

Material Safety Data Sheet

SECTION 1 – CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Ferric Chloride Solution

Chemical Family: Inorganic Iron Salt

Manufacturer's Name: Siemens Industry, Inc. - Water Technologies Business Unit

Address: 2650 Tallevast Road, Sarasota, FL 34243

Product/Technical Information Phone Number: 1.941.355.2971

Medical/Handling Emergency Phone Number: CHEMTREC 1.800.424.9300
24 hours a day

Transportation Emergency Phone Number: CHEMTREC 1.800.424.9300
24 hours a day

Issue Date: November 2005

Revision Number / Date: Rev 3 April 2011

SECTION 2 – COMPOSITION INFORMATION

<u>Chemical Name</u>	<u>Percent by Weight</u>	<u>CAS#</u>
Ferric Chloride	39-47	7705-08-0
Hydrochloric Acid	<0.5	7647-01-0
Water	Balance	7732-18-5

SECTION 3 – HAZARDS IDENTIFICATION

Appearance & Odor: Reddish-brown liquid with slightly acidic odor.

Emergency Overview: Corrosive! Contact with the liquid, mists, or vapors will burn and may cause severe injury, including death.

Fire & Explosion Hazards: During a fire, irritating/toxic hydrogen chloride and phosgene gas may be generated. Ferric chloride reacts with most metals to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces.

Primary Route(s) of Exposure: Skin and eye contact, ingestion and inhalation.

Inhalation – Acute Effects: Irritation to mucous membranes, difficulty breathing.

Skin Contact – Acute Effects: Irritation and possibly burns.

Eye Contact – Acute Effects: Irritation and possibly burns.

Ingestion – Acute Effects: Irritation of the mouth and stomach. Symptoms of severe poisoning include stomach pain, vomiting, diarrhea, dehydration, shock, pallor, weak pulse, drowsiness, dilated pupils, and coma.

SECTION 4 – FIRST AID MEASURES

Inhalation First Aid: If symptoms are experienced, move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim

Material Safety Data Sheet

ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Obtain medical attention IMMEDIATELY.

Skin Contact First Aid: IMMEDIATELY flush skin with running water for at least 15 minutes while removing contaminated clothing. Get IMMEDIATE medical attention.

Eye Contact First Aid: Immediately flush eyes with running water for at least 20 minutes, occasionally lifting upper and lower lids, until no evidence of chemical remains. Obtain medical attention IMMEDIATELY.

Ingestion First Aid: If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt, or waistband. Seek IMMEDIATE medical attention.

Note to Physician: For inhalation, consider oxygen. Avoid gastric lavage or emesis. Repeated dosage may cause hemosiderosis with possible damage to the liver and pancreas.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point/Method: Not applicable.

Auto Ignition Temperature: Not applicable.

Upper/Lower Explosion Limits: Not applicable.

Extinguishing Media: Water spray, fog, or regular foam appropriate for surrounding material. Cool any exposed containers with water.

Fire Fighting Procedures: As with any fire, fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Move exposed containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

Fire & Explosion Hazards: During a fire, irritating/toxic hydrogen chloride and phosgene gas may be generated. Ferric chloride reacts with most metals to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces.

Hazardous Products of Decomposition and/or Combustion: Hydrogen chloride, hydrogen, phosgene.

NFPA Ratings: HEALTH - 3 FLAMMABILITY- 0 REACTIVITY - 1

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up. Wear adequate personal protective equipment. **DO NOT TOUCH SPILLED MATERIAL.** Stop leak if possible without personal risk.

Material Safety Data Sheet

Small Spills: Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water.

Large Spills: Prevent entry into sewers and confined areas. Dike if possible. Keep unnecessary people away, isolate hazard area, and deny entry. Absorb spill with sand or non-combustible dry material and collect in appropriate container for disposal. Flush area with water.

DO NOT DUMP ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State, Local and Provincial laws, and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.

SECTION 7 – HANDLING AND STORAGE

Handling: Store in corrosion-proof area. 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. Use FRP or PVC pipes.

Storage: Store in tightly closed container, preferably the supplier container. Do not store in metal containers. Fiberglass, plastic, or rubber lined tanks may be used for storage. Protect from damage. Keep dry. Read the label before use. Keep separated from incompatible substances.

SECTION 8 –PERSONAL PROTECTION/ EXPOSURE CONTROL

Respiratory Protection: Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron, or coveralls as appropriate to prevent skin contact.

Eye Protection: Wear splash resistant chemical goggles and a full face shield if splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Ventilation Protection: A ventilation system of local and/or general exhaust is recommended.

Other Protection: Safety showers, with quick opening valves which stay open, and eye wash fountains, or other means of washing the eyes with a gentle flow of cool to tepid water, should be readily available in all areas where this material is handled or stored. Water should be supplied through insulated and heat-traced lines to prevent freeze-ups in cold weather.

Exposure Limits: Exposure limits have not been established for this product. However, for some ingredients:

Soluble iron salts:
OSHA PEL – 1 mg/m³ (as Fe)
ACGIH: TLV - 1 mg/m³ (as Fe)

Hydrochloric acid:
OSHA PEL – 5 ppm (Ceiling)
ACGIH TLV – 2 ppm (Ceiling)

Material Safety Data Sheet

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Reddish-brown liquid with slightly acidic odor.

Vapor Pressure: 40 (mm Hg at 20°C)

Vapor Density (Air=1): Not applicable

Boiling Point: 106°C (223°F)

Melting Point: Not applicable

Specific Gravity: 1.47

Solubility in Water: 100%

Volatile Percentage: Not applicable

pH: less than 1

Flash Point/method: Not applicable

Auto Ignition Temperature: Not applicable

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and pressure

Incompatibilities: Metals, bases (alkaline materials), halocarbons, acids, and combustible materials. Forms shock sensitive explosive mixtures with some metals (e.g. potassium; sodium).

Polymerization: Will not occur.

Decomposition: Thermal decomposition: hydrochloric acid. Contact with metals may evolve flammable hydrogen gas. Container may explode when heated.

Conditions to Avoid: Heat, flames, sparks, and other sources of ignition. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

SECTION 11 – TOXICOLOGICAL INFORMATION

Chronic Effects: Repeated dosage may cause hemosiderosis with possible damage to the liver and pancreas.

Toxicological Data: Ferric Chloride Solid (anhydrous) Oral LD₅₀ (rat) = 450 mg/kg.

Carcinogenicity/Mutagenicity: Ferric chloride is not classified as carcinogenic by ACGIH (American Conference of Governmental Industrial Hygienists) or IARC (International Agency for Research on Cancer), not regulated as carcinogens by OSHA (Occupational Safety and Health Administration), and not listed as carcinogens by NTP (National Toxicology Program).

Reproductive Effects: TDLo Rat 1 day (intratesticular) 12976 µg/kg; TDLo Rat 1 day (intravaginal) 29/mg/kg pre pregnancy continuous.

Target Organs: No data.

Material Safety Data Sheet

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicological Information: TLm Daphnia 15 ppm/96 hr fresh water / Conditions of bioassay not specified.

Persistence and Degradation: No data available

SECTION 13 – DISPOSAL CONSIDERATIONS

Material that cannot be used or chemically reprocessed and empty containers should be disposed of in accordance with all applicable regulations. Product containers should be thoroughly emptied before disposal. Generators of waste material are required to evaluate all waste for compliance with RCRA and any local disposal procedures and regulations.

NOTE: State and local regulations may be more stringent than federal regulations.

SECTION 14 – TRANSPORTATION INFORMATION

DOT Shipping Description: Ferric Chloride Solution

Hazard Class/Division: 8 - corrosive liquid

UN Number: UN2582

Packing Group: II

SECTION 15 – REGULATORY INFORMATION

OSHA: Hazardous as a Corrosive Liquid - 29 CFR 1920.1200

CERCLA: Hazardous substance - reportable quantity (RQ) = 1000 lb. (454 kg)

SARA Regulations: 313 and 40 CFR 372: N

SARA Hazard Categories, SARA Sections 311/312 (40 CFR 370.21):

Acute: Y

Chronic: N

Fire: N

Reactive: N

Sudden Release: N

OSHA Process Safety (29 CFR 1910.119): N

Clean Water Act Requirements: Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

TSCA Inventory Status: Y

California Proposition 65: N

Right-To-Know Lists: Massachusetts, New Jersey, Pennsylvania, California. This product does not contain, nor is it manufactured with ozone-depleting substances.

SECTION 16 – OTHER INFORMATION

Disclaimer: The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. It is the buyer's responsibility to ensure that its activities comply with federal, state, provincial, and local laws.

Revision Indicator: Legal Entity name change 04/01/11

Ferric Chloride Solution - Rev 3 April 2011