



Safety Data Sheet

Section 01 - Identification

Product Identifier	Ferric Chloride, Solution Ferric Chloride 38%, Solution Ferric Chloride, Solution NSF® - 60
Other Means of Identification	Iron(III) chloride
Product Use and Restrictions on Use	Wastewater treatment, purifying factory effluents and deodorizing sewage, mordant in dyeing and printing textiles; pigments and inks; photoengraving.
Initial Supplier Identifier	ClearTech Industries Inc. 1500 Quebec Avenue Saskatoon, SK. Canada S7K 1V7
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Section 02 - Hazard Identification

GHS-Classification

Acute Toxicity-Oral	Category 4
Skin Corrosion/Irritation	Category 1B
Serious Eye Damage/Irritation	Category 1
STOT-Single Exposure	Category 3

Physical Hazards

Corrosive to Metals	Category 1
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Danger

Hazards Statements

H290 – May be corrosive to metals.
H302 – Harmful if swallowed.
H314 – Causes severe skin burns and eye damage.
H335 – May cause respiratory irritation.
H318 – Causes serious eye damage.

Pictograms



Precautionary Statements

P234 – Keep only in original container.

P403 + P233 – Store in a well-ventilated place. Keep container tightly closed.

P405 – Store locked up.

P390 – Absorb spillage to prevent material damage.

P264 – Wash hands thoroughly after handling.

P280 – Wear protective gloves, protective clothing, eye protection, and face protection.

P302 + P352 – IF ON SKIN: Wash with plenty of soap and water.

P332 + P313 – If skin irritation occurs: Get medical advice/attention.

P362 – Take off contaminated clothing and wash before reuse.

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 – Immediately call a POISON CENTER or doctor/physician.

P261 – Avoid breathing mist, vapours or spray.

P271 – Use only outdoors or in a well-ventilated area.

P304 + P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312 – Call a POISON CENTER or doctor/physician if you feel unwell.

P501 – Dispose of contents/container in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 03 - Composition / Information on Ingredients

Chemical Name	CAS Number	Weight %	Unique Identifiers
Ferric Chloride	7705-08-0	30-47%	
Hydrochloric Acid	7647-01-0	1-5%	

Section 04 - First Aid Measures

Inhalation	Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.
Skin Contact / Absorption	Remove contaminated clothing. Rinse skin with lukewarm, gently flowing water for 30 minutes. Seek immediate medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Eye Contact	Contact lenses should never be worn when working with this product. Flush immediately with water for at least 30 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.
Ingestion	Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomit. Give large amounts of water. Do not give anything by mouth to an unconscious or convulsing person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Seek immediate medical attention.
Additional Information	Note to physician: for inhalation, consider oxygen. Avoid gastric lavage or emesis.

Section 05 - Fire Fighting Measures

Suitable Extinguishing Media	Product does not burn. Use extinguishing media suitable for surrounding fire and compatible with ferric chloride.
Unsuitable Extinguishing Media	Not Available
Specific Hazards Arising From the Chemical	Hydrogen chloride and phosgene.
Special Protective Equipment and Precautions for Fire-Fighters	Wear NIOSH-approved self-contained breathing apparatus and protective clothing.

Further Information Move containers from fire area if you can do it without risk. Dike fire control water for later disposal; do not scatter the material. Fire involving tanks or car/trailer loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.

Section 06 - Accidental Release Measures

Personal Precautions / Protective Equipment / Emergency Procedures Wear appropriate personal protective equipment. Ventilate area. Only enter area with PPE. Stop or reduce leak if safe to do so.

Environmental Precautions Prevent entry into sewers or streams, dike if needed.

Methods and Materials for Containment and Cleaning Up Stop leak if safe to do so. Isolate hazard area and restrict access. Neutralize with lime slurry, limestone, or soda ash. Absorb with an inert dry material and place an appropriate waste disposal container. Flush area with water to remove trace residue.

Section 07 - Handling and Storage

Precautions for Safe Handling Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure. Avoid breathing vapours, mist, fume or dust. Avoid contact with eyes, skin and clothing.

Conditions for Safe Storage Keep container tightly closed. Do not store in metal containers. Aluminium, copper and stainless steel are readily attacked. Provide venting for rubber lined steel to avoid pressure buildup. Materials of construction to be used can include 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 year.

Incompatibilities Strong acids, strong bases, strong reducing agents, mineral acids, alkalis, metals and alloys.

Section 08 - Exposure Controls and Personal Protection

Exposure Limit(s)

Component	Regulation	Type of Listing	Value
Ferric Chloride	ACGIH	TLV-TWA	1mg/m ³
Hydrochloric Acid	ACGIH	Ceiling	2ppm
	OSHA	Ceiling	5ppm
			7mg/m ³

Engineering Control(s)

Ventilation Requirements Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions must be provided in accordance with all fire codes and regulatory requirements. Supply sufficient replacement air to make up for air removed by exhaust systems.

Other Emergency shower and eyewash must be available and tested in accordance with regulations and be in close proximity.

Protective Equipment

Eyes/Face	Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.
Hand Protection	Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
Skin and Body Protection	Body suite, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse. Impervious boots of chemically resistant material should be worn at all times. No special footwear is required other than what is mandated at place of work.
Respiratory Protection	Use NIOSH-approved acid gas respirator or a self-contained breathing apparatus if airborne concentrations may exceed exposure limits.
Thermal Hazards	Not Available

Section 09 - Physical and Chemical Properties

Appearance

Physical State	Liquid
Colour	Orange, brown
Odour	Slight pungent odour
Odour Threshold	Not Available

Property

pH	< 2.0
Melting Point/Freezing Point	Not Available
Initial Boiling Point and Boiling Range	105-110°C
Flash Point	Not Applicable
Evaporation Rate	Not Applicable
Flammability	Non-Flammable
Upper Flammable Limit	Not Available
Lower Flammable Limit	Not Available
Vapour Pressure (mm Hg, 20°C)	Negligible
Vapour Density (Air=1)	Not Applicable
Relative Density	Not Available
Solubility(ies)	Negligible in water.
Partition Coefficient: n-octanol/water	Not Available

Auto-ignition Temperature	Not Available
Decomposition Temperature	Not Available
Viscosity	Not Available
Explosive Properties	Not sensitive to mechanical impact or static discharge. Ferric chloride reacts with most metals to give flammable and potentially explosive hydrogen gas. Latent fire and explosion hazard when in contact with metals due to hydrogen gas.
Specific Gravity (Water=1)	1.26-1.48
% Volatiles by Volume	Not Available
Formula	Mixture
Molecular Weight	Not Available

Section 10 - Stability and Reactivity

Reactivity	Decomposes to yield hydrochloric gas on exposure to light. Highly reactive with oxidizing, bases, acids and reducing agents. Reactive with metals and combustible materials.
Stability	Stable under normal conditions.
Possibility of Hazardous Reactions	None known.
Conditions to Avoid	Excessive heat.
Incompatible Materials	Strong acids, strong bases, strong reducing agents, mineral acids, alkalis, metals and alloys.
Hazardous Decomposition Products	Hydrogen chloride, phosgene.

Section 11 - Toxicological Information

Acute Toxicity Estimate

Component	Oral LD ₅₀	Dermal LD ₅₀	Inhalation LC ₅₀
Ferric Chloride Solution	400 mg/kg	Not Available	Not Available

This product has been classified in accordance with the Hazardous Products Regulations using ATE formula documented in the GHS standard.

Chronic Toxicity – Carcinogenicity

Component	IARC
Ferric Chloride Solution	None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

Skin Corrosion/Irritation	Corrosive. Capable of producing severe burns, blisters, ulcers and permanent scarring.
Ingestion	Irritation of the mouth and stomach. Symptoms of severe poisoning includes stomach pain, vomiting, diarrhea, dehydration, shock, pallor, weak pulse, drowsiness, dilated pupils, and coma.

Inhalation	Inhalation of spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Repeated exposure may produce respiratory tract irritation leading to frequent attacks of bronchial infection.
Serious Eye Damage/Irritation	Irritating to eyes; possible burns to eyes.
Respiratory or Skin Sensitization	Ferric Chloride has been infrequently associated with skin sensitization in humans.
Germ Cell Mutagenicity	Tests in bacterial and mammalian cell cultures demonstrate no genetic damage.
Reproductive Toxicity	Prolonged or repeated exposure may cause adverse reproductive effects based upon animal studies.
STOT-Single Exposure	May cause respiratory tract irritation.
STOT-Repeated Exposure	Toxic effects in animals from repeated exposure by ingestion include reduced weight gain, elevated serum iron levels, increased red blood cell counts, and iron deposition in many organs. Repeated ingestion to sublethal doses may lead to excessive deposition in the tissues accompanied by pancreatic and liver damage. Individuals with pre-existing diseases of the liver may have increased susceptibility to the toxicity of repeated exposures,
Aspiration Hazard	Not Available
Synergistic Materials	Not Available

Section 12 – Ecological Information

Ecotoxicity

Component	Toxicity to Algae	Toxicity to Fish	Toxicity to Daphnia and Other Aquatic Invertebrates
Ferric Chloride	EC ₅₀ (Blue-green algae, 22hr): 25mg/L	LC ₅₀ (Lepomis macrochirus, 96hr): 20.26mg/L LC ₅₀ (Pimephales promelas, 96hr): 21.84mg/L	LC ₅₀ (Ceriodaphnia dubia, 48hr): 30.06mg/L
Hydrochloric Acid	Not Available	LC ₅₀ (Oncorhynchus mykiss, 96hr): 7.45mg/L	LC ₅₀ (Carcinus maenas (Green or European shore crab, adult), 48hr): 240 mg/L

Biodegradability	Not Applicable
Bioaccumulation	Low potential to bioaccumulate.
Mobility	Not Available
Other Adverse Effects	Not Available

Section 13 – Disposal Considerations

Waste From Residues/Unused Products	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.
Contaminated Packaging	Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 – Transport Information

UN Number	UN2582
UN Proper Shipping Name	FERRIC CHLORIDE SOLUTION
Transport Hazard Class(es)	8
Packaging Group	III
Environmental Hazards	Not listed as a marine pollutant under Canadian TDG Regulations, schedule III.
Special Precautions	Not Available

Transport in Bulk

Not Available

Additional Information

Packing Group

Limited Quantity Index

III

5 L

TDG

Other

Secure containers (full and/or empty) with suitable hold down devices during shipment and ensure all caps, valves, or closures are secured in the closed position.

TDG PRODUCT CLASSIFICATION: This product has been classified on the preparation date specified at section 14 of this MSDS / SDS, for transportation in accordance with the requirements of part 2 of the Transportation of Dangerous Goods Regulations. If applicable, testing and/or published test data regarding the classification of this product are listed in the references at section 16 of this MSDS / SDS.

Section 15 – Regulatory Information

NOTE: THE PRODUCT LISTED ON THIS SDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS SDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

Section 16 – Other Information

Preparation Date

August 25, 2015

Revision Date

October 30, 2019

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / SDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution[®] initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service center.

References:

- 1) CHEMINFO
- 2) eChemPortal
- 3) TOXNET
- 4) Transportation of Dangerous Goods Canada
- 5) HSDB
- 6) ECHA
- 7) PAN

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