SECTION 1: Identification

1.1. Product Identifier

    Trade Name or Designation: Ferrous Iron Standard, 1000 ppm Fe (II)

    Product Number: 4198
    Other Identifying Product Numbers: 4198-16, 4198-4

1.2. Recommended Use and Restrictions on Use

    General Laboratory Reagent

1.3. Details of the Supplier of the Safety Data Sheet

    Company: Ricca Chemical Company

    Address: 448 West Fork Drive
              Arlington, TX 76012 USA
    Telephone: 888-467-4222

1.4. Emergency Telephone Number (24 hr)

    CHEMTREC (USA) 800-424-9300
    CHEMTREC (International) 1+ 703-527-3887

SECTION 2: Hazard(s) Identification

2.1. Classification of the Substance or Mixture (in accordance with OSHA HCS 29 CFR 1910.1200)

For the full text of the Hazard and Precautionary Statements listed below, see Section 16.

<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Category</th>
<th>Hazard Statement</th>
<th>Precautionary Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corrosion / irritation</td>
<td>Category 2</td>
<td>H315</td>
<td>P264, P280, P302+P352, P321, P332+P313, P362</td>
</tr>
<tr>
<td>Eye damage / irritation</td>
<td>Category 1</td>
<td>H318</td>
<td>P280, P305+P351+P338, P310</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Category 1</td>
<td>H350</td>
<td>P201, P202, P280, P308+P313, P405, P501</td>
</tr>
<tr>
<td>Specific target organs/systemic toxicity following single exposure</td>
<td>Category 1</td>
<td>H370</td>
<td>P260, P264, P270, P307+P311, P321, P405, P501</td>
</tr>
<tr>
<td>Specific target organs/systemic toxicity following repeated exposure</td>
<td>Category 1</td>
<td>H372</td>
<td>P260, P264, P270, P314, P501</td>
</tr>
<tr>
<td>Hazardous to the aquatic environment (acute)</td>
<td>Category 3</td>
<td>H402</td>
<td>P273, P501</td>
</tr>
</tbody>
</table>
## 2.2. GHS Label Elements

**Pictograms:**

- ![](image1.png)
- ![](image2.png)

**Signal Word:** Danger

### Hazard Statements:

<table>
<thead>
<tr>
<th>Hazard Number</th>
<th>Hazard Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>H350</td>
<td>May cause cancer.</td>
</tr>
<tr>
<td>H370</td>
<td>Causes damage to organs.</td>
</tr>
<tr>
<td>H372</td>
<td>Causes damage to organs through prolonged or repeated exposure.</td>
</tr>
<tr>
<td>H402</td>
<td>Harmful to aquatic life.</td>
</tr>
</tbody>
</table>

### Precautionary Statements:

<table>
<thead>
<tr>
<th>Precautionary Number</th>
<th>Precautionary Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>P201</td>
<td>Obtain special instructions before use.</td>
</tr>
<tr>
<td>P202</td>
<td>Do not handle until all safety precautions have been read and understood.</td>
</tr>
<tr>
<td>P260</td>
<td>Do not breathe dust, fumes or mist.</td>
</tr>
<tr>
<td>P264</td>
<td>Wash arms, hands and face thoroughly after handling.</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td>P273</td>
<td>Avoid release to the environment.</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves and eye protection.</td>
</tr>
<tr>
<td>P302+P352</td>
<td>IF ON SKIN: Wash with plenty of soap and water.</td>
</tr>
<tr>
<td>P305+P351+P338</td>
<td>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</td>
</tr>
<tr>
<td>P307+P311</td>
<td>IF exposed: Call a POISON CENTER or physician.</td>
</tr>
<tr>
<td>P308+P313</td>
<td>IF exposed or concerned: Get medical attention.</td>
</tr>
<tr>
<td>P310</td>
<td>Immediately call a POISON CENTER or physician.</td>
</tr>
<tr>
<td>P314</td>
<td>Get medical attention if you feel unwell.</td>
</tr>
<tr>
<td>P321</td>
<td>Specific treatment (Wash areas of contact with water. If possible, wipe off areas of contact with dry cloth before flushing with water).</td>
</tr>
<tr>
<td>P332+P313</td>
<td>If skin irritation occurs: Get medical attention.</td>
</tr>
<tr>
<td>P362</td>
<td>Take off contaminated clothing and wash it before reuse.</td>
</tr>
<tr>
<td>P405</td>
<td>Store locked up.</td>
</tr>
<tr>
<td>P501</td>
<td>Dispose of contents in accordance with local, state, federal and international regulations.</td>
</tr>
</tbody>
</table>
2.3. WHMIS Classification
WHMIS classification is not included based on the recommended option (Option 4) found in the Canada Gazette Part II, Vol. 149, No.3, page 458

