



# SAFETY DATA SHEET

## FERRIC CHLORIDE (42.5% Min)

SDS 010 / Rev 07  
12-05-2025

Reg. No. 2003/017152/07

**Safety Data Sheet (SDS)** According to ISO/SANS 11014:2009/2010, UN Transport of Dangerous Goods, UN Globally Harmonized System of Classification & Labelling and EC Directive 1272/2008

### SECTION 1. Identification – Chemical Product and Company

|                                      |                                                                                                                                                                                                |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trade Name                           | : Ferric Chloride                                                                                                                                                                              |
| Chemical Name / Proper Shipping Name | : FERRIC CHLORIDE SOLUTION                                                                                                                                                                     |
| UN Number                            | : 2582                                                                                                                                                                                         |
| CAS Number                           | : 7705-08-0 / 10025-77-1                                                                                                                                                                       |
| GHS Product identifier               | : Iron Trichloride / Ferric Chloride Hexahydrate                                                                                                                                               |
| Chemical Family                      | : Inorganic mono constituent substance                                                                                                                                                         |
| EC Number                            | : 231-729-4/ 600-047-2                                                                                                                                                                         |
| IUPAC Name                           | : Iron (III) chloride                                                                                                                                                                          |
| Other means of identification        | : Dark orange to brown liquid                                                                                                                                                                  |
| Recommended use of the chemical      | : Coagulant for use in treatment of potable water and industrial effluent and the precipitation of phosphate in sewage.<br>Certified to NSF/ANSI/CAN 60 for potable water at prescribed dosage |
| Restrictions on use                  | : Not for retail or domestic use, nor use by untrained persons.                                                                                                                                |

|                          |                                                                    |
|--------------------------|--------------------------------------------------------------------|
| <b>Suppliers details</b> | : NCP Chlorchem (Pty) Ltd                                          |
| <b>Address</b>           | : Cnr. Ossewa & Norwalk Street<br>Chloorkop, Gauteng, South Africa |

**Telephone number** : +27 (0) 11 976 3111

**24 Hour Emergency phone number** : +27 (0)11 976 2115

### SECTION 2. Hazards Identification

**GHS classification of the substance:**

| Hazard classes/Hazard categories               | GHS Hazard Statement                                       |
|------------------------------------------------|------------------------------------------------------------|
| <b>Transport – Class 8</b> Corrosive substance |                                                            |
| Acute Toxicity (Ingestion) Category 4          | H302 Harmful if swallowed.                                 |
| Eye Damage Category 1                          | H318 Causes serious eye damage.                            |
| Skin Corrosion Category 1B                     | H314 Causes severe skin burns                              |
| Metal Corrosion Category 1                     | H290 May be corrosive to metals                            |
| Skin Sensitivity Category 1                    | H317 May cause an allergic skin reaction (contains Nickel) |

**The most important adverse effects to know in emergency are** – Harmful if swallowed, causes serious eye damage, skin irritation, may cause an allergic skin reaction and may be corrosive to metals

**GHS label elements, including Precautionary Statements:**



GHS 05



GHS 07

**Signal word** – Danger

**Hazard Statements** - this substance is harmful if swallowed, causes serious eye damage, may be corrosive to metals, causes severe skin burns and irritation, and may cause an allergic skin reaction.



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### Precautionary statements -

P261: Avoid breathing dust/fume/gas/mist/vapours/spray.  
P264: Wash thoroughly after handling.  
P270: Do not eat, drink or smoke when using this product.  
P272: Contaminated work clothing should not be allowed out of the workplace.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor/... if you feel unwell.  
P302+P352: IF ON SKIN: Wash with plenty of water/...  
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/doctor/...  
P321: Specific treatment (see ... on this label).  
P330: Rinse mouth.  
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.  
P362+P364: Take off contaminated clothing and wash it before reuse.

