



## Safety Data Sheet

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### Section 1. Identification of the substance/mixture and of the company/undertaking

Product identifier:

Product name: Iron(III) chloride solution

SDS No. : 4070E-3

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

Research and Development

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.

Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN

Division: Chemical Safety Management Department

Telephone number: +81-6-6946-8061

FAX: +81-6-6946-1607

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### Section 2. Hazards identification

GHS classification and label elements of the product

Classification of the substance or mixture

HEALTH HAZARDS

Acute toxicity (Oral): Category 4

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

Specific target organ toxicity – single exposure: Category 1 (systemic toxicity)

Specific target organ toxicity – single exposure: Category 3 (Respiratory tract irritation)

ENVIRONMENT HAZARDS

Hazardous to the aquatic environment, short-term (acute): Category 3

(Note) GHS classification without description: Not classified/Classification not possible

Label elements



Signal word: Danger

HAZARD STATEMENT

H302 Harmful if swallowed

H314 Causes severe skin burns and eye damage

H370 Causes damage to organs (systemic toxicity)

H335 May cause respiratory irritation

H402 Harmful to aquatic life

PRECAUTIONARY STATEMENT

Prevention

P273 Avoid release to the environment.

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P271 Use only outdoors or in a well-ventilated area.

P264 Wash contaminated parts thoroughly after handling.

P280 Wear protective gloves, protective clothing or face protection.

P280 Wear eye protection/face protection.



P270 Do not eat, drink or smoke when using this product.

**Response**

P310 Immediately call a POISON CENTER/doctor/physician.

P312 Call a POISON CENTER/doctor/physician if you feel unwell.

P308 + P311 IF exposed or concerned: Call a POISON CENTER/doctor/physician.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing.

Rinse skin with water or shower.

P363 Wash contaminated clothing before reuse.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P330 IF SWALLOWED: Rinse mouth.

P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**Storage**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

**Disposal**

P501 Dispose of contents/container in accordance with local/national regulation.

**Specific adverse human health effects**

See "11. Toxicological Information".

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### Section 3. Composition/information on ingredients

Mixture/Substance selection:

Mixture

Ingredient name	Content (%)	CAS No.	ENCS	Chemical formula
Iron(III) chloride, anhydride	38-40	7705-08-0	1-213	FeCl <sub>3</sub>
Water	60-62	7732-18-5	-	H <sub>2</sub> O

Note : The figures shown above are not the specifications of the product.

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### Section 4. First-aid measures

Descriptions of first-aid measures

**IF INHALED**

Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER/doctor/physician if you feel unwell.

**IF ON SKIN**

Take off immediately all contaminated clothing. Rinse skin with water or shower.

If skin irritation or rash occurs: Get medical advice/attention.

**IF IN EYES**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

**IF SWALLOWED**

Rinse mouth.

Do NOT induce vomiting.

Call a POISON CENTER/doctor/physician if you feel unwell.



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**Section 5. Fire-fighting measures**

## Extinguishing media

## Suitable extinguishing media

Use appropriate extinguishing media suitable for surrounding facilities.

## Unsuitable extinguishing media

Unsuitable extinguishing media data is not available.

## Specific hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.

Runoff from fire control or dilution water may cause pollution.

See "10. Stability and Reactivity".

## Advice for firefighters

## Specific fire-fighting measures

Evacuate non-essential personnel to safe area.

## Special protective equipment and precautions for fire-fighters

Wear fire resistant or flame retardant clothing.

Wear protective gloves/protective clothing/eye protection/face protection.

Firefighters should wear self-contained breathing apparatus with a full facepiece operated in the positive pressure mode.

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**Section 6. Accidental release measures**

## Personnel precautions, protective equipment and emergency procedures

Keep unauthorized personnel away.

Ventilate area until material pick up is complete.

Wear proper protective equipment.

## Environmental precautions

Prevent spills from entering sewers, watercourses, low areas or rivers. To be careful not discharged to the environment without being properly handled waste water contaminated.

## Methods and materials for containment and cleaning up

Absorb spill with inert material (dry sand, earth, et al), then place in a chemical waste container.

## Preventive measures for secondary accident

Collect spillage.

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**Section 7. Handling and storage**

## Precautions for safe handling

## Preventive measures

(Exposure Control for handling personnel)

Do not breathe dust/fume/gas/mist/vapors/spray.

(Protective measures against fire and explosion)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Exhaust/ventilator)

Exhaust/ventilator should be available.

(Safety treatments)

Avoid contact with skin.

Avoid contact with eyes.

## Safety Measures



Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Wash hands et al thoroughly after handling.

When using do not eat, drink or smoke.

Any incompatibilities

See "10.Stability and Reactivity".

Advice on general occupational hygiene

Wash contaminated parts thoroughly after handling.

Do not eat, drink or smoke when using this product.

Wash contaminated clothing before reuse.

Storage

Conditions for safe storage

Keep container tightly closed.

Store locked up. (P405)

Store in a cool, dry place. Do not store in direct sunlight.

Storage in accordance with local/national regulation.

Container and packaging materials for safe handling

Use closed unbreakable containers.

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## Section 8. Exposure controls/personal protection

Control parameters

Control value and concentration standard value are not available in ISHA.

Adopted value

(Iron(III) chloride, anhydride)

ACGIH(1990) TWA: 1mg-Fe/m<sup>3</sup> (URT & skin irr)

Exposure controls

Appropriate engineering controls

Do not use in areas without adequate ventilation.

Eye wash station should be available.

Washing facilities should be available.

Individual protection measures

Recommend to use protective equipment in conformity with the standards.

Use appropriate protective equipment in accordance with local/national regulation.

Respiratory protection

Wear respiratory protection (dust-proof mask/gas mask). Select chemical cartridge corresponding to type of gases when using a gas mask.

Hand protection

Wear impervious protective glove.

Eye protection

Wear eye/face protection. Wear safety goggles in cases gas is generated.

Skin and body protection

Wear protective clothing.

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## Section 9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state: Liquid

Color: Yellowish brown to reddish brown

Odor: Odorless to slightly characteristic odor



Melting point/Freezing point data is not available.

Boiling point or initial boiling point data is not available.

Boiling range data is not available.

Flammability (gases, liquids and solids) data is not available.

Lower and upper explosion limit/flammability limit data is not available.

Flash point data is not available.

Auto-ignition temperature data is not available.

Decomposition temperature data is not available.

pH:  $\leq 3.0$

Kinematic viscosity data is not available.

Solubility:

Solubility in water: Soluble

Solubility in solvent data is not available.

n-Octanol/water partition coefficient data is not available.

Vapor pressure data is not available.

Density and/or relative density: 1.4g/cm<sup>3</sup>(20°C)

Relative vapor density (Air=1) data is not available.

Particle characteristics data is not available.

Other information

Other information is not available.

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## Section 10. Stability and Reactivity

Reactivity

Not available.

Chemical stability

Stable under normal storage/handling conditions.

Possibility of hazardous reactions

(Iron(III) chloride, anhydride)

Decomposes above 200°C. This produces toxic and corrosive gases including chlorine and hydrogen chloride. Decomposes on contact with water. This produces hydrogen chloride. The solution in water is a medium strong acid. Reacts violently with alkali metals, allyl chloride, ethylene oxide, styrene and bases. This generates explosion hazard. Attacks metal. This produces flammable/explosive gas (hydrogen). (ICSC 1499)

Conditions to avoid

Contact with incompatible materials.

Contact with fire source.

Incompatible materials

Bases, Alkali metals, Allyl chloride, Ethylene oxide, Styrene, Metals

Hazardous decomposition products

Chlorine, Hydrogen chloride, Hydrogen

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## Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity

Acute toxicity (Oral)

[Product]

Category 4, Harmful if swallowed

[Data for components of the product]



[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)  
rat LD50=500-1872mg/kg (SIDS, 2008)

**Irritant properties****Skin corrosion/irritation****[Product]**

Category 1, Causes severe skin burns and eye damage

**[Data for components of the product]**

[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)  
0.1M solution pH=2 (HSDB, 2014)

**Serious eye damage/irritation****[Product]**

Category 1, Causes serious eye damage

**[Data for components of the product]**

[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)  
0.1M solution pH=2 (HSDB, 2014)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

Carcinogenic effects data is not available.

