

Safety Data Sheet

1. Product and company identification

Product name : Sulfuric acid (96%)
Name of manufacturer : KANTO CHEMICAL CO., INC.
Address : 2-1, Nihonbashi, Muromachi 2-Chome, Chuo-Ku, Tokyo, 103-0022, Japan
Name of section : Electronic materials division technical department
Telephone number : +81-3-6214-1080
Facsimile number : +81-3-3241-1043
Mail address : el-info@gms.kanto.co.jp
SDS No. : GE00257

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Out of category

Pyrophoric liquids : Out of category

Self-heating substances and mixtures
: Out of category

Oxidizing liquids : Out of category

Human health hazard

Acute toxicity(oral) : Out of category

Acute toxicity(inhalation:dust, mists)
: Category 2

Skin corrosion/irritation
: Category 1B

Serious eye damage/eye irritation
: Category 1

Skin sensitization : Out of category

Reproductive toxicity
: Out of category

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

Specific target organ systemic toxicity(repeated exposure)
: Category 1

Environmental hazard

Hazardous to the aquatic environment-acute hazard
: Category 3

Hazardous to the aquatic environment-chronic hazard
: Category 1

Pictogram or symbol



Signal word	: Danger
Hazard statement	: Fatal if inhaled Causes severe skin burns and eye damage Causes serious eye damage Causes damage to organs (respiratory organs) Causes damage to organs (respiratory organs) through prolonged or repeated exposure Harmful to aquatic life Very toxic to aquatic life with long lasting effects
Cautions	
Safety measurements	: Do not breathe dust, mist, and vapor. Use only in a well-ventilated area. Avoid release to the environment. Do not eat, drink or smoke when using this product. Wear appropriate protective gloves, glasses, clothing, face shield, or mask. Wash protective equipment thoroughly after use. Wash hands thoroughly after handling.
First-aid measures	: If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately get medical treatment. If swallowed: Rinse mouth, do not induce vomiting. Immediately get medical treatment. If in eyes : Rinse cautiously with water for several minutes. Get medical treatment. If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment. If exposed, get medical treatment. Get medical treatment, if you feel unwell. Collect leakage
Storage	: Tightly container closed and store in a well-ventilated area. Store locked up.
Disposal	: Dispose of contents and containers appropriately in accordance with related regulations.

3. Composition/Information on ingredients

Substance/Mixture : Substance

Chemical name or commercial name
: Sulfuric acid

Ingredients and composition
: Water solution contains 96.5% sulfuric acid

Chemical formula : H₂SO₄

CAS No. : 7664-93-9

TSCA Inventory : Registered

EINECS No. : 2316395

Dangerous and hazardous ingredients
: Sulfuric acid

4. First aid measures

- Inhalation : Remove the victim to fresh air, and keep him quiet. Get medical attention immediately. If necessary, give artificial respiration or oxygen.
- Skin contact : Wash the affected areas under running water.
- Eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.
- Ingestion : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Anticipated acute and delayed symptoms

- : Inhalation of sulfuric acid mist causes sore throat, cough, and shortness of breath. Dermal exposure causes redness, pain, blister, and burns.

5. Fire fighting measures

- Extinguishing media : This product is noncombustible.
- Prohibited extinguishing media
: Water spray
- Particular fire fighting : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
- Protection for firefighters
: Wear breathing apparatus.

6. Accidental release measures

- Cautions for personnel : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Keep away personnel except for authorized ones from spillage area by stretching ropes.
- Cautions for environment : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.
- Removal measure : Absorb spill with diatomaceous earth or dry sand and place in container. Neutralize residue with calcium hydroxide solution or sodium carbonate solution and then flush with copious amounts of water.
- Prevention of second accident
: Do not allow contact with organic substances or combustible substances.

7. Cautions of handling and storage

Handling

- Engineering measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor.

Storage

- Adequate storage condition
: Store in a dark, cool place and tightly closed.

Safety adequate container materials

: Glass, Fluorine resin, Polyethylene

8. Exposure control/Personal protection

Engineering measures : Use with an enclosed system or a local exhaust ventilation.

Control parameters

ACGIH(2015) : 0.2mg/m³(T) (TLV-TWA)

Protective equipment

Respiration protective equipment

: If necessary, wear a chemical cartridge respirator with acidic gases.

Hands protective equipment

: Impervious protective gloves

Eyes protective equipment

: Safety goggles

Skin and body protective equipment

: Protective clothing, protective boots

9. Physical and chemical properties

Appearance : Liquid

Color : Colorless

Odor : Odorless

pH : Strong acidity

Boiling point : 308°C

Melting point : -14.7°C (As 95% Sulfuric acid)

Flash point : Noncombustible

Auto-ignition point : Noncombustible

Explosion characteristics

Explosion limit : Noncombustible

Vapor pressure : 0.2Pa(35°C) (As 95% Sulfuric acid)

Vapor density : 3.4

Density : 1.84g/cm³ (20°C)

Solubility

Solubility in solvents : Water : Freely soluble, but generate heat
Reacts with organic solvents.

log Pow : Not available

Other data : Viscosity : 23cP(25°C)

10. Stability and reactivity

Stability : Generates heat when contacted with water.

Reactivity : Corrodes many kinds of metals.

Incompatible conditions : Contact with alkaline substances and combustible materials

Incompatible materials : Alkaline substances, combustible materials, reducing substances

Hazardous decomposition products

: Sulfur oxides

11. Toxicological information

- Acute toxicity : Oral : Out of category
Dermal : Not possible to classify because of insufficient data.
Inhalation(vapor) : Not possible to classify because of insufficient data.
Fatal if inhaled(dust, mist) (category 2)
rat oral LD50=2140mg/kg
rat inhalation LC50=0.375mg/L/4H(mist)
- Skin corrosion/irritation : Causes severe skin burns and eye damage(category 1B)
The product is strongly acidic and causes severe skin irritation.
Thus, it was classified into category 1B.
- Serious eye damage/eye irritation
: Causes serious eye damage(category