

SAFETY DATA SHEET

Preparation Date: 04/13/2015

Revision Date: 11/19/2018

Revision Number: G2

1. IDENTIFICATION

Product identifier

Product code: F1010
Product Name: FERRIC CHLORIDE, HEXAHYDRATE, LUMP, REAGENT, ACS

Other means of identification

Synonyms: Ferric chloride, hexahydrate
 Ferric trichloride hexahydrate
 Iron (III), chloride, hexahydrate
 Iron trichloride hexahydrate
 Iron chloride (FeCl₃), hexahydrate
 Chlorure ferrique hexahydraté (French)
 Cloruro férrico hexahidrato (Spanish)

CAS #: 10025-77-1
RTECS # NO5425000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000

Order Online At: <https://www.spectrumchemical.com>
Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Corrosive to metals	Category 1

Label elements

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Danger

Hazard statements

Harmful if swallowed
Causes severe skin burns and eye damage
May be corrosive to metals



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container

Precautionary Statements - Response

Immediately call a POISON CENTER or doctor/physician
Absorb spillage to prevent material damage
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 or doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage

Store locked up
Store in corrosive resistant/ .? container with a resistant inner liner

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Ferric Chloride hexahydrate	10025-77-1	100

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4. FIRST AID MEASURES

First aid measures

- General Advice:** National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Skin Contact:** Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.
- Eye Contact:** Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.
- Inhalation:** Move to fresh air. If not breathing, give artificial respiration. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim 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. Immediate medical attention is required.
- Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention. Call a physician immediately.

Most important symptoms and effects, both acute and delayed

- Symptoms**
- Severe skin and eye irritation or burns
 - May cause corneal injury
 - Causes digestive (gastrointestinal) tract irritation
 - May cause gastrointestinal (digestive) tract burns
 - May affect the liver

Indication of any immediate medical attention and special treatment needed

- Notes to Physician:** Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

- Suitable Extinguishing Media:** The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

- Unsuitable Extinguishing Media:** No information available.

Specific hazards arising from the chemical

- Hazardous Combustion Products:** If it is involved in a fire the following can be released: Iron oxides. Hydrogen Chloride Gas.

- Specific hazards:** No information available.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid breathing dust.

Environmental precautions Do not let product enter drains. Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Use appropriate tools to put the spilled solid in a suitable waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials. Do not allow contact with water.

Safe Handling Advice

Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe dust. Handle in accordance with good industrial hygiene and safety practice. Keep container tightly sealed. Use only in well-ventilated areas. Wear personal protective equipment.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Deliquescent. Keep container tightly closed in a dry and well-ventilated place. Protect from moisture. Store at room temperature in the original container. Store in a segregated and approved area.

Incompatible Materials:

Strong bases
Oxidizing agents
Allyl chloride
Ethylene oxide
Metals
Potassium
Sodium

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WEEL
Ferric Chloride hexahydrate	10025-77-1	None	1 mg/m ³ TWA (as Fe)	None	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Ferric Chloride hexahydrate	10025-77-1	1 mg/m ³ TWA (as Fe)	1 mg/m ³ TWA (as Fe) 2 mg/m ³ STEL (as Fe)	1 mg/m ³ TWA (as Fe)	1 mg/m ³ TWAEV (as Fe)

Australia and Mexico

Components	CAS-No.	Australia	Mexico
Ferric Chloride hexahydrate	10025-77-1	1 mg/m ³ TWA (as Fe)	1 mg/m ³ TWA (as Fe) 2 mg/m ³ STEL (as Fe)

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Long sleeved clothing
Chemical resistant apron
Gloves

Respiratory protection: Effective dust mask. or. Wear respirator with dust filter. Use a dust respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentration of dust (dust clouds) , inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:
Liquid

Appearance:
Lumps.

Color:
Yellow. Yellow Brown.

Odor:

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Odorless.	Taste No information available.	Formula: FeCl ₃ -6H ₂ O
Molecular/Formula weight (g/mole): 270.30 g/mol	Flammability: No information available	Flashpoint (°C/°F): No information available.
Flash Point Tested according to: Not available	Autoignition Temperature (°C/°F): No information available	Lower Explosion Limit (%): No information available
Upper Explosion Limit (%): No information available	Melting point/range(°C/°F): 37°C/ 99°F	Decomposition temperature(°C/°F): No information available
Boiling point/range(°C/°F): 280-285°C/ 536-545°F	Bulk density: No information available	Density (g/cm³): No information available
Specific gravity: 1.82	pH: 1.8	Vapor pressure @ 20°C (kPa): No information available
Evaporation rate: No information available	Vapor density: No information available	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): No information available	Viscosity: No information available
Miscibility: No information available	Solubility: Soluble in water: 920 g/l @ 20°C Easily soluble in cold water Easily soluble in hot water Easily soluble in diethyl ether Easily soluble in acetone Soluble in Alcohol	

10. STABILITY AND REACTIVITY

Reactivity

Reactive with oxidizing agents
 Reacts with alkali metals
 Reactive with allyl chloride, ethylene oxide, potassium, sodium
 It may react with water to produce toxic and corrosive fumes of hydrogen chloride. This information comes from looking at the hazards for Ferric Chloride, anhydrous

Chemical stability

Stability: Deliquescent. Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Exposure to moisture. Exposure to moist air. Incompatible materials.

Incompatible Materials: Strong bases
 Oxidizing agents
 Allyl chloride
 Ethylene oxide
 Metals
 Potassium
 Sodium

Hazardous decomposition products: Hydrogen chloride gas. Iron oxides.

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Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Ingestion. Inhalation.

Acute Toxicity

Component Information

Ferric Chloride hexahydrate	
CAS-No.	10025-77-1

- LD50/oral/rat** = 900 mg/kg Oral LD50 Rat
- LD50/oral/mouse** = No information available
- LD50/dermal/rabbit** = No information available
- LD50/dermal/rat** = No information available
- LC50/inhalation/rat** = No information available
- LC50/inhalation/mouse** = No information available
- Other LD50 or LC50 information** = > 2000 mg/kg dermal LD50 Rabbit (for Ferric chloride anhydrous CAS number 7705-08-0)

Product Information

- LD50/oral/rat** =
VALUE- Acute Tox Oral = 900 mg/kg
- LD50/oral/mouse** =
Value - Acute Tox Oral = No information available
- LD50/dermal/rabbit**
VALUE-Acute Tox Dermal = No information available
- LD50/dermal/rat**
VALUE -Acute Tox Dermal = > 2000 mg/kg
- LC50/inhalation/rat**
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available
- LC50/Inhalation/mouse**
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes severe irritation and burns. Ferric chloride has been infrequently

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associated with skin sensitization in humans.

Eye Contact: Causes severe eye irritation and possible burns. Effects can vary from mild irritation to chemical conjunctivitis and corneal damage depending on the intensity and duration of exposure.

Inhalation Causes irritation of the respiratory tract with possible burns.

Ingestion Harmful if swallowed. Causes irritation of the gastrointestinal (digestive) tract with nausea, vomiting, diarrhea, hemorrhage and possible burns. May cause severe and permanent damage to the digestive tract. Delayed effects may include cardiovascular disturbances, liver damage, kidney damage, metabolic acidosis, cerebral coma and possible death. It may also affect behavior/central nervous system (convulsions, lethargy).

Aspiration hazard No information available.

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

Chronic Toxicity Ingestion: May affect liver/spleen (increased iron levels and damage), urinary system (kidney, ureter, bladder), blood (changes in white blood cell count), central nervous system, and cardiovascular system. May cause eye discoloration.

Sensitization: No information available.

Mutagenic Effects: May affect genetic material

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Ferric Chloride hexahydrate	10025-77-1	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: May cause adverse reproductive effects based on animal data

Developmental Effects: No information available

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Target Organs: Liver. Skin. Eyes.

12. ECOLOGICAL INFORMATION

Ecotoxicity

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Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Ferric Chloride hexahydrate	10025-77-1	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not Regulated

Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (Ferric Chloride, hexahydrate)

Hazard Class: 8

Subsidiary Class No information available

Packing group: No information available

Emergency Response Guide Number No information available

Marine Pollutant No data available

DOT RQ (lbs): No information available

Special Provisions No Information available

Symbol(s): [DOT]: (G) - Identifies proper shipping names for which one or more technical names of the hazardous material must be entered in parentheses, in association with the basic description.

Description: UN3260, Corrosive solid, acidic, inorganic, n.o.s. ,8,PG III

TDG (Canada)

UN-No: UN3260

Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)

Hazard Class: 8

Subsidiary Risk: No information available

Packing Group: III

Marine Pollutant No Information available

Description: UN3260, CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.,8,PG III

ADR

UN-No: UN3260

Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)

Hazard Class: 8

Packing Group: III

Product code: F1010

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Subsidiary Risk: No information available
Description: UN3260 Corrosive solid, acidic, inorganic, n.o.s.,8,III

IMO / IMDG

UN-No: UN3260
Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant: No information available
EMS: F-A

RID

UN-No: UN3260
Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: UN3260 Corrosive solid, acidic, inorganic, n.o.s.,8,III

ICAO

UN-No: UN3260
Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
Description: UN3260,Corrosive solid, acidic, inorganic, n.o.s.,8,PG III

IATA

UN-No: UN3260
Proper Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (ammonium fluoborate)
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: III
ERG Code: 8L
Special Provisions: No information available
Description: UN3260,Corrosive solid, acidic, inorganic, n.o.s.,8,PG III

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
<i>Ferric Chloride hexahydrate</i>	10025-77-1	Not listed: Ferric Chloride, hexahydrate (CAS number 10025-77-1) is exempt from TSCA 8(b) Inventory listing since it is a hydrate. However the anhydrous form (CAS number 7705-08-0 is	Not present	Present	Not present	Present [23517]	Present	Not present

		listed as ACTIVE on the TSCA 8(b) Inventory.						
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U.S. Regulations

Ferric Chloride hexahydrate

Pennsylvania RTK: Present (as iron salts)

Pennsylvania RTK - Environmental Hazard List Present (as iron salts)

Minnesota - Hazardous Substance List: Present (as iron soluble salts)

California Directors List of Hazardous Substances: Present (as iron soluble salts; refers only to water-soluble salts not mixed in food or animal feed)

FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 184.1297

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Ferric Chloride hexahydrate	10025-77-1	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
<i>Ferric Chloride hexahydrate</i>	10025-77-1	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Ferric Chloride hexahydrate	10025-77-1	Not Applicable	Not Applicable

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information:

Component
 Ferric Chloride hexahydrate
 10025-77-1 (100)

WHMIS 2015 Hazard Classification
 Acute toxicity - Oral - Category 4: H302 Harmful if swallowed.;
 Health Hazard Not Otherwise Classified - Category 1: Causes severe damage to the respiratory tract; Skin corrosion/irritation - Category 1: H314 Causes severe skin burns and eye damage.;
 Serious Eye Damage/Eye Irritation - Category 1: H318 Causes serious eye damage.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

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Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Ferric Chloride hexahydrate	10025-77-1	Not Listed	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Ferric Chloride hexahydrate	10025-77-1	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Ferric Chloride hexahydrate	10025-77-1	Not listed

EU Classification

EU GHS - SV - CLP 1272/2008

Components	CAS-No.	EU GHS - SV - CLP (1272/2008)
Ferric Chloride hexahydrate	10025-77-1	

EU - CLP (1272/2008)

R-phrase(s)

R22 - Harmful if swallowed.

R34 - Causes burns.

S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Ferric Chloride hexahydrate	10025-77-1		No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

C - Corrosive.

Xn - Harmful.



16. OTHER INFORMATION

Preparation Date: 04/13/2015
Revision Date: 11/19/2018
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may

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pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet