



Material Safety Data Sheet

1. IDENTIFICATION

PRODUCT NAME: H2-FC
CHEMICAL FAMILY: Inorganic Salts
FORMULA: FeCl₃
SYNONYM: Iron (III) Chloride
For emergencies call Chemtrec at 1-800-424-9300

2. HAZARD(S) IDENTIFICATION

EMERGENCY OVERVIEW: Eye contact may cause irritation. Harmful if inhaled. Harmful or fatal if swallowed.
POTENTIAL EFFECTS ON HEALTH: Acute and chronic.
CARCINOGENICITY: Does not contain any known carcinogens or potential carcinogens.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS #</u>	<u>COMPONENT</u>	<u>PERCENT</u>	<u>ACGIH TWA</u>
7705-08-0	Ferric Chloride	28-43	1 mg/m ³ (as Fe)
7647-01-0	Hydrochloric Acid	<5 ppm	5 ppm

4. FIRST-AID MEASURES

GENERAL: If you feel unwell, seek medical attention (show the label or this MSDS if possible). Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

SKIN CONTACT: Remove all contaminated clothing, jewelry, and shoes. Wash affected area with soap or mild detergent and running water for at least 15 minutes. If irritation is still present, seek medical attention.

EYE CONTACT: Flush immediately with water for at least 15 minutes, occasionally lifting upper and lower lids, until no evidence of chemical remains. Obtain medical attention immediately.

INHALATION: Move to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim has 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.

INGESTION: If conscious, give two (2) glasses of water. DO NOT INDUCE VOMITING. Do not give anything by mouth to an unconscious person. Obtain immediate medical attention.

5. FIRE-FIGHTING MEASURES

GENERAL FIRE HAZARDS:
UPPER FLAMMABLE LIMIT (UFL): N/A
LOWER FLAMMABLE LIMIT (LFL): N/A
METHOD USED: N/A
FLASH POINT: nonflammable
FLAMMABILITY CLASSIFICATION: N/A

AUTO IGNITION: N/A

COMBUSTION AND THERMAL DECOMPOSITION PRODUCTS: hydrogen chloride gas, phosgene gas if dried and then heated

EXTINGUISHING MEDIA: Use media appropriate for surrounding area.

UNUSUAL FIRE AND EXPLOSION HAZARDS: During a fire, irritating/toxic hydrogen chloride, and/or phosgene gases may be generated if material is dried and then heated to decomposition.

NFPA CODES: HEALTH: 2 FIRE: 0 REACTIVITY: 1 SPECIAL HAZARD:
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

ACTIONS TO TAKE FOR SPILLS OR LEAKS: Restrict access until clean-up operations are complete. Wear appropriate Personal Protective Equipment per Section 8. Ensure trained personnel conduct clean up and wear Personal Protective Equipment per Section 8. Stop leak if possible. Avoid personal risk. Notify Authorities if release exceeds reportable quantity per Section 14.

SMALL SPILLS - Absorb spill with clay or dry material or neutralize with lime, limestone or soda ash and collect in appropriate container for disposal. Neutralization with soda ash can generate carbon dioxide so additional ventilation may be necessary.

LARGE SPILLS - Prevent entry into sewers and confined areas. Dike, if possible. Keep unnecessary people away, isolate area and deny entry. Pump liquid material into appropriate vessels as possible or absorb spill with clay absorbents or non-reactive dry materials and collect in appropriate container for disposal. Neutralize spill residuals carefully with lime, limestone, or soda ash and collect in suitable container for disposal. Flush area with water. This could generate carbon dioxide so additional ventilation may be necessary. Notify the appropriate environmental authorities.

7. HANDLING AND STORAGE

HANDLING: Handle all chemicals with respect. Review the label, this MSDS and any other applicable information before use. Keep separated from incompatible substances. Use appropriate Personal Protective Equipment per Section 8. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.

STORAGE: Bulk storage containers and ancillary fill and feed systems should be constructed out of appropriate materials such as polyethylene, polypropylene, rubber-lined steel and FRP designated as appropriate for use with this product. Storage tanks should be vented to scrubber or exterior atmosphere. Storage facilities should have secondary containment as required by law or regulation. **Storage tanks, piping and offloading points should be labeled with appropriate signage to avoid accidents.**

Some concentrations of this product will freeze or crystallize at low temperatures.

Insulate and heat-trace storage tanks, pumps, pipes and ancillary equipment as necessary. Product should be used within one (1) year.

Material may be stored in tightly closed shipping containers, preferably the supplier containers. 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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PREVENTIVE MEASURES:

ENGINEERING CONTROLS: A ventilation system of local/general exhaust is recommended to keep employee exposure below the Airborne Exposure Limits. Ensure that eyewash station and safety showers are proximal to the workstation location.

PERSONAL PROTECTION EQUIPMENT:

H2-FC

EYE PROTECTION: Wear splash resistant chemical goggles and, where splashing is possible, a full face shield. Maintain eye wash fountain and quick-drench facilities in work area.

SKIN PROTECTION: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to avoid skin contact.

