

## Material Safety Data Sheet

Version 5.3

Revision Date 05/17/2013

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### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Iron(III) chloride  
 Product Number : 157740  
 Brand : Sigma-Aldrich  
 Supplier : Sigma-Aldrich  
 3050 Spruce Street  
 SAINT LOUIS MO 63103  
 USA  
 Telephone : +1 800-325-5832  
 Fax : +1 800-325-5052  
 Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555  
 Preparation Information : Sigma-Aldrich Corporation  
 Product Safety - Americas Region  
 1-800-521-8956

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

##### OSHA Hazards

Harmful by ingestion., Irritant

##### GHS Classification

Corrosive to metals (Category 1)  
 Acute toxicity, Oral (Category 4)  
 Acute toxicity, Dermal (Category 5)  
 Skin irritation (Category 2)  
 Serious eye damage (Category 1)  
 Acute aquatic toxicity (Category 2)  
 Chronic aquatic toxicity (Category 2)

##### GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H290 May be corrosive to metals.  
 H302 Harmful if swallowed.  
 H313 May be harmful in contact with skin.  
 H315 Causes skin irritation.  
 H318 Causes serious eye damage.  
 H411 Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P273 Avoid release to the environment.  
 P280 Wear protective gloves/ eye protection/ face protection.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

#### HMIS Classification

Health hazard: 2  
Flammability: 0  
Physical hazards: 0

**NFPA Rating**

Health hazard: 2  
Fire: 0  
Reactivity Hazard: 0

**Potential Health Effects**

**Inhalation** May be harmful if inhaled. Causes respiratory tract irritation.  
**Skin** Harmful if absorbed through skin. Causes skin irritation.  
**Eyes** Causes eye irritation.  
**Ingestion** Harmful if swallowed.

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**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms : Ferric chloride

Formula :  $\text{Cl}_3\text{Fe}$

Molecular Weight : 162.20 g/mol

Component		Concentration
<b>Iron trichloride</b>		
CAS-No.	7705-08-0	-
EC-No.	231-729-4	

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**4. FIRST AID MEASURES**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

**If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

**In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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**5. FIREFIGHTING MEASURES**

**Conditions of flammability**

Not flammable or combustible.

**Suitable extinguishing media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Special protective equipment for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Hydrogen chloride gas, Iron oxides

**Further information**

The product itself does not burn.

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**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

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## 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols.

Provide appropriate exhaust ventilation at places where dust is formed.

### Conditions for safe storage

Store under inert gas. Keep container tightly closed in a dry and well-ventilated place.

hygroscopic

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Iron trichloride	7705-08-0	TWA	1 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Upper Respiratory Tract & skin irritation varies			
		TWA	1 mg/m <sup>3</sup>	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	1 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits

### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374  
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Eye protection**

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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**9. PHYSICAL AND CHEMICAL PROPERTIES****Appearance**

Form	solid
Colour	no data available

**Safety data**

pH	no data available
Melting point/freezing point	Melting point/range: 304 °C (579 °F) - lit.
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Auto-ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	< 1 hPa (< 1 mmHg) at 20 °C (68 °F) 1 hPa (1 mmHg) at 194 °C (381 °F)
Density	2.800 g/cm <sup>3</sup>
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	5.60 - (Air = 1.0)
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

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**10. STABILITY AND REACTIVITY****Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

no data available

**Conditions to avoid**

no data available

**Materials to avoid**

Strong oxidizing agents, Potassium, Alkali metals, Bases, Exothermic in contact with water, Forms shock-sensitive mixtures with certain other materials.

**Hazardous decomposition products**

Other decomposition products - no data available

Hazardous decomposition products formed under fire conditions. - Hydrogen chloride gas, Iron oxides

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**11. TOXICOLOGICAL INFORMATION****Acute toxicity****Oral LD50**

LD50 Oral - mouse - 1,300 mg/kg

**Inhalation LC50**

no data available

**Dermal LD50**

LD50 Dermal - rabbit - > 2,000 mg/kg

**Other information on acute toxicity**

no data available

**Skin corrosion/irritation**

Skin - rabbit - Irritating to skin.

**Serious eye damage/eye irritation**

Eyes - rabbit - Severe eye irritation

**Respiratory or skin sensitisation**

no data available

**Germ cell mutagenicity**

no data available

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

no data available

**Teratogenicity**

no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

no data available

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Potential health effects****Inhalation**

May be harmful if inhaled. Causes respiratory tract irritation.

**Ingestion**

Harmful if swallowed.

**Skin**

Harmful if absorbed through skin. Causes skin irritation.

**Eyes**

Causes eye irritation.

**Signs and Symptoms of Exposure**

spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include epigastric pain, diarrhea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Synergistic effects**

no data available

**Additional Information**

RTECS: LJ9100000

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**12. ECOLOGICAL INFORMATION****Toxicity**

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 21.84 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 9.6 mg/l - 48 h

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life with long lasting effects.

no data available

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**13. DISPOSAL CONSIDERATIONS****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

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**14. TRANSPORT INFORMATION****DOT (US)**

UN number: 1773 Class: 8 Packing group: III  
Proper shipping name: Ferric chloride, anhydrous  
Reportable Quantity (RQ): 1000 lbs  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1773 Class: 8 Packing group: III EMS-No: F-A, S-B  
Proper shipping name: FERRIC CHLORIDE, ANHYDROUS  
Marine pollutant: No

**IATA**

UN number: 1773    Class: 8    Packing group: III  
Proper shipping name: Ferric chloride, anhydrous

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**15. REGULATORY INFORMATION****OSHA Hazards**

Harmful by ingestion., Irritant

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Acute Health Hazard

**Massachusetts Right To Know Components**

	CAS-No.	Revision Date
Iron trichloride	7705-08-0	1993-04-24

**Pennsylvania Right To Know Components**

	CAS-No.	Revision Date
Iron trichloride	7705-08-0	1993-04-24

**New Jersey Right To Know Components**

	CAS-No.	Revision Date
Iron trichloride	7705-08-0	1993-04-24

**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. OTHER INFORMATION****Further information**

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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