2.4. Hazards not Otherwise Classified or Covered by GHS
Data not available.

SECTION 3: Composition / Information on Ingredients

3.1. Components of Substance or Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Formula</th>
<th>Molecular Weight</th>
<th>CAS Number</th>
<th>Weight%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>H₂O</td>
<td>18.01 g/mol</td>
<td>7732-18-5</td>
<td>97.53%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>H₂SO₄</td>
<td>98.07 g/mol</td>
<td>7664-93-9</td>
<td>1.77%</td>
</tr>
<tr>
<td>Ferrous Ammonium Sulfate Hexahydrate</td>
<td>Fe(NH₄)₂(SO₄)₂·6H₂O</td>
<td>Data not available.</td>
<td>7783-85-9</td>
<td>0.70%</td>
</tr>
</tbody>
</table>

SECTION 4: First-Aid Measures

4.1. General First Aid Information

Eye Contact: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. May cause irritation, redness, pain, and tearing.

Inhalation: Not expected to require first aid. If necessary, remove to fresh air.

Skin Contact: IF ON SKIN: Wash with plenty of soap and water. May cause irritation, redness, and pain.

Ingestion: Dilute with water or milk. Do not induce vomiting. Call a physician if necessary.

4.2. Most Important Symptoms and Effects, Acute and Delayed
Does not present any significant health hazards. Mildly corrosive. Irritating to the eyes and skin. Wash areas of contact with water. If ingested, dilute with water. Call a physician if necessary. EYE CONTACT: May cause irritation, redness, pain, and tearing. SKIN CONTACT: May cause irritation, redness, and pain.

4.3. Medical Attention or Special Treatment Needed
Immediately call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water. If possible, wipe off areas of contact with dry cloth before flushing with water).

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing Media
Dry chemical, foam, or carbon dioxide. Water is acceptable to use on these solutions due to the weak concentrations of acid involved.
Safety Data Sheet

5.2. Specific Hazards Arising from the Substance or Mixture
Contact with most metals causes formation of flammable and explosive hydrogen gas. However, the risk is reduced due to the weaker concentration of Sulfuric Acid present.

5.3. Special Protective Equipment for Firefighters
Use protective clothing and NIOSH-approved breathing equipment appropriate for the surrounding fire.

SECTION 6: Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures
Wear protective gloves and eye protection.

6.2. Cleanup and Containment Methods and Materials
Cover the spill with Sodium Carbonate or a soda ash-slaked lime mixture (50:50). Mix and add water to form slurry. Decant the liquid to the drain with excess water. Treat the solid residue as normal refuse unless there are regulations prohibiting this practice due to the iron content. Always dispose of in accordance with local regulations.

SECTION 7: Handling and Storage

7.1. Precautions for Safe Handling and Storage Conditions
Store locked up. As with all chemicals, wash hands thoroughly after handling. Avoid contact with eyes and skin. Protect from freezing and physical damage. Do not mix with bases. Contact with water will generate heat.

SECTION 8: Exposure Controls / Personal Protection

8.1. Control Parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Limit Type</th>
<th>Country</th>
<th>Exposure Limit</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Ammonium Sulfate Hexahydrate</td>
<td>TLV-TWA</td>
<td>USA</td>
<td>1 mg/m³ TWA (as Fe)</td>
<td>ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)</td>
</tr>
<tr>
<td>Sulfuric Acid (7664-93-9)</td>
<td>TWA</td>
<td>USA</td>
<td>1 mg/m³ TWA</td>
<td>U.S. - OSHA - Final PELs - Time Weighted Averages (TWAs)</td>
</tr>
<tr>
<td>Sulfuric Acid (7664-93-9)</td>
<td>TLV-TWA</td>
<td>USA</td>
<td>0.2 mg/m³ TWA (thoracic fraction)</td>
<td>ACGIH - Threshold Limit Values - Time Weighted Averages (TLV-TWA)</td>
</tr>
</tbody>
</table>

8.2. Exposure Controls

Engineering Controls: No specific controls are needed. Normal room ventilation is adequate.

