

Material Safety Data Sheet

Updated - November 2008

Section 1 - Product Identification

Product Name: Ferrous Sulfate Heptahydrate, Moist

Synonyms: Copperas, Iron (II) Sulfate, Green Vitriol
Molecular Formula: FeSO₄ 7H₂O
CAS# 7782-63-0

This MSDS covers all Ferrous Sulfate Products manufactured by National Standard production facilities located at:

1631 Lake Street
 Niles, MI 49120
 (260) 683-8100

Section 2 - Hazard Identification

Routes of Entry: Inhalation, Skin, Eyes, and Ingestion

- Inhalation:** Irritant. Acute exposure may cause irritation of the respiratory tract. Remove from exposure area to fresh air.
- Skin:** Mild Irritant. Acute exposure may cause irritation. Chronic exposure may cause dermatitis. Low pH of 2-4.
- Eyes:** Corrosive. Acute exposure contact with eyes may cause severe irritation and corrosive action due to acidity. Chronic exposure effects depend on concentration and duration of exposure. Prolonged contact with corrosives may result in conjunctivitis.
- Ingestion:** Acute exposure side effects of ingestion of iron salts may include heartburn, nausea, gastric discomfort, constipation or diarrhea. Symptoms of severe poisoning may occur within 30 minutes or be delayed for several hours. Severe hemorrhagic gastritis with abdominal pain, retching, violent diarrhea, and vomiting may occur. Circulatory system may be affected with symptoms of shock, rapid, weak, or no pulse, severe hypotension and pulmonary changes with dyspnea, and emphysema may occur. The average lethal dose of iron is about 200 to 250 mg per kg of body weight.

Section 3 – Hazardous Composition Information

Ferrous Sulfate Heptahydrate: 92 - 100%
 Ferrous Iron: 18.5 – 19.5 %

Ingredient	CAS No.	PEL ¹	TLV ²	REL ³	STEL ⁴	IDLH ⁵
Iron Salts, Soluble as Fe	1309-37-1		1			

Notes: All values are in mg/m³. OSHA requires employers to ensure exposures are below individual constituent PEL's. Determine actual exposure through industrial hygiene monitoring.

Section 4 – First Aid Measures

- Inhalation:** If breathing has stopped perform CPR and consult a Physician.
- Skin:** Remove contaminated clothing and shoes immediately. Wash effected area with soap and water.
- Eyes:** Flush eyes with water for at least 15 minutes. Consult physician.
- Ingestion:** In patients not in shock or coma, induce vomiting with syrup of ipecac if vomiting has not occurred. Follow with gastric lavage using deferoxamine, 2 grams in liter of water with contains sodium bicarbonate 20g/l. Leave 10g of deferoxamine in 50 ml of 5% sodium bicarbonate in the stomach. Maintain airway, blood pressure, and respiration. Treat symptomatically and supportively. Get medical attention. Treatment should be administered by qualified medical personnel.

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Section 5 - Fire and Explosion Hazard Data

Flammability: Negligible Fire Hazard When Exposed to Heat or Flame

Fire Extinguisher Media: Dry Chemical, Carbon Dioxide, water spray or foam.

Procedure: Move container from fire area if possible. Do not scatter spilled material with high pressure water.

National Fire Protection Association (NFPA) Rating: Health - 1 Flammability - 0 Reactivity - 0

Section 6 - Spill or Leak Procedure

Contain spilled granular material. Sweep-up and place into container for shipment. If material is not useable place into suitable container for disposal in landfill. If material has been washed down with water, contain the material and neutralize with lime or sodium carbonate if necessary. Rinse residue thoroughly into sewer.

Section 7 - Handling and Storage

WARNING! Harmful if swallowed or inhaled. Causes irritation to skin, eyes, and respiratory tract. Affects the liver.

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Maintain a constant temperature not to exceed 24 °C (75 °F). Fluctuating temperatures causes product oxidation. Do not use this product if coated with brownish-yellow basic ferric sulfate. Isolate from incompatible substances. 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.

Section 8 - Exposure Controls & Personal Protection

Respiratory Protection: Specific respirators selected must be based on the levels of the substance in the workplace. They must not exceed the working limits of the respirator and jointly approved by NIOSH and MSHA.

Clothing: Clean body covering clothing.

Eye Protection: Dust resistant safety goggles recommended.

Gloves: Rubber, or other appropriate protection.

See OSHA *Safety and Health Standards*, available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, or at (www.osha.gov).

Section 9 - Physical and Chemical Properties

Physical Description: Hygroscopic, Blue Green, Crystal

Solubility: 48.6g/100g water at 20°C

Melting Point: Loses Water at 149°F

Boiling Point: Decomposes > 572°F

pH: 2 to 4

Bulk Density: Approximately 60-70 lb ft³ (1.898@25°C)

Molecular Weight: 278.01

Section 10 - Stability & Reactivity Information

Stability: Stable under normal temperatures and pressures.

Materials to Avoid: Oxidizing agents and Alkalies

Conditions to Avoid: Extremely High Temperatures

Hazardous Polymerization: Will Not Occur

Hazardous Decomposition Products: Products of Sulfur Oxides i.e. SO₂ and SO₃

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Section 11 - Toxicological Information

Oral Rat LD50: 319mg/kg. Investigated as a tumorigen and mutagen. Ferrous Sulfate is not listed by NTP or IARC as a known or suspected carcinogen.

Section 12 - Ecological Information

Runoff water from spill or fire may have a low pH and high iron content. Contain runoff and prevent from entering waterways.

Section 13 - Disposal Considerations

Waste Disposal Methods: Prevent waste from contaminating surrounding environment, scrap steel should be recycled. Discard any product, residue, disposable container, or liner in an environmentally acceptable manor, in full compliance with federal state and local regulations.

Section 14 - MSDS Transportation Information

Proper Shipping Name: Not regulated by DOT if less than 1,000 lbs in a single container.

If >1000 lbs: Environmentally Hazardous Substance, Solid N.O.S., 9, UN3077, III, RQ, (Ferrous Sulfate).

Section 15 - Regulatory Information

Reportable Quantity (RQ): 1,000 lbs CERCLA 103 Reportable

SARA 311 and 312 Reporting: Acute: Yes; Chronic: Yes; Fire: No; Pressure: No; Reactivity: No

EPCRA 313 Reporting: Not Applicable

TSCA: Not Applicable

Clean Air Act: Not Applicable

Section 16 - Other Information

MSDS NOTES:

- (1) Permissible Exposure Limit (PEL) - 8-hour TWA exposure as defined by OSHA (29CFR1910).
- (2) Threshold Limit Value (TLV) - 8-hour TWA as defined by American Conference of Governmental Industrial Hygienists (ACGIH).
- (3) Recommended Exposure Limit (REL) - 8-hour TWA as defined by National Institute of Occupational Safety & Health (NIOSH).
- (4) Short Term Exposure Limit (STEL) - 15 minute TWA exposure as defined by OSHA (29CFR1910.1200) or certain state regulations.
- (5) Immediately Dangerous to Life & Health (IDLH) – As defined by OSHA and NIOSH.
- (6) Ceiling Value (C) - Exposure which shall not be exceeded at any time during the working day.

Approved By: Brian J. McGuire, Corporate EH&S Manager **Date:** November 20, 2008

This data is believed to be accurate and was obtained from recognized technical sources, but cannot be warranted as to its accuracy or sufficiency. See www.heicowiregroup.com for the most recent MSDS.