

Safety Data Sheet

Ferric Chloride Anhydrous

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1. Identification

Product identifier used on the label

Ferric Chloride Anhydrous

Recommended use of the chemical and restriction on use

Recommended use*: Chemical

Recommended use*: Intermediate; process chemical; catalyst

* The "Recommended use" identified for this product is provided solely to comply with a Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Company:

BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

Telephone: +1 973 245-6000

Emergency telephone number

24 Hour Emergency Response Information

CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Other means of identification

Substance number:	14035
Molecular formula:	FeCl(3)
Chemical family:	iron chloride
Synonyms:	Ferric Chloride Anhydrous; Iron III Chloride Flores Martis, Iron Trichloride

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2. Hazards Identification

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Classification of the product

Acute Tox.	4 (oral)	Acute toxicity
Skin Corr./Irrit.	2	Skin corrosion/irritation
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Skin Sens.	1	Skin sensitization

Label elements

Pictogram:

Signal Word:
Danger

Hazard Statement:

H318	Causes serious eye damage.
H315	Causes skin irritation.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.

Precautionary Statements (Prevention):

P280	Wear protective gloves and eye protection or face protection.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P272	Contaminated work clothing should not be allowed out of the workplace.
P270	Do not eat, drink or smoke when using this product.
P264	Wash contaminated body parts thoroughly after handling.

Precautionary Statements (Response):

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P310	Immediately call a POISON CENTER or physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P362	IF ON SKIN (or hair): Wash with plenty of soap and water.
P301 + P330	IF SWALLOWED: rinse mouth.
P332 + P313	If skin irritation occurs: Get medical attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.
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Hazards not otherwise classified

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.
Corrodes metals in the presence of water or moisture.

Labeling of special preparations (GHS):

May produce an allergic reaction. Contains: Nickel chloride (NiCl₂)

3. Composition / Information on Ingredients

According to Regulation 2012 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Iron trichloride

CAS Number: 7705-08-0
Content (W/W): 75.0 - < 100.0%
Synonym: Iron trichloride

Manganese chloride (MnCl₂)

CAS Number: 7773-01-5
Content (W/W): 0.0 - < 1.0%
Synonym: Manganese dichloride

iron dichloride

CAS Number: 7758-94-3

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Content (W/W): 0.0 - < 1.0%
Synonym: Iron dichloride

Chromium chloride (CrCl₃)
CAS Number: 10025-73-7
Content (W/W): 0.0 - < 0.2%
Synonym: Chromium trichloride

4. First-Aid Measures

Description of first aid measures

General advice:

Remove contaminated clothing.

If inhaled:

Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

If on skin:

Wash affected areas thoroughly with soap and water. Immediate medical attention required.

If in eyes:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

If swallowed:

Rinse mouth and then drink 200-300 ml of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. 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.

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irritates the eyes and respiratory tract, skin irritation, allergic symptoms

Information on: Iron trichloride

Symptoms: Overexposure may cause: corneal injury, skin corrosion, severe pain, coughing, respiratory disorders, dyspnea, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps

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

Indication of any immediate medical attention and special treatment needed

Note to physician

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

5. Fire-Fighting Measures

Extinguishing media

Suitable extinguishing media:
carbon dioxide, dry powder

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
chlorine, can be emitted at > 200 °C
The substances/groups of substances mentioned can be released in case of fire.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Contaminated extinguishing water must be disposed of in accordance with official regulations. Avoid direct contact with water. Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered.

Impact Sensitivity:

Remarks: Based on the chemical structure there is no shock-sensitivity.

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6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with the skin, eyes and clothing. Avoid dust formation.

Environmental precautions

Substance/product is RCRA hazardous due to its properties.

Methods and material for containment and cleaning up

Spills should be contained, solidified, and placed in suitable containers for disposal.

7. Handling and Storage

Precautions for safe handling

Keep container tightly sealed. Processing machines must be fitted with local exhaust ventilation.

Protection against fire and explosion:

See SDS section 5 - Fire fighting measures.

Conditions for safe storage, including any incompatibilities

Suitable materials for containers: High density polyethylene (HDPE), Low density polyethylene (LDPE), Polyester resin, glass reinforced (Palatal A410), enamelled, rubberized, Carbon steel (Iron), glass

Further information on storage conditions: Keep container tightly closed and in a cool place.

