

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: Ferric chloride hexahydrate; Iron chloride hexahydrate, Iron (III) chloride

Chemical Family: Inorganic salt

Chemical Formula: FeCl₃·6H₂O

Product Use: Laboratory reagent

Manufacturers Name and Address: Caledon Laboratories Ltd. 40 Armstrong Avenue Georgetown, Ontario L7G 4R9

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HAZARDOUS INGREDIENTS OF MATERIALS

Ingredients, %, TLV Units, CAS No.: Ferric chloride, hexahydrate, ~ 97, 1 mg/m³ (as Fe) (ACGIH), 10025-77-1

PHYSICAL DATA

Physical State: Solid

Odour and Appearance: Yellow brown deliquescent crystals, slight odour of hydrochloric acid

Odour Threshold (ppm): Not available.

Vapour Pressure (mm Hg): 1.1 mm Hg at 194 °C

Vapour Density (Air = 1): 5.59

Evaporation Rate: Not available.

Boiling Point (degrees C): 280 °C (loses water); 300 °C (decomposes)

Melting Point (degrees C): 306 °C

pH: Not available.

Specific Gravity: 1.653

Coefficient of Water/Oil distribution: Not available.

SHIPPING DESCRIPTION

UN: Not regulated.

T.D.G. Class: Not regulated.

Pkg. Group: Not regulated.

REACTIVITY DATA

Chemical Stability: May slowly oxidize on exposure to air. May decompose when exposed to humid conditions.

Incompatibility with other substances: Strong oxidizing agents, strong mineral acids, metals. Forms explosive mixtures with sodium, potassium. Will react with water to produce toxic and corrosive fumes. Allyl chloride may polymerize violently under conditions involving an acid catalyst such as ferric chloride. Solutions are corrosive to most metals.

Reactivity: Avoid excessive heat, generation of dust, ignition sources, all incompatible materials, exposure to air and humidity.

FIRE AND EXPLOSION DATA

Extinguishing Media: Dry chemical, carbon dioxide, or standard foam. Use water spray to cool fire-exposed containers. Do not allow water to contact the chemical; it reacts to form toxic and corrosive fumes. Do not allow runoff to enter sewers or waterways. Fight fire from a safe distance and from upwind. Firefighters should wear protective equipment, full face-piece positive-pressure self-contained breathing apparatus, and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes.

Flash Point (Method Used): Not applicable.

Autoignition Temperature: Not applicable.

Upper Flammable Limit (% by volume): Not applicable.

Lower Flammable Limit (% by volume): Not applicable.

Hazardous Combustion Products: Toxic fumes of chlorides upon decomposition, especially HCl, phosgene

Sensitivity to Impact: None identified.

TOXICOLOGICAL PROPERTIES AND HEALTH DATA**Toxicological Data:**

LD50: (oral, rat) 450 mg/kg (FeCl₃)

LC50: Not available.

Effects of Acute Exposure to Product:

Inhaled: Severe irritant, corrosive. Can burn mucous membranes, causing burning sensation, coughing, wheezing, laryngitis, shortness of breath, nausea and vomiting. Inhalation may be fatal as a result of spasm, inflammation and edema of larynx and bronchi. Severity of effects will depend on the concentration of dust or mist, and the duration of exposure.

In contact with skin: Severe irritant. May cause redness, pain, thermal and acid burns if contact is prolonged. Severity of effects depends on concentration of dust or mist, and duration of exposure.

In contact with eyes: Severe irritant. May cause severe irritation or corneal burns with eye damage. Severity of effects depends on concentration of dust or mist, and duration of exposure.

Ingested: Corrosive. Ingestion can cause burns to throat, oesophagus and stomach, gastric irritation, nausea and vomiting. Ingestion of small amounts is not toxic, but large amounts (30 mg/kg) can cause iron poisoning with black stool, pink urine discoloration, liver damage, coma, and even death. Symptoms may be delayed for two to three days.

