



# MATERIAL SAFETY DATA SHEET

## Ferric Sulfate 60% (12% Fe<sup>3+</sup>)

### 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

<b>Product Name:</b>	<b>Ferric Sulfate 12%</b>	<b>Molecular Formula:</b>	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> •9H <sub>2</sub> O
<b>CAS #:</b>	10028-22-5	<b>Preparation Date (M/D/Y):</b>	10/16/2012
<b>Control #:</b>	A 2901	<b>Revision Date (M/D/Y):</b>	05/09/2014
<b>Synonyms:</b>	Iron (III) Sulfate		
<b>Product Use:</b>	Water and wastewater treatment; Odor removal		

#### 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)		
Sulfuric Acid	< 0.5	1 mg/m <sup>3</sup> (TWA)	0.2 mg/m <sup>3</sup> thoracic fraction (TWA)	IARC 1 ACGIH A2	7664-93-9
Ferric Sulfate	60 ± 5 (43 ± 5 as anhydrous)	1 mg/m <sup>3</sup> Fe (TWA)	0.1 mg/m <sup>3</sup> as persulfate (TWA) 1 mg/m <sup>3</sup> as Fe (TWA)		10028-22-5

### SECTION 3: HAZARD IDENTIFICATION

#### EMERGENCY OVERVIEW

#### APPEARANCE AND ODOR:

Color: red-brown  
Appearance: liquid  
Odor: acidic

#### STATEMENTS OF HAZARD:

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

#### POTENTIAL HEALTH EFFECTS

##### EFFECTS OF EXPOSURE:

Direct contact with this material may cause moderate to severe eye and moderate skin irritation.  
The acute oral (rat) LD50 is estimated to be >400 mg/kg.



**Other Important Hazards:** 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.

**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:** The substance is not combustible. Use extinguishing media appropriate to the surrounding fire.

**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:** Restrict access until clean-up operations are complete. Wear appropriate Personal Protective Equipment per Section 8. Ensure trained personnel conduct clean up and wear Personal Protective Equipment per Section 8. Stop leak if possible. Avoid personal risk.

**Methods for Cleaning Up:**

Small Spills – Absorb spill with clay or dry material or neutralize with lime, limestone or soda ash and collect in appropriate container for disposal. Neutralization with soda ash can generate carbon dioxide so additional ventilation may be necessary.

Large Spills – Prevent entry into sewers and confined areas. Dike, if possible. Keep unnecessary people away, isolate non-reactive dry materials and collect in appropriate container for disposal.

Neutralize spill residuals carefully with lime, limestone, or soda ash and collect in suitable container for disposal. Flush area with water. This could generate carbon dioxide so additional ventilation may be necessary.

\* Notify Authorities if release exceeds reportable quantity per Section 15.

#### **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.

**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**

<b>Color</b>	red-brown
<b>Appearance</b>	Liquid
<b>Odor</b>	Acidic
<b>Boiling Point</b>	105-110°C (220-230°F)
<b>Melting Point</b>	< -18°C (0°F)
<b>Vapor Pressure</b>	Not Available
<b>Specific Gravity</b>	1.50 -1.59 @ 25°C
<b>Percent Volatile (% by wt.)</b>	~50
<b>pH</b>	<2.0
<b>Saturation by Air (% by Vol.)</b>	Not Available
<b>Evaporation Rate</b>	Similar to water
<b>Solubility in Water</b>	Soluble
<b>Volatile Organic Content</b>	Not Applicable
<b>Flash Point</b>	Not Applicable
<b>Flammable Limits (% by Vol.)</b>	Not Applicable
<b>Autoignition Temperature</b>	Not Applicable
<b>Decomposition Temperature</b>	Not Applicable
<b>Partition coefficient (n-octanol/water)</b>	Not Applicable
<b>Odor Threshold</b>	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:

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.

Ferric Sulfate

Available TOXICOLOGICAL DATA:

LD50 (intraperitoneal mouse): 168 mg/kg

LD50 (oral, rat) = 500 mg/kg

Mutagenicity: Not available

Reproductive Effects: Not available

Teratogenicity and Fetotoxicity: Not available

Synergistic Materials: Not available



**SECTION 12: ECOLOGICAL INFORMATION**

The test values shown for this product are actually the results for studies conducted on anhydrous ferric sulfate.

**ALGAE TEST RESULTS**

**Test:** Acute toxicity, freshwater

**Duration:** 7 day

**Species:** Green Algae (*Scenedesmus subspicatus*)

10000 ug/l Toxicity endpoint not reported.

Based on the anhydrous material. 1978 Journal. Egypt. J. Bot. 21(2):121-130

**FISH TEST RESULTS**

**Test:** Acute toxicity, freshwater

**Duration:** 24 hr **Procedure:** Static

**Species:** Mosquitofish (*Gambusia affinis*)

37,200 ug/l LC50

Based on the anhydrous material. 1957 Journal: Sewage Ind. Wastes 29(6):695-711

**Test:** Acute toxicity, freshwater

**Duration:** 96 hr **Procedure:** Static

**Species:** Mosquitofish (*Gambusia affinis*)

37,200 ug/l LC50

Based on the anhydrous material. 1957 Journal: Sewage Ind. Wastes 29(6):695-711

**OTHER TEST RESULTS**

**Test:** Acute toxicity, freshwater

**Duration:** 48 hr

**Species:** Rock Oyster (*Saccostrea commercialis*)

100-200 ug/l NOEC

Based on the anhydrous material. 1997 Journal: Ectoxicol. Environ. Saf. 37:30-36

**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.



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Review/Update: January 6, 2014

## 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 ferric sulfate  
Hazardous Substances:

Component/CAS No.	Reportable Quantity of Product (lbs)
Ferric sulfate	~1600 lbs. (Ferric 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
Sulfuric Acid 7664-93-9	< 0.25	1000	1000	Yes	No
Ferric sulfate 10028-22-5	60 ± 5 (43 ± 5 as anhydrous)	none	1000	No	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.



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Review/Update: January 6, 2014

Page 7 of 7

## 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

### Revisions

04/17/2012: Revised product specifications.  
05/22/2012: Update of Address.  
01/21/2014: Update of Name & Contact Numbers.  
05/09/2014: Updated % of Sulfuric Acid. This MSDS replaces all previous MSDS for this product.