Safety Data Sheet

Martrex, Inc.

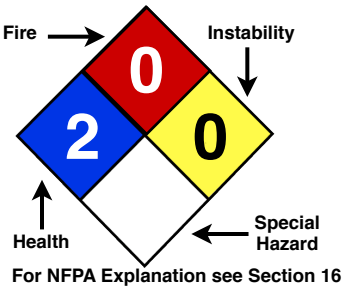
Section 1: Chemical Product and Company Information

Product name: Ferrous Sulfate Monohydrate
Reference Number: n/a
Supplier/ Further Information: Martrex, Inc.

1107 Hazeltine Blvd,
Suite 535 MD 27,
Chaska, Minnesota 55318

Phone: 952/933-5000
Toll Free: 800/328-3627
FAX: 952/933-1889

Web: www.martrexinc.com



For NFPA Explanation see Section 16

EPA Registration Number: n/a
CAS#: 13463-43-9
Chemical Name: Ferrous Sulfate Monohydrate
Synonyms: Ferrous Sulfate Monohydrate
Chemical Family: Inorganic salt
SDS Number: n/a

24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637

Section 2: Hazards Identification

Emergency Overview

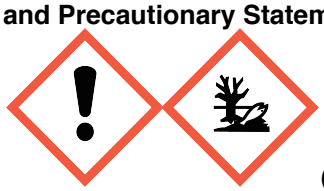
Warning! Harmful if swallowed. May Cause skin irritation and severe eye irritation. Very Toxic to Aquatic Life with Long Lasting Effects.

GHS Classification (Global Harmonized Classification see Section 16)**:**

Acute toxicity, Oral **Category 4** (H302)
Hazardous to the aquatic environment, acute hazard **Category 1** (H400)
Hazardous to the aquatic environment, long-term hazard **Category 1** (H410)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:



(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Warning**

Hazard Statements:

Harmful if swallowed. (H302)
Very Toxic to Aquatic life with long lasting effects. (H400+ H410)

Precautionary Statements:

Prevention:

Wash skin thoroughly after handling. (P264)
Do not eat, drink or smoke when using this product. (P270)
Avoid Release to the Environment (P273)

Response:

IF SWALLOWED: Rinse Mouth. (P301+P330)
Call a POISON CENTER / doctor / physician if you feel unwell. (P312)
Collect Spillage (P391)

Disposal Considerations:
Dispose of this material and its container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

NFPA: Health: **2** Flammability: **0** Reactivity: **0**

Health Effects

Inhalation (breathing):

Acute Inhalation Exposure: May cause irritation of the respiratory tract.

Chronic Inhalation Exposure: no data

Skin Contact:

Acute Skin Exposure: May cause irritation

Chronic Skin Exposure: Repeated exposure to irritants may cause dermatitis.

Eye Contact:

Acute Eye Exposure: Corrosive. Contact with eyes may cause severe irritation and corrosive action due to acidity.

Chronic Eye Exposure: Effects depend on concentration and duration of exposure. Prolonged contact with corrosives may result in conjunctivitis.

Ingestion (swallowing):

Acute Ingestion (swallowing) **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.

Chronic Ingestion (swallowing) **Exposure:** Reproductive effects have been reported in animals.

Medical Conditions Aggravated By Long-Term Exposure: no data

Carcinogenicity Data:
See Section 11 for more Toxicological information

Section 3: Composition/Information on Ingredients

Hazardous Component	CAS#	%	OSHA Limits	ACGIH Limits	OTHER Limits
Ferrous Sulfate Monohydrate	13463-43-9	100	n/a	TWA: 1 mg/m^3	See Section 11,12,15

Section 4: First Aid Measures

Inhalation: Remove from exposure area to fresh air. If breathing has stopped, perform artificial respiration. **Call a physician.**

Skin Exposure: Remove contaminated clothing and shoes immediately. Wash affected area with soap and water.

Eye Exposure: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. **Call a physician.**

Ingestion: Call a physician immediately. Never give anything by mouth to an unconscious person. In patients not in shock or coma, induce emesisi with syrup of ipecac if vomiting has not occurred. Follow with gastric lavage using deferoxamine, 2 grams in 1 liter of water, which contains sodium bicarbonate in the stomach. Maintain airway, blood pressure and respiration.

NOTE TO THE PHYSICIAN: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

Flammability Classification: no data

Fire: Negligible fire hazard when exposed to heat and flame.

Fire Extinguishing Media: Dry chemical, carbon dioxide, water spray or foam.

Explosion: (See Section 10 Reactivity Incompatibilities)

Arsenic trioxide and sodium nitrate: Spontaneously combustible mixture

Methyl isocyanoacetate: May decompose explosively at 25°.

Special Fire Fighting Information: Move container from fire area if possible. Do not scatter spilled material with high-pressure water. Use agents appropriate to surrounding fire.

Section 6: Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill: Use personal protective equipment. See Section 8.

Small Spills: Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spills: Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements. Be careful that the product is not present at a concentration level above TLV. Check TLV on the SDS and with local authorities.

Cleanup Conditions to Avoid: Avoid formation of dust and aerosols. (See Section 7)

Environmental and Regulatory Reporting: See Sections 12, 13 and 15. Obey all Federal, State and Local regulations when storing or disposing of ferrous sulfate monohydrate.

Section 7: Handling and Storage

Minimum/maximum Storage Temperature: no data.

Precautions in Handling: Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. **If you feel unwell, seek medical attention and show the label when possible.** Avoid contact with skin and eyes.

Storage: Hygroscopic. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 24°C (75.2°F).

REGULATORY REQUIREMENTS: Obey all Federal, State and Local regulations when storing or disposing of ferrous sulfate monohydrate. See Section 15.

Section 8: Exposure Controls / Personal Protection

Ventilation/Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Eye wash station: Maintain eye wash fountain.

Personal Protection In Case of Large Spills: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; **consult a specialist BEFORE handling this product.**

Exposure Limits: **ACGIH Limits:** TWA: 1 mg/m^3

Section 9: Physical and Chemical Properties

Chemical Name: Ferrous Sulfate monohydrate

Percent Equivalent: no data

Physical State: Solid Powder

Color and Appearance: Grayish White Powder.

Odor: no data

Odor Threshold: no data

Boiling Point: no data

Melting Point: Decomposes at 671°F
Evaporation Rate: no data
Vapor Pressure: no data
Vapor Density (Air = 1)**:** no data
Density: 30 lb./cu. ft.. (loose), 45 lb./cu. ft.. (packed)
Specific Gravity (water=1)**:** no data
Solubility in water: Slowly soluble in water
Other Solubilities: no data
pH (10% solution)**:** 2.8 - 5
Formula: $FeSO_4 \cdot H_2O$
Formula Wt: 169.94

Section 10: Stability and Reactivity

Chemical Stability (stable under normal temperature and pressures)**:** Stable__X__ Unstable____
Chemical Incompatibility and Materials to Avoid: Alkalis

Arsenic trioxide and sodium nitrate:	Spontaneously combustible mixture
Methyl isocyanoacetate:	May decompose explosively at 25°

Hazardous Decomposition Products: Thermal decomposition products may include toxic sulfur oxides.
Hazardous Polymerization: May Occur____ Will Not Occur__X__

Section 11: Toxicological Information

Acute toxicity
LD50 Oral - rat - 319 mg/kg
Skin corrosion/irritation
no data
Serious eye damage/eye irritation
no data
Respiratory or skin sensitization
no data
Germ cell mutagenicity
no data
Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
no data
Specific target organ toxicity - single exposure (GHS)
no data
Specific target organ toxicity - repeated exposure (GHS)
no data
Aspiration hazard
no data
Potential health effects
Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion Toxic if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Additional Information: no data

Section 12: Ecological Information

Toxicity: no data available
Persistence and degradability: no data available
Bioaccumulative potential: no data available
Mobility in soil: no data available
PBT and vPvB assessment: no data available
Other adverse effects: no data available

Section 13: Disposal Considerations

Disposal of Product: Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Contaminated packaging: Dispose of as unused product.

Section 14: Transport Information

US DOT Classification: Not a DOT controlled material unless packaged above RQ (see section 15)
UN-Number: 3077 Class: 9 Packing group: III
Proper shipping name:
RQ, Environmentally hazardous substances, solid, n.o.s. (Iron sulphate hydrate)
Reportable Quantity:
(RQ): 1000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No
IMDG: Not dangerous goods
IATA: Not dangerous goods

Section 15: Regulatory Information

OSHA Hazards
Target Organ Effect, Toxic by ingestion
DSL Status
All components of this product are on the Canadian DSL list.
SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components
SARA 313: 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