Effects of Chronic Exposure to Product: Prolonged inhalation can cause lung damage. Prolonged or repeated exposure can cause liver damage. Prolonged eye exposure can cause discoloration. To the best of our knowledge, the physical, chemical and toxicological properties of this substance have not yet been thoroughly investigated (RTECS No. NO5425000).

Carcinogenicity: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Mutagenicity: No information available.

Synergistic Products: None known.

PREVENTIVE MEASURES

Engineering Controls: Local exhaust required

Respiratory Protection: Dust/mist mask. Up to 10x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH/MSHA approved half-face dust/mist filter respirator. Up to 50x TLV, or the maximum use specified by the respirator supplier, whichever is lowest - NIOSH/MSHA approved full face-piece dust/mist filter respirator. Higher or unknown concentrations, or for fire or spill conditions, self-contained breathing apparatus, or full face-piece, positive-pressure supplied-air respirator.

Skin Protection: Wear protective rubber or plastic gloves, clean body-covering clothing. For solutions, Responder gloves are resistant to breakthrough. Other protective clothing, sleeves, apron, coveralls, boots. Sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye wash fountain readily available in work area.

Leak and Spill Procedure: Ventilate area. Evacuate area. Cleanup personnel must be thoroughly trained in the handling of hazardous materials, and must wear protective equipment and clothing sufficient to prevent any inhalation of fumes and contact with skin, eyes, or clothing. Stop leak if you can do it without risk. Do not touch spilled material. Do not use water until cleanup is complete (contact with water releases toxic and corrosive fumes). Mix with inert adsorbent and collect in suitable containers for reclamation or disposal. Prevent from entering sewers or waterways. Contaminated absorbent may pose the same hazards as the chemical; treat with caution. After cleanup is complete, flush area of spill thoroughly with copious amounts of running water.

Waste Disposal: Follow all federal, provincial and local regulations.

Handling Procedures and Equipment: TOXIC, CORROSIVE.

Workers must be thoroughly trained in the hazards of this substance and its safe use, and must wear appropriate protective equipment and clothing. Use routine safe handling procedures. Use good housekeeping practices to prevent accumulations of dust. Use the smallest amount possible for the purpose in a designated area with adequate ventilation. Avoid generation of dust. AVOID ALL CONTACT AND INHALATION. Wash thoroughly after handling. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution.

Storage Requirements: Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Keep containers tightly closed when not in use and when empty. Protect from exposure to air and moisture. Protect from damage, and inspect frequently for signs of leaking.

FIRST AID MEASURES

Specific Measures:

Eyes: Flush thoroughly with gently running water for at least fifteen (15) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into the unaffected eye. Wear impervious gloves to avoid contact with this chemical.

Skin: Remove contaminated clothing (including rings, watches, belts and shoes). Wear impervious gloves to avoid contact with this chemical. Brush off excess chemical and wash skin with plenty of running water for at least fifteen (15) minutes. If exposure was extensive, place under deluge shower until no trace of chemical remains. Take care to completely clean folds, creases, groin, under fingernails. Get medical attention. Decontaminate clothing and leather goods (shoes, belts) before reuse, or discard.

Inhalation: Move victim to fresh air. Give oxygen and get medical attention for breathing difficulty. If breathing has stopped apply artificial respiration. Get medical attention immediately. Symptoms of pulmonary edema may be delayed for up to 72 hours; if exposure was severe, continue to monitor for at least that long.

Ingestion: If victim is alert and not convulsing, rinse mouth thoroughly with water, and have him drink 2 to 4 glasses of water or milk to dilute. Do not induce vomiting. If vomiting occurs spontaneously, rinse mouth and give more water or milk to drink. Get medical attention immediately.

REFERENCES USED

Budavari: The Merck Index, 12th ed., 1997

CCINFO disc: MSDSs, May 2007

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979

Sax, Lewis: Hawleys Condensed Chemical Dictionary, 11th ed., 1987

Suppliers Material Safety Data Sheets:

ADDITIONAL INFORMATION

Date Issued: 18-Dec-89

Revision: May 2013

Proposed WHMIS Designation: D2B; E

Prepared by: Caledon Laboratories Ltd. (905) 877-0101