

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Enriched Iron(II) sulfate heptahydrate
Synonyms	Green vitrol; Ferrous sulfate heptahydrate; Iron protosulfate
Chemical Formula	FeSO ₄ ·7H ₂ O
Molecular Weight	278.01
CAS No.	7782-63-0
RTECS No.	NO8510000
Supplier Address*	ISOFLEX USA PO Box 472615 San Francisco CA 94147 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance: Blue-green solid
 Caution! May cause eye and skin irritation. May cause respiratory tract irritation. May be harmful if swallowed.
 Air sensitive. Moisture sensitive. Target Organs: Liver, gastrointestinal system, eyes, skin, mucous membranes.

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 Flammability = 0 Reactivity = 0



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 Flammability = 0 Physical Hazard = 0

HEALTH HAZARD	2
FLAMMABILITY	0

Potential Health Effects

<i>Eye</i>	May cause mild eye irritation
<i>Skin</i>	May cause skin irritation
<i>Ingestion</i>	Ingestion of large amounts may cause gastrointestinal irritation. May be harmful if swallowed. Ingestion may result in irritation of the esophagus, bleeding of the stomach, and ulcer formation. G.I. disturbances (e.g., gastric distress, colic, constipation, diarrhea) may occur if swallowed. In children, ingestion of large quantities of ferrous sulfate may cause vomiting, vomiting of blood, liver damage, rapid heart rate, peripheral vascular collapse.
<i>Inhalation</i>	May cause respiratory tract irritation
<i>Chronic</i>	Repeated exposure may increase iron levels in the liver, spleen and lymphatic system. Damage may occur in the spleen and liver. Oral doses of 960 mg/kg given intermittently over a 9-week period produced jaundice in humans.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Enriched iron(II) sulfate heptahydrate
CAS No.:	7782-63-0
Chemical Formula:	FeSO ₄ ·7H ₂ O
Molecular Weight:	278.01

4. FIRST AID MEASURES

<i>Eyes</i>	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
<i>Skin</i>	In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
<i>Ingestion</i>	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
<i>Inhalation</i>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
<i>Notes to Physician</i>	Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

<i>General Information</i>	As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Substance is noncombustible.
<i>Special Hazards Arising from the Substance or Mixture</i>	Sulphur oxides, iron oxides
<i>Suitable Extinguishing Media</i>	Substance is noncombustible; use agent most appropriate to extinguish surrounding fire

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Use proper personal protective equipment as indicated in Section 8.
<i>Environmental Precautions</i>	Do not let product enter drains.
<i>Methods for Cleaning Up</i>	Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

7. HANDLING AND STORAGE

<i>Handling</i>	Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin and clothing. Avoid breathing dust.
<i>Storage</i>	Do not store in direct sunlight. Store in a cool, dry area away from incompatible substances. Store under inert gas. Hygroscopic.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<i>Engineering Controls</i>	Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
<i>Exposure Limits</i>	None listed
<i>OSHA Vacated PELs</i>	Iron(II) sulfate heptahydrate: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment	
<i>Eyes</i>	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
<i>Skin</i>	Wear appropriate protective gloves to prevent skin exposure.
<i>Clothing</i>	Wear appropriate protective clothing to prevent skin exposure.
<i>Respirators</i>	Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Solid
Color	Blue-green
Odor	Odorless

Safety Data

pH:	3-5 (5% aq. sol.)	Flash Point:	Not applicable
Vapor Pressure:	Not available	NFPA Rating:	2-0-0
Vapor Density:	Not available	Solubility:	48.6g/100g water at 50 °C
Evaporation Rate:	Negligible	Specific Gravity/Density:	1.898
Viscosity:	Not available	Boiling Point:	300 °C (dec)

Freezing/Melting Point: 64 °C
Explosion Limits:
 Lower: Not available
 Upper: Not available
Molecular Formula: $\text{FeSO}_{4A} \cdot 7\text{H}_2\text{O}$

Decomposition Temperature: >300 °C
Autoignition Temperature: Not applicable

Molecular Weight: 278.01



10. STABILITY AND REACTIVITY

<i>Chemical Stability</i>	Stable at room temperature in closed containers under normal storage and handling conditions. FeSO ₄ ·7H ₂ O oxidizes in moist air, forming a brown coating of basic ferric sulfate. Aqueous solutions are oxidized slowly by air when cold, rapidly when hot; rate of oxidation increased by addition of base or exposure to light.
<i>Conditions to Avoid</i>	Light, dust generation, moisture, excess heat, prolonged exposure to air
<i>Incompatibilities with</i>	Strong oxidizing agents, bases, lead acetate, silver salts, lime water,
<i>Other Materials</i>	carbonates, potassium tartrate, gold salts, potassium iodide, sodium borate, sodium tartrate, tannin
<i>Hazardous Decomposition Products</i>	Oxides of sulfur, oxides of iron
<i>Hazardous Polymerization</i>	Has not been reported

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

<i>Oral LD50</i>	1520 mg/kg (Mouse)
<i>Inhalation</i>	No data available
<i>Dermal</i>	No data available
<i>LD50 Intraperitoneal</i>	245 mg/kg (mouse)
<i>LD50 Intravenous</i>	51 mg/kg (mouse)
<i>Skin Corrosion/Irritation</i>	No data available
<i>Serious Eye Damage/Eye Irritation</i>	No data available
<i>Respiratory or Skin Sensitization</i>	No data available
<i>Carcinogenicity</i>	Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA
<i>Epidemiology</i>	No information available
<i>Teratogenicity</i>	No information available
<i>Reproductive Effects</i>	See actual entry in RTECS for complete information.
<i>Specific Target Organ Toxicity / Single Exposure</i>	No data available
<i>Specific Target Organ Toxicity / Repeated Exposure</i>	No data available
<i>Aspiration Hazard</i>	No data available
<i>Neurotoxicity</i>	No information available
<i>Mutagenicity</i>	See actual entry in RTECS for complete information
<i>Other Studies</i>	See actual entry in RTECS for complete information

12. TOXICOLOGICAL INFORMATION

<i>Toxicity</i>	No data available
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	No data available
<i>Mobility in Soil</i>	No data available
<i>Results of PBT and vPvB Assessment</i>	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted
<i>Other Adverse Effects</i>	No data available

13. DISPOSAL CONSIDERATIONS

<i>Product</i>	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

<i>UN No.</i>	3077
<i>Class</i>	9
<i>Packing Group</i>	III
<i>Proper Shipping Name</i>	Environmentally hazardous substance, solid, n.o.s. (Ferrous sulfate heptahydrate)
<i>Reportable Quantity (RQ)</i>	1000 lbs
<i>Marine Pollutant</i>	No
<i>Poison Inhalation Hazard</i>	No

IMDG Not dangerous goods

IATA Not dangerous goods

15. REGULATORY INFORMATION

REACH No. A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

SARA 313 Components This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards Acute Health Hazard, Chronic Health Hazard

Massachusetts Right to Know CAS No. 7782-63-0

Components

Pennsylvania Right to Know Components CAS No. 7782-63-0

New Jersey Right to Know Components CAS No. 7782-63-0

California Prop. 65 Components This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

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United States

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Revision Note Update supplier address

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EC50	Half Maximal Effective Concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IMDG	International Maritime Code for Dangerous Goods

LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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