

SAFETY DATA SHEET

Creation Date 08-February-2010

Revision Date 13-October-2023

Revision Number 8

1. Identification

Product Name Ferric chloride hexahydrate

Cat No. : I88-100; I88-500

CAS-No 10025-77-1
Synonyms Ferric chloride hexahydrate

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Importer/Distributor

Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Manufacturer

Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

| | |
|--|------------|
| Acute oral toxicity | Category 4 |
| Skin Corrosion/Irritation | Category 2 |
| Serious Eye Damage/Eye Irritation | Category 1 |

Label Elements

Signal Word

Danger

Hazard Statements

Harmful if swallowed
Causes skin irritation
Causes serious eye damage



Precautionary Statements

Prevention

Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Wear protective gloves/protective clothing/eye protection/face protection

Response

IF ON SKIN: Wash with plenty of soap and water
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 Immediately call a POISON CENTER/doctor
 Rinse mouth
 Take off contaminated clothing and wash it before reuse

Disposal

Dispose of contents/container to an approved waste disposal plant

3. Composition/Information on Ingredients

| Component | CAS-No | Weight % |
|-----------------------------|------------|----------|
| Ferric chloride hexahydrate | 10025-77-1 | <=100 |
| Iron trichloride | 7705-08-0 | - |

4. First-aid measures

| | |
|--|--|
| General Advice | If symptoms persist, call a physician. |
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention. |
| Skin Contact | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician. |
| Inhalation | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur. |
| Ingestion | Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur. |
| Most important symptoms/effects | None reasonably foreseeable. Causes severe eye damage. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing |
| Notes to Physician | Treat symptomatically |

5. Fire-fighting measures

| | |
|---------------------------------------|--------------------------|
| Unsuitable Extinguishing Media | No information available |
| Flash Point | Not applicable |
| Method - | No information available |

Autoignition Temperature No information available
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. May ignite combustibles (wood paper, oil, clothing, etc.). In the event of fire and/or explosion do not breathe fumes. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products

Chlorine. Metal oxides. Hydrogen chloride gas.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

| | | | |
|---------------|---------------------|--------------------|-------------------------|
| Health | Flammability | Instability | Physical hazards |
| 3 | 0 | 1 | N/A |

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Avoid dust formation. Ensure adequate ventilation.

Environmental Precautions Should not be released into the environment. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation. Avoid ingestion and inhalation.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Keep away from water or moist air. Store under an inert atmosphere. Protect from moisture. Incompatible Materials. Strong oxidizing agents. Metals. Strong bases.

8. Exposure controls / personal protection

Exposure Guidelines

| Component | Alberta | British Columbia | Ontario TWAEV | Quebec | ACGIH TLV | OSHA PEL | NIOSH |
|-----------------------------|--------------------------|---|--------------------------|----------------------------|--------------------------|------------------------------------|--------------------------|
| Ferric chloride hexahydrate | TWA: 1 mg/m ³ | TWA: 1 mg/m ³ STEL: 2 mg/m ³ | TWA: 1 mg/m ³ | TWA: 1.0 mg/m ³ | TWA: 1 mg/m ³ | (Vacated) TWA: 1 mg/m ³ | TWA: 1 mg/m ³ |
| Iron trichloride | TWA: 1 mg/m ³ | TWA: 1 mg/m ³ STEL: 2 mg/m ³ | TWA: 1 mg/m ³ | TWA: 1.0 mg/m ³ | TWA: 1 mg/m ³ | (Vacated) TWA: 1 mg/m ³ | TWA: 1 mg/m ³ |

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location.
 Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact,

and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection Goggles
Hand Protection Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time | Glove thickness | Glove comments |
|----------------|-----------------------------------|-----------------|------------------------|
| Natural rubber | See manufacturers recommendations | - | Splash protection only |
| Nitrile rubber | | | |
| Neoprene | | | |
| PVC | | | |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Recommended Filter type: Particulates filter conforming to EN 143

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

No information available.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

9. Physical and chemical properties

| | |
|---|-----------------------------|
| Physical State | Solid |
| Appearance | Dark yellow |
| Odor | No information available |
| Odor Threshold | No information available |
| pH | 2 0.1M in water |
| Melting Point/Range | 37 °C / 98.6 °F |
| Boiling Point/Range | 280 - 285 °C / 536 - 545 °F |
| Flash Point | Not applicable |
| Evaporation Rate | Not applicable |
| Flammability (solid,gas) | No information available |
| Flammability or explosive limits | |
| Upper | No data available |
| Lower | No data available |
| Vapor Pressure | negligible |
| Vapor Density | Not applicable |
| Specific Gravity | 1.82 (H2O=1) |
| Solubility | Soluble in water |
| Partition coefficient; n-octanol/water | No data available |
| Autoignition Temperature | No information available |
| Decomposition Temperature | No information available |
| Viscosity | Not applicable |
| Molecular Formula | Cl3 Fe . 6 H2 O |

Molecular Weight 270.29

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Hygroscopic.

