SAFETY DATA SHEET

FERRIC CHLORIDE ANHYDROUS

CAS No.: 7705-08-0

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

FERRIC CHLORIDE ANHYDROUS
Iron(III) chloride; Ferric trichloride
CAS: 7705-08-0

Other means of identification

Not relevant

Recommended use of the chemical and restrictions on use

Relevant uses: Coagulant/flocculant for water and wastewater treatment, etchant for printed circuit boards, mordant in dyeing, pigment/catalyst manufacture. For industrial user only.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

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2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Acute Tox. 4	Acute oral toxicity, Category 4, H302
Skin Corr. 1B	Skin corrosion, Category 1B, H314
STOT SE 3	Respiratory tract irritation, single exposure, Category 3, H335

GHS label elements, including precautionary statements

GHS: Danger

Hazard statements

Acute Tox. 4: H302 – Harmful if swallowed.
Skin Corr. 1B: H314 – Causes severe skin burns and eye damage.
STOT SE 3: H335 – May cause respiratory irritation.

Precautionary statements

P260: Do not breathe dust/mist.
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
P501: Dispose of contents/container in accordance with local regulations.

Other hazards which do not result in classification

Strongly hygroscopic – absorbs moisture rapidly from air, forming corrosive fumes of hydrogen chloride. Aqueous solutions are strongly acidic and corrosive to metals.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: Iron(III) chloride, anhydrous

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7705-08-0	Ferric chloride — Acute Tox. 4: H302; Skin Corr. 1B: H314; STOT SE 3: H335 – Danger	≥ 96% (technical grade)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

Mixtures

Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

Request medical assistance immediately, showing the SDS of this product.

By inhalation

Remove person to fresh air. If breathing is difficult, provide oxygen. Seek medical attention if symptoms occur.

By skin contact

Remove contaminated clothing immediately. Flush affected skin with plenty of water for at least 20 minutes. Seek immediate medical attention – treat as a chemical burn.

By eye contact

Rinse eyes immediately with plenty of lukewarm water for at least 20 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek immediate medical attention.

By ingestion/aspiration

Do NOT induce vomiting. Rinse mouth with water. Seek immediate medical attention; show this SDS to the physician – corrosive, risk of gastrointestinal burns.

Most important symptoms/effects, acute and delayed

Acute and delayed effects are indicated in sections 2 and 11.

Indication of immediate medical attention and special treatment needed, if necessary

Not relevant

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Suitable: Water spray, carbon dioxide (CO2), dry chemical powder, sand – use extinguishing media suitable for surrounding fire.
Unsuitable: None known specifically.

Specific hazards arising from the chemical

Non-combustible solid. Reacts with water/moisture to release heat and corrosive hydrogen chloride fumes. On strong heating, may release irritant/corrosive fumes.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus (SCBA) and full acid-resistant protective clothing.

Additional provisions

If safe to do so, remove exposed containers or cool with water spray from a safe distance. Prevent fire-fighting water from entering drains or watercourses; contain and collect for disposal.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Evacuate unnecessary personnel. Avoid raising dust. Ensure adequate ventilation. Use appropriate PPE (see section 8).

For emergency responders

Wear full protective equipment including respiratory protection for large spills.

Environmental precautions

Prevent entry into drains, sewers, watercourses and soil. Strongly colors water reddish-brown and can be toxic to aquatic organisms at elevated concentrations; notify authorities for significant releases.

Methods and materials for containment and cleaning up

Sweep/vacuum up carefully (avoid dust and contact with moisture) and place in a dry, sealed, labelled container. Do not allow spilled material to contact water in an uncontrolled manner (releases HCl fumes and heat). Collect for disposal per section 13.

Reference to other sections

See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use

Avoid contact with skin, eyes and clothing. Avoid generation and inhalation of dust. Handle in a dry environment where possible – strongly hygroscopic.

B. Technical recommendations for the prevention of fires and explosions

Non-combustible; standard precautions for handling corrosive/hygroscopic solids apply.

C. Technical recommendations on general occupational hygiene

Wash hands and exposed skin thoroughly after handling and before eating, drinking or smoking.

D. Technical recommendations to prevent environmental risks

Prevent uncontrolled discharge to drains or watercourses.

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Storage temperature	Ambient, dry conditions
Maximum time	12 months in original sealed/airtight packaging

B. General conditions for storage

Store in a cool, dry, well-ventilated area in tightly sealed containers, protected from moisture. Store away from strong bases, oxidizers and reactive metals. Corrosion-resistant flooring/containment recommended.

Specific end use(s)

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

No specific occupational exposure limit has been established for this product/grade. Available on request.

Appropriate engineering controls

Use local exhaust ventilation where dust may be generated.

B. Respiratory protection

Use a particulate (dust) respirator (e.g., FFP2/N95); use an acid-gas cartridge respirator if HCl fumes are present due to moisture contact.

C. Specific protection for the hands

Acid-resistant gloves (nitrile, PVC or neoprene) recommended.

D. Eye and face protection

Chemical safety goggles; face shield for operations with splash/dust risk.

E. Bodily protection

Acid-resistant apron/protective clothing; acid-resistant footwear.

F. Additional emergency measures

Emergency eyewash station and safety shower should be available in the work area.