Storage stability:

Protect against moisture.

8. Exposure Controls/Personal Protection

Components with occupational exposure limits

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zinc chloride	ACGIH TLV	TWA value 1 mg/m ³ fumes/smoke ; STEL value 2 mg/m ³ fumes/smoke ;
Iron trichloride	OSHA PEL ACGIH TLV	TWA value 1 mg/m ³ (iron (Fe)); TWA value 1 mg/m ³ (iron (Fe));
Chromium chloride (CrCl ₃)	OSHA PEL ACGIH TLV	PEL 0.5 mg/m ³ (Chromium (Cr)); TWA value 0.003 mg/m ³ Inhalable fraction (chromium(III));
Nickel chloride (NiCl ₂)	OSHA PEL ACGIH TLV	PEL 1 mg/m ³ (nickel (Ni)); TWA value 0.1 mg/m ³ (nickel (Ni)); TWA value 0.1 mg/m ³ Inhalable fraction (nickel (Ni));

Advice on system design:

Provide local exhaust ventilation to control dust.

Personal protective equipment**Respiratory protection:**

Wear a NIOSH-certified (or equivalent) particulate respirator.

Hand protection:

Chemical resistant protective gloves

Eye protection:

Tightly fitting safety goggles (chemical goggles).

Body protection:

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:

Eye wash fountains and safety showers must be easily accessible. Wear protective clothing as necessary to prevent contact. Avoid inhalation of dust. Wash soiled clothing immediately.

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9. Physical and Chemical Properties

Form:	powder, crystalline
Odour:	faint odour, pungent odour
Odour threshold:	Not determined due to potential health hazard by inhalation.
Colour:	green to black
pH value:	1 (200 g/l, 20 °C)
Melting point:	dropped
Boiling point:	315 °C (1,013.25 hPa) Decomposes on heating. Literature data.
Sublimation temperature:	304 °C (1 bar)
Flash point:	not applicable, the product is a solid
Flammability:	not highly flammable (Directive 92/69/EEC, A.10)
Lower explosion limit:	For solids not relevant for classification and labelling.
Upper explosion limit:	For solids not relevant for classification and labelling.
Vapour pressure:	1 mbar (20 °C)
Density:	2.89 g/cm ³ (25 °C)
Bulk density:	approx. 1,000 kg/m ³
Vapour density:	The product is a non-volatile solid.
Partitioning coefficient n-octanol/water (log Pow):	-4 (24 °C)
Thermal decomposition:	> 200 °C chlorine
Viscosity, dynamic:	not applicable, the product is a solid
Viscosity, kinematic:	not applicable, the product is a solid
Solubility in water:	744 g/l (0 °C) Literature data.
Solubility (quantitative):	480 g/kg (20 °C)

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Evaporation rate: The product is a non-volatile solid.

10. Stability and Reactivity

Reactivity

Corrosion to metals:
Corrosive effect on metals.

Oxidizing properties:
not fire-propagating (UN Test O.1 (oxidizing solids))

Chemical stability

Possibility of hazardous reactions

The product is chemically stable.
Explosive reaction with cyanides.

Conditions to avoid

Avoid moisture.

Incompatible materials

water, strong bases

Hazardous decomposition products

Decomposition products:
Hazardous decomposition products: Hydrogen chloride, metal compounds, Acid fumes, chlorides

Thermal decomposition:
> 200 °C
Possible thermal decomposition products:
chlorine

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11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity

Assessment of acute toxicity: No other known acute effects.

Oral

Type of value: LD50

Species: mouse (female)

Value: > 300 - < 630 mg/kg

Inhalation

Study does not need to be conducted.

Dermal

Type of value: LD50

Species: rat (male/female)

Value: > 2,000 mg/kg (OECD Guideline 402)

No mortality was observed. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Irritation / corrosion

Assessment of irritating effects: Corrosive to the skin, eyes and respiratory system. Skin contact may result in dermatitis and deep burns.

Skin

Species: rabbit

Result: Irritant.

Method: BASF-Test

Data refer to a diluted aqueous solution of the substance.

Eye

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Species: rabbit
Result: Risk of serious damage to eyes.
Method: BASF-Test
Data refer to a diluted aqueous solution of the substance.

Sensitization

Assessment of sensitization: May cause allergic skin reaction.

Information on: Chromium chloride (CrCl₃)

Assessment of sensitization:

Sensitization after skin contact possible.

Aspiration Hazard

Study does not need to be conducted.

Chronic Toxicity/Effects

Repeated dose toxicity

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.

Genetic toxicity

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: The whole of the information assessable provides no indication of a carcinogenic effect.

Reproductive toxicity

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.

Teratogenicity

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

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12. Ecological Information

Toxicity

Aquatic toxicity

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.

Toxicity to fish

Study scientifically not justified.

Aquatic invertebrates

Study scientifically not justified.

Chronic toxicity to fish

Study scientifically not justified.

Chronic toxicity to aquatic invertebrates

Study scientifically not justified.

Assessment of terrestrial toxicity

No data available.

Microorganisms/Effect on activated sludge

Toxicity to microorganisms

other aquatic

activated sludge/EC50 (5 min): 500 mg/l

Persistence and degradability

Assessment biodegradation and elimination (H₂O)

Not applicable for inorganic substances.

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Elimination information

not applicable

Assessment of stability in water

In contact with water the substance will hydrolyse rapidly.

Information on Stability in Water (Hydrolysis)

$t_{1/2}$ 4.15 - 34 min, (calculated, pH 7)

The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Bioaccumulative potential

Assessment bioaccumulation potential

Does not significantly accumulate in organisms.

Bioaccumulation potential

Bioconcentration factor: < 20 (28 d), *Cyprinus carpio* (OECD-Guideline 305)

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Mobility in soil

Assessment transport between environmental compartments

The substance will not evaporate into the atmosphere from the water surface.

No data available.

Study scientifically not justified.

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.

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13. Disposal considerations

Waste disposal of substance:

Do not discharge into waterways or sewer systems without proper authorization. Dispose of in a RCRA-licensed facility. Dispose of in accordance with national, state and local regulations.

Container disposal:

Recommend crushing, puncturing or other means to prevent unauthorized use of used containers. If containers are not empty, they must be disposed of in a RCRA-licensed facility.

RCRA: D002

14. Transport Information

Land transport

USDOT

Hazard class:	8
Packing group:	III
ID number:	UN 1773
Hazard label:	8
Proper shipping name:	FERRIC CHLORIDE, ANHYDROUS

Sea transport

IMDG

Hazard class:	8
Packing group:	III
ID number:	UN 1773
Hazard label:	8
Marine pollutant:	NO
Proper shipping name:	FERRIC CHLORIDE, ANHYDROUS

Air transport

IATA/ICAO

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Hazard class: 8
Packing group: III
ID number: UN 1773
Hazard label: 8
Proper shipping name: FERRIC CHLORIDE, ANHYDROUS

15. Regulatory Information

Federal Regulations

Registration status:

Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Refer to SDS section 2 for GHS hazard classes applicable for this product.

<u>CERCLA RQ</u>	<u>CAS Number</u>	<u>Chemical name</u>
1000 LBS	7646-85-7; 7705-08-0	zinc chloride; Iron trichloride
100 LBS	7758-94-3; 7718-54-9	iron dichloride; Nickel chloride (NiCl ₂)
10 LBS	7447-39-4; 7758-95-4	copper dichloride; Lead chloride (PbCl ₂)
1 LBS	7784-34-1	Arsenous trichloride

State regulations

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical name</u>
PA	7705-08-0	Iron trichloride
NJ	7705-08-0	Iron trichloride

Safe Drinking Water & Toxic Enforcement Act, CA Prop. 65:

WARNING: This product can expose you to chemicals including NICKEL COMPOUNDS, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov.

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NFPA Hazard codes:

Health: 3 Fire: 0 Reactivity: 0 Special:

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Acute Tox.	4 (oral)	Acute toxicity
Skin Corr./Irrit.	2	Skin corrosion/irritation
Eye Dam./Irrit.	1	Serious eye damage/eye irritation
Skin Sens.	1	Skin sensitization

16. Other Information

SDS Prepared by:

BASF NA Product Regulations
SDS Prepared on: 2020/08/25

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