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Safety data sheet

BASF Safety data sheet according to the United Nations' Globally Harmonized System (UN GHS)
Date / Revised: 07.01.2025 Version: 2.3
Product: **Iron trichloride solution (FeCl3)**

(ID no. 30042289/SDS_GEN_00/EN)
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1. Identification

Product identifier

Iron trichloride solution (FeCl3)

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Chemical
Recommended use: process chemical, flocculation agent, Water purification

Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY
Division Monomers

Telephone: +49 621 60 42737
E-mail address: pss.monomers@basf.com

Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

2. Hazards Identification

Classification of the substance or mixture

According to UN GHS criteria

Met. Corr. 1
Acute Tox. 5 (oral)
Eye Dam. 1

For the classifications not written out in full in this section the full text can be found in section 16.

Label elements

Globally Harmonized System (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H290	May be corrosive to metals.
H318	Causes serious eye damage.
H303	May be harmful if swallowed.

Precautionary Statements (Prevention):

P280	Wear eye and face protection.
P234	Keep only in original packaging.

Precautionary Statements (Response):

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 physician.
P390	Absorb spillage to prevent material damage.

Precautionary Statements (Storage):

P406	Store in a corrosion-resistant container with a resistant inner liner.

According to UN GHS criteria

Hazard determining component(s) for labelling: Iron trichloride

Other hazards

According to UN GHS criteria

No specific dangers known, if the regulations/notes for storage and handling are considered. If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

3. Composition/Information on Ingredients

Substances

Not applicable

Mixtures

Chemical nature

Iron trichloride

dissolved in: Water

Contains: inorganic metal salts, Manganese dichloride (Content (W/W): < 0,5 %), Nickel dichloride (Content (W/W): < 0,01 %)

Hazardous ingredients (GHS)
According to UN GHS criteria

Iron trichloride

Content (W/W): 40 %	Acute Tox. 4 (oral)
CAS Number: 7705-08-0	Skin Corr./Irrit. 2
EC-Number: 231-729-4	Eye Dam./Irrit. 1
	H318, H315, H302

For the classifications not written out in full in this section the full text can be found in section 16.

4. First-Aid Measures

Description of first aid measures

Immediately remove contaminated clothing. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position).

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Immediately wash thoroughly with soap and water, seek medical attention.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open.

On ingestion:
Rinse mouth and then drink 200-300 ml of water. Immediate medical attention required.

Most important symptoms and effects, both acute and delayed

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

skin irritation, irritates the eyes and respiratory tract

Hazards: No hazard is expected under intended use and appropriate handling.

Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
water spray

Unsuitable extinguishing media for safety reasons:
water jet

Special hazards arising from the substance or mixture

hydrogen chloride
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Special protective equipment:
Wear a self-contained breathing apparatus.

Further information:
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems. Contaminated extinguishing water must be disposed of in accordance with official regulations. Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with eyes.

Environmental precautions

Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants. Do not discharge into waterways or sewer systems without proper authorization.

Methods and material for containment and cleaning up

For small amounts: Rinse away with water.
For large amounts: Neutralize with lime.
For residues: Dispose of contaminated material as prescribed.

7. Handling and Storage

Precautions for safe handling

Protection against fire and explosion:
The substance/product is non-combustible.

Conditions for safe storage, including any incompatibilities

Segregate from metals. Segregate from reducing agents.

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Polyester resin, glass reinforced (Palatal A410), rubberized, glass
Unsuitable materials for containers: Aluminium, Carbon steel (Iron), Stainless steel 1.4541, Stainless steel 1.4571
Further information on storage conditions: Keep in a cool place.

Protect from temperatures below: -12 °C

Specific end use(s)

See exposure scenario(s) in the attachment to this safety data sheet.

8. Exposure Controls/Personal Protection

Control parameters

Components with occupational exposure limits

7705-08-0: Iron trichloride

Exposure controls

Personal protective equipment

Respiratory protection:
Breathing protection if gases/vapours are formed. Gas filter for acid inorganic gases/vapours such as SO2, HCl (e.g. EN 14387 Type E).

