

## 1. Material Identification

**Product Name** : Ferric chloride

**Catalog Number** : io-2392

**CAS Number** : 7705-08-0

**Identified uses** : Laboratory chemicals, manufacture of chemical compounds

**Company** : IonZ

>> R&D Use only

## 2. Hazards Identification

### GHS Classification:

Flammable liquid ( category 2 )

Acute toxicity, oral (Category 3)

Acute toxicity, dermal (Category 3)

Acute toxicity, inhalation (Category 3)

Specific target organ toxicity, single exposure (Category 1)

### Note

>> Pictograms displayed are for 99.8% (2831 of 2838) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for 0.2% (7 of 2838) of reports.

### Pictogram(s)



### GHS Hazard Statements

>> H290 (11.3%): May be corrosive to metals [Warning Corrosive to Metals]

>> H302 (96.6%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H314 (75.9%): Causes severe skin burns and eye damage [Danger Skin corrosion/irritation]

>> H315 (23.9%): Causes skin irritation [Warning Skin corrosion/irritation]

>> H318 (24%): Causes serious eye damage [Danger Serious eye damage/eye irritation]

>> H412 (72.8%): Harmful to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]

### Precautionary Statement Codes

>> P234, P260, P264, P264+P265, P270, P273, P280, P301+P317, P301+P330+P331, P302+P352, P302+P361+P354, P304+P340, P305+P354+P338, P316, P317, P321, P330, P332+P317, P362+P364, P363, P390, P405, P406, and P501

### Health Hazards:

>> Inhalation of dust may irritate nose and throat. Ingestion causes irritation of mouth and stomach. Dust irritates eyes. Prolonged contact with skin causes irritation and burns. (USCG, 1999)

### ERG 2024, Guide 157 (Ferric chloride, anhydrous)

>> TOXIC and/or CORROSIVE; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.

>> Reaction with water or moist air may release toxic, corrosive or flammable gases.

>> Reaction with water may generate much heat that will increase the concentration of fumes in the air.

- >> Fire will produce irritating, corrosive and/or toxic gases.
- >> Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.

#### ERG 2024, Guide 154 (Ferric chloride, solution)

- >> TOXIC and/or CORROSIVE; inhalation, ingestion or skin contact with material may cause severe injury or death.
- >> Contact with molten substance may cause severe burns to skin and eyes.
- >> Avoid any skin contact.
- >> Fire may produce irritating, corrosive and/or toxic gases.
- >> Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.
- >> Special Hazards of Combustion Products: Irritating hydrogen chloride fumes may form in fire. (USCG, 1999)

#### ERG 2024, Guide 157 (Ferric chloride, anhydrous)

- >> Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- >> UN1802, UN2032, UN3084, UN3093, UN1796 (above 50%), UN1826 (above 50%), and UN2031 (above 65%) may act as oxidizers. Also consult GUIDE 140.
- >> Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- >> Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- >> Corrosives in contact with metals may evolve flammable hydrogen gas.
- >> Containers may explode when heated or if contaminated with water.

#### ERG 2024, Guide 154 (Ferric chloride, solution)

- >> Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
- >> Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).
- >> Corrosives in contact with metals may evolve flammable hydrogen gas.
- >> Containers may explode when heated.
- >> For electric vehicles or equipment, GUIDE 147 (lithium ion or sodium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.
- >> Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.

### 3. Composition/Information On Ingredients

**Chemical name** : Ferric chloride  
**CAS Number** : 7705-08-0  
**Molecular Formula** :  $\text{Cl}_3\text{Fe}$   
**Molecular Weight** : 162.2000 g/mol

### 4. First Aid Measures

#### First Aid:

- >> EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.
- >> SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.
- >> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere.

Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

- >> INGESTION: DO NOT INDUCE VOMITING. Corrosive chemicals will destroy the membranes of the mouth, throat, and esophagus and, in addition, have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. Transport the victim IMMEDIATELY to a hospital. (NTP, 1992)

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**ERG 2024, Guide 157 (Ferric chloride, anhydrous)**

- >> General First Aid:
- >> Call 911 or emergency medical service.
- >> Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.
- >> Move victim to fresh air if it can be done safely.
- >> Administer oxygen if breathing is difficult.
- >> If victim is not breathing:
  - >> DO NOT perform mouth-to-mouth resuscitation; the victim may have ingested or inhaled the substance.
- >> If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).
- >> If no pulse detected or no respiratory medical device available, provide continuous compressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.
- >> Remove and isolate contaminated clothing and shoes.
- >> For minor skin contact, avoid spreading material on unaffected skin.
- >> In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.
- >> For severe burns, immediate medical attention is required.
- >> Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.
- >> Keep victim calm and warm.
- >> Keep victim under observation.
- >> For further assistance, contact your local Poison Control Center.
- >> Note: Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.
- >> Specific First Aid:
  - >> For corrosives, in case of contact, immediately flush skin or eyes with running water for at least 30 minutes. Additional flushing may be required.
  - >> In case of skin contact with Hydrofluoric acid (UN1790), if calcium gluconate gel is available, rinse 5 minutes, then apply gel. Otherwise, continue rinsing until medical treatment is available.
  - >> In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

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**ERG 2024, Guide 154 (Ferric chloride, solution)**

- >> General First Aid:
- >> Call 911 or emergency medical service.
- >> Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.
- >> Move victim to fresh air if it can be done safely.
- >> Administer oxygen if breathing is difficult.
- >> If victim is not breathing:
  - >> DO NOT perform mouth-to-mouth resuscitation; the victim may have ingested or inhaled the substance.
- >> If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).

- >> If no pulse detected or no respiratory medical device available, provide continuous compressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.
- >> Remove and isolate contaminated clothing and shoes.
- >> For minor skin contact, avoid spreading material on unaffected skin.
- >> In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.
- >> For severe burns, immediate medical attention is required.
- >> Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.
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- >> For further assistance, contact your local Poison Control Center.
- >> Note: Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.
- >> Specific First Aid:
  - >> For corrosives, in case of contact, immediately flush skin or eyes with running water for at least 30 minutes. Additional flushing may be required.
  - >> In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

#### **First Aid Measures**

##### **Inhalation First Aid**

- >> Fresh air, rest. Refer for medical attention.

##### **Skin First Aid**

- >> Remove contaminated clothes. Rinse skin with plenty of water or shower.

##### **Eye First Aid**

- >> First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

##### **Ingestion First Aid**

- >> Rinse mouth. Give one or two glasses of water to drink. Do NOT induce vomiting. Refer for medical attention .

## **5. Fire Fighting Measures**

- >> Excerpt from ERG Guide 157 [Substances – Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:
- >> Note: Some foams will react with the material and release corrosive/toxic gases.
- >> SMALL FIRE: CO2 (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.
- >> LARGE FIRE: Water spray, fog or alcohol-resistant foam. If it can be done safely, move undamaged containers away from the area around the fire. Avoid aiming straight or solid streams directly onto the product. Dike runoff from fire control for later disposal.
- >> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames. (ERG, 2024)
- >> Excerpt from ERG Guide 154 [Substances – Toxic and/or Corrosive (Non-Combustible)]:
- >> SMALL FIRE: Dry chemical, CO2 or water spray.
- >> LARGE FIRE: Dry chemical, CO2, alcohol-resistant foam or water spray. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal.
- >> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames. (ERG, 2024)
- >> In case of fire in the surroundings, use appropriate extinguishing media.

## 6. Accidental Release Measures

### Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

- >> Excerpt from ERG Guide 157 [Substances – Toxic and/or Corrosive (Non-Combustible / Water-Sensitive)]:
- >> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- >> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.
- >> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

### Evacuation: ERG 2024, Guide 157 (Ferric chloride, anhydrous)

- >> Immediate precautionary measure
- >> Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- >> Spill
- >> For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.
- >> Fire
- >> If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

### Evacuation: ERG 2024, Guide 154 (Ferric chloride, solution)

- >> Immediate precautionary measure
- >> Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- >> Spill
- >> For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.
- >> Fire
- >> If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

### Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

- >> Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered plastic containers. If appropriate, moisten first to prevent dusting.