### Response:

Refer Sections 5, 6 and 8

### Storage:

Refer Section 7

**Special Labelling requirements** – refer Section 14 for Transport labels

### Main hazards

**This substance is harmful if swallowed, causes serious eye damage, may be corrosive to metals, causes skin irritation and may cause an allergic skin reaction.**

## SECTION 3. Composition/information on ingredients

|                                      |                                          |
|--------------------------------------|------------------------------------------|
| Chemical identity                    | : Substance                              |
| Other means of identity              | : Dark orange to greenish brown solution |
| CAS number                           | : 7705-08-0                              |
| EC number                            | : 231-729-4                              |
| IUPAC names                          | : Iron (III) chloride                    |
| Impurities and stabilizing additives | : < 1% Hydrochloric Acid                 |
| Hazardous components                 | : Ferric Chloride                        |

| Ingredient name | UN Number | CAS number | %           | Classification EC1272/2008 |
|-----------------|-----------|------------|-------------|----------------------------|
| Ferric Chloride | 2582      | 7705-08-0  | 42.5 – 44.5 | 231-729-4                  |

## SECTION 4. First Aid Measures

### Most important symptoms/effects, and necessary measures:

#### Product in eye

Check the victim for contact lenses and remove if present and safe to do so. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while calling for medical help. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY after flushing eyes, transport the victim to an eye specialist, doctor or hospital as a precaution, even if no symptoms (such as redness or irritation) are evident.

#### Product on skin

IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY get medical advice, take to a doctor or hospital



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after washing the affected areas, as a precautionary measure even if no symptoms (such as redness or irritation) develop as delayed symptoms could occur.

### Product ingested

If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a doctor and get medical advice, and transport the victim to a doctor or hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING.

### Product inhaled

IMMEDIATELY move the affected person from the contaminated area; and get to take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, get medical advice and transport the victim to a doctor or hospital for observation and/or treatment.

**Always provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.**

## SECTION 5. Fire Fighting Measures –

**This product is not flammable, however if involved in a fire, suitable extinguishing media -**

Use water spray, carbon dioxide or dry chemical to extinguish fires.

**ERG - Emergency Response Guide 2024, Guide 154 and 157 and SANS 10232 - 3**

**Small fires** – immediate response action should quickly put out the fire. Use water spray, fog, foam, dry chemical, CO<sub>2</sub> or other agents as appropriate for surrounding fire. Use water to keep fire-exposed drums / containers cool.

**Large fires** – evacuate area, move containers away from fire if it can be done safely without increasing risk. Isolate and contain fire as much as possible, and dike or use inert material to contain run-off water for later disposal. Do not scatter the material. Water spray, fog or alcohol-resistant foam. Do not use straight streams. Dry chemical, CO<sub>2</sub>, alcohol-resistant foam or water spray. Dike fire-control water for later disposal; do not scatter the material.

### Special hazards –

- Non-combustible, substance itself but decomposes above 200°C to produce toxic and corrosive gases including chlorine and hydrogen chloride.
- The solution in water is a medium strong acid and reacts violently with alkali metals, allyl chloride, ethylene oxide, styrene and bases. This generates an explosion hazard.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapours may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Containers may explode when heated or if contaminated with water.

**Protective clothing** - Wear full protective clothing and self-contained, positive breathing apparatus for large fires.

**NB: Prompt actions can stop small fires but large fires involving chemicals require professional Emergency Response teams**

## SECTION 6. Accidental Release Measures

### Personal precautions

Avoid breathing fumes from burning material. Keep upwind and avoid bodily contact with the material. Do not handle broken packages or spillages unless wearing appropriate personal protective equipment. Wash away any material which may have contacted the body with copious amounts of water or soap and water.

### Environmental precautions

Cover the drains to prevent the product from entering storm water or the sewer, and prevent any run-off going off site into water ways or the environment. If the product contaminates waterways, rivers or drains promptly inform the



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respective authorities. Dike spillages and water run-off using soil and / or sandbags, and absorb bulk liquid with fly ash, soil, sawdust or commercial sorbents.

### Clean-up methods

#### Small Spills:

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Cover with dry earth, sand or other inert material and place it into loosely covered plastic containers for later disposal.

#### Large Spills:

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop the leakage e.g. by shutting valves, if this can be done safely. Collect leaking product in suitable acid-proof containers or overpacks. A vapour-suppressing foam may be used to reduce vapours. Use water spray to reduce vapours or divert any vapour cloud drift. Avoid allowing water runoff to contact spilled material. Prevent entry into waterways, sewers, basements or confined areas.

**GHS Disposal Precautionary Statement - P501:** dispose of product and containers in accordance with SA National and / or regional Regulations refer National Environmental Management Waste Act - NEM: WA, it's Regulations and local by-laws. See the South African Waste Information Centre website [sawic.environment.gov.za](http://sawic.environment.gov.za) which informs permitted Waste Facilities and Service providers.

## SECTION 7. Handling and Storage

### Storage requirements

Keep away from incompatible products. Solution of ferric chloride should be stored in polyethylene bottles and should be protected from exposure to light and heat. Avoid extreme temperatures - freezing and very high. Do not store together with incompatible materials such as caustic soda and alkali metals. Keep containers closed and protect from physical damage.

### Handling precautions – see Section 8 for suitable PPE

Prevent or minimise direct contact with skin, eyes or clothing, and keep drums tightly closed when not in use. Handle as a corrosive liquid, wear gloves of a suitable material such as PVC, Neoprene or Natural rubber if likely to come into skin contact, face shield / safety glasses and acid respirator to protect against splashes and fumes. Eating, drinking and smoking shall be prohibited in any areas where chemicals are handled, stored or processed. Workers should remove contaminated clothing and protective equipment before entering eating areas and must wash hands before eating, drinking or smoking to remove any chemicals that could be ingested or inhaled. Tightly fitting safety goggles must be worn when decanting and ensure pumps, hoses and any other equipment used is compatible with product, i.e. polyethylene, polypropylene, PVC, Teflon, rubber and FRP.

**Conditions for Safe Storage - refer SANS 10263:** The Warehousing of dangerous goods, and 10263 - Part 8 The storage and handling of corrosive substances, for more specific information and relevant regulations and recognised practices for storage, warehousing and handling.

**GHS Precautionary Statement - P 406 store in corrosion resistant containers.**

### Suitable materials

Packaging material - Plastic (PE, PP, PVC), Fiberglass-reinforced polyester, Epoxy-coated concrete, Acid-proof or rubber-coated steel.

### Unsuitable materials

Mild steel, iron, copper, aluminium and alloys. Bases, unalloyed steel and galvanized surfaces.

## SECTION 8. Exposure Controls/Personal Protection

**Control parameters** e.g. occupational exposure limit values or biological limit values

| Ingredient name | TLV (TWA) | Recommended Exposure limits – (NIOSH) & ACGIH    |
|-----------------|-----------|--------------------------------------------------|
| Ferric Chloride |           | 1 mg/m <sup>3</sup> - Iron salts, soluble, as Fe |



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**NIOSH** - National Institute for Occupational Safety and Health

**ACGIH** - American Conference of Governmental Industrial Hygienists (ACGIH)

**Engineering control measures:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.

### Respiratory protection:

- Low concentrations and short-term activity (max 15 min): filter masks with filter type E. Be aware of the filter capacity and the use-time limitation!
- High concentrations or unknown exposure or prolonged activity: self-contained breathing apparatus.

### Hand protection:

- Protective gloves which conform to EN 374.
- Suitable glove material: butyl rubber. chloroprene rubber. Chloro-sulfonated polyethylene, neoprene, polyethylene and PVC.

The suitability of a specific glove should be evaluated taking cognizance of the conditions of use i.e. chemical, mechanical, thermal stress, and potential contact time.

### Eye and face Personal protection:

- Tightly fitting safety goggles or safety glasses with side protection shield that conforms to EN 166.
- Full face mask.

### Skin and body protection:

- Acid-resistant safety clothing – overalls are preferable, and safety shoes or boots with high tops.



**General protective and hygiene measures:** use suitable PPE for the job to be done -

- Avoid contact with skin and eyes.
- Do not inhale any mist if formed.
- Remove contaminated clothing immediately.
- Wash hands immediately after handling chemicals and before breaks.
- Do not eat, drink and smoke at work, keep away from foodstuffs and beverages.

**Other protection** - A safety shower and eye wash facility should be nearby and ready for use.

## SECTION 9. Physical and Chemical Properties

|                           |                                         |
|---------------------------|-----------------------------------------|
| Appearance                | : Dark orange to brown                  |
| Odour                     | : Faint hydrochloric acid odour         |
| pH                        | : 1.1 (0.1 N solution); strongly acidic |
| Boiling point/range       | : 90°C                                  |
| Melting point/range       | : -12° C                                |
| Flash point               | : Not applicable                        |
| Flammability              | : Not flammable                         |
| Auto-ignition temperature | : Not flammable                         |
| Decomposition temperature | : >200°C                                |
| Vapour pressure           | : Pa at 20°C: negligible                |
| Specific gravity          | : min 1.45 @ 20°C                       |
| Viscosity                 | : 10 mPas at 20°C                       |
| Solubility - water        | : Miscible                              |

## SECTION 10. Stability and Reactivity

**Stability:** Stable under recommended conditions of handling and storage. Hygroscopic material.

**Conditions to avoid:** The solution in water is strongly acidic and reacts violently with alkali metals, allyl chloride, ethylene oxide, styrene and bases.



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### Incompatible materials:

- Alkali and organic bases with violent evolution of heat
- Strong oxidants, bleaching agents, hydrogen peroxide, nitric acid, etc. and their salts, chromates, permanganates, etc with evolution of toxic chlorine gas
- Sulphides with evolution of toxic H<sub>2</sub>S gas
- Sulphites, hydrogen sulphites and pyro sulphites with evolution of toxic SO<sub>2</sub> gas
- Sodium aside to highly toxic and explosive hydrazo acid

Hazardous decomposition products:

Decomposes above 200°C to produce toxic and corrosive gases including chlorine and hydrogen chloride.

Hazardous polymerization does not occur.

## SECTION 11. Toxicological Information

### EU Group Classification, and C & L Inventory:

#### Acute Toxicity

**Skin Corrosion/Irritation:** harmful if swallowed, causes skin irritation and may cause an allergic skin reaction.

**Eye Damage/irritation:** causes serious eye damage

**Respiratory or skin sensitization:** Can cause an allergic reaction

| Acute toxicity | Result                               | Species | Dose/ Exposure                                 | Caution                   |
|----------------|--------------------------------------|---------|------------------------------------------------|---------------------------|
| Oral           | Abdominal pain, vomiting or diarrhea | mouse   | LD <sub>50</sub> 440 - 1 300 mg/kg body weight | Do not ingest the product |
| Dermal         | Redness. Pain or allergic reaction   | rat     | LD <sub>50</sub> 880 - 2 000 mg/kg body weight | Avoid skin contact        |

**Germ Cell Mutagenicity:** No data available

**Carcinogenicity:** Not considered to be carcinogenic by IARC, ACGIH, NTP or OSHA

**Reproductive Toxicity:** Not Considered to have any reproductive effects

**Specific Target Organ Toxicity Single Exposure:** No data available

**Specific Target Organ Toxicity Repeated Exposure:** No data available

**Aspiration Hazard:** No available data but inhalation of mist may irritate the respiratory tract.

## SECTION 12. Ecological Information

### GHS – EU Group Classification, and C & L Inventory:

**Hazardous to the Aquatic Environment:** Not Classified as hazardous to the environment but could impact on acidity in water with harmful effects on aquatic organisms

Hazardous to the Ozone layer: No evidence - not Classified

**Persistence and Biodegradability:** Not biodegradable

**Bio-accumulation:** no potential for bioaccumulation

**Mobility in soil:** No data available but unlikely as will be neutralized by naturally occurring alkalinity in the soil.

## SECTION 13. Disposal Considerations

### Disposal methods

Neutralise prior to disposal (pH between 6 and 8.5 inclusive). Must undergo physic-chemical treatment prior to disposal. Take all necessary precautions when disposing of this product.

Disposal must be made in accordance with the applicable National and Regional Government regulations at approved and permitted chemical disposal sites – refer to the SA National Environmental Management Waste Act - NEM: WA, its Regulations and local by-laws, and see the South African Waste Information Centre [www.sawic.environment.gov.za](http://www.sawic.environment.gov.za) which informs permitted Waste Facilities and Service providers



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### Disposal of packaging

Packaging and containers, even those that have been emptied, will retain product residue, handle empty containers as if they were full, unless emptied and cleaned. Remove all possible traces of product and wash prior to disposal of packaging and containers. Dispose in compliance with Regulations – see above, and Industry Best Practice

Always observe and comply with hazard warnings.

## SECTION 14. Transport information

| Road & Rail                         | UNTDG /ADR/SANS 10228                                                             | Maritime - IMDG                                                                    | Air - ICAO / IATA                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| UN Number                           | UN 2582                                                                           | UN 2582                                                                            | UN 2582                                                                             |
| Proper shipping name – PSN          | FERRIC CHLORIDE SOLUTION                                                          | FERRIC CHLORIDE SOLUTION                                                           | FERRIC CHLORIDE SOLUTION                                                            |
| Class 8 Corrosive                   |  |  |  |
| Packing group - III                 | Use UN Certified packaging P001 & IBC 03                                          | Use UN Certified packaging P001 & IBC 03                                           | Use UN Certified packaging P001 & IBC 03                                            |
| Environmental hazards               | Not a marine pollutant                                                            | IMDG Supplement Ems: F-A & S-B                                                     | Refer ICAO & IATA 2025                                                              |
| Additional information              |                                                                                   |                                                                                    |                                                                                     |
| Emergency Response Guide - ERG 2024 | Guide 154 & 157 Toxic and/or corrosive/Noncombustible                             | Refer IMDG 42-24 2024 & Supplement                                                 | Refer ICAO & IATA 2025                                                              |
| Suitable Packaging                  | Plastic or lined steel drums & portable tanks /tankers                            | Plastic or lined steel drums & tanks                                               | Plastic or lined steel drums                                                        |

