

Safety Data Sheet (SDS)

Section 1: Identification

Product identifier: Ferric Chloride Etchant

Other name(s): None

Item number(s): 191, 192

Identified use: SU24 Scientific research and development.

Details of the supplier of the safety data sheet:

ES Laboratory, LLC

2041 E. Gladstone St. Unit N Glendora, CA 91740 USA

Tel: 626-208-9011

Emergency telephone number:

CHEMTREC® 1-800-424-9300 (US & Canada Only)

Section 2: Hazard(s) Identification

Hazardous classification of the substance or mixture:

| Hazard Class | Category code |
|--------------------------|---------------|
| Skin Corrosion | 1A |
| Serious Eye Damage | 1 |
| Corrosive to metal | 1 |
| Acute aquatic toxicity | 3 |
| Chronic aquatic toxicity | 3 |

Signal word: Danger

Pictogram:



Hazard statement(s):

H290 May be corrosive to metals.
H314 Cause severe skin burn and eye damage.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s):

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s):

P303+P361+P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinses skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage statement(s):

P405 Store locked up.

Disposal statement(s):

P273 Avoid release to environment.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified: No information.

Label elements: See tables above

HMIS Ratings:

Health: 3
Flammability: 0
Reactivity: 0

NFPA Ratings:

Health: 3
Flammability: 0
Reactivity: 0
Special hazard: None

Section 3: Composition/Information on Ingredients

| Component | CAS No. | Concentration (wt%) |
|-----------|---------|---------------------|
|-----------|---------|---------------------|

| | | |
|----------------------------|-----------|--------|
| Hydrochloric acid | 7647-01-0 | 20-25% |
| Ferric chloride, anhydrous | 7705-08-0 | 5-10% |

Any concentration shown as a range is to protect the confidentiality or is due to batch variation. Only hazardous components are shown.

Section 4: First-Aid Measures

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical aid immediately.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid immediately.

Skin contact: Wash the areas of contact with water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately.

Ingestion: Do not induce vomiting. Rinse mouth. Get medical aid immediately.

Most important symptoms and effects, both acute and delayed: No further relevant information.

Recommendation for immediate medical care and special treatment needed, when necessary: No further relevant information.

Section 5: Fire-Fighting Measures

Extinguishing media: Water, dry chemical, foam, or carbon dioxide.

Special hazards arising from the substance or mixture: In the case of fire, the following can be released: acidic liquid and irritating fumes.

Special protective equipment or precautions for firefighters: Wear full protective clothing and a self-contained respirator.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures: Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

Environmental precautions: Do not allow the material to be released to the environment without proper government permits.

Methods and materials for containment and cleaning up: Absorb with a liquid binding material (sand, diatomite, acid binder, universal binders, sawdust). Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation.

Section 7: Handling and Storage

Precautions for safe handling: Wear protective equipment. Ensure good ventilation in the workplace. Open and handle with care.

Condition for safe storage: Keep container tightly sealed. Store in an approved corrosive liquid storage container/area.

Incompatibilities: Store away from strong bases and reducing agents.

Specific storage requirement(s): No information.

Section 8: Exposure Controls/Personal Protection

Exposure Limits

| Component | CAS No. | ACGIH TLV | OSHA PEL |
|----------------------------|-----------|-----------|----------|
| Hydrochloric acid | 7647-01-0 | C 2 ppm | C 5 ppm |
| Ferric chloride, anhydrous | 7705-08-0 | 1 mg/m3 | 1 mg/m3 |

Engineering controls: Use general and/or local exhaust ventilation to control the vapor concentration.

Eye protection: Wear safety glasses or goggles.

Skin protection: Wear protective clothing and chemical-resistant gloves.

Respiratory protection: Use a self-contained respiratory device in an emergency situation.

Section 9: Physical and Chemical Properties

| | |
|---|----------------------|
| Appearance: | Brown liquid |
| UFL/LEL: | Not determined |
| LFL/LEL: | Not determined |
| Odor: | Acidic, pungent |
| Vapor pressure: | Not determined |
| Odor threshold: | Not determined |
| Vapor density: | Not determined |
| pH: | Not determined |
| Relative density: | Not determined |
| Melting Point/Freezing point: | Approximately 0 °C |
| Solubility in water: | Miscible |
| Boiling point/boiling range: | Approximately 100 °C |
| Flashpoint: | Not determined |
| Evaporation Rate: | Not determined |
| Flammability (solid, gas): | Not applicable |
| Partition coefficient (n-octanol/water): | Not determined |
| Auto-ignition temperature: | Not determined |
| Decomposition temperature: | Not determined |
| Viscosity: | Not determined |

Section 10: Stability and Reactivity

Reactivity: No information.

Chemical stability: Stable under recommended conditions.

Stabilizer(s): Not required.

Safety issues that may arise should the product change in appearance: No information.

Thermal decomposition/ conditions to Avoid: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions: see incompatibilities.

Incompatibilities: Strong bases and reducing agents. May react with metals and generate hydrogen gas.

Hazardous decomposition products: Acidic and irritating fumes when heated to decomposition.

Section 11: Toxicological Information

For Hydrochloric Acid:

Acute toxicity:

Oral rat LD50: 900 mg/kg.

Other exposure effect:

Inhalation: Strong corrosive effect.

On the Skin: Strong corrosive effect.

On the Eye: Strong corrosive effect.

Sensitization: No sensitizing effects were known.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from NTP or OSHA. IARC-3 Not classifiable as to human carcinogenicity.

For Ferric Chloride, Anhydrous:

Acute toxicity:

Oral rat LD50: 450mg/kg.

Other exposure effect:

Inhalation: No data available.

On the Skin: Cause skin irritation.

On the Eye: Cause serious eye damage

Sensitization: No sensitizing effects were known.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from NTP, IARC, or OSHA.

Section 12: Ecological Information

Toxicity:

Aquatic toxicity: Ferric chloride is toxic to aquatic organisms.

Persistence and degradability: Ferric chloride may cause long lasting harmful effects to aquatic life.

Behavior in environmental system:

Bioaccumulative potential: No information.

Mobility in soil: No information.

Additional ecological information: No information.

Other adverse effects: No information.

Section 13: Disposal Considerations

Place in a chemical waste container for proper disposal in an approved waste disposal facility. Dispose of the content and container in accordance with local, regional, national, international regulations.

Section 14: Transport Information

D.O.T. shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric Acid, Ferric chloride)

D.O.T. hazard class: 8

UN number: UN3264

Packing group: II

Section 15: Regulatory Information

Not meant to be all inclusive, selected regulation represented

OSHA status: These items meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA status: All components are listed.

Section 16: Other Information

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us.

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