



# C.I.F

## SAFETY DATA SHEET

July 2011

FDS 11.07

### 1. Identification of the chemical product

FERRIC CHLORIDE LIQUID 2 X 2.5 liters Ref : AR4122

#### Company : CIF

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#### Emergency telephone number :

80076767600 (Europe) 498946360321 (Europe)

#### Identification of the substance or the preparation

Product name :	FERRIC CHLORIDE (Solution 37-46 %)
Chemical name :	Iron trichloride (solution 37-46 %)
Synonym(s) :	Iron chloride III (solution 37-46 %), Iron perchloride (solution 37-46 %)
Commercial Name :	SOLFLOC (R)
Formula :	FeCl <sub>3</sub>
Molecular Weight :	161.5

### 2. Hazards identification

Toxicity effects principally related to its corrosive properties.  
Hazardous product for the aquatic environment.  
in case of decomposition, releases dangerous products.

### 3. Composition information on ingredients

#### Ferric chloride :

- CAS Number :	7705-08-0
- EC Number (EINECS)	231-729-4
- Symbols	C
- Phrases R	34, 22, 52/53
- Concentration	37.00 – 46.00 %

### 4. First aid measures

#### General recommendations

- Personal protective equipment required for rescuers (see section 8).
- In case of product splashing into the eyes and face, treat eyes first.
- Submerge soiled clothing in a basin of water.

#### Effects

##### Main affects

Irritating to skin; corrosive to mucous membrane and eyes.

The seriousness of the lesions and the prognosis of intoxication depend directly on the concentration and duration of exposure.

Risk of liver effects.

Fatalities have been observed after a single dose of 30 grammes and more taken by an adult weighing 70 kg.

Chronic exposure to the product can induce iron accumulation in tissues characterized by redbrown deposits.

#### Inhalation

Severe irritation of the nose and the throat.

Cough and difficulty in breathing.

At high concentrations, risk of chemical pneumonitis, pulmonary oedema.

In case of repeated or prolonged exposure: risk of sore throat, nose bleeds, chronic bronchitis.

In case of repeated or prolonged exposure: risk of brown colouration of teeth.

#### 4. First aid measures

##### Eyes contact

Severe eye irritation, watering, redness and swelling of the eyelids.

Burns.

Risk of serious or permanent eye lesions.

##### Skin contact

Irritation.

In case of prolonged contact : risk of burns.

In case of repeated contact : risk of allergic dermatitis.

On contact with broken skin, risk of persistent pigmentation.

##### Ingestion

Low probability of risk (stinging odour).

Severe irritation and risk of burns to the mouth, throat, oesophagus and stomach.

Nausea, vomiting (bloody), abdominal cramps and diarrhea (bloody).

Risk of shock.

Risk liver and kidney alterations.

Risk of chemical pneumonitis and pulmonary oedema resulting from aspiration during vomiting.

By ingestion of large quantities : risk of convulsions, coma.

##### First aid

###### Inhalation

Remove the subject from the contaminated area as soon as possible ; transport him/her lying down, with the head higher than the body, to a quiet, uncontaminated and well-ventilated location..

Oxygen or pulmonary resuscitation if necessary.

Keep warm (blanket).

Consult with a physician in all cases.

###### Eyes contact

Consult with an ophthalmologist immediately in all cases.

Flush eyes as soon as possible with running water for 15 minutes, while keeping the eyelids wide open.

In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).

###### Skin contact

Remove contaminated shoes, socks and clothing under the shower if necessary; wash the affected skin with soap and water.

Clean clothing.

Consult with a physician in case of persistent pain or redness.

###### Ingestion

###### General recommendations

Consult with a physician immediately in all cases.

Take to hospital.

###### If the subject is completely conscious:

Rinse mouth with fresh water.

Do not induce vomiting.

If the subject presents nervous, respiratory or cardiovascular disorders: administer oxygen.

###### If the subject is unconscious:

Classical resuscitation measures.

#### Medical treatment

##### Inhalation

Pulmonary resuscitation (oxygen therapy).

Prevention or treatment of pulmonary oedema and bacterial secondary infection.

##### Eyes contact

On the advice of the ophthalmologist.

##### Skin contact

Usual treatment for burns.

##### Ingestion

Gastric lavage with a saline solution.

In case of intense pain : inject an I.M. morphomimetic analgesic drug (piritramide) before taking to hospital.

Prevention or treatment for shock.

I.V. perfusion of desferrioxamine (40 mg/kg every 3 hrs) associated with hemodialysis in the case of renal failure.