Respiratory Protection: Normal room ventilation is adequate.

Skin Protection: Wear protective gloves and eye protection. Chemical resistant gloves.

Eye Protection: Wear protective gloves and eye protection. Safety glasses or goggles.

8.3. Personal Protective Equipment
Wear protective gloves and eye protection. Normal room ventilation is adequate. Chemical resistant gloves. Safety glasses or goggles.
Safety Data Sheet

SECTION 9: Physical and Chemical Properties

9.1. Basic Physical and Chemical Properties

- **Appearance**: Colorless liquid
- **Physical State**: Liquid
- **Odor**: Data not available.
- **Odor Threshold**: Data not available.
- **pH**: Data not available.
- **Melting/Freezing Point**: Approximately 0°C
- **Initial Boiling Point /Range**: Approximately 100°C - Approximately 100°C
- **Flash Point**: Data not available.
- **Evaporation Rate**: Data not available.
- **Flammability**: Data not available.
- **Flammability/Explosive Limits**: Data not available.
- **Vapor Pressure**: Data not available.
- **Vapor Density**: Data not available.
- **Relative Density**: 1.00
- **Solubility**: Miscible
- **Partition Coefficient (n-Octanol/Water)**: Data not available.
- **Auto-Ignition Temperature**: Data not available.
- **Decomposition Temperature**: Data not available.
- **Viscosity**: Data not available.
- **Explosive Properties**: Data not available.
- **Oxidizing Properties**: Data not available.

SECTION 10: Stability and Reactivity

10.1. Reactivity and Chemical Stability

Stable under normal conditions of use and storage.

10.2. Possibility of Hazardous Reactions

Data not available.

10.3. Conditions to Avoid and Incompatible Materials

Organics, chlorates, carbides, fulminates, picrates, alkalines, reducing agents, nitrates, Acetic Acid, oxidizing agents, metals.

10.4. Hazardous Decomposition Products

Will not occur.
Safety Data Sheet

SECTION 11: Toxicological Information

11.1. Information on Toxicological Effects

Acute Toxicity - Oral Exposure:
Not applicable.

Acute Toxicity - Dermal Exposure:
Not applicable.

Acute Toxicity - Inhalation Exposure:
Not applicable.

Acute Toxicity - Other Information:
LD50, Oral, Rat: 2140 mg/kg (Sulfuric Acid), 3250 mg/kg (Ferrous Ammonium Sulfate Hexahydrate), details of toxic effects not reported other than lethal dose value. LC50, Inhalation, Rat: (Sulfuric Acid) 510 mg/m3/2H, No toxic effect noted.

Skin Corrosion and Irritation:
Causes skin irritation. Wash arms, hands and face thoroughly after handling. Wear protective gloves and eye protection. IF ON SKIN: Wash with plenty of soap and water. Specific treatment (Wash areas of contact with water. If possible, wipe off areas of contact with dry cloth before flushing with water). If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse.

Serious Eye Damage and Irritation:
Causes serious eye damage. Wear protective gloves and eye protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Respiratory Sensitization:
Not applicable.

Skin Sensitization:
Not applicable.

Germ Cell Mutagenicity:
Not applicable.

Carcinogenicity:
May cause cancer. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye protection. IF exposed or concerned: Get medical attention. Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.

Reproductive Toxicity:
Not applicable.

Specific Target Organ Toxicity from Single Exposure:
Causes damage to organs. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. IF exposed: Call a POISON CENTER or physician. Specific treatment (Wash areas of contact with water. If possible, wipe off areas of contact with dry cloth before flushing with water). Store locked up. Dispose of contents in accordance with local, state, federal and international regulations.
Safety Data Sheet

Specific Target Organ Toxicity from Repeated Exposure:
Causes damage to organs through prolonged or repeated exposure. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Get medical attention if you feel unwell. Dispose of contents in accordance with local, state, federal and international regulations.

Aspiration Hazard:
Not applicable.

Additional Toxicology Information:
Data not available.

SECTION 12: Ecological Information

12.1. Ecotoxicity
Harmful to aquatic life. Avoid release to the environment. Dispose of contents in accordance with local, state, federal and international regulations.

12.2. Persistence and Degradability
Data not available.

12.3. Bioaccumulative Potential
Data not available.

12.4. Mobility in Soil
Data not available.

12.5. Other Adverse Ecological Effects
Data not available.

SECTION 13: Disposal Considerations

13.1. Waste Treatment Methods
Data not available.

SECTION 14: Transportation Information

14.1. Transportation by Land - Department of Transportation (DOT, United States of America)

Not regulated according to DOT Regulations.
15.1. Occupational Safety and Health Administration (OSHA) Hazards
Not listed.

15.2. Superfund Amendments and Reauthorization Act (SARA) 302 Extremely Hazardous Substances
Sulfuric Acid (CAS # 7664-93-9): 1000 lb EPCRA RQ
Sulfuric Acid (CAS # 7664-93-9): 1000 lb TPQ

15.3. Superfund Amendments and Reauthorization Act (SARA) 311/312 Hazardous Chemicals
Sulfuric Acid (CAS # 7664-93-9): 1000 lb final RQ; 454 kg final RQ
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): 1000 lb final RQ; 454 kg final RQ

15.4. Superfund Amendments and Reauthorization Act (SARA) 313 Toxic Release Inventory (TRI)
Sulfuric Acid (CAS # 7664-93-9): 1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)

15.5. Massachusetts Right-to-Know Substance List
Sulfuric Acid (CAS # 7664-93-9): Extraordinarily hazardous
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): Present

15.6. Pennsylvania Right-to-Know Hazardous Substances
Sulfuric Acid (CAS # 7664-93-9): Environmental hazard
Sulfuric Acid (CAS # 7664-93-9): Present
Water (CAS # 7732-18-5): Present
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): Environmental hazard
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): Present

15.7. New Jersey Worker and Community Right-to-Know Components
Sulfuric Acid (CAS # 7664-93-9): carcinogen; corrosive; reactive - second degree
Sulfuric Acid (CAS # 7664-93-9): sn 1761
Sulfuric Acid (CAS # 7664-93-9): SN 1761 TPQ: 500 lb
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): sn 0928

15.8. California Proposition 65
Sulfuric Acid (CAS # 7664-93-9): carcinogen, initial date 3/14/03

15.9. Canada Domestic Substances List / Non-Domestic Substances List (DSL/NDSL)
Sulfuric Acid (CAS # 7664-93-9): Present
Water (CAS # 7732-18-5): Present
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): Present
Safety Data Sheet

15.10. United States of America Toxic Substances Control Act (TSCA) List
Sulfuric Acid (CAS # 7664-93-9): Present
Water (CAS # 7732-18-5): Present
Ferrous Ammonium Sulfate Hexahydrate (CAS # 7783-85-9): Present

15.11. European Inventory of Existing Commercial Chemical Substances (EINECS),
European List of Notified Chemical Substances (ELINCS), and No Longer Polymers (NLP)
Not listed.

SECTION 16: Other Information

16.1. Full Text of Hazard Statements and Precautionary Statements

Causes skin irritation. Causes serious eye damage. May cause cancer. Causes damage to organs. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fumes or mist. Wash arms, hands and face thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment. Wear protective gloves and eye protection.

IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed: Call a POISON CENTER or physician. Get medical attention if you feel unwell. Specific treatment (Wash areas of contact with water. If possible, wipe off areas of contact with dry cloth before flushing with water). If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash it before reuse.

Store locked up.

Dispose of contents in accordance with local, state, federal and international regulations.

16.2. Miscellaneous Hazard Classes

   **Canadian Carcinogenicity Hazard Class:** Not Applicable.
   **Physical Hazards Not Otherwise Classified (PHNOC):** Not Applicable.
   **Health Hazards Not Otherwise Classified (HHNOC):** Not Applicable.
Safety Data Sheet

16.3. National Fire Protection Association (NFPA) Rating

Health: 1
Flammability: 0
Reactivity: 0
Special Hazard:
16.4. Document Revision

Last Revision Date: 5/1/2015

DISCLAIMER

When handled properly by qualified personnel, the product described herein does not present a significant health or safety hazard. Alteration of its characteristics by concentration, evaporation, addition of other substances, or other means may present hazards not specifically addressed herein and which must be evaluated by the user. The information furnished herein is believed to be accurate and represents the best data currently available to us. No warranty, expressed or implied, is made and RICCA CHEMICAL COMPANY assumes no legal responsibility or liability whatsoever resulting from its use.