Pennsylvania Right To Know Components

	CAS#	Revision Date
Iron sulphate hydrate	13463-43-9	04-24-1993

Massachusetts Right To Know Components

	CAS#	Revision Date
Iron sulphate hydrate	13463-43-9	04-24-1993

New Jersey Right To Know Components

	CAS#	Revision Date
Iron sulphate hydrate	13463-43-9	04-24-1993

California Prop. 65 Components

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

Section 16: Other Information

Acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ANSI - American National Standards Institute
CAS - Chemical Abstracts Service
CERCLA - Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR - Code of Federal Regulations
CHEMTREC - Chemical Transportation Emergency Center
CPR - Controlled Products Regulations
CWC - Chemical Weapons Convention
DOT - U.S. Department of Transportation
DSL - Canadian Domestic Substance List
EHS - Extremely Hazardous Substance
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Material Identification System
IARC - International Agency for Research on Cancer
LEL/UEL - Lower and Upper Explosive Limit
mg/m³ - Milligrams per cubic meter
NAERG - North American Emergency Response Guidebook
NIOSH - National Institute of Occupational Safety and Health
NFPA - National Fire Protection Association
NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit (set by OSHA)
PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act of 1976
SARA - Superfund Amendments and Reauthorization Act
SDS - Safety Data Sheet

GHS Pictograms and Hazards

Health Hazard	Flame	Exclamation Mark
		
• Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	• Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	• Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder	**Corrosion**	**Exploding Bomb**
		
• Gases Under Pressure	• Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	• Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle	**Environment** (Non-Mandatory)	**Skull and Crossbones**
		
• Oxidizers	• Aquatic Toxicity	• Acute Toxicity (fatal or toxic)

24 Hour Emergency Phone - Chemtrec: 1-800-424-9300 Transportation
1-800-441-3637 Medical

STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.

TDG (Canadian)**:** Transport of Dangerous Goods Regulations

TLV - Threshold Limit Value (set by ACGIH)

TWA - 8-hour Time Weighted Average

TSCA - US Toxic Substance Control Act

WHMIS - Workplace Hazardous Material Information System

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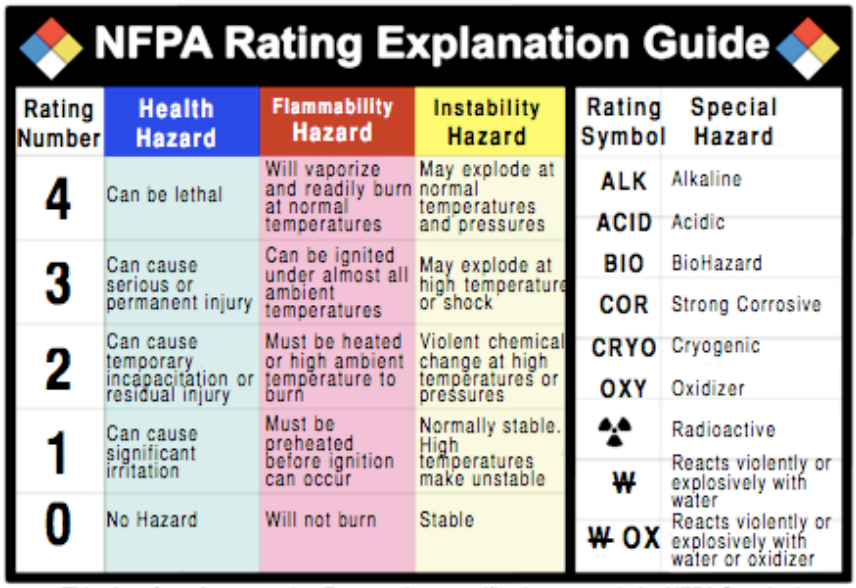
Revised Date: 4-13-2014
Supersedes: 11-7-2011



NFPA Rating Explanation Guide

Rating Number	Health Hazard	Flammability Hazard	Instability Hazard
4	Can be lethal	Will vaporize and readily burn at normal temperatures	May explode at normal temperatures and pressures
3	Can cause serious or permanent injury	Can be ignited under almost all ambient temperatures	May explode at high temperature or shock
2	Can cause temporary incapacitation or residual injury	Must be heated or high ambient temperature to burn	Violent chemical change at high temperatures or pressures
1	Can cause significant irritation	Must be preheated before ignition can occur	Normally stable. High temperatures make unstable
0	No Hazard	Will not burn	Stable

Rating Symbol	Special Hazard
ALK	Alkaline
ACID	Acidic
BIO	BioHazard
COR	Strong Corrosive
CRYO	Cryogenic
OXY	Oxidizer
	Radioactive
W	Reacts violently or explosively with water
W OX	Reacts violently or explosively with water or oxidizer

This chart for reference only - For complete specifications consult the NFPA Standard

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