Conditions to Avoid Avoid dust formation. Incompatible products. Excess heat. Exposure to air or moisture over prolonged periods. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Metals, Strong bases

Hazardous Decomposition Products Chlorine, Metal oxides, Hydrogen chloride gas

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

**Product Information
Component Information**

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-----------------------------|--|-------------|-----------------|
| Ferric chloride hexahydrate | LD50 = 900 mg/kg (Rat) | Not listed | Not listed |
| Iron trichloride | 450 mg/kg (Rat) 316 mg/kg (Rat) | Not listed | Not listed |

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes eye burns, Irritating to skin, May cause irritation of respiratory tract

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component | CAS-No | IARC | NTP | ACGIH | OSHA | Mexico |
|-----------------------------|------------|------------|------------|------------|------------|------------|
| Ferric chloride hexahydrate | 10025-77-1 | Not listed | Not listed | Not listed | Not listed | Not listed |
| Iron trichloride | 7705-08-0 | Not listed | Not listed | Not listed | Not listed | Not listed |

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects, both acute and delayed Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

| Component | Freshwater Algae | Freshwater Fish | Microtox | Water Flea |
|-----------------------------|------------------|--|------------|--|
| Ferric chloride hexahydrate | Not listed | 22 mg/l 96H (anh subst) | Not listed | 9.6 mg/l 48H (anh subst) |
| Iron trichloride | Not listed | LC50: 20.95 - 22.56 mg/L, 96h semi-static (Pimephales promelas) LC50: = 20.26 mg/L, 96h semi-static (Lepomis macrochirus) | Not listed | EC50: = 9.6 mg/L, 48h Static (Daphnia magna) EC50: = 27.9 mg/L, 48h (Daphnia magna) |

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

| Component | log Pow |
|-----------------------------|---------|
| Ferric chloride hexahydrate | 4 |
| Iron trichloride | -4 |

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN3260
Proper Shipping Name consumer commodity CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Technical Name Iron (III) chloride hexahydrate
Hazard Class 8
Packing Group III

TDG

UN-No UN3260
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Hazard Class 8
Packing Group III

IATA

UN-No UN3260
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Hazard Class 8
Packing Group III

IMDG/IMO

UN-No UN3260
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Hazard Class 8
Packing Group III

15. Regulatory information

International Inventories

| Component | CAS-No | DSL | NDSL | TSCA | TSCA Inventory | EINECS | ELINCS | NLP |
|-----------|--------|-----|------|------|----------------|--------|--------|-----|
|-----------|--------|-----|------|------|----------------|--------|--------|-----|

| | | | | | | | | |
|-----------------------------|------------|---|---|---|--------------------------------|-----------|---|---|
| | | | | | notification - Active-Inactive | | | |
| Ferric chloride hexahydrate | 10025-77-1 | - | - | - | - | - | - | - |
| Iron trichloride | 7705-08-0 | X | - | X | ACTIVE | 231-729-4 | - | - |

| Component | CAS-No | IECSC | KECL | ENCS | ISHL | TCSI | AICS | NZIoC | PICCS |
|-----------------------------|------------|-------|----------|------|------|------|------|-------|-------|
| Ferric chloride hexahydrate | 10025-77-1 | X | - | X | - | X | X | X | X |
| Iron trichloride | 7705-08-0 | X | KE-21134 | X | X | X | X | X | X |

Legend:

X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Other International Regulations

Authorisation/Restrictions according to EU REACH Not applicable

Safety, health and environmental regulations/legislation specific for the substance or mixture

| Component | CAS-No | OECD HPV | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|-----------------------------|------------|----------|------------------------------|---------------------------|--|
| Ferric chloride hexahydrate | 10025-77-1 | Listed | Not applicable | Not applicable | Not applicable |
| Iron trichloride | 7705-08-0 | Listed | Not applicable | Not applicable | Not applicable |

| Component | CAS-No | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|-----------------------------|------------|---|--|----------------------------|------------------------------------|
| Ferric chloride hexahydrate | 10025-77-1 | Not applicable | Not applicable | Not applicable | Not applicable |
| Iron trichloride | 7705-08-0 | Not applicable | Not applicable | Not applicable | Not applicable |

16. Other information

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Revision Summary This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS