



MATERIAL SAFETY DATA SHEET

Ferrous Sulfate (5% Fe²⁺)

SECTION 1: CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer's Name and Address:

ALTIVIA Chemicals, LLC
1100 Louisiana, Ste. 4800
Houston, TX 77002
USA • (713) 658-9000

Product Name:	Ferrous Sulfate 5%	Molecular Formula:	FeSO ₄ •7H ₂ O
Synonyms:	Iron (II) Sulfate	Preparation Date (M/D/Y):	10/16/2012
CAS #:	7720-78-7	Revision Date (M/D/Y):	01/06/2014
Control #:	A 2904		
Product Use:	Water and wastewater treatment		

EMERGENCY CONTACTS (24 HR)

TRANSPORTATION EMERGENCIES – CHEMTREC: (800) 424-9300

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	% (w/w)	Exposure Limits		Carcinogen	CAS NO.
		OSHA (PEL)	ACGIH (TLV)		
Ferrous Sulfate	25 +/- 5	1 mg/m ³ Fe (TWA)	1 mg/m ³ Fe (TWA)		7720-78-7
Sulfuric Acid	< 0.25	1 mg/m ³ (TWA)	0.2 mg/m ³ thoracic fraction (TWA)	IARC 1 ACGIH A2	7664-93-9

SECTION 3: HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR:

Color: greenish-blue
Appearance: liquid
Odor: slightly acidic

STATEMENTS OF HAZARD:

WARNING! IRRITATING TO EYES, SKIN, RESPIRATORY AND DIGESTIVE TRACTS

POTENTIAL HEALTH EFFECTS

EFFECTS OF EXPOSURE:
Oral LD50 (Mouse) 1520 mg/kg

Refer to TOXICOLOGICAL INFORMATION (Section 11) for additional information.



SECTION 4: FIRST AID MEASURES

Ingestion: Never give anything by mouth to an unconscious person. Obtain medical attention. Do not induce vomiting. Administer 250 – 300 ml water to dilute material in the stomach.

Skin Contact: In case of skin contact, wash affected areas of skin with soap and water. If skin irritation persists, call a physician.

Eye Contact: Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

Inhalation: If breathing has stopped, trained personnel should administer artificial respiration. If the heart has stopped, trained personnel should administer CPR. Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

SECTION 5: FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Use extinguishing media appropriate for the surrounding fire. This material will not burn easily.

Protective Equipment: Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection). Firefighters and others exposed, wear self-contained breathing apparatus.

Special Hazards: Sulfur oxides and/or toxic and flammable hydrogen sulfide may be formed under fire conditions. Keep unnecessary people away.

Mechanical/Static Sensitivity Statements: None

NOTE: Also see “Section 10 – Stability and Reactivity”

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. Refer to Section 8 (Exposure Controls/Personal Protection) for appropriate personal protective equipment.

Methods for Cleaning Up:

Cover spills with some inert absorbent. Sweep up into containers for disposal.

Environmental Precautions:

Use appropriate containment to avoid environmental contamination. Prevent water contaminated with this product from entering drains, sewers or streams, growing crops/keeping animal areas, and site of native flora and fauna.

SECTION 7: HANDLING AND STORAGE

HANDLING

Precautionary Measures: Do not get in eyes. Handle with caution. Wash thoroughly after handling. See MSDS for details.

Special Handling Statements: Review the label, this MSDS and any other applicable information before use. Keep separated from incompatible substances. Use appropriate Personal Protective Equipment per Section 8. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.



MATERIAL SAFETY DATA SHEET – Ferrous Sulfate (5% Fe²⁺)

Review/Update: January 6, 2014

Page 3 of 6

STORAGE

Prevent material from coming in contact with common metals. Ensure that all storage vessels are labeled. Avoid skin and eye contact. Wear appropriate protective clothing. Store only in dry rubber-lined, plastic, FRP or stainless steel (304,316). Keep storage temperatures between 10° and 30°C. Store away from incompatible materials such as alkalis. Keep smaller containers (drums and totes) tightly closed when not in use or when empty. Product should be used within one year. Storage facilities should have secondary containment as required by law or regulation. Storage tanks, piping and offloading points should be labeled with appropriate signage to avoid accidents.

Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures: A ventilation system of local/general exhaust is recommended to keep employee exposure below the Airborne Exposure Limits. Ensure that eyewash station and safety showers are proximal to the workstation location.

Respiratory Protection: Where exposures are below the established exposure limit, no respiratory protection is required. Where exposures exceed the established exposure limit, use respiratory protection recommended for the material and level of exposure.

Eye Protection: Provide eye wash fountain and safety shower in close proximity to points of potential exposure. Wear eye/face protection such as chemical splash proof goggles or face shield. Prevent eye and skin contact.

Skin Protection: Prevent contamination of skin or clothing when removing protective equipment. Wear impermeable gloves and suitable protective clothing.

Additional Advice: Before eating, drinking, or smoking wash face and hands thoroughly with soap and water. Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Color	Greenish – blue
Appearance	Liquid
Odor	Slightly Acidic
Boiling Point	105-110°C (220-230°F)
Melting Point	Not Available
Vapor Pressure	Not Available
Specific Gravity	1.12 – 1.18 @ 25°C
Percent Volatile (% by wt.)	~50
pH	>2.0
Saturation by Air (% by Vol.)	Not Available
Evaporation Rate	Similar to water
Solubility in Water	Soluble
Volatile Organic Content	Not Applicable
Flash Point	Not Applicable
Flammable Limits (% by Vol.)	Not Applicable
Autoignition Temperature	Not Applicable
Decomposition Temperature	Not Applicable
Partition coefficient (n-octanol/water)	Not Applicable
Odor Threshold	Not Available



SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Conditions to Avoid: Avoid contact with mineral acids, excessive heat and bases/alkalis.

Polymerization: Will not occur.

Conditions to Avoid: None known.

Materials to Avoid: Carbon steel, brasses, and nylon.

Hazardous Decomposition Products: Thermal decomposition; after completely dry and heated to decomposition will produce oxides and sulfur.

SECTION 11: TOXICOLOGICAL INFORMATION

For additional toxicological information, refer to Section 3. Toxicological information on the regulated components of this product is as follows:

Ferrous sulfate has oral (rat) LD50 value of 237 mg/kg. Direct contact may cause severe eye and moderate skin irritation. Inhalation overexposure may cause irritation of the respiratory tract.

The acute oral (rat) LD50 and acute 1-hour inhalation (rat) for sulfuric acid are 2,140 mg/kg and 347 ppm (0.348 mg/L/4hr), respectively. Sulfuric acid is corrosive to the skin and eyes. Concentrated sulfuric acid can also be corrosive to the nose, mucous membranes, respiratory tract and gastrointestinal tract. Inhalation of the vapors or mist can cause pulmonary edema, emphysema or permanent changes in pulmonary function. Chronic exposure has been reported to be associated with dermatitis, chronic bronchitis, gastritis, erosion of dental enamel, conjunctivitis, increased frequency of respiratory tract infections and cancer of the larynx, lungs and upper respiratory tract.

SECTION 12: ECOLOGICAL INFORMATION

No aquatic LC50, BOD, or COD data available.

SECTION 13: DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is RCRA 'listed hazardous waste' or has any of the four RCRA 'hazardous waste characteristics.' Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA 'listed hazardous waste'; information contained in Section 15 of this MSDS is not intended to indicate if the product is a 'listed hazardous waste.' RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. ALTIVIA Chemicals, LLC encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. ALTIVIA Chemicals, LLC recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. ALTIVIA Chemicals, LLC has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.



SECTION 14: TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s.

Hazard Class: 8

Packing Group: III

UN/ID Number: UN3264

Transport Label Required: Corrosive

Technical Name (N.O.S.): Contains ferrous sulfate

Hazardous Substances:

<u>Component/CAS No.</u>	<u>Reportable Quantity of Product (lbs)</u>
Ferrous sulfate	~4000 lbs. (Ferrous Sulfate RQ=1000 lbs)

SECTION 15: REGULATORY INFORMATION

INVENTORY INFORMATION

United States (USA): This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.

OTHER ENVIRONMENTAL INFORMATION

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

Component / CAS No.	%	TPQ (lbs)	RQ (lbs)	S313	TSCA 12B
Ferrous Sulfate 7720-78-7	~ 25 +/- 5	None	1000	No	No
Sulfuric Acid	< 0.25	1000	1000	Yes	No

PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA

- Acute

SECTION 16: OTHER INFORMATION

The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. ALTIVIA Chemicals, LLC provides no warranties either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your information, consideration, and investigation. You should satisfy yourself that you have all current data relevant to your particular use. ALTIVIA Chemicals, LLC knows of no medical condition, other than those noted on this material safety data sheet, which are generally recognized as being aggravated by exposure to this product.



MATERIAL SAFETY DATA SHEET – Ferrous Sulfate (5% Fe²⁺)

Review/Update: January 6, 2014

Page 6 of 6

National Fire Protection Association (NFPA) Rating Hazardous Materials Identification System (HMIS) Rating

	NFPA	HMIS
HEALTH	2	2
FIRE	0	0
REACTIVITY / INSTABILITY	0	0
SPECIAL HAZARDS	N/Ap	N/Ap

4 = Extreme/Severe
3 = High/Serious
2 = Moderate
1 = Slight
0 = Minimum
W = Water Reactive
OX = Oxidizer
* = Chronic Health Hazard

Emergency Information:

Call toll free 24 hours a day: 800-424-9300

For Any Other Information Contact:

ALTIVIA Chemicals, LLC, Technical Marketing, 1100
Louisiana, Suite 4800, Houston, TX 77002.

Phone: 713-658-9000

8 AM – 5 PM CST, Monday through Friday