



## Safety Data Sheet

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

Product identifier:

Product name: 40% Titanium(IV) sulfate solution

SDS No. : 7880E-4

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

PHYSICAL AND CHEMICAL HAZARDS

Corrosive to metals: Category 1

HEALTH HAZARDS

Acute toxicity (Inhalation): Category 2

Skin corrosion/irritation: Category 1

Serious eye damage/eye irritation: Category 1

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

Specific target organ toxicity – repeated exposure: Category 1 (respiratory system)

ENVIRONMENT HAZARDS

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

Hazardous to the aquatic environment, long-term (chronic): Category 1

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

Label elements



Signal word: Danger

HAZARD STATEMENT

H290 May be corrosive to metals

H330 Fatal if inhaled

H314 Causes severe skin burns and eye damage

H370 Causes damage to organs (respiratory system)

H372 Causes damage to organs through prolonged or repeated exposure (respiratory system)

H402 Harmful to aquatic life

H410 Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENT

Prevention

P273 Avoid release to the environment.



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- P234 Keep only in original packaging.
- P260 Do not breathe dust/fume/gas/mist/vapors/spray.
- P284 In case of inadequate ventilation wear respiratory protection.
- 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**

- P390 Absorb spillage to prevent material-damage.
- P391 Collect spillage.
- P314 Get medical advice/attention if you feel unwell.
- P310 Immediately call a POISON CENTER/doctor/physician.
- 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.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

**Storage**

- P403 Store in a well-ventilated place. P233 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".

**Section 3. Composition/information on ingredients**

Mixture/Substance selection:

Mixture

Ingredient name	Content (%)	CAS No.	Chemicals No, Japan	Chemical formula
Titanium(IV) sulfate	40-41	13693-11-3	-	O8S2Ti
Sulfuric acid	about 30	7664-93-9	1-430	H2O4S
Water	about 30	7732-18-5	-	H2O

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

**Section 4. First-aid measures**

Descriptions of first-aid measures

General measures

Get medical advice/attention if you feel unwell.

**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

Absorb spillage to prevent material-damage.  
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

Keep only in original packaging.

Store in a corrosion resistant/specified container with a resistant inner liner.

Glass

Polyethylene

etc.

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**Section 8. Exposure controls/personal protection**

## Control parameters

## Adopted value

(Sulfuric acid)

ACGIH(2004) TWA: 0.2mg/m<sup>3</sup>(T) (Pulm func)

## 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



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Recommend to use protective equipment in conformity with the standards.

**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: Colorless, Clear

Odor data is not available.

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 data is not available.

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: 1.85

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**

(Sulfuric acid)

Decomposes on heating. This produces toxic and corrosive gases including sulfur oxides. The substance is a strong oxidant. It reacts with combustible and reducing materials and organic materials. This generates fire and explosion hazard. The substance is a strong acid. It reacts violently with bases and is corrosive to most common metals forming a



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flammable/explosive gas (hydrogen). Reacts violently with water. This generates heat and fire or explosion hazard. Attacks many plastics. (ICSC 0362)

**Conditions to avoid**

- Contact with incompatible materials.
- Contact with fire source.

**Incompatible materials**

Bases, Reducing agents, Combustible materials, Organic materials, Metals

**Hazardous decomposition products**

Sulfur oxides, Hydrogen

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**Section 11. Toxicological Information****Information on toxicological effects****Acute toxicity****Acute toxicity (Oral)**

- [Data for components of the product]
- [GHS Cat. Japan, base data]
- (Sulfuric acid)
- rat LD50=2140mg/kg (AICIS IMAP, 2015)

**Acute toxicity (Inhalation)**

- [Product]
- Category 2, Fatal if inhaled
- [Data for components of the product]
- [GHS Cat. Japan, base data]
- (Sulfuric acid)
- mist: rat LC50=0.375mg/L/4hr (OECD TG 403) (AICIS IMAP, 2015)

**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]
- (Sulfuric acid)
- corrosive and irritation (AICIS IMAP, 2015)

**Serious eye damage/irritation**

- [Product]
- Category 1, Causes serious eye damage
- [Data for components of the product]
- [GHS Cat. Japan, base data]
- (Sulfuric acid)
- corrosive and irritation (AICIS IMAP, 2015)

Allergenic and sensitizing effects data is not available.

Mutagenic effects data is not available.

**Carcinogenicity**

- [Data for components of the product]
- [IARC]
- (Sulfuric acid)
- Group 1 : Carcinogenic to humans
- [ACGIH]
- (Sulfuric acid)



A2(2004) : Suspected Human Carcinogen

[NTP]

(Sulfuric acid)

Known : Known to be Human Carcinogens

Reproductive toxicity data is not available.

Specific target organ toxicity (STOT)

STOT-single exposure

[Product]

Category 1, Causes damage to organs

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

(Sulfuric acid)

respiratory system (DFG MAK, 2001)

STOT-repeated exposure

[Product]

Category 1, Causes damage to organs through prolonged or repeated exposure

[Data for components of the product]

[cat.1]

[GHS Cat. Japan, base data]

(Sulfuric acid)

respiratory system (AICIS IMAP, 2015)

Aspiration hazard data is not available.

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## Section 12. Ecological Information

Toxicity

Aquatic toxicity

[Product]

Category 3, Harmful to aquatic life

Category 1, Very toxic to aquatic life with long lasting effects

[Data for components of the product]

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

[GHS Cat. Japan, base data]

(Sulfuric acid)

Fish (bluegill) LC50(pH3.25-3.5)=16-28mg/L/96hr (OECD SIDS, 2001)

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

[GHS Cat. Japan, base data]

(Sulfuric acid)

Fish (Gambusia affinis) NOEC(pH6.0)=0.025mg/L/45days (OECD SIDS, 2001)

Water solubility

(Sulfuric acid)

miscible (ICSC, 2000)

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



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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 : 2796

UN Proper Shipping Name :

SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID

Class or division (Transport hazard class) : 8

Packing group : II

ERG GUIDE No.: 157

**IMDG Code (International Maritime Dangerous Goods Regulations)**

UN Number or ID Number : 2796

UN Proper Shipping Name :

SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID

Class or division (Transport hazard class) : 8

Packing group : II

**IATA (Dangerous Goods Regulations)**

UN Number or ID Number : 2796

UN Proper Shipping Name :

SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID

Class or division (Transport hazard class) : 8

Hazard labels : Corrosive

Packing group : II

**Environmental hazards**

Marine pollutants (yes/no) : yes

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Noxious Liquid Substances ; Cat. Y

Sulfuric acid

Non Noxious Liquid Substances ; Cat. OS

Water

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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

Water; Sulfuric acid; Titanium(IV) sulfate

**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, 2020 Edition (Incorporating Amendment 40-20)  
IATA Dangerous Goods Regulations (64th Edition) 2023  
2020 EMERGENCY RESPONSE GUIDEBOOK (US DOT)  
2023 TLVs and BEIs. (ACGIH)  
Supplier's data/information

## General Disclaimer

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).