Section I - Product Identification
An aqueous solution of ferric chloride and hydrochloric acid.

Section II - Hazards Identification
Overview: May be harmful if swallowed. May be irritating to skin eyes and respiratory tract.

Safety Ratings

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight</td>
<td>None</td>
<td>None</td>
<td>Slight</td>
</tr>
</tbody>
</table>

Recommended safety equipment: safety goggles, lab coat and proper gloves

Storage: General storage

NFPA Ratings

Health = 1  Flammability = 0  Reactivity = 0

Potential Health Effects

The toxicology of this compound have not been completely examined. It is presumed that the toxicity of this item is similar to other weak acids.

Inhalation: May be irritating.

Ingestion: While the toxicity of this compound is low, large doses may cause nausea, vomiting, diarrhea, etc.

Skin contact: Not normally a problem.

Eye contact: May be irritating.

Chronic Exposure: Unknown.

Aggravation of preexisting conditions: Unknown.

Section III - Composition/Information on Components

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS#</th>
<th>OSHA Pel</th>
<th>ACGIH TLV</th>
<th>Other Limits</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric chloride</td>
<td>10025-77-1</td>
<td>1 mg(Fe)/m³</td>
<td>1.0 mg(Fe)/m³</td>
<td></td>
<td>1.2% w/v</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>5 ppm ceiling</td>
<td>2 ppm ceiling</td>
<td></td>
<td>1% w/v</td>
</tr>
</tbody>
</table>

Section IV - First Aid Measures

Inhalation: Remove from source of exposure and get medical attention for any breathing difficulty.

Ingestion: If the victim is conscious, induce vomiting. Never give anything by mouth to an unconscious person.

Skin Contact: Wash affected area with soap and water. Get medical advice if irritation develops.

Eye Contact: Rinse thoroughly with running water. Get medical advice if irritation develops.
Section V - Fire Fighting Measures

Flash point: Not applicable.
Flammable Limits: Not applicable.
Explosion: Not Normally an explosion hazards.
Fire Extinguishing Media: Any means suitable for surrounding fire.
Special information: Pyrolysis will release corrosive oxides.

Section VI - Accidental Release Measures

Absorb with a suitable absorbent (such as paper towels) and store in a suitable container for disposal.

Section VII - Handling and Storage

Store in a closed container, protected from freezing.

Section VIII - Exposure Control/Personal Protection

Airborne Exposure Limits: See section III.
Ventilation System: Usually not required. When required, Refer to the ACGIH document, “Industrial Ventilation, a Manual of Recommended Practices” for details about ventilation.
Personal Respirator: Usually not required.
Skin protection: Protective gloves are not required but recommended as part of good laboratory practice.
Eye Protection: Laboratory safety goggles or similar products are not required but recommended as part of good laboratory practice.

Section IX - Physical and Chemical Properties

Boiling Point: 100 °C
Vapor pressure (mm Hg): 18 @ 20 °C
Vapor Density (air = 1): 0.6
Appearance and Odor: A clear yellow liquid with a pungent odor.

Density: 1.02 g/ml
Evaporation Rate (water = 1): 1
Solubility: Infinitely miscible with water

Section X - Stability and Reactivity

Stability: Freezes at low temperature.
Hazardous Decomposition Products: Nothing unusual.
Hazardous polymerization: Will not occur.
Incompatibilities: Nothing unusual.
Conditions to avoid: Excessive cold/heat and light.

Section XI - Toxicological Information

None relating to normal exposure.

Cancer lists

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Known Carcinogenicity?</th>
<th>NTP?</th>
<th>Anticipated?</th>
<th>IARC Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric chloride</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>none</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>3</td>
</tr>
</tbody>
</table>

Section XII - Ecological Information

Environmental Fate: Biodegradable
Environmental Toxicity: Iron salts are expected to be toxic to aquatic life.
Section XIII - Disposal Considerations
Local governments usually restrict the drain disposal of acids. Typically the pH of the sewage outflow from a building is restricted to Between 4 and 10. Also, acids will corrode metal plumbing. Dispose of contents and container in accordance with all government regulations.

Section XIV - Transportation Information
Not regulated.

Section XV - Regulatory Information

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TSCA</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric chloride</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Hydrochloric acid</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Hydrochloric acid</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chemical Weapons Convention: No</td>
<td>TSCA 12(b): No</td>
<td>CDTA: No</td>
</tr>
<tr>
<td>SARA 311/312: Acute: Yes, Chronic: Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section XVI - Other Information
This information is believed to be correct but is not warranted as such, nor does it purport to be all inclusive.

Revision Date: Jan. 1, 2018