



a Bud Group Company

SAFETY DATA SHEET

FERRIC CHLORIDE (42.5% Min)

SDS 010 / Rev 06
02-10-2020

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. Certified to NSF/ANSI 60 for potable water at prescribed dosage
Restrictions on use	: Not for retail or domestic use, nor use by untrained persons.
Suppliers details	: NCP Chlorchem (Pty) Ltd
Address	: Cnr. Allandale Road and Chloor Road Chlookop, Gauteng, South Africa
Telephone number	: +27 (0) 11 976 2115
24 Hour Emergency phone number	: +27 (0)11 921 3333

SECTION 2. Hazards Identification

GHS classification of the substance:

Hazard classes/Hazard categories	GHS Hazard Statement
Transport – Class 8 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.

Precautionary statements -



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- 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	42.0 – 44.0	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 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



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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.

NFPA (704) Hazard rating for

Fire: 0 classed as material that will not burn

Health: 3 Material which on exposure could cause serious, temporary or moderate residual injury

ERG - Emergency Response Guide 2020 and SANS 10232 - 3 Guide 154 and 157

Small fires – immediate response action should quickly put out the fire. Use water spray, fog, foam, dry chemical, CO₂ 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, CO₂, 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.
- Vapors 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



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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 respective authorities. Dike spillages and water run-off using soil and/or sandbags, absorb bulk liquid with flyash, 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 vapor-suppressing foam may be used to reduce vapors. Use water spray to reduce vapors or divert vapor 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 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



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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 ³ - Iron salts, soluble, as Fe

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 gloves 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



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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.

Incompatible materials:

- Alkali and organic bases with violent evolution of heat
- Limestone, marble, dolomite and other carbonic minerals with evolution of suffocating CO₂ gas
- 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 H₂S gas
- Sulphites, hydrogen sulphites and pyro sulphites with evolution of toxic SO₂ 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

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

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

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:

Specific Target Organ Toxicity Repeated Exposure:

Aspiration Hazard: Not 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.



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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 which informs permitted Waste Facilities and Service providers

Disposal of packaging

Packagings 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

	UNTDG /ADR/SANS 10228	IMDG	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 - Amt 39-18	Refer ICAO & IATA Rev 61, 2020
Additional information		IMDG Supplement Elms: F-A & S-B	
Emergency Response Guide - ERG 2020	Guide 154 & 157 Toxic and/or corrosive/Noncombustible	Refer IMDG 39-18 2018 & Supplement	Refer ICAO & IATA 2020
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. **Section 9A** requirement to provide MSDS

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 Labor, and local Emergency Services.

Pressure Equipment Regulations - OHS Act: encompasses containers and service equipment

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



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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 2020 Transport Canada and US Dept Transportation PHMSA - Pipeline and Hazardous Materials Safety Administration

SECTION 16. Other information

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

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 21st revision

UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS commonly known as the “Purple Book” latest revision, currently the 8th revision

IMDG – International Maritime Dangerous Goods Code, amendment 39-18

IATA Technical Regulations 62nd edition, January 2020

SANS 50888: Chemicals used for treatment of water for human consumption

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	Complied by P. Govender
Date of Revision 6	: 2018-10-02	Compiled by E U Anderson

Approved as per Management of Change No. 15-10-2020-126

EXCLUSION OF LIABILITY

All information and instructions provided in this Safety Data Sheet (SDS) in respect of the substance is given in terms of the provisions of the Occupational Health and Safety Act No 85 of 1993 and its Regulations. Information is based on best available scientific and technical knowledge as at the date indicated on this SDS, and, is presented in good faith to be correct.

The information provided in this SDS apply 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 as formulated and/or mixed to investigate and 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, wherever such may be situated, to ensure that the information provided is communicated to, and understood by any person who may come in contact with the product in any place and in any manner whatsoever. If such recipient produces formulations or mixes using the product, then it is the recipient's sole responsibility to comply with the provisions of the Act in respect of the provision of the necessary SDS, and/or to comply with any other applicable legislation.