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
polyvinylchloride (PVC) - 0.7 mm coating thickness
fluoroelastomer (FKM) - 0.7 mm coating thickness
butyl rubber (butyl) - 0.7 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness

nitrile rubber (NBR) - 0.4 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:
Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Hands and/or face should be washed before breaks and at the end of the shift. Take off immediately all contaminated clothing.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

State of matter:	liquid	
Form:	liquid	
Colour:	brown	
Odour:	odourless	
Odour threshold:	not applicable, odour not perceivable	
crystallization temperature:	-12 °C Literature data.	
Boiling point:	> 100 °C (1.013 bar) Literature data.	
Flammability:	not flammable, not self-igniting	(derived from flash point)
Lower explosion limit:	For liquids not relevant for classification and labelling.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Flash point:	not applicable, Aqueous preparation	
Auto-ignition temperature:	not applicable	
Thermal decomposition:	To avoid thermal decomposition, do not overheat.	
pH value:	1 (40 %(m), 20 °C)	(OECD Guideline 122)
Viscosity, kinematic:	not determined	
Viscosity, dynamic:	10 mPa.s (40 %(m), 20 °C) Literature data.	
Solubility in water:	soluble	

Information on: iron trichloride
Partitioning coefficient n-octanol/water (log Kow): -4
(24 °C)

Vapour pressure: < 23 mbar
(20 °C)
Literature data.
< 100 mbar
(50 °C)
Literature data.

Density: 1.430 kg/m3 (OECD Guideline 109)
(20 °C)

Relative vapour density (air):
not determined

Particle characteristics

Particle size distribution: The substance / product is marketed or used in a non solid or granular form. -

9.2. Other information

Information with regard to physical hazard classes

Explosives
Explosion hazard: not explosive
Oxidizing properties
Fire promoting properties: not fire-propagating
Corrosion to metals

Corrosive effect on metals. - Corrosion rate > 6.25 mm/a using a Type 3 test steal. - Corrosion rate > 6.25 mm/a using 7075-T6 or AZ5GU-T6 - The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Other safety characteristics

Miscibility with water:
(15 °C)
completely (e.g. >=90%)

Evaporation rate:
negligible, Value can be approximated from Henry's Law Constant or vapor pressure.

10. Stability and Reactivity

Reactivity

Corrosion to metals: Corrosive effect on metals. Corrosion rate > 6.25 mm/a using a Type 3 test steal. Corrosion rate > 6.25 mm/a using 7075-T6 or AZ5GU-T6 The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Possibility of hazardous reactions

No hazardous reactions when stored and handled according to instructions.
The product is chemically stable.

Conditions to avoid

Avoid heat.

Incompatible materials

Substances to avoid:
metal

Hazardous decomposition products

Hazardous decomposition products:
hydrogen chloride

11. Toxicological Information

Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of low toxicity after single ingestion. Inhalation-risk test (IRT): No mortality within 8 hours as shown in animal studies. The inhalation of a highly saturated vapor-air mixture represents no acute hazard.

Experimental/calculated data:
LD50 rat (oral): approx. 2.900 mg/kg (BASF-Test)

Irritation

Assessment of irritating effects:
Not irritating to the skin. Risk of serious damage to eyes.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant (BASF-Test)

Serious eye damage/irritation rabbit: irreversible damage (BASF-Test)

Respiratory/Skin sensitization

Assessment of sensitization:
No reliable data were available concerning sensitization. A sensitizing effect on particularly sensitive individuals cannot be excluded.

Germ cell mutagenicity

Assessment of mutagenicity:
No mutagenic effect was found in various tests with bacteria and mammalian cell culture.

Experimental/calculated data:
Mouse lymphoma assay

negative
The data on toxicology refer to the active ingredient.

Information on: Iron trichloride
Assessment of mutagenicity:
The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in studies with mammals.

Carcinogenicity

Assessment of carcinogenicity:
Based on available data, the classification criteria are not met.