**4. First aid measures** Surveillance of hepatic, renal and central nervous system functions.  
Surveillance of the glycaemia and coagulation tests.  
Treatment of gastrointestinal tract burns and resulting effects.

**5. Fire -fighting measures**

**Common extinguishing means**

In case of fire in close proximity, all means of extinguishing are acceptable.

inappropriate extinguishing means

No restriction

**Specific hazards**

Non-combustible

Formation of dangerous gas/vapours in case of decomposition (see section 10).

Formation of flammable gas on contact with certain metals (see 10).

**Protective measures** In case of intervention

Wear self contained breathing apparatus when in close proximity or in confined spaces.

When intervention in close proximity wear acid resistant over suit.

After intervention, proceed to clean the equipment (take a shower, remove clothing carefully, clean and check).

**Other precautions**

Cool containers exposed to fire.

Disperse gas/vapours with water spray.

After the fire, proceed rapidly to clean the surfaces exposed to the fumes in order to limit the damage to the equipment.

As for any fire, ventilate and clean the rooms before re-entry.

**6. Accidental release measures**

**Precautions**

Follow the protective measures given in section 8.

Ventilate the premises.

Keep away materials and products which are incompatible with the product (see section 10).

If safe to do so, without over exposing anyone, try to stop the leak.

**Cleanup methods**

If possible, dam large quantities of liquid with sand or earth.

Collect the product with suitable means

Place everything into a closed, labelled container compatible with the product.

Clean the area with large quantities of water.

For disposal methods, refer to section 13.

**Precautions for protection of the environment**

Do not discharge into the environment (sewers, rivers, soils, ...).

Immediately notify the appropriate authorities in case of significant discharge.

**7. handling and storage**

**Handling**

Operate in a well-ventilated area.

Use only equipment and materials which are compatible with the product.

Keep away from reactive products (see section 10).

Avoid heating the product above the decomposition temperature (see section 9).

Transfer by pump or by gravity; if not possible, use compressed air.

**Storage**

Keep in original packaging, closed.

In a ventilated area.

Keep away from heat sources.

Keep away from reactive products (see section 10).

Containment bund around storage containers and transfer installation.

**Other precautions**

Warn people about the dangers of the product.

Provide tight electrical equipment well protected against corrosion.

Protect from frost.

Follow the protective measures given in section 8.

**Packaging**

Steel coated (enamelled).

## 8. Exposure controls / personal protection

### Engineering controls

Provide local ventilation suitable for the emission risk.  
Provide local ventilation suitable for the product decomposition risk (see section 10).  
Maintain employee exposures to levels below the applicable exposure limits.  
Follow the protective measures given in section 7.

### Authorized limit values

#### Ferric chloride

TLV (ACGIH-USA)

TWA = 1 mg/m<sup>3</sup>

Remark : In Iron, soluble components as Fe

### Respiratory protection

In case of emissions and dust clouds/fog/fumes, face mask with combined type B-P2 cartridge.  
Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection.  
Use only respiratory protection that conforms to international / national standards.

### Hand protection

Protective gloves - chemical resistant :

Recommended materials : PVC

### Eye protection

Chemical proof goggles/face shield obligatory.

### Skin protection

Protective clothing suitable for the handling of chemicals.

Apron/boots of PVC if risk of splashing.

### Other precautions

Shower and eye wash stations.

Consult the industrial hygienist or the safety manager for the selection of personal protective equipment suitable for the working conditions.

## 9. Physical and chemical properties

Appearance : liquid  
Color/Colour: brown  
Odor/Odour: pungent

### Change of state

\* Freezing point :

-9 °C

\* Boiling point/range (1013 mbars):

110 °C

(40 % solution )

### Flash point

\* No data

### Vapor/vapour pressures

\* 17 mbar

temperature 20 Cel

(30 % solution )

### Density

\* Specific gravity

1.43

(40 % solution )

### Solubility

Miscible In all proportions with:

Water Soluble in Common organic solvents

pH : <1

### Partition coefficient P (n-octanol/water)

\* Not applicable

**9. Physical and chemical properties**

Viscosity  
\* 9 mPa.s  
temperature 20  
Cel (40 % solution)

Decomposition temperature  
\* 160 Cel

Danger of explosion

Non-explosive

Remark : See also section 10

**10. Stability and reactivity**

Stability

Stable under certain conditions (see below).

Formation of dangerous products in case of decomposition.

**Conditions to avoid**

Heating the product to its decomposition temperature (see section 9).

**Materials to avoid**

Metals

Strong bases

Oxidizing agents

**Hazardous decomposition products**

Chlorine

Hydrogen

Hydrochloric acid.

**Other information**

Corrosive action with many metals.

In presence of humidity, contact with metals releases hydrogen.