RECOMMENDED PROTECTIVE MATERIAL: Neoprene

RESPIRATORY PROTECTION: Under conditions of misting or contact with head gases, respiratory protection may be needed. Consider respirator warning properties before use.

- With limited contact use an appropriate chemical cartridge respirator with acid gas cartridge(s)
- When cleaning, decontaminating or performing maintenance on tanks, containers, piping systems and accessories, and in any other situations where airborne contaminants and/or dust could be generated, use protective equipment to protect against ingestion or inhalation. HEPA or air supplied respirator, full protective coveralls with head cover, gloves and boots or chemical suits, and boots are suggested.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Reddish Brown
ODOR: Slight pungent odor
FORM: Liquid
pH: <2
VAPOR PRESSURE (MM HG): Negligible
BOILING POINT IN °F: 220-230°F
SPECIFIC GRAVITY: 1.26—1.48
WATER SOLUBILITY: Max 0.78 kg FeCl₃ (anhydrous)/ kg water
VAPOR DENSITY: N/A
% VOLATILE BY VOL.: N/A
FREEZE POINT IN °F: Concentration Dependent

10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition of dried residues - will produce hydrogen chloride gas.

CHEMICAL STABILITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Dangerous gases may accumulate in confined spaces. Incompatibility with other Substances: Reacts with most metals (except Titanium and Tantalum) and bases (alkaline materials). Material has moderate oxidizing capability, avoid contact with strong reducing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

Based on Ferric Chloride Solid (anhydrous)

TOXICOLOGICAL DATA: LD50 (oral, rat) = 450 mg/kg

MUTAGENICITY: Other mutation test systems: Escherichia coli - 500 nmol/tube; Phage inhibition capacity: Escherichia coli 41 ng/well

REPRODUCTIVE EFFECTS: TDLo Rat 1 day(s) intratesticular 12976 I-µg/kg; TDLo Rat 1 day(s) intravaginal 29 mg/kg pre pregnancy continuous

TERATOGENICITY AND FETOTOXICITY: Not available

SYNERGISTIC MATERIALS: Not available

12. ECOLOGICAL INFORMATION

Based on Ferric Chloride Solution

ECOTOXICOLOGICAL INFORMATION: TLm Daphnia 15 ppm/96 hr fresh water / Conditions of bioassay not specified

PERSISTENCE AND DEGRADATION: No data available

13. DISPOSAL CONSIDERATIONS

MSDS

H2-FC

Review Federal, State, Provincial, and Local government regulations prior to disposal. This material exhibits the characteristic of corrosivity to metals and other building materials and any disposal must comply with hazardous waste disposal requirements. Any residues and/or rinse waters from cleaning of tanks, containers, piping systems and accessories may be a hazardous characteristic waste and must be properly disposed of in accordance with federal, state, provincial and local laws.

RCRA: Test waste material for corrosivity, 0002, prior to disposal

14. TRANSPORT INFORMATION

This material is regulated as a DOT Hazardous Material.

US DOT INFORMATION:

UN/NA #	Shipping Name Hazard	Class	Packing Group	ERG	RQ
UN2582	Ferric Chloride Solution,	8,	III,	154	1000lbs

15. REGULATORY INFORMATION

USA CLASSIFICATION:

OSHA Classification: Hazardous by definition of Hazard Communication Standard (29 CFR 1920.1200)

CERCLA: Hazardous substance/reportable quantity (RQ): final RQ = 1000 lb. (454 kg) Based on Anhydrous Ferric Chloride (divide by solution concentration to obtain solution weight)

SARA Regulations sections 313 and 40 CFR 372: No

SARA Hazard Categories. SARA SECTIONS 311/312 (40CFR370.21):

Acute	yes
Chronic	no
Fire	no

Reactive	no
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Sudden Release	no
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OSHA Process Safety (29CFR 1910.119)	yes
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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: This substance or all ingredients of this product are listed on the Chemical Substances Inventory of the TSCA. Does not require reporting.

Other Regulations/Legislation which apply to this product:

California Proposition 65: No

Right-to-Know Lists: -Massachusetts, New Jersey, Pennsylvania, California

This product does not contain, nor is it manufactured with, ozone-depleting substances.

CANADIAN CLASSIFICATION

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all information required by the CPR.

Controlled Products Regulation (WHMIS) Classification: E: Corrosive

CEPA / Canadian Domestic Substances List (DSL): The substance in this product is not on the Canadian Domestic Substances List (CEPA DSL).

EEC CLASSIFICATION

EINECS: 231-729-4

16. OTHER INFORMATION

HMS Rating

Health 2 Fire 0 Reactivity 1

Do not use ingredient information and/ or ingredient percentages in this MSDS as a product specification. For product specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from H2O Technical Services.

DISCLAIMER:

We believe that the information in this MSDS is accurate. The suggested procedures are based on experience as of the date of publication. They are not necessarily either all-inclusive or fully adequate in every circumstance. Also, these suggestions should not be confused with or followed in violation of applicable laws, regulations, rules or insurance requirements.

NO WARRANTY IS MADE, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE.