Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ferric chloride hexahydrate
Cat No.: I86-3; I86-10; I88-100; I88-500
Synonyms: Iron(III) chloride hexahydrate (Lumps/Technical/Certified ACS)
Recommended Use: Laboratory chemicals

Company: Fisher Scientific
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. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview
Causes burns by all exposure routes. Harmful if swallowed. Hygroscopic.

Appearance: Dark yellow
Physical State: Solid
odor: odorless

Target Organs: Skin, Eyes, Respiratory system, Gastrointestinal tract (GI), Liver, Kidney, Blood

Potential Health Effects

Acute Effects
Principle Routes of Exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Causes burns.</td>
</tr>
<tr>
<td>Skin</td>
<td>Causes burns. May be harmful in contact with skin.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Causes burns. May be harmful if inhaled.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Harmful if swallowed. Causes burns.</td>
</tr>
</tbody>
</table>

Chronic Effects
Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions: No information available.
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Haz/Non-haz</th>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iron (III) chloride hexahydrate</td>
<td>10025-77-1</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

**Eye Contact**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin Contact**
Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

**Inhalation**
Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Get medical attention immediately if symptoms occur.

**Ingestion**
Do not induce vomiting. Call a physician or Poison Control Center immediately.

**Notes to Physician**
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

**Flash Point**
Not applicable

**Method**
No information available.

**Autoignition Temperature**
No information available.

**Explosion Limits**
Upper
No data available

Lower
No data available

**Suitable Extinguishing Media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Unsuitable Extinguishing Media**
No information available.

**Hazardous Combustion Products**
No information available.

- Sensitivity to mechanical impact
  No information available.
- Sensitivity to static discharge
  No information available.

**Specific Hazards Arising from the Chemical**
Containers may explode when heated.

**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. Thermal decomposition can lead to release of irritating gases and vapors.

**NFPA**

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

6. ACCIDENTAL RELEASE MEASURES
6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Use personal protective equipment. Avoid dust formation. Remove all sources of ignition.

Environmental Precautions
Should not be released into the environment.

Methods for Containment and Clean Up
Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation. Remove all sources of ignition.

7. HANDLING AND STORAGE

Handling
Wear personal protective equipment. Use only under a chemical fume hood. Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Do not ingest.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures
Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Exposure Guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>TWA: 1 mg/m³</td>
<td>(Vacated) TWA: 1 mg/m³</td>
<td>TWA: 1 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Quebec</th>
<th>Mexico OEL (TWA)</th>
<th>Ontario TWA EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>TWA: 1.0 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>STEL: 2 mg/m³</td>
</tr>
</tbody>
</table>

NIOSH IDLH: Immediately Dangerous to Life or Health

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
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.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Dark yellow</td>
</tr>
<tr>
<td>odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>2.01M in water</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>negligible</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No information available.</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>280 - 285°C / 536 - 545°F</td>
</tr>
</tbody>
</table>
### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting Point/Range</td>
<td>37°C / 98.6°F</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>negligible</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.82 (H2O=1)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>270.29</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>Cl3 Fe . 6 H2 O</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Stability**

Hygroscopic. Stable under normal conditions.

**Conditions to Avoid**

Avoid dust formation. Incompatible products. Excess heat. Exposure to moist air or water.

**Incompatible Materials**

Strong oxidizing agents, Metals

**Hazardous Decomposition Products**

Hydrogen chloride gas, Chlorine, Thermal decomposition can lead to release of irritating gases and vapors

**Hazardous Polymerization**

Hazardous polymerization does not occur

**Hazardous Reactions**

None under normal processing.

### 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**

**Product Information**

See actual entry in RTECS for complete information.

**Component Information**

**Irritation**

Causes burns by all exposure routes

**Toxicologically Synergistic Products**

No information available.

**Chronic Toxicity**

**Carcinogenicity**

There are no known carcinogenic chemicals in this product

**Sensitization**

No information available.

**Mutagenic Effects**

Mutagenic effects have occurred in humans.

**Reproductive Effects**

Experiments have shown reproductive toxicity effects on laboratory animals.

**Developmental Effects**

No information available.
Teratogenicity

No information available.

Other Adverse Effects

The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

Endocrine Disruptor Information

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>Not listed</td>
<td>22 mg/l 96H (anh subst)</td>
<td>Not listed</td>
<td>9.6 mg/l 48H (anh subst)</td>
</tr>
</tbody>
</table>

Persistence and Degradability

No information available

Bioaccumulation/ Accumulation

No information available

Mobility


<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>4</td>
</tr>
</tbody>
</table>

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 CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.
Proper 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


14. TRANSPORT INFORMATION

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

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>CHINA</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

Legend:

X - Listed  
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.  
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.  
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.  
P - Indicates a commenced PMN substance  
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.  
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule  
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.  
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).  
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.  
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313  
Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard: Yes  
Chronic Health Hazard: Yes  
Fire Hazard: No  
Sudden Release of Pressure Hazard: No  
Reactive Hazard: No

Clean Water Act
Clean Air Act
Not applicable

OSHA
Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

California Proposition 65
This product does not contain any Proposition 65 chemicals.

State Right-to-Know

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (III) chloride hexahydrate</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation

Reportable Quantity (RQ): Y
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade: No information available

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class
D2A Very toxic materials
E Corrosive material

Thermo Fisher Scientific - Ferric chloride hexahydrate
16. OTHER INFORMATION

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 08-Feb-2010
Print Date 27-Nov-2012
Revision Summary (M)SDS sections updated 14

Disclaimer
The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of MSDS