### Section 1. Chemical Product and Company Identification

**Common Name/Trade Name**  
Ferrous Ammonium Sulfate, 0.4 N (0.4 M) Solution

**Manufacturer**  
SPECTRUM LABORATORY PRODUCTS INC.  
14422 S. SAN PEDRO STREET  
GARDENA, CA 90248

**Commercial Name(s)**  
Not available.

**Synonym**  
Not available.

**Chemical Name**  
Not applicable.

**Chemical Family**  
(Salt.)

**Chemical Formula**  
Not applicable.

**Supplier**  
SPECTRUM LABORATORY PRODUCTS INC.  
14422 S. SAN PEDRO STREET  
GARDENA, CA 90248

**Catalog Number(s).**  
F-179

**CAS#**  
Mixture.

**RTECS**  
Not applicable.

**TSCA**  
TSCA 8(b) inventory: Water; Sulfuric acid

**CI#**  
Not applicable.

**IN CASE OF EMERGENCY**  
CHEMIREC (24hr) 800-424-9300

**CALL**  
(310) 516-8000

### Section 2. Composition and Information on Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>TWA (mg/m³)</th>
<th>STEL (mg/m³)</th>
<th>CEIL (mg/m³)</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Water</td>
<td>7732-18-5</td>
<td></td>
<td></td>
<td></td>
<td>&lt;81</td>
</tr>
<tr>
<td>2) Ferrous ammonium sulfate hexahydrate</td>
<td>7783-85-9</td>
<td>1</td>
<td></td>
<td></td>
<td>&lt;16</td>
</tr>
<tr>
<td>3) Sulfuric acid</td>
<td>7664-93-9</td>
<td>1</td>
<td>3</td>
<td></td>
<td>&lt;3</td>
</tr>
</tbody>
</table>

**Toxicological Data on Ingredients**

Ferrous ammonium sulfate hexahydrate:

**ORAL (LD₅₀):**  
Acute: 3250 mg/kg [Rat].

Sulfuric acid:

**ORAL (LD₅₀):**  
Acute: 2140 mg/kg [Rat].

**VAPOR (LC₅₀):**  
Acute: 510 mg/m² 2 hours [Rat], 320 mg/m² 2 hours [Mouse].

Continued on Next Page
Section 3. Hazards Identification

**Potential Acute Health Effects**
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion. Hazardous in case of skin contact (corrosive/ permeator), of eye contact (corrosive), inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

**Potential Chronic Health Effects**

**CARCINOGENIC EFFECTS:** Classified A2 (Suspected for human.) by ACGIH [Sulfuric acid].
**MUTAGENIC EFFECTS:** Not available.
**TERATOGENIC EFFECTS:** Not available.
**DEVELOPMENTAL TOXICITY:** Not available.
The substance may be toxic to lungs, liver, mucous membranes, spleen, upper respiratory tract, skin, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4. First Aid Measures

**Eye Contact**
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. Get medical attention immediately.

**Skin Contact**
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact**
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Serious Inhalation**
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion**
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion**
Not available.

Section 5. Fire and Explosion Data

**Flammability of the Product**
Non-flammable.

**Auto-Ignition Temperature**
Not applicable.

**Flash Points**
Not applicable.

**Flammable Limits**
Not applicable.

**Products of Combustion**
Not available.

**Fire Hazards in Presence of Various Substances**
Not applicable.

**Explosion Hazards in Presence of Various Substances**
Non-explosive in presence of open flames and sparks, of shocks.

**Fire Fighting Media and Instructions**
Not applicable.

Continued on Next Page
### Section 6. Accidental Release Measures

**Small Spill**
- Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

**Large Spill**
- Corrosive liquid. Poisonous liquid.
- Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dig if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

### Section 7. Handling and Storage

**Precautions**
- Keep container dry. Do not ingest. Do not breathe gas/fumes/vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage**
- Keep container tightly closed. Keep container in a cool, well-ventilated area.

### Section 8. Exposure Controls/Personal Protection

**Engineering Controls**
- Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the workstation location.

**Personal Protection**

**Personal Protection in Case of a Large Spill**
- Splash goggles. Full suit. Vapor 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**

<table>
<thead>
<tr>
<th>Substance</th>
<th>TWA: 1 (mg(Fe)/m$^3$)</th>
<th>STEL: 1 (mg/m$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous ammonium sulfate hexahydrate</td>
<td>Norway: 1</td>
<td>Australia: 3</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>United Kingdom [UK]: 1</td>
<td>United States [1999]: 1</td>
</tr>
<tr>
<td></td>
<td>United States [TLV]: 1</td>
<td>United States [1999]: 1</td>
</tr>
</tbody>
</table>

Consult local authorities for acceptable exposure limits.

### Section 9. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state and appearance</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>pH (1% soln/water)</td>
<td>Neutral.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&gt;100°C (212°F)</td>
</tr>
</tbody>
</table>

*Continued on Next Page*
**Ferrous Ammonium Sulfate, 0.4 N (0.4 M) Solution**

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**Melting Point**

<0°C (32°F)

**Critical Temperature**

Not available.

**Specific Gravity**

Weighted average: 1.1 (Water = 1)

**Vapor Pressure**

The highest known value is 2.3 kPa (@ 20°C) (Water).

**Vapor Density**

The highest known value is 3.4 (Air = 1) (Sulfuric acid). Weighted average: 0.72 (Air = 1)

**Volatility**

Not available.

**Odor Threshold**

Not available.

**Water/Oil Dist. Coeff.**

Not available.

**Ionicity (in Water)**

Not available.

**Dispersion Properties**

See solubility in water.

**Solubility**

Easily soluble in cold water, hot water.

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**Section 10. Stability and Reactivity Data**

- **Stability**
  The product is stable.

- **Instability Temperature**
  Not available.

- **Conditions of Instability**
  Incompatible materials

- **Incompatibility with various substances**
  Slightly reactive to reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis.

- **Corrosivity**
  Extremely corrosive in presence of aluminum, of stainless steel (304).

  Expected to be corrosive in presence of copper.

  Slightly corrosive in presence of stainless steel (316).

  Non-corrosive in presence of glass.

**Special Remarks on Reactivity**

Not available.

**Special Remarks on Corrosivity**

Minor corrosive effect on Bronze.

No data on corrosive effect on Brass or Copper.

**Polymerization**

Will not occur.

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**Section 11. Toxicological Information**

- **Routes of Entry**
  Absorbed through skin. Dermal contact. Eye contact.

- **Toxicity to Animals**
  Acute oral toxicity (LD₅₀): 15970 mg/kg (Rat) (Calculated value for the mixture).

- **Chronic Effects on Humans**
  CARCINOGENIC EFFECTS: Classified A2 (Suspected for human) by ACGIH (Sulfuric acid).

  Contains material which may cause damage to the following organs: lungs, liver, mucous membranes, spleen, upper respiratory tract, skin, eyes, teeth.

- **Other Toxic Effects on Humans**
  Very hazardous in case of skin contact (irritant), eye contact (irritant), of ingestion.

  Hazardous in case of skin contact (corrosive, permeator), of eye contact (corrosive), of inhalation.

**Special Remarks on Toxicity to Animals**

Not available.

**Special Remarks on Chronic Effects on Humans**

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**Continued on Next Page**
Ferrous Ammonium Sulfate, 0.4 N (0.4 M) Solution

### Acute Potential Health Effects:
- **Skin:** Corrosive. Causes severe skin irritation and burns. Continued contact can cause tissue necrosis.
- **Eye:** Corrosive. Causes severe eye irritation and burns. May cause irreversible eye injury.
- **Ingestion:** Corrosive. Harmful if swallowed. May cause permanent damage to the digestive tract. Causes digestive/gastrointestinal tract (mouth, throat, stomach) burns, nausea, vomiting of coffee ground material, severe gastritis and epigastric pain,. May also cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatoryshock/collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis.