Environmental exposure controls

Avoid environmental spillage of both the product and its container. See subsection 7.1.D.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid (crystalline/flake)
Appearance	Crystalline solid
Color	Greenish-black to brownish-black (dark green by reflected light, purple/red by transmitted light)
Odor	Slight HCl-like odor (due to hydrolysis)
Odour threshold	Not relevant
Volatility	
Boiling point	approx. 315°C (sublimes/decomposes)
Vapour pressure at 20°C	Negligible
Evaporation rate	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	2.90 g/cm³
pH (5% aqueous solution)	approx. 1.5–2.5 (strongly acidic)
Solubility in water at 20°C	approx. 920 g/L (highly soluble, exothermic and hygroscopic dissolution)
Melting point	306°C
Flammability	
Flash Point	Non-applicable (non-flammable solid)
Flammability	Not classified as flammable
Autoignition temperature	Not relevant

** Not relevant / not applicable due to the physical nature of the product.*

Other information

Explosive properties	Not explosive
Oxidising properties	Not oxidising
Corrosive to metals	Highly corrosive to most common metals, especially in aqueous solution
Molecular weight	162.20 g/mol

10. STABILITY AND REACTIVITY

Reactivity

Strongly hygroscopic – reacts with atmospheric moisture releasing heat and hydrogen chloride fumes. Reacts with strong bases (exothermic neutralization) and reactive metals.

Chemical stability

Chemically stable when kept dry and sealed; readily absorbs moisture from air if exposed.

Possibility of hazardous reactions

Contact with water/moisture generates heat and corrosive HCl fumes. Reaction with strong oxidizers or reducing agents may occur.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Absorbs moisture, releases HCl fumes	Avoid strong heating	No special sensitivity	Avoid – strongly hygroscopic, keep sealed

Incompatible materials

Water/Moisture	Reactive Metals
Strong Bases	Strong Oxidizers/Reducing Agents

Hazardous decomposition products

On contact with moisture or strong heating, releases hydrogen chloride (HCl) fumes.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect)
Harmful if swallowed; may cause gastrointestinal irritation/corrosive injury.

B. Inhalation (acute effect)
Dust and any HCl fumes generated by hydrolysis are irritating to the respiratory tract.

C. Contact with skin and eyes (acute effect)
Corrosive: causes severe skin burns and eye damage on contact, particularly with moist skin/eyes.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity)
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data.

E. Sensitizing effects
Not classified as a skin or respiratory sensitizer based on available data.

F. Specific target organ toxicity (STOT) – single exposure
May cause respiratory irritation (H335).

G. Specific target organ toxicity (STOT) – repeated exposure
Classification criteria are not met based on available data.

H. Aspiration hazard
Classification criteria are not met based on available data.

Product-specific toxicological information

Identification	Acute Toxicity	Species
Ferric chloride CAS: 7705-08-0	LD50 oral (rat): approx. 900 mg/kg	Rat
	LD50 dermal: Not established	–

12. ECOLOGICAL INFORMATION

Toxic to aquatic organisms at elevated concentrations; strongly acidifies and colors water, reducing light penetration and dissolved oxygen.

Toxicity

Acute Toxicity	Species	Genus
LC50 (fish): 32–104 mg/L (96h), pH-dependent	Not specified	Fish
EC50 (Daphnia): approx. 12 mg/L (48h)	Daphnia magna	Crustacean

Persistence and degradability

Not applicable – inorganic salt; hydrolyzes to iron hydroxide and hydrochloric acid in water, which are subsequently neutralized/precipitated.

Bioaccumulative potential

Not applicable – inorganic, does not bioaccumulate (iron is an essential trace element).

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Low (dissociates in water)	Not relevant	No	Precipitates as iron hydroxide in moist/neutral soil

Results of PBT and vPvB assessment

Non-applicable – not assessed as a PBT/vPvB substance (inorganic salt).

Other adverse effects

Not described

13. DISPOSAL CONSIDERATIONS

Disposal methods

Neutralize with lime or soda ash to precipitate as iron hydroxide sludge before disposal, in accordance with local regulations. Dispose of via a licensed hazardous/chemical waste contractor. Do not discharge directly to drains or watercourses without neutralization as permitted by local Pollution Control Board norms.

Refer to national and local regulations on waste management (Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended).

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	UN1773
14.2 UN proper shipping name	FERRIC CHLORIDE, SOLID
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental hazard	Yes (marine pollutant)
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22)

14.1 UN number	UN1773
14.2 UN proper shipping name	FERRIC CHLORIDE, SOLID
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Marine pollutant	Yes (marine pollutant)
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

EmS Codes: Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024)

14.1 UN number	UN1773
14.2 UN proper shipping name	FERRIC CHLORIDE, SOLID
14.3 Transport hazard class(es)	8
14.4 Packing group	III
14.5 Environmental hazard	Yes (marine pollutant)
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

15. REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product in question

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991

16. OTHER INFORMATION

Legislation related to safety data sheets

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3

H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources

The United Nations Economic Commission for Europe (UNECE); publicly available GHS classification and labelling data for the substance/CAS number referenced in Section 1.

Abbreviations and acronyms

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

Disclaimer: The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

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