Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
   
   Product identifier:
   
   Product name: Titanyl sulfate
   Product code (SDS NO): 7890E-1

   Details of the supplier of the safety data sheet
   
   Manufacturer/Supplier: KISHIDA CHEMICAL CO., LTD.
   Address: 3-1, Honmachibashi, Chuo-ku, Osaka, JAPAN
   Division: Safety Management Dept. of Chemicals
   Telephone number: +81-6-6946-8061
   FAX: +81-6-6946-1607
   e-mail address: kagakuhinanzenkanri@kishida.co.jp

2. Hazards identification

   GHS classification and label elements of the product

   Classification of the substance or mixture

   HEALTH HAZARDS
   - Acute toxicity (Inhalation): Category 3
   - Skin corrosion/irritation: Category 1
   - Serious eye damage/eye irritation: Category 1
   - Specific target organ toxicity – single exposure: Category 2(respiratory apparatus/system)
   - Specific target organ toxicity – repeated exposure: Category 2(respiratory apparatus/system)

   ENVIRONMENT HAZARDS
   - Hazardous to the aquatic environment (Long-term): Category 2

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

   Label elements

   Signal word: Danger

   HAZARD STATEMENT
   - Toxic if inhaled
   - Causes severe skin burns and eye damage
   - Causes serious eye damage
   - May cause damage to organs after single exposure
   - May cause damage to organs through prolonged or repeated exposure
   - Toxic to aquatic life with long lasting effects

   PRECAUTIONARY STATEMENT

   Prevention
   - Avoid release to the environment.
   - Do not breathe dust/fume/gas/mist/vapors/spray.
   - Use only outdoors or in a well-ventilated area.
   - Wash contaminated parts thoroughly after handling.
   - Wear protective gloves, protective clothing or face protection.
   - Wear eye protection/face protection.
   - Do not eat, drink or smoke when using this product.

   Response
   - Collect spillage.
Get medical advice/attention if you feel unwell.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage
Store in a well-ventilated place. Keep container tightly closed.

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

3. Composition/information on ingredients
Mixture/Substance selection:

<table>
<thead>
<tr>
<th>Mixture</th>
<th>Ingredient name</th>
<th>Content (%)</th>
<th>Chemical formula</th>
<th>Chemicals No., Japan</th>
<th>CAS No.</th>
<th>MW</th>
<th>ECNO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>Content:7.5</td>
<td>H2O4S</td>
<td>H2O4S</td>
<td>1–430</td>
<td>7664–93–9</td>
<td>98.1</td>
<td>231–639–5</td>
</tr>
</tbody>
</table>

Note: The figures shown above are not the specifications of the product.
to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

**IF SWALLOWED**
Rinse mouth. Do NOT induce vomiting.
Call a POISON CENTER or doctor/physician if you feel unwell.

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### 5. Fire-fighting measures

**Extinguishing media**

- **Suitable extinguishing media**
  
  Use appropriate extinguishing media suitable for surrounding facilities.

- **Unsuitable extinguishing media data is not available.**

**Specific hazards arising from the substance or mixture**

- Containers may explode when heated.
- Fire may produce irritating, corrosive and/or toxic gases.

**Advice for firefighters**

- **Specific fire-fighting measures**
  
  Evacuate non-essential personnel to safe area.

- **Special protective equipment and precautions for fire-fighters**
  
  Wear fire/flame resistant/retardant clothing.
  Wear protective gloves/protective clothing/eye protection/face protection.
  Firefighters should wear self-contained breathing apparatus with full face peace operated positive pressure mode.

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### 6. Accidental release measures

**Personnel precautions, protective equipment and emergency procedures**

- Ventilate area until material pick up is complete.
- Wear proper protective equipment.

**Environmental precautions**

- Prevent spills from entering sewers, watercourses or low areas.
- Avoid raising dust.

**Methods and materials for containment and cleaning up**

- Sweep up, place in a bag and hold for waste disposal.

**Preventive measures for secondary accident**

- Collect spillage.

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### 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/sparks/open flames/hot surfaces. ~ 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 or face protection.
- Wear eye protection/face protection.
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 in a cool, dry place. Do not store in direct sunlight.

Container and packaging materials for safe handling
Polyethylene

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8. Exposure controls/personal protection
Control parameters
Adopted value
(Sulfuric acid)
ACGIH(2000) TWA: 0.2mg/m3(T) (Pulm func)
OSHA–PEL
(Sulfuric acid)
TWA: 1mg/m3

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
Respiratory protection
Wear respiratory protection.

Hand protection
Wear protective gloves.