## SECTION 15. Regulatory information

**OHS Act - Occupational Health and Safety Act 85 of 1993:** requires site Risk Assessment and monitoring to inform personnel Health / Biological Monitoring. The **HCA – Hazardous Chemical Agents Regulations** require provision of a GHS compliant Safety Data Sheet - SDS.

**MHI – Major Hazards Installations Regulations - OHS Act:** require site Risk Assessment to ascertain potential impacts outside of the site and potential impacts on the public or neighbours. Copy to be lodged with the Dept Labour, and local Emergency Services.

**NEMA – National Environmental Management Act 107 of 1998:** Duty of Care and Producer Responsibility for products and packaging on a Life Cycle basis. Environmental Impact Assessment Regulations

**NEM: WA – National Environmental Waste Act 59 of 2008:** Extended Producer Responsibility, requirements and regulations for waste management, Classification and disposal

**NEM: AQA – National Environmental Air Quality Act 39 of 2004:** AQA Licenses and Emissions

**National Department of Health – Hazardous Substances Act**

**EU Directive EC 1272/2008 (EU GHS /CLP) – Safety Data Sheets and Labelling**

**ECHA – European Chemical Agency Website, Chemical information, C&L Inventory, Chemicals of High Concern (SVHCs) and Chemicals for Community Rolling Action Plan (Corapi)**

**ERG 2024 Transport Canada and US Dept Transportation PHMSA - Pipeline and Hazardous Materials Safety Administration, Emergency Response Guidelines.**

## SECTION 16. Other information

Personnel working with this product shall be trained in the hazards and safe use



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**This product has been approved by NSF/ANSI/CAN 60 Standard** for the treatment of potable water up to the maximum rates specified by NSF.

**ISO 11014:2009 Safety Data Sheets for Chemical Products** – content and order of sections adopted as **SANS 11014:2010**

**UN Recommendations for Transport of Dangerous Goods, Model Regulations** commonly known as the **“Orange Books”** latest revision, currently the 23<sup>rd</sup> revision

**UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS** commonly known as the **“Purple Book”** latest revision, currently the 10<sup>th</sup> revision

**IMDG – International Maritime Dangerous Goods Code, amendment 42-24**

**IATA Technical Regulations 66<sup>th</sup> edition, January 2025**

**SANS 50888:** Chemicals used for treatment of water for human consumption: Iron trichloride

|                              |              |                                  |
|------------------------------|--------------|----------------------------------|
| Date of original MSDS        | : 1993-10-28 | Compiled by DD Liebenberg        |
| Date of issue for revision 1 | : 2009-06-05 | Compiled by HH Maringa           |
| Date of issue for revision 2 | : 2010-08-04 | Compiled by P. Govender          |
| Date of Revision3            | : 2012-10-18 | Compiled by HH Maringa           |
| Date of Revision4            | : 2016-11-16 | Compiled by EU Anderson          |
| Date of Revision 5           | : 2017-02-24 | Compiled by P. Govender          |
| Date of Revision 6           | : 2020-08-04 | Revised by E Anderson            |
| Date of Revision 7           | : 2025-05-12 | Reviewed & revised by E Anderson |

## EXCLUSION OF LIABILITY

All the information provided in this Safety Data Sheet (SDS) is based on the best available Technical information at the date of this revision, and is presented in good faith to be correct.

It is the responsibility of the recipient to communicate the hazards stated in this SDS to any person/s who are likely to handle, work with, come into contact with or use this product to ensure safe use.

**NB** The information provided in this SDS applies only to the product in its present form and not to any formulation or mix. It should be used only as directed, and any formulations or other use is at the responsibility of the user of the product to implement Risk Assessments in order to establish any hazards or risks which may arise out of its use, wherever such user may be situated.

It is the legal responsibility of the person in receipt of this SDS, whether for Transport, storage or use that a Risk Assessment and Emergency Plan is done, and to ensure that the information provided is communicated to, and understood by, any person who may come into contact with the product in any way and /or any manner whatsoever.