



## Safety Data Sheet

### Section 1: Identification

#### Product identifier

**Product Name** • Ferrous Sulfate Solution

**Synonyms** • Iron (II) Sulfate

**Molecular Formula** • FeSO<sub>4</sub>

• Trade Names: Ferrous Sulfate 5%; Ferrous Sulfate 7%; 25% Ferrous Sulfate; 35% Ferrous Sulfate.

#### Relevant identified uses of the substance or mixture and uses advised against

**Recommended use** • Water and Wastewater Treatment

#### Details of the supplier of the safety data sheet

**Manufacturer** • USALCO, LLC  
2601 Cannery Ave,  
Baltimore, MD 21226  
[www.usalco.com](http://www.usalco.com)  
[info@usalco.com](mailto:info@usalco.com)

**Telephone** • (410) 354-0100  
(General)

#### Emergency telephone number

**Manufacturer** • 800-282-5322

### Section 2: Hazard Identification

#### United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

#### Classification of the substance or mixture

**OSHA HCS 2012** • Corrosive to Metals 1  
Acute Toxicity Oral 4

#### Label elements

OSHA HCS 2012

**WARNING**



**Hazard statements** • May be corrosive to metals  
Harmful if swallowed

**Precautionary statements**

**Prevention** • Keep only in original container.  
Wash thoroughly after handling.  
Do not eat, drink or smoke when using this product.

**Response** • Absorb spillage to prevent material damage.  
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell.  
Rinse mouth.

**Storage/Disposal** • Store in corrosive resistant/ container with a resistant inner liner.  
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Other hazards**

**OSHA HCS 2012** • Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

**Section 3 - Composition/Information on Ingredients**

**Substances**

• Material does not meet the criteria of a substance.

**Mixtures**

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Ferrous Sulfate	CAS:7720-78-7	20% TO 40%	Ingestion/Oral-Rat LD50 • 319 mg/kg	<b>OSHA HCS 2012:</b> Acute Tox. 4 (Orl)	NDA
Sulfuric acid	CAS:7664-93-9	< 0.25%	Inhalation-Rat LC50 • 510 mg/m <sup>3</sup> Ingestion/Oral-Rat LD50 • 2140 mg/kg	<b>OSHA HCS 2012:</b> Eye Dam. 1; Skin Corr. 1B	NDA

**Section 4: First-Aid Measures**

**Description of first aid measures**

**Inhalation** • Move victim to fresh air. Administer oxygen if breathing is difficult. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give artificial respiration if victim is not breathing. Get medical attention immediately.

## Ferrous Sulfate Solution

- Skin** • For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Get medical attention immediately.
- Eye** • In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. Get medical attention immediately.
- Ingestion** • If swallowed, rinse mouth with water (only if the person is conscious) Do NOT induce vomiting. Do not use mouth-to-mouth method if victim ingested the substance. Obtain medical attention immediately if ingested.

### Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### Indication of any immediate medical attention and special treatment needed

- Notes to Physician** • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

## Section 5: Fire-Fighting Measures

### Extinguishing media

- Suitable Extinguishing Media** • LARGE FIRES: Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray.  
SMALL FIRES: Dry chemical, CO<sub>2</sub> or water spray.

- Unsuitable Extinguishing Media** • No data available

### Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • Containers may explode when heated.

- Hazardous Combustion Products** • Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.

### Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.  
Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.  
Wear positive pressure self-contained breathing apparatus (SCBA).  
SMALL FIRES: Move containers from fire area if you can do it without risk.

## Section 6 - Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures

- Personal Precautions** • Ventilate enclosed areas. Do not walk through spilled material. Use appropriate Personal Protective Equipment (PPE) Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

- Emergency Procedures** • ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container.

### Environmental precautions

- Avoid run off to waterways and sewers.

### Methods and material for containment and cleaning up

**Containment/Clean-up Measures** • Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

## Section 7 - Handling and Storage

### Precautions for safe handling

**Handling** • Review the label, this SDS and any other applicable information before use. Handle and open container with care. Use only with adequate ventilation. 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. Do not get in eyes. Avoid contact with skin. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

### Conditions for safe storage, including any incompatibilities

**Storage** • Prevent material from coming in contact with common metals. Ensure that all storage vessels are labeled. Store only in dry rubber-lined, plastic, FRP (fiberglass) or stainless steel (304,316) Keep storage temperatures between 10° and 40°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

### Control parameters

Exposure Limits/Guidelines				
	Result	ACGIH	NIOSH	OSHA
Sulfuric acid(7664-93-9)	TWAs	0.2 mg/m3 TWA (thoracic fraction)	1 mg/m3 TWA	1 mg/m3 TWA