Reproductive toxicity data is not available.

**Specific target organ toxicity (STOT)****STOT-single exposure****[Product]**

Category 1, Causes damage to organs

Category 3, May cause respiratory irritation

**[Data for components of the product]****[cat.1]**

[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)  
systemic toxicity (SIDS, 2008; HSDB, 2014)

**[cat.3 (respiratory tract irritation)]**

[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)  
respiratory tract irritation (SIDS, 2008; HSDB, 2014)

STOT-repeated exposure data is not available.

Aspiration hazard data is not available.

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**Section 12. Ecological Information****Toxicity****Aquatic toxicity****[Product]**

Category 3, Harmful to aquatic life

**[Data for components of the product]**

Hazardous to the aquatic environment, short-term (acute)

[GHS Cat. Japan, base data]  
(Iron(III) chloride, anhydride)

Crustacea (*Daphnia magna*) EC50=37.5mg/L/48hr (12.9mg-Fe/L) (SIDS, 2008)



Hazardous to the aquatic environment, long-term (chronic)

[GHS Cat. Japan, base data]

(Iron(III) chloride, anhydride)

Crustacea (Daphnia magna) NOEC=2.0mg/L/21days (0.70mg-Fe/L) (SIDS, 2008)

Water solubility

(Iron(III) chloride, anhydride)

(reaction) 92 g/100 ml (20°C) (ICSC, 2004)

Persistence and degradability

Persistence and degradability data is not available.

Bioaccumulative potential

Bioaccumulative potential data is not available.

Mobility in soil

Mobility in soil data is not available.

Other adverse effects

Ozone depleting chemical data is not available.

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### Section 13. Disposal considerations

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging

Waste treatment methods

Avoid release to the environment.

Dispose of contents/container as industrial waste. Accordance with local/national regulation.

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### Section 14. Transport Information

UN Number or ID Number : 2582

UN Proper Shipping Name :

FERRIC CHLORIDE SOLUTION

Class or division (Transport hazard class) : 8

Packing group : III

ERG GUIDE No.: 154

IMDG Code (International Maritime Dangerous Goods Regulations)

UN Number or ID Number : 2582

UN Proper Shipping Name :

FERRIC CHLORIDE SOLUTION

Class or division (Transport hazard class) : 8

Packing group : III

IATA (Dangerous Goods Regulations)

UN Number or ID Number : 2582

UN Proper Shipping Name :

FERRIC CHLORIDE SOLUTION

Class or division (Transport hazard class) : 8

Hazard labels : Corrosive

Packing group : III

Environmental hazards

Marine pollutants (yes/no) : no



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**Section 15. Regulatory Information**

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

U.S. Toxic Substances Control Act (TSCA) Inventory

Chemicals listed in TSCA Inventory

Iron(III) chloride, anhydride; Water

Other regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

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**Section 16. Other information**

References and sources for data

Globally Harmonized System of classification and labelling of chemicals, UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 22nd edit., 2021 UN

IMDG Code, 2022 Edition (Incorporating Amendment 41-22)

IATA Dangerous Goods Regulations (65th Edition) 2024

2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)

2024 TLVs and BEIs. (ACGIH)

JIS Z 7252 : 2019

JIS Z 7253 : 2019

2023 Recommendation on TLVs (JSOH)

Supplier's data/information

General Disclaimer

The Safety Data Sheet (SDS) is copyrighted material of KISHIDA CHEMICAL CO., LTD.

Please provide SDS to customers for selling or transferring.

All chemicals have unknown hazard. Handle the product with care.

This data sheet was created based on the information we currently have and may be revised according to new information. In addition, the precautions apply only to normal handling, and in the case of special handling, please make adequate countermeasure to maintain your safety.

The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.

The GHS classification data given here is based on current Japan official data (NITE published in 2022).