal salt solutions may generate hydrogen gas when contacting alkaline metals. Corrosive to cast iron, cast bronze, copper and its alloys and galvanized steel. May be corrosive to aluminum, paints, enamel and concrete.

HAZARDOUS POLYMERIZATION: May not occur.

DECOMPOSITION PRODUCTS: When heating to decomposition, toxic sulfur dioxide, sulfur trioxide, and iron oxide fumes are produced.

CONDITIONS TO AVOID: Open flames; avoid forming product mists.

11. TOXICOLOGICAL INFORMATION

ESTIMATED FATAL DOSE: Ferric salts is 30 grams
LD 50 (mouse) = 681 mg/kg LD50 (rat) = 319 mg/

TOXIC HAZARD RATING: Moderately Toxic. Probable oral lethal dose in humans from ferrous sulfate ranges from .4 – 5g/kg or 1 oz. to 1 pint (1 lb).

WARNING: This product contains detectable amounts of a chemical known to the state of California to cause tumors in laboratory animals. In one case, through subcutaneous application, tumors developed on a mouse at the site of application. Several other studies of interperitoneal and oral application to lab animals found no turnerigenic effects. Alternation of genetic materials has been reports in microorganisms but not in humans as of yet.

12. ECOLOGICAL INFORMATION**13. DISPOSAL CONSIDERATIONS**

Waste Disposal Methods: Neutralize and landfill or incinerate in accordance with local, state or federal environment regulations.

14. TRANSPORT INFORMATION

This material is regulated as a DOT Hazardous Material.

US DOT INFORMATION:

UN/NA #	Shipping Name Hazard	Class	Packing Group	ERG	RQ
UN1760,	Corrosive liquids, n.o.s. (Ferrous Sulfate Solution)	8,	III,	154	1000lbs

15. REGULATORY INFORMATION**16. OTHER INFORMATION**

Do not use ingredient information and/ or ingredient percentages in this MSDS as a product specification. For product specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from H2O Technical Services.

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DISCLAIMER:

We believe that the information in this MSDS is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily either all-inclusive or fully adequate in every circumstance. Also, these suggestions should not be confused with or followed in violation of applicable laws, regulations, rules or insurance requirements.

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