Contact with strong bases or alkaline materials may cause violent reactions or explosions.

Exothermic reaction with bases

**11. Toxicological information**

Acute toxicity

Oral route, LD 50, rat, 2,900 mg/kg (40 % solution)

**irritation**

Rabbit, non irritant (skin)(40 % solution)

Rabbit, serious damage (eyes)(40 % solution)

**Chronic toxicity**

Oral route (water), after prolonged exposure, rat, Target organ : gastro-Intestinal system /  
hematology system / liver, 10 mg/l (in iron)

No mutagenic effect

**Comments**

Toxic effect linked with corrosive properties

**12. Ecological Information****Acute ecotoxicity**

(Anhydrous form)

Fishes *Gambusia affinis*, LC 50, 96 h, 75.6 mg/l

Crustaceans, *Daphnia magna*. EC 50, 48 h, 27.9 mg/l

**Chronic ecotoxicity**

(Anhydrous form)

Fishes, *Gasterosteus aculeatus*. LC 100, 10 day, 2.9 mg/l

Crustaceans, *Daphnia magna*, EC 50, reproduction, 21 day, 15.1 mg/l

Algae, *Chlorella vulgaris*, NOEC, growth, 120 day, 2.7 mg/l

Mobility

Water

Result: considerable solubility and mobility

Soil/sediments

### Ecological information

Result: absorption on mineral and organic soil constituents

#### Abiotic degradation

Water

Result: significant hydrolysis

Conditions: surface water

Degradation's products: ferric iron(pH < 3) / ferric hydroxide (pH > 3)

\* Water, reduction

Conditions: groundwater

Degradation's products: iron (II)

\* Water/soil

Result: complexation/precipitation of inorganic and organic materials

#### Biotic degradation

Result: not applicable (inorganic compound)

Effects on biological treatment plants, inhibition  $\geq 100$  mg/l

Result as iron.

#### Potential for bioaccumulation

bioconcentration: Molluscs, Mytilus edulis, BCF from 2,756 - 9,622 , 42 day(s)

Conditions: test concentration: 0.01 ppm

Result as iron.

#### Comments

Harmful for aquatic organisms.

Fe II/Fe III ionic pair is responsible for heavy metals (traces) attenuation by complexation/precipitation processes depending on pH. Product fate is highly depending on environmental conditions: pH, temperature, oxidoreductive potential, mineral and organic content of the medium,.

### 13. Disposal Considerations

#### Waste treatment

Dispose in compliance with local/federal and national regulations.

Contact waste exchanges for recycling.

Or

Dilute with large quantities of water.

Neutralise the product with a base (sodium carbonate, lime, ...).

Filtrate the product and send the cake to a landfill for industrial waste.

#### Packaging treatment

To avoid treatments, as far as possible, use dedicated containers.

If not,

Rinse the empty containers with plenty of water and treat the effluent in the same way as waste.

Or

Dispose of the containers by dispatching them to an approved industrial incineration facility.

The empty and clean containers are to be reused in conformity with regulations.

### 14. Transport information

UN Number 2582

IATA Class: 8

Packing group: III

Hazard label: CORROSIVE

PSN:  
FERRIC CHLORIDE SOLUTION

IMDG Class: 8

Packing group: III

Hazard label: CORROSIVE

Placard: 2582

MFAG: 700

EmS: 8-08

IMDG Name:  
FERRIC CHLORIDE SOLUTION

**14. Transport information (suite)**

ADR /ADNR Class 8.5°C  
Packing group: III  
Hazard label: 8  
Placard: 80/2582

ADR / RID Name;  
FERRIC CHLORIDE SOLUTION

RID Class: 8.5°C  
Packing group: III  
Hazard label: 8  
Placard: 80/2582

ADR/RID Name:  
FERRIC CHLORIDE SOLUTION

**15. Regulatory information****EC Labelling**

Name of dangerous product(s) (to indicate on the label):  
Iron trichloride {37-46 % solution}

Labelling "Dangerous preparations" following Dir. 93/18/EEC.

Symbole	C	Corrosive
Phrases R	34	Causes burns
	22	Harmful if swallowed
	52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Phrases S	26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
	45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
	61	Avoid release to the environment. Refer to special

Labelling "Dangerous for the environment" applicable to dangerous preparations following Dir. 1999/45/EC {date of transposition : 30.07.2002 at the latest}.

**16. Other information****Reason for update**

Update: section 3  
sections 15 – 16  
Distribute new edition to clients

This MSDS is intended for only the selected countries to which it is applicable. for example, this MSDS is not intended for use nor distribution within North America. You should contact CIFcompany The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.