### Accidental Release Measures

#### Public Safety: ERG 2024, Guide 157 (Ferric chloride, anhydrous)

- >> CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- >> Keep unauthorized personnel away.
- >> Stay upwind, uphill and/or upstream.
- >> Ventilate closed spaces before entering, but only if properly trained and equipped.

#### Spill or Leak: ERG 2024, Guide 157 (Ferric chloride, anhydrous)

- >> ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- >> All equipment used when handling the product must be grounded.
- >> Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- >> Stop leak if you can do it without risk.

- >> A vapor-suppressing foam may be used to reduce vapors.
- >> DO NOT GET WATER INSIDE CONTAINERS.
- >> Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- >> Prevent entry into waterways, sewers, basements or confined areas.
- >> Small Spill
- >> Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.
- >> Use clean, non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

#### **Public Safety: ERG 2024, Guide 154 (Ferric chloride, solution)**

- >> CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- >> Keep unauthorized personnel away.
- >> Stay upwind, uphill and/or upstream.
- >> Ventilate closed spaces before entering, but only if properly trained and equipped.

#### **Spill or Leak: ERG 2024, Guide 154 (Ferric chloride, solution)**

- >> ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- >> Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- >> Stop leak if you can do it without risk.
- >> Prevent entry into waterways, sewers, basements or confined areas.
- >> Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- >> DO NOT GET WATER INSIDE CONTAINERS.

## **7. Handling And Storage**

### **Safe Storage:**

- >> Separated from strong bases and incompatible materials. See Chemical Dangers. Dry. Well closed.

### **Storage Conditions:**

- >> Solution of ferric chloride should be stored in polyethylene bottles and should be protected from exposure to light and heat. ...If solutions ...become cloudy, they should be discarded. Solution stored in glass bottles must be refrigerated. Solution stored in glass bottles may reach alkali from glass and the rubber stoppers, forming yellow precipitate of ferric oxide.

## **8. Exposure Control/ Personal Protection**

- >> 1.0 [mg/m<sup>3</sup>], as Fe (soluble iron salts)

### **Emergency Response: ERG 2024, Guide 157 (Ferric chloride, anhydrous)**

- >> Note: Some foams will react with the material and release corrosive/toxic gases.
- >> Small Fire
- >> CO<sub>2</sub> (except for Cyanides), dry chemical, dry sand, alcohol-resistant foam.
- >> Large Fire
- >> Water spray, fog or alcohol-resistant foam.
- >> If it can be done safely, move undamaged containers away from the area around the fire.
- >> Avoid aiming straight or solid streams directly onto the product.
- >> Dike runoff from fire control for later disposal.
- >> Fire Involving Tanks, Rail Tank Cars or Highway Tanks

- >> Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames.

#### **Emergency Response: ERG 2024, Guide 154 (Ferric chloride, solution)**

- >> Small Fire
  - >> Dry chemical, CO2 or water spray.
- >> Large Fire
  - >> Dry chemical, CO2, alcohol-resistant foam or water spray.
  - >> If it can be done safely, move undamaged containers away from the area around the fire.
  - >> Dike runoff from fire control for later disposal.
- >> Fire Involving Tanks, Rail Tank Cars or Highway Tanks
  - >> Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames.

#### **Inhalation Risk:**

- >> Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

#### **Effects of Short Term Exposure:**

- >> The substance is irritating to the eyes, skin and respiratory tract. Corrosive on ingestion.

#### **Inhalation Prevention**

- >> Use local exhaust or breathing protection.

#### **Skin Prevention**

- >> Protective gloves.

#### **Eye Prevention**

- >> Wear safety goggles.

#### **Ingestion Prevention**

- >> Do not eat, drink, or smoke during work.

#### **Exposure Control and Personal Protection**

##### **Protective Clothing: ERG 2024, Guide 157 (Ferric chloride, anhydrous)**

- >> Wear positive pressure self-contained breathing apparatus (SCBA).
- >> Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE.
- >> Structural firefighters' protective clothing provides thermal protection but only limited chemical protection.

##### **Protective Clothing: ERG 2024, Guide 154 (Ferric chloride, solution)**

- >> Wear positive pressure self-contained breathing apparatus (SCBA).
- >> Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE.
- >> Structural firefighters' protective clothing provides thermal protection but only limited chemical protection.