This product also contains Ferrous Ammonium Sulfate, hexahydrate which may cause pallor or cyanosis, central nervous system effects (CNS depression, lethargy, restlessness, confusion, lassitude, drowsiness), hyperventilation due to metabolic acidosis, hyperglycemia or hypoglycemia, hypotension, and cardiovascular collapse, stomach/abdominal pain, nausea, lack of appetite, vomiting/vomiting brown or bloody stomach contents, diarrhea, black stool. Acute ingestion of Ferrous Ammonium Sulfate, hexahydrate may also cause cardiovascular collapse (similar to acute ingestion). It may also cause hepatic toxicity with acidosis.

Acute or serious poisoning from iron or iron salts is rare in adults.
- **Inhalation:** Causes severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, sneezing, shortness of breath, and delayed lung edema. Can cause chemical burns (corrosive action) to the respiratory tract and mucous membranes. Inhalation may be fatal as a result of bronchoconstriction, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory shock/collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Ischemic liver and heart lesions, kidney failure, may occur several hours after uncheck circulatory collapse. Circulatory shock is often the immediate cause of death. May also affect teeth (changes in teeth and supporting structures - erosion, discoloration).

### Chronic Potential Health Effects
- **Inhalation:** Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and respiratory system/lungs/pulmonary edema, lung damage/changes in lung function with chronic bronchitis and emphysema, teeth (dental discoloration, erosion).
- **Skin:** Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.
- **Eyes:** Conjunctivitis is a common finding with chronic exposure. This product contains Ferrous Ammonium Sulfate, hexahydrate which can cause a brownish discoloration of the eye lens upon prolonged or repeated contact.
- **Ingestion:** Chronic (Repeated or prolonged) ingestion of iron or iron salts results in increased accumulation of iron in the body, particularly the liver, spleen, and lymphatic system. It may cause Liver damage (Hemosiderosis in the liver), and rarely Hemochromatosis in the Kupffer cells of the liver. Chronic iron poisoning may also cause leukocytosis and anemia.

### Section 12. Ecological Information

#### Ecotoxicity
Not available.

#### BOD5 and COD
Not available.

#### Products of Biodegradation
Posibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

#### Toxicity of the Products of Biodegradation
The products of degradation are less toxic than the product itself.

#### Special Remarks on the Products of Biodegradation
Not available.
**Section 13. Disposal Considerations**

**Waste Disposal**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14. Transport Information**

**DOT Classification**

Class 8: Corrosive material

**Identification**

UNNA: 3264 : Corrosive liquid, acidic, inorganic, n.o.s. (Sulfuric acid solution)  PG: II

**Special Provisions for Transport**

RO: 1000 lbs. (Listed as Ferrous Ammonium Sulfate (anhydrous CAS no. 10045-89-3) (Ferrous ammonium sulfate hexahydrate)

**DOT(Pictograms)**

![DOT Pictogram]

**Section 15. Other Regulatory Information and Pictograms**

**Federal and State Regulations**

California Director's List of Hazardous Substances: Sulfuric acid; Ferrous Ammonium Sulfate, hexahydrate  TSCA 8(b) inventory: Water; Sulfuric acid  SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid  SARA 313 toxic chemical notification and release reporting: Sulfuric acid 2.97%  CERCLA: Hazardous substances: Ferrous ammonium sulfate hexahydrate: 1000 lbs. (453.6 kg); Sulfuric acid: 1000 lbs. (453.6 kg);

**California Proposition 65 Warnings**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.  California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

**Other Regulations**


**Other Classifications**

**WHMIS (Canada)**

CLASS E: Corrosive liquid.

**DSCL (EEC)**

R34- Causes burns.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.  S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.)**

![HMIS Icon]

**WHMIS (Canada) (Pictograms)**

![WHMIS Icon]
Protective Equipment

Gloves.

Full suit.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Wear appropriate respirator when ventilation is inadequate.

Face shield.

Section 16. Other Information

MSDS Code    F0251

References    Not available.

Other Special Considerations    Not available.

Verified by Sonia Owen.  

CALL (310) 516-8000

Notice to Reader

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum Quality Products, Inc. assumes no responsibility for the completeness or accuracy of the information contained herein.