### Exposure controls

**Engineering Measures/Controls** • Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

### Personal Protective Equipment

**Respiratory** • In case of insufficient ventilation, wear suitable respiratory equipment.

**Eye/Face** • Wear protective eyewear (goggles, face shield, or safety glasses).

**Skin/Body** • Wear appropriate gloves. Wear long sleeves and/or protective coveralls.

**Environmental Exposure Controls** • Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

#### Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

## Section 9 - Physical and Chemical Properties

### Information on Physical and Chemical Properties

#### Material Description

**Ferrous Sulfate Solution**

Physical Form	Liquid	Appearance/Description	Green to blue colored liquid with an acidic odor.
Color	Green to blue.	Odor	Acidic Odor.
Odor Threshold	No data available		
<b>General Properties</b>			
Boiling Point	105 to 110 °C(221 to 230 °F)	Melting Point/Freezing Point	No data available
Decomposition Temperature	> 300 °C(> 572 °F)	pH	> 2
Specific Gravity/Relative Density	1.12 to 1.22 @ 25 °C(77 °F) Water=1	Water Solubility	Appreciable 10 to 99 %
Viscosity	No data available		
<b>Volatility</b>			
Vapor Pressure	No data available	Vapor Density	No data available
Evaporation Rate	Similar to water		
<b>Flammability</b>			
Flash Point	None	UEL	None
LEL	None	Autoignition	None
Flammability (solid, gas)	None		
<b>Environmental</b>			
Octanol/Water Partition coefficient	None		

**Section 10: Stability and Reactivity****Reactivity**

- No dangerous reaction known under conditions of normal use.

**Chemical stability**

- Stable under normal temperatures and pressures.

**Possibility of hazardous reactions**

- Hazardous polymerization will not occur.

**Conditions to avoid**

- Excess heat.

**Incompatible materials**

- Carbon Steel, Brasses, Aluminum, & Nylon.

**Hazardous decomposition products**

- Thermal decomposition; after completely dry and heated to decomposition will produce oxides and sulfur.

**Section 11 - Toxicological Information****Information on toxicological effects**

**Other Material Information** • Although Ferrous Sulfate is manufactured with the use of Sulfuric Acid, the residual amount of sulfuric acid is less than 0.25% active in the finished Ferrous Sulfate product. The following statements in regards to Sulfuric Acid are indicative of concentrated acid level of greater than 5% and are not anticipated as potential health effects of the Sulfuric Acid concentrations in the finished product known as Ferrous Sulfate.

Components	
Sulfuric acid (< 0.25%)	7664-93-9

**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2140 mg/kg; Inhalation-Rat LC50 • 510 mg/m<sup>3</sup>;  
**Irritation:** Eye-Rabbit • 5 mg 30 Second(s)-Rinse • Severe irritation;  
**Multi-dose Toxicity:** Inhalation-Rat TClO • 0.2 mg/m<sup>3</sup> 6 Hour(s) 4 Week(s)-Intermittent; *Lungs, Thorax, or Respiration*; **Other changes**;  
**Mutagen:** Cytogenetic analysis • Unreported Route-Hamster • Ovary (Somatic cell) • 4 mmol/L;  
**Reproductive:** Inhalation-Rabbit TClO • 20 mg/m<sup>3</sup> 7 Hour(s)(6-18D preg); *Reproductive Effects: Specific Developmental Abnormalities*; **Musculoskeletal system**

**Ferrous Sulfate Solution**

Ferrous Sulfate (20% TO 40%)	7720-78-7	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 319 mg/kg; <b>Mutagen:</b> Micronucleus test • Ingestion/Oral-Mouse • 33.2 mg/kg; DNA damage • Ingestion/Oral-Mouse • 33.2 mg/kg; <b>Reproductive:</b> Ingestion/Oral-Rat TDLo • 7200 mg/kg (9-14D preg); <i>Reproductive Effects: Effects on Embryo or Fetus: Fetal death</i>
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GHS Properties	Classification
Acute toxicity	<b>OSHA HCS 2012</b> •Acute Toxicity - Oral 4 - ATEmix (oral) = 798 mg/kg
Skin corrosion/Irritation	<b>OSHA HCS 2012</b> •No data available
Serious eye damage/Irritation	<b>OSHA HCS 2012</b> •No data available
Skin sensitization	<b>OSHA HCS 2012</b> •No data available
Respiratory sensitization	<b>OSHA HCS 2012</b> •No data available
Aspiration Hazard	<b>OSHA HCS 2012</b> •No data available
Carcinogenicity	<b>OSHA HCS 2012</b> •No data available
Germ Cell Mutagenicity	<b>OSHA HCS 2012</b> •No data available
Toxicity for Reproduction	<b>OSHA HCS 2012</b> •No data available
STOT-SE	<b>OSHA HCS 2012</b> •No data available
STOT-RE	<b>OSHA HCS 2012</b> •No data available