Eye protection
Wear eye/face protection.

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9. Physical and Chemical Properties
Information on basic physical and chemical properties
Physical state: Powder
Color: White
Odor: None
pH data is not available.
Boiling point or initial boiling point data is not available.
Boiling range data is not available.
Melting point/Freezing point data is not available.
Decomposition temperature data is not available.
Flammability (gases, liquids and solids) data is not available.
Flash point data is not available.
Auto–ignition temperature data is not available.
Lower and upper explosion limit/flammability limit data is not available.
Vapor pressure data is not available.
Relative vapor density (Air=1) data is not available.
Density and/or relative density data is not available.
Kinematic viscosity data is not available.

Solubility:
Solubility in water: 750g/L
n-Octanol/water partition coefficient data is not available.
No Particle characteristics data is not available.

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 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

11. Toxicological Information
Information on toxicological effects
Acute toxicity
Acute toxicity (Oral)
[Sulfuric acid]
rat LD50=2140mg/kg (SIDS, 2001)

Acute toxicity (Inhalation)
[Sulfuric acid]
mist: rat LC50=0.347mg/L/4hr (SIDS, 2001)

Irritant properties
Skin corrosion/irritation
[Sulfuric acid]
corrosive substance

Serious eye damage/irritation
[Sulfuric acid]
human severe damage (ATSDR, 1998)

Allergenic and sensitizing effects data is not available.
Mutagenic effects data is not available.

Carcinogenicity
(Sulfuric acid)
IARC-Gr.1 : Carcinogenic to humans
(Sulfuric acid)
ACGIH-A2(2000) : Suspected Human Carcinogen
Reproductive toxicity data is not available.

STOT
STOT—single exposure
[cat.1]
[GHS Cat. Japan, base data]
(Sulfuric acid)
respiratory apparatus/system (ATSDR, 1998)

STOT—repeated exposure
[cat.1]
[GHS Cat. Japan, base data]
(Sulfuric acid)
respiratory apparatus/system (ATSDR, 1998)

Aspiration hazard data is not available.

12. Ecological Information
Ecotoxicity
Aquatic toxicity
Toxic to aquatic life with long lasting effects
Aquatic acute toxicity component(s) data
[GHS Cat. Japan, base data]
(Sulfuric acid)
Fish (bluegill) LC50(pH3.25−3.5)=16−28mg/L/96hr (OECD SIDS, 2001)

Aquatic chronic toxicity component(s) data
[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
Ozone depleting chemical data is not available.

13. Disposal considerations
Waste treatment methods
Avoid release to the environment (− if this is not the intended use).
Dispose of contents/container in accordance with local/national regulation.

14. Transport Information
UN No.: 2796
Proper Shipping Name:
SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID
Class or division: 8
Packing group: II
IMDG Code (International Maritime Dangerous Goods Regulations)
UN No.: 2796
Proper Shipping Name:
SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID
Class or division: 8
Packing group: II

IATA Dangerous Goods Regulations
UN No.: 2796
Proper Shipping Name:
SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID
Class or division: 8
Hazard labels: Corrosive
Packing group: II

Environmental hazards
MARPOL Annex III – Prevention of pollution by harmful substances
Marine pollutants (yes/no): yes

MARPOL Annex V – Prevention of pollution by garbage discharge
Hazardous to the aquatic environment – long-term hazard: cat.1, 2
Sulfuric acid

Transport in bulk according to Annex II of MARPOL73/78 and IBC Code
Noxious Liquid: Cat. Y
Sulfuric acid
Non Noxious Liquid: Cat. OS
Water

15. Regulatory Information
Safety, health and environmental regulations/legislation specific for the substance or mixture
US major regulations
TSCA: Water, Sulfuric acid, Titanium oxide sulphate

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

16. Other information
GHS classification and labelling
Acute Tox. 3: H331 Toxic if inhaled
Skin Corr. 1: H314 Causes severe skin burns and eye damage
Eye Dam. 1: H318 Causes serious eye damage
STOT SE 2: H371 May cause damage to organs after single exposure
STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure
Aquatic Chronic 2: H411 Toxic to aquatic life with long lasting effects

Reference Book
IMDG Code, 2018 Edition (Incorporating Amendment 39–18)
IATA Dangerous Goods Regulations (60th Edition) 2019
Classification, labelling and packaging of substances and mixtures (table3–1 ECNO6182012)
2016 EMERGENCY RESPONSE GUIDEBOOK (US DOT)
2019 TLVs and BEIs (ACGIH)
http://monographs.iarc.fr/ENG/Classification/index.php
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 2018).