## **9. Physical And Chemical Properties**

#### **Molecular Weight:**



>> 162.20

**Exact Mass:**

>> 160.841494

**Physical Description:**

>> Ferric chloride is an orange to brown-black solid. It is slightly soluble in water. It is noncombustible. When wet it is corrosive to aluminum and most metals. Pick up and remove spilled solid before adding water. It is used to treat sewage, industrial waste, to purify water, as an etching agent for engraving circuit boards, and in the manufacture of other chemicals.

>> BLACK-TO-BROWN HYGROSCOPIC CRYSTALS.

**Color/Form:**

>> Hexagonal red by transmitted light, green by reflected light; sometimes appears brownish-black; dark leaflets or plates.

**Boiling Point:**

>> 599 °F at 760 mmHg (Decomposes) (NTP, 1992)

**Melting Point:**

>> 583 °F (NTP, 1992)

>> 37 °C

**Solubility:**

>> 5 to 10 mg/mL at 68 °F (NTP, 1992)

>> Solubility in water, g/100ml at 20 °C: 92 (reaction)

**Density:**

>> 2.8 at 68 °F (anhydrous solid) (USCG, 1999) – Denser than water; will sink

>> 2.9 g/cm<sup>3</sup>

**Vapor Pressure:**

>> 1 mmHg at 381 °F (NTP, 1992)

>> Vapor pressure at 20 °C: negligible

**Decomposition:**

>> When heated to decomposition it emits highly toxic fumes of /hydrogen chloride/.

**Corrosivity:**

The ability of a chemical to damage or destroy other substances when it comes into contact.

>> Water solutions are acidic and corrosive to most metals.

## 10. Stability And Reactivity

>> Very hygroscopic. Slightly water soluble, where a 0.1M solution has a pH of 2.0.

>> Known Catalytic Activity

## 11. Toxicological Information

**Exposure Routes:**

>> The substance can be absorbed into the body by ingestion.

**Inhalation Exposure**

>> Cough. Sore throat.

**Skin Exposure**

>> Redness. Pain.



### Eye Exposure

- >> Redness. Pain. Blurred vision.

### Ingestion Exposure

- >> Abdominal pain. Vomiting. Diarrhoea. Shock or collapse.

### Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

- >> Occupational hepatotoxin – Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.
- >> Dermatotoxin – Skin burns.

### Interactions:

- >> The effect of di- and trivalent iron on the intestinal absorption of aluminum (Al) was studied in an in situ perfusion system of rat small intestine in combination with systemic and portal blood sampling. The small intestine of female Wistar rats (6 animals/group) was perfused with media containing 10.0, 15.0, 20.0, and 25.0 mmol/L Al as aluminum chloride hexahydrate ( $\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$ ), with or without 5 mmol/L ferrous chloride tetrahydrate ( $\text{FeCl}_2 \cdot 4\text{H}_2\text{O}$ ) or ferric chloride hexahydrate ( $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ ) for 60 min. The disappearance of Al or Fe from the perfusion medium, which is a measure for uptake from the intestinal lumen, was calculated. After perfusion, samples of small intestine were collected. Control tissue samples were taken from a rat perfused with saline for 60 min and from a nonperfused rat. In the rats perfused with Al and/or Fe there was no morphological damage to the intestinal wall compared with the saline and nonperfused controls. Fe(III) did not affect Al disappearance at any point during perfusion ( $p > 0.05$  for all concentrations of Al perfusion media). Al appeared after the 60 min perfusion period in both systemic and portal blood. Both Fe(II) and Fe(III) were absorbed after 60 min perfusion, with the divalent iron being more extensively absorbed. The rise of the Al level in portal blood was slightly higher than that in systemic blood suggesting a possible liver trapping of Al before entering the peripheral circulation. Fe(III) did not affect Al absorption during 60 min perfusion for all concentrations of Al perfusion media ( $0.10 < p < 0.25$ ). /Ferric chloride hexahydrate/

### Antidote and Emergency Treatment:

- >> Ensure adequate airway, ventilation and circulation. Perform a gastric lavage in patients after intentional ingestion, a positive KUB radiography, and when the ingestion of elemental iron content exceeds 20 mg/kg. Do not use sodium bicarbonate or phosphosoda. Observation alone is usually sufficient when children have ingested multivitamins, The amount of elemental iron is less than 20 mg/kg and the KUB radiograph is negative. In symptomatic patients give a bolus of 20 ml/kg of isotonic normal saline. Order serum iron levels, creatinine, electrolytes, blood hemoglobin concentration, blood prothrombin time, baseline liver function tests, and arterial blood gases in seriously poisoned patients. Activated charcoal is ineffective. Oral magnesium may reduce serum iron absorption.

### Human Toxicity Excerpts:

- >> /CASE REPORTS/ Contact sensitization to iron and positive patch test to a 2% ferric chloride solution were reported in a 66 yr old white male tool maker. The patient's 5 yr history of allergic contact dermatitis was not associated with any other exposure to metals. This is the second documented case of allergic contact sensitization to iron.

### Non-Human Toxicity Excerpts:

- >> /LABORATORY ANIMALS: Acute Exposure/ ...Injection of 0.05 – 0.1 cc of 10% solution of ferric chloride into vitreous humor of rabbits caused in 1–4 wk a loss of pupillary response to light, marked drop in resting potential of eye measured at cornea and subnormal intraocular pressure.

### Non-Human Toxicity Values:

- >> LD50 Mouse oral 450 mg/kg

### Populations at Special Risk:

- >> ...There is concern that the individual with metabolic defects that impair the ability to regulate iron absorption will be at risk from excessive exposure to iron, primarily as a result of acceleration of accumulation of iron in the body and an earlier onset of clinical symptoms of the disease. /Iron salts/

## 12. Ecological Information

### ICSC Environmental Data:

- >> The substance is harmful to aquatic organisms.

## 13. Disposal Considerations

### Spillage Disposal

- >> Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered plastic containers. If appropriate, moisten first to prevent dusting.

### Disposal Methods

- >> SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational exposure or environmental contamination. Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in soil or water; effects on animal, aquatic, and plant life; and conformance with environmental and public health regulations.
- >> Neutralization & landfill: Bury neutralized (with lime or soda ash) waste material in an approved landfill or dispose of through a licensed waste disposal firm.
- >> The following wastewater treatment technologies have been investigated for iron (Fe+2): Concentration process: Biological treatment. /Iron (Fe+2)/

## 14. Transport Information

### DOT

Ferric chloride

8

UN Pack Group: III

Reportable Quantity of 1000 lb or 454 kg

### IATA

Ferric chloride

8,

UN Pack Group: III

## 15. Regulatory Information

### Federal Drinking Water Guidelines:

Federal drinking water guidelines (e.g. maximum containment level (MCL)) for this chemical. In general, these guidelines are recommendations and not legally enforceable.

- >> EPA 300 ug/L /Iron/

### Clean Water Act Requirements:

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under CWA, the U.S. Environmental Protection Agency (EPA) developed the Toxic Pollutant List (40 CFR Part 401.15) and the Priority Pollutant List (40 CFR Part 423, Appendix A). These lists are to be used by EPA and States to develop the Effluent Guidelines regulations and ensure water quality criteria and standards.

- >> Ferric chloride is 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. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

### Regulatory Information

#### The Australian Inventory of Industrial Chemicals

- >> Chemical: Iron chloride (FeCl3)

#### REACH Registered Substance

>> Status: Active Update: 12-05-2023 <https://echa.europa.eu/registration-dossier/-/registered-dossier/16109>

#### New Zealand EPA Inventory of Chemical Status

>> Ferric chloride: Does not have an individual approval but may be used under an appropriate group standard

#### New Zealand EPA Inventory of Chemical Status

>> Iron (III) chloride: Does not have an individual approval but may be used under an appropriate group standard

## 16. Other Information

### Toxic Combustion Products:

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> Irritating hydrogen chloride fumes may form in fire.

### Other Safety Information

### Chemical Assessment

>> IMAP assessments – Iron chloride (FeCl<sub>3</sub>) and its hydrates: Human health tier II assessment

>> IMAP assessments – Iron chloride (FeCl<sub>3</sub>): Environment tier I assessment

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."