**Potential Health Effects**

**Inhalation**

**Acute (Immediate)** • Concentrated sulfuric acid can be corrosive to the nose, mucous membranes, and respiratory tract. Inhalation of the vapors or mist can cause pulmonary edema, emphysema or permanent changes in pulmonary function.

**Chronic (Delayed)** • No data available

**Skin**

**Acute (Immediate)** • Sulfuric acid is corrosive to the skin.

**Chronic (Delayed)** • No data available

**Eye**

**Acute (Immediate)** • Sulfuric acid is corrosive to the eyes.

**Chronic (Delayed)** • No data available

**Ingestion**

**Acute (Immediate)** • Harmful if swallowed. Concentrated sulfuric acid can be corrosive to the gastrointestinal tract.

**Chronic (Delayed)** • No data available

**Other**

**Chronic (Delayed)** • Chronic exposure to sulfuric acid 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.

## Ferrous Sulfate Solution

### Carcinogenic Effects

- The International Agency for Research on Cancer (IARC) has classified “strong inorganic acid mists containing sulfuric acid” as a known human carcinogen (Category 1). This classification is for inorganic acid mists only and does not apply to sulfuric acid or sulfuric acid solutions. The basis for the IARC classification rests on several epidemiology studies which have several deficiencies. These studies did not account for exposure to other substances, some known to be animal or potential human carcinogens, social influences (smoking or alcohol consumption) and included small numbers of subjects. Based on the overall weight of evidence from all human and chronic animal studies, no definitive causal relationship between sulfuric acid mist exposure and respiratory tract cancer has been shown.

#### Key to abbreviations

LC = Lethal Concentration    TC = Toxic Concentration  
LD = Lethal Dose            TD = Toxic Dose

## Section 12 - Ecological Information

### Toxicity

- Non-mandatory section - information about this substance not compiled.

### Persistence and degradability

- Non-mandatory section - information about this substance not compiled.

### Bioaccumulative potential

- Non-mandatory section - information about this substance not compiled.

### Mobility in Soil

- Non-mandatory section - information about this substance not compiled.

### Other adverse effects

- Non-mandatory section - information about this substance not compiled.

## Section 13 - Disposal Considerations

### Waste treatment methods

**Product waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

**Packaging waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN3264	Corrosive liquid, acidic, inorganic, n.o.s. (contains Ferrous Sulfate)	8	III	NDA

**Special precautions for user**

- None specified.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** • No data available

## Section 15 - Regulatory Information

**Safety, health and environmental regulations/legislation specific for the substance or mixture**

**SARA Hazard Classifications**

• Acute

Inventory		
Component	CAS	TSCA
Ferrous Sulfate	7720-78-7	Yes
Sulfuric acid	7664-93-9	Yes

**United States**

**Labor**

**U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - OSHA - Specifically Regulated Chemicals**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**Environment**

**U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities**

•Ferrous Sulfate	7720-78-7	1000 lb final RQ; 454 kg final RQ
•Sulfuric acid	7664-93-9	1000 lb final RQ; 454 kg final RQ

**U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	1000 lb EPCRA RQ

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	1000 lb TPQ

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

**U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**United States - California**

**Environment**

**U.S. - California - Proposition 65 - Carcinogens List**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - California - Proposition 65 - Developmental Toxicity**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)**

•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**

•Ferrous Sulfate	7720-78-7	Not Listed
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**Ferrous Sulfate Solution**

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•Sulfuric acid	7664-93-9	Not Listed
<b>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</b>		
•Ferrous Sulfate	7720-78-7	Not Listed
•Sulfuric acid	7664-93-9	Not Listed

**Section 16 - Other Information**

<b>Revision Date</b>	• 10/1/2021
<b>Preparation Date</b>	• 10/1/2021
<b>Disclaimer/Statement of Liability</b>	• The technical data given herein is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. No guarantee is being given as to the end use performance. The product is sold on the basis that buyers test the product for their specific purposes. This information related to the material designated and may not be valid for such material used in combination with any other materials or in any process.

**Key to abbreviations**

NDA = No data available