Information on: Iron trichloride
Assessment of carcinogenicity:
The whole of the information assessable provides no indication of a carcinogenic effect.

Reproductive toxicity

Assessment of reproduction toxicity:
Not classified, due to lack of data.

Information on: Iron trichloride
Assessment of reproduction toxicity:
No reliable data are available concerning reproduction toxicity. The chemical structure does not suggest a specific alert for such an effect.

Developmental toxicity

Assessment of teratogenicity:
In animal studies the substance did not cause malformations.

Information on: Iron trichloride
Assessment of teratogenicity:
No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
Repeated exposure to large quantities may affect certain organs.

Information on: Iron trichloride
Assessment of repeated dose toxicity:

The substance may cause damage to the kidney after repeated ingestion of high doses, as shown in animal studies. The substance may cause damage to the liver after repeated ingestion of high doses, as shown in animal studies.

Aspiration hazard

No aspiration hazard expected.

12. Ecological Information

Toxicity

Assessment of aquatic toxicity:
At the present state of knowledge, no negative ecological effects are expected. The ecotoxicological effects are solely caused by the pH. The product has not been tested. The statement has been derived from the properties of the individual components.

Information on: Iron trichloride
Assessment of aquatic toxicity:
At the present state of knowledge, no negative ecological effects are expected. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
The product gives rise to pH shifts.

Information on: Iron trichloride
Toxicity to fish:
Study scientifically not justified.

Information on: Iron trichloride
Aquatic invertebrates:
Study scientifically not justified.

Information on: Iron trichloride
Microorganisms/Effect on activated sludge:
EC50 (5 min) 500 mg/l, activated sludge (other, aquatic)

Persistence and degradability

Assessment biodegradation and elimination (H2O):
Inorganic product which cannot be eliminated from water by biological purification processes.
Elimination from water by precipitation or flocculation.

Information on: Iron trichloride
Assessment biodegradation and elimination (H2O):
Not applicable for inorganic substances.

Bioaccumulative potential

Bioaccumulation potential:
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments:
Adsorption in soil: No data available. Study scientifically not justified.

Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

Additional information

Adsorbable organically-bound halogen (AOX):
The Substance/product may have a halogenizing effect and therefore contribute to the OBH.

Other ecotoxicological advice:
Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations. Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants.

13. Disposal Considerations

Waste treatment methods

Must be disposed of by special means, e.g. suitable dumping after chemical/physical pretreatment (consolidation).
The local regulations on waste-water treatment must be followed.

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. Transport Information

Land transport

ADR

UN number or ID number: UN2582

UN proper shipping name:	FERRIC CHLORIDE, SOLUTION
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	no
Special precautions for user:	Tunnel code: E

RID

UN number or ID number:	UN2582
UN proper shipping name:	FERRIC CHLORIDE, SOLUTION
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	no
Special precautions for user:	None known

Inland waterway transport

ADN

UN number or ID number:	UN2582
UN proper shipping name:	FERRIC CHLORIDE, SOLUTION
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	no
Special precautions for user:	None known

Transport in inland waterway vessel

Not evaluated

Sea transport

IMDG

UN number or ID number:	UN 2582
UN proper shipping name:	FERRIC CHLORIDE, SOLUTION
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	no Marine pollutant: NO
Special precautions for user:	EmS: F-A; S-B

Air transport

IATA/ICAO

UN number or ID number:	UN 2582
UN proper shipping name:	FERRIC CHLORIDE SOLUTION
Transport hazard class(es):	8
Packing group:	III
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

Maritime transport in bulk according to IMO instruments

Maritime transport in bulk is not intended.

15. Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

16. Other Information

This product is of industrial quality and unless otherwise specified or agreed intended exclusively for industrial use. Any other intended applications should be discussed with the manufacturer.

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

Met. Corr.	Corrosive to metals
Acute Tox.	Acute toxicity
Eye Dam.	Serious eye damage
Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
H318	Causes serious eye damage.
H315	Causes skin irritation.
H302	Harmful if swallowed.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.