

#### 1. IDENTIFICATION

**Product Name Ferric Chloride Solution** 

**Other Names** Ferric Chloride Liquid

Uses Coagulation and clarification of drinking water, process water and wastewater treatment units; Flocculant; Precipitant.

**Chemical Family** No Data Available **Chemical Formula** Unspecified

**Chemical Name** Iron chloride (FeCl3), aqueous solution

**Product Description** No Data Available

# **Contact Details of the Supplier of this Safety Data Sheet**

Organisation Location Telephone Redox Ltd 2 Swettenham Road +61-2-97333000

> Minto NSW 2566 Australia

Redox Ltd 11 Mayo Road +64-9-2506222

> Wiri Auckland 2104 New Zealand

3960 Paramount Boulevard Redox Inc. +1-424-675-3200

Suite 107

Lakewood CA 90712

USA

Redox Chemicals Sdn Bhd Level 2, No. 8, Jalan Sapir 33/7 +60-3-5614-2111

Seksyen 33, Shah Alam Premier Industrial Park

40400 Shah Alam Sengalor, Malaysia

## **Emergency Contact Details**

For emergencies only; DO NOT contact these companies for general product advice.

Organisation Location Telephone Poisons Information Centre Westmead NSW 1800-251525 131126 Chemcall Australia 1800-127406 +64-4-9179888 +64-4-9179888 Chemcall Malaysia Chemcall New Zealand 0800-243622 +64-4-9179888

New Zealand 0800-764766

CHEMTREC USA & Canada 1-800-424-9300 CN723420

+1-703-527-3887

## 2. HAZARD IDENTIFICATION

National Poisons Centre

Poisons Schedule (Aust) Not Scheduled



#### **Globally Harmonised System**

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of

Chemicals (GHS)

Hazard Categories Corrosive to Metals - Category 1

Acute Toxicity (Oral) - Category 4
Skin Corrosion/Irritation - Category 1C
Serious Eye Damage/Irritation - Category 1

**Pictograms** 





Signal Word Danger

Hazard Statements H290 May be corrosive to metals.

**H302** Harmful if swallowed.

**H314** Causes severe skin burns and eye damage.

**Precautionary Statements** Prevention **P270** Do not eat, drink or smoke when using this product.

**P280** Wear protective gloves/protective clothing/eye protection/face protection.

Response **P390** Absorb spillage to prevent material-damage.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with

water or shower.

**P301 + P330 + P331** IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**P363** Wash contaminated clothing before reuse.

**P304 + P340** IF INHALED: Remove victim to fresh air and keep comfortable for breathing.

Storage P406 Store in corrosive resistant container with a resistant inner liner.

Disposal P501 Dispose of contents/container in accordance with local / regional / national /

international regulations.

#### **National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification**Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by

Road & Rail (ADG Code)

#### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Iron chloride	FeCl3	7705-08-0	35 - 45 %
Hydrochloric acid	HCI	7647-01-0	<=0.5 %
Water	H2O	7732-18-5	Balance %

#### 4. FIRST AID MEASURES

#### Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink a glass of water. Do not induce vomiting. Immediately call a Poison Centre or

doctor/physician for advice. Never give anything by mouth to an unconscious person.

**Eye** IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting

the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes.

Immediately call a Poison Centre or doctor/physician for advice.

**Skin** IF ON SKIN: Remove contaminated clothing and shoes immediately. Flush skin with running water for at least 15 minutes.

For minor skin contact, avoid spreading material on unaffected skin. If skin irritation occurs, get medical advice/attention.

Wash contaminated clothing and shoes before reuse.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison

Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device -

Administer oxygen if breathing is difficult.

Advice to Doctor Treat symptomatically. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical

personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.

Medical Conditions Aggravated by No information available.

**Exposure** 

# 5. FIRE FIGHTING MEASURES

General Measures If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.

Avoid getting water inside containers.

Flammability Conditions Non-combustible; Material itself does not burn.

**Extinguishing Media** If material is involved in a fire, use an extinguishing agent suitable for the surrounding fire.

Fire and Explosion Hazard Contact with metals may evolve flammable hydrogen gas. Closed containers exposed to heat may explode.

**Hazardous Products of** 

Combustion

Fire or heat will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride gas.

**Special Fire Fighting Instructions** 

Contain runoff from fire control or dilution water - Runoff may be toxic and/or corrosive and may pollute waterways.

Personal Protective Equipment

Wear positive pressure self-contained breathing apparatus (SCBA) and chemical splash suit. Fully-encapsulating, gas-tight

suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for this material.

Flash Point
No Data Available
Lower Explosion Limit
No Data Available
Upper Explosion Limit
No Data Available
Auto Ignition Temperature
No Data Available

Hazchem Code 2X

#### **6. ACCIDENTAL RELEASE MEASURES**

General Response Procedure Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Do not touch or

walk through spilled material - high slip hazard. Do not breathe vapours and prevent contact with eyes, skin and clothing.

Clean Up Procedures Absorb with earth, sand or other non-combustible material and transfer to a suitable container for disposal (see SECTION

13). \*Contaminated absorbent material may pose the same hazard as the spilt product.

**Containment** Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Use water spray to reduce vapours.

Move containers from spill area.

**Decontamination**The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Flush spill area

with water.

**Environmental Precautionary** 

Measures

Spillages and decontamination runoff should be prevented from entering drains and watercourses.

Evacuation Criteria Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher

around

Personal Precautionary Measures Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8).

#### 7. HANDLING AND STORAGE

**Handling** Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure

adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid aerosol formation. Do not breathe mist/aerosols and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective

gloves/protective clothing/eye protection/face protection (see SECTION 8). Absorb spillage to prevent material damage

(see SECTION 6).

Storage Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Containers that have

been opened must be carefully resealed and kept upright to prevent leakage. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Use appropriate

containment to avoid environmental contamination.

**Container** Keep only in the original container or an approved alternative made from a compatible material. Do not store in

unlabelled containers.

\*Containers of this material may be hazardous when empty since they retain product residues (vapours, liquid); observe

all warnings and precautions listed for the product.

# 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**General** No specific exposure standards are available for this product. For Iron salts, soluble (as Fe):

- Safe Work Australia Exposure Standard: TWA = 1 mg/m3.

- New Zealand Workplace Exposure Standard: TWA = 1 mg/m3.

COMPONENT: Hydrogen chloride (CAS No. 7647-01-0):

- Safe Work Australia Exposure Standard: TWA = 5 ppm (7.5 mg/m3) Peak limitation.

- New Zealand Workplace Exposure Standard: TWA = 5 ppm (7.5 mg/m3) Ceiling.

**Exposure Limits** No Data Available

**Biological Limits** No information available.

**Engineering Measures** A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust

ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing

dispersion of it into the general work area.

**Personal Protection Equipment** - Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: For high

concentration, combination filter device (refer to AS/NZS 1715 & 1716). For emergencies, or instances where the exposure levels are not known, use a full face piece positive pressure, air supplied respirator. WARNING: Air purifying respirators

do not protect workers in oxygen deficient atmospheres.

- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Use chemical safety

goggles and/or full face shield where splashing is possible.

- Hand protection: Wear protective gloves. Recommended: Chemical-resistant, impervious gloves (elbow-length), e.g. NR (natural rubber (caoutchouc, natural latex), CR (chloroprene rubber), NBR (nitrile rubber), butyl rubber, FKM (fluororubber),

PVC (polyvinyl chloride).

- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Wear

impervious protective clothing, including boots, gloves lab coat, apron or coveralls, as appropriate.

**Special Hazards Precaustions** 

No information available.

Work Hygienic Practices Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of work. Wash

contaminated clothing prior to re-use.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State** Liquid **Appearance** Liquid

Odour Characteristic, acid Colour Orange to reddish-brown

1-2 рН

**Vapour Pressure** 40 mmHg (@ 20 °C) **Relative Vapour Density** No Data Available **Boiling Point** No Data Available **Melting Point** No Data Available **Freezing Point** No Data Available

Solubility Completely soluble in water

**Specific Gravity** 1.42 +/- 0.02 Flash Point No Data Available **Auto Ignition Temp** No Data Available **Evaporation Rate** No Data Available **Bulk Density** No Data Available **Corrosion Rate** No Data Available **Decomposition Temperature** No Data Available

1.43 g/cm3 Density

**Specific Heat** No Data Available **Molecular Weight** No Data Available **Net Propellant Weight** No Data Available **Octanol Water Coefficient** No Data Available **Particle Size** No Data Available **Partition Coefficient** No Data Available **Saturated Vapour Concentration** No Data Available **Vapour Temperature** No Data Available Viscosity No Data Available **Volatile Percent** No Data Available **VOC Volume** No Data Available

**Additional Characteristics** No information available.

Not applicable. **Potential for Dust Explosion** 

**Fast or Intensely Burning** 

Characteristics

No information available.

Flame Propagation or Burning

**Rate of Solid Materials** 

No information available.

Non-Flammables That Could Contribute Unusual Hazards to a No information available.

**Properties That May Initiate or** 

**Contribute to Fire Intensity** 

Non-combustible; Material itself does not burn.

**Reactions That Release Gases or** Vapours

Fire or heat will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride gas.

**Release of Invisible Flammable** 

Vapours and Gases

Contact with metals may evolve flammable hydrogen gas.

#### 10. STABILITY AND REACTIVITY

**General Information** May be corrosive to metals.

**Chemical Stability** Stable under normal temperature conditions and recommended use.

**Conditions to Avoid** Avoid exposure to heat and light. Avoid contact with incompatible materials.

Materials to Avoid Incompatible/reactive with metals, alkalis, strong oxidising agents, reducing agents.

**Hazardous Decomposition** 

**Products** 

Fire or heat will produce irritating, toxic and/or corrosive gases, including Hydrogen chloride gas. Contact with metals

may evolve flammable hydrogen gas.

Hazardous Polymerisation Will not occur.

#### 11. TOXICOLOGICAL INFORMATION

General Information - Acute toxicity: Harmful if swallowed. Ingestion may cause burns to mouth, throat and stomach. Adverse symptoms may

include stomach pains.

- Skin corrosion/irritation: Causes severe skin burns. Contact with skin will result in severe irritation. Corrosive to skin -

may cause skin burns.

- Eye damage/irritation: Causes serious eye damage. Corrosive to eyes; contact can cause corneal burns. Contamination

of eyes can result in permanent injury.

- Respiratory/skin sensitisation: No danger of sensitisation.

- Germ cell mutagenicity: No known significant effects or critical hazards.

- Carcinogenicity: No known significant effects or critical hazards.

- Reproductive toxicity: No known significant effects or critical hazards.

- STOT (single exposure): Breathing in mists or aerosols may produce respiratory irritation. Vapour may be very irritating

or corrosive to the respiratory system.

- STOT (repeated exposure): No systemic toxicity is expected following repeated exposure. May affect the liver.

- Aspiration toxicity: No information available.

Acute

**Ingestion** Acute toxicity (Oral):

COMPONENT: Iron chloride (CAS No. 7705-08-0):

- LD50, Mouse: 1,300 mg/kg bw.

Other Acute toxicity (Dermal):

COMPONENT: Iron chloride (CAS No. 7705-08-0):

- LD50, Rat: >2,000 mg/kg bw.

Carcinogen Category None

#### 12. ECOLOGICAL INFORMATION

**Ecotoxicity** Aquatic toxicity:

- LC50, Fish (Oryzias latipes): 46.6 mg/L (96 h). - EC50, Crustacea (Daphnia magna): 19.0 mg/L (48 h).

- ErC50, Algae (Selenastrum capricornutum): 6.9 mg/L (72 h).

Persistence/Degradability

No information available.

Mobility

No information available.

**Environmental Fate**No known significant effects or critical hazards. Avoid dispersal of spilt material and runoff and contact with soil,

waterways, drains and sewers.

Bioaccumulation Potential No information available

**Environmental Impact** No Data Available

#### 13. DISPOSAL CONSIDERATIONS

**General Information**The generation of waste should be avoided or minimised wherever possible. Whatever cannot be saved for recovery or

recycling should be managed in an appropriate and approved waste facility. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local

authority requirements.

Special Precautions for Land Fill This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product

residues. Handle contaminated packaging in the same way as the substance itself.

#### 14. TRANSPORT INFORMATION

# Land Transport (Australia)

ADG Code

Proper Shipping Name FERRIC CHLORIDE SOLUTION
Class 8 Corrosive Substances
Subsidiary Risk(s) No Data Available

**EPG** 37 Toxic And/Or Corrosive Substances Non-Combustible

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

Special Provision No Data Available

#### Land Transport (Malaysia)

ADR Code

Proper Shipping Name FERRIC CHLORIDE SOLUTION

Class 8 Corrosive Substances
Subsidiary Risk(s) No Data Available

**EPG** 37 Toxic And/Or Corrosive Substances Non-Combustible

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

**Special Provision** No Data Available

## Land Transport (New Caledonia)

Proper Shipping Name FERRIC CHLORIDE SOLUTION

Class 8 Corrosive Substances
Subsidiary Risk(s) No Data Available

EPG 37 Toxic And/Or Corrosive Substances Non-Combustible

UN Number 2582
Hazchem 2X
Pack Group III

Special Provision No Data Available

# Land Transport (New Zealand)

NZS5433

 Proper Shipping Name
 FERRIC CHLORIDE SOLUTION

 Class
 8 Corrosive Substances

Subsidiary Risk(s) No Data Available

**EPG** 37 Toxic And/Or Corrosive Substances Non-Combustible

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

**Special Provision** No Data Available

# Land Transport (United States of America)

**US DOT** 

Proper Shipping Name FERRIC CHLORIDE SOLUTION
Class 8 Corrosive Substances

Subsidiary Risk(s) No Data Available

ERG 154 Substances - Toxic and/or Corrosive (Non-Combustible)

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

**Special Provision** No Data Available

# **Sea Transport**

**IMDG** Code

Proper Shipping Name FERRIC CHLORIDE SOLUTION

Class 8 Corrosive Substances

Subsidiary Risk(s) No Data Available

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

**Special Provision** No Data Available

EMS F-A, S-B Marine Pollutant No

# **Air Transport**

IATA DGR

Proper Shipping Name FERRIC CHLORIDE SOLUTION
Class 8 Corrosive Substances

Subsidiary Risk(s) No Data Available

 UN Number
 2582

 Hazchem
 2X

 Pack Group
 III

**Special Provision** No Data Available

# **National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification** 

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

#### 15. REGULATORY INFORMATION

General Information No Data Available
Poisons Schedule (Aust) Not Scheduled

# **Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code Additives Process Chemicals and Raw Materials Corrosive Group Standard 2020 HSR002491

\*HSR004519 (Revoked)

#### **National/Regional Inventories**

Australia (AIIC) Listed

Canada (DSL) Not Determined

Canada (NDSL) Not Determined

China (IECSC) Not Determined

**Europe (EINECS)** Not Determined

**Europe (REACh)** Not Determined

Japan (ENCS/METI) Not Determined

Korea (KECI) Not Determined

Malaysia (EHS Register) Not Determined

New Zealand (NZIoC) Listed

Philippines (PICCS) Not Determined

Switzerland (Giftliste 1) Not Determined

Switzerland (Inventory of Notified

Substances)

Not Determined

Taiwan (NCSR) Not Determined

USA (TSCA) Not Determined

#### **16. OTHER INFORMATION**

Related Product Codes FECHLO1800, FECHLO1801, FECHLO1802, FECHLO1803, FECHLO1804, FECHLO1805, FECHLO1806, FECHLO1807,

FECHLO1808, FECHLO1809, FECHLO1810, FECHLO1811, FECHLO1812, FECHLO1813, FECHLO1814, FECHLO1815, FECHLO1816, FECHLO1817, FECHLO1818, FECHLO1819, FECHLO1820, FECHLO1821, FECHLO1822, FECHLO1823, FECHLO1824, FECHLO1825, FECHLO1826, FECHLO1827, FECHLO1828, FECHLO1829, FECHLO1830, FECHLO1832,

FECHL01833, FECHS00040, FECHS00041, FECHS00045, FECHS01000, FECHS01001, FECHS01002, FECHS01003, FECHS01004, FECHS01100, FECHS01101, FECHS01104, FECHS01127, FECHS01200, FECHS01400, FECHS01500, FECHS01600, FECHS02000, FECHS02001, FECHS02200, FECHS02300, FECHS02400, FECHS02401, FECHS02425, FECHS02500, FECHS02501, FECHS02502, FECHS02503, FECHS02504, FECHS02505, FECHS02506, FECHS02507, FECHS02508, FECHS02510, FECHS02515, FECHS02518, FECHS02600, FECHS02601, FECHS02700, FECHS02900, FECHS02901, FECHS02910, FECHS03000, FECHS03200, FECHS03201, FECHS03400, FECHS03500, FECHS03501, FECHS03502, FECHS03503, FECHS03600, FECHS03700, FECHS03742, FECHS03800, FECHS03900, FECHS04000, FECHS04100, FECHS04200, FECHS04300, FECHS04301, FECHS04302, FECHS04305, FECHS04307, FECHS04500, FECHS05000, FECHS05100, FECHS05200, FECHS05500, FECHS056000, FECHS06100, FECHS08000

Revision

Revision Date 01 Mar 2021

Reason for Issue SDS updated

Key/Legend < Less Than

> Greater Than

**AICS** Australian Inventory of Chemical Substances

atm Atmosphere

CAS Chemical Abstracts Service (Registry Number)

cm² Square CentimetresCO2 Carbon Dioxide

**COD** Chemical Oxygen Demand **deg C (°C)** Degrees Celcius

EPA (New Zealand) Environmental Protection Authority of New Zealand

deg F (°F) Degrees Farenheit

**g** Grams

g/cm3 Grams per Cubic Centimetre

q/I Grams per Litre

**HSNO** Hazardous Substance and New Organism **IDLH** Immediately Dangerous to Life and Health **immiscible** Liquids are insoluable in each other.

inHg Inch of Mercury inH2O Inch of Water

**K** Kelvin **kg** Kilogram

kg/m³ Kilograms per Cubic Metre

**Ib** Pound

**LC50** LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

**LD50** LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

Itr or L Litre m³ Cubic Metre mbar Millibar mg Milligram

mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram ma/m³ Milligrams per Cubic Metre

Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH2O Millimetres of Water mPa.s Millipascals per Second

N/A Not Applicable

**NIOSH** National Institute for Occupational Safety and Health **NOHSC** National Occupational Heath and Safety Commission

**OECD** Organisation for Economic Co-operation and Development

Oz Ounce

**PEL** Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion
ppm Parts per Million

ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

**R** Rankine

RCP Reciprocal Calculation Procedure STEL Short Term Exposure Limit TLV Threshold Limit Value tne Tonne TWA Time Weighted Average ug/24H Micrograms per 24 Hours UN United Nations wt Weight