

## SAFETY DATA SHEET

Version 5.9  
Revision Date 05/27/2016  
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**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : Iron(III) chloride

Product Number : F7134  
Brand : Sigma-Aldrich

CAS-No. : 7705-08-0

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052

**1.4 Emergency telephone number**

Emergency Phone # : (314) 776-6555

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**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Corrosive to metals (Category 1), H290  
Acute toxicity, Oral (Category 4), H302  
Skin irritation (Category 2), H315  
Serious eye damage (Category 1), H318  
Acute aquatic toxicity (Category 2), H401

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

Hazard statement(s)

H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H401 Toxic to aquatic life.

Precautionary statement(s)

P234 Keep only in original container.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.

|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P273                      | Avoid release to the environment.                                                                                                                                         |
| P280                      | Wear eye protection/ face protection.                                                                                                                                     |
| P280                      | Wear protective gloves.                                                                                                                                                   |
| P301 + P312 + P330        | IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.<br>Rinse mouth.                                                                                             |
| P302 + P352               | IF ON SKIN: Wash with plenty of soap and water.                                                                                                                           |
| P305 + P351 + P338 + P310 | 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. |
| P332 + P313               | If skin irritation occurs: Get medical advice/ attention.                                                                                                                 |
| P362                      | Take off contaminated clothing and wash before reuse.                                                                                                                     |
| P390                      | Absorb spillage to prevent material damage.                                                                                                                               |
| P406                      | Store in corrosive resistant stainless steel container with a resistant inner liner.                                                                                      |
| P501                      | Dispose of contents/ container to an approved waste disposal plant.                                                                                                       |

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

|                  |                          |
|------------------|--------------------------|
| Synonyms         | : Ferric chloride        |
| Formula          | : $\text{Cl}_3\text{Fe}$ |
| Molecular weight | : 162.20 g/mol           |
| CAS-No.          | : 7705-08-0              |
| EC-No.           | : 231-729-4              |

#### Hazardous components

| Component               | Classification                                                                                                | Concentration |
|-------------------------|---------------------------------------------------------------------------------------------------------------|---------------|
| <b>Iron trichloride</b> |                                                                                                               |               |
|                         | Met. Corr. 1; Acute Tox. 4;<br>Skin Irrit. 2; Eye Dam. 1;<br>Aquatic Acute 2; H290, H302,<br>H315, H318, H401 | <= 100 %      |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## 4. FIRST AID MEASURES

### 4.1 Description of 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.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## 5. FIREFIGHTING MEASURES

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2 Special hazards arising from the substance or mixture

No data available

### 5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### 5.4 Further information

No data available

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## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

### 6.2 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.

### 6.3 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.

### 6.4 Reference to other sections

For disposal see section 13.

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## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

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

hygroscopic

Storage class (TRGS 510): Non-combustible, corrosive hazardous materials

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

| Component        | CAS-No.   | Value                                                        | Control parameters | Basis                                   |
|------------------|-----------|--------------------------------------------------------------|--------------------|-----------------------------------------|
| Iron trichloride | 7705-08-0 | TWA                                                          | 1.000000 mg/m3     | USA. ACGIH Threshold Limit Values (TLV) |
|                  | Remarks   | Upper Respiratory Tract irritation<br>Skin irritation varies |                    |                                         |

|  |  |                                                              |                |                                                                                         |
|--|--|--------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------|
|  |  | TWA                                                          | 1.000000 mg/m3 | USA. NIOSH Recommended Exposure Limits                                                  |
|  |  | TWA                                                          | 1 mg/m3        | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|  |  | Upper Respiratory Tract irritation<br>Skin irritation varies |                |                                                                                         |
|  |  | TWA                                                          | 1 mg/m3        | USA. NIOSH Recommended Exposure Limits                                                  |
|  |  | PEL                                                          | 1 mg/m3        | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

## 8.2 Exposure controls

### Appropriate engineering controls

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

### Personal protective equipment

#### Eye/face 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 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.

#### 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.

#### 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).

#### Control of environmental exposure

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

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

|                                                 |                                                                          |
|-------------------------------------------------|--------------------------------------------------------------------------|
| a) Appearance                                   | Form: solid                                                              |
| b) Odour                                        | No data available                                                        |
| c) Odour Threshold                              | No data available                                                        |
| d) pH                                           | No data available                                                        |
| e) Melting point/freezing point                 | 304 °C (579 °F)                                                          |
| f) Initial boiling point and boiling range      | No data available                                                        |
| g) Flash point                                  | No data available                                                        |
| h) Evaporation rate                             | No data available                                                        |
| i) Flammability (solid, gas)                    | No data available                                                        |
| j) Upper/lower flammability or explosive limits | No data available                                                        |
| k) Vapour pressure                              | < 1 hPa (< 1 mmHg) at 20 °C (68 °F)<br>1 hPa (1 mmHg) at 194 °C (381 °F) |
| l) Vapour density                               | 5.60 - (Air = 1.0)                                                       |
| m) Relative density                             | 2.800 g/cm <sup>3</sup>                                                  |
| n) Water solubility                             | No data available                                                        |
| o) Partition coefficient: n-octanol/water       | No data available                                                        |
| p) Auto-ignition temperature                    | No data available                                                        |
| q) Decomposition temperature                    | No data available                                                        |
| r) Viscosity                                    | No data available                                                        |
| s) Explosive properties                         | No data available                                                        |
| t) Oxidizing properties                         | No data available                                                        |

### 9.2 Other safety information

|                         |                    |
|-------------------------|--------------------|
| Relative vapour density | 5.60 - (Air = 1.0) |
|-------------------------|--------------------|

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

No data available

### 10.5 Incompatible materials

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

## 10.6 Hazardous decomposition products

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

Other decomposition products - No data available

In the event of fire: see section 5

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## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Mouse - 1,300 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - > 2,000 mg/kg  
(OECD Test Guideline 402)

No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: Irritating to skin.

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: 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.

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

No data available

#### Specific target organ toxicity - single exposure

No data available

#### Specific target organ toxicity - repeated exposure

No data available

#### Aspiration hazard

No data available

#### Additional Information

RTECS: LJ9100000

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.

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## 12. ECOLOGICAL INFORMATION

### 12.1 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

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life.

No data available

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## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### 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

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: yes

### IATA

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

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## 15. REGULATORY INFORMATION

### SARA 302 Components

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

### SARA 313 Components

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**

Iron trichloride

CAS-No.  
7705-08-0Revision Date  
1993-04-24**Pennsylvania Right To Know Components**

Iron trichloride

CAS-No.  
7705-08-0Revision Date  
1993-04-24**New Jersey Right To Know Components**

Iron trichloride

CAS-No.  
7705-08-0Revision Date  
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****Full text of H-Statements referred to under sections 2 and 3.**

|               |                             |
|---------------|-----------------------------|
| Acute Tox.    | Acute toxicity              |
| Aquatic Acute | Acute aquatic toxicity      |
| Eye Dam.      | Serious eye damage          |
| H290          | May be corrosive to metals. |
| H302          | Harmful if swallowed.       |
| H315          | Causes skin irritation.     |
| H318          | Causes serious eye damage.  |
| H401          | Toxic to aquatic life.      |
| Met. Corr.    | Corrosive to metals         |

**HMIS Rating**

|                        |   |
|------------------------|---|
| Health hazard:         | 2 |
| Chronic Health Hazard: |   |
| Flammability:          | 0 |
| Physical Hazard        | 0 |

**NFPA Rating**

|                    |   |
|--------------------|---|
| Health hazard:     | 2 |
| Fire Hazard:       | 0 |
| Reactivity Hazard: | 0 |

**Further information**

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**Preparation Information**

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Product Safety – Americas Region  
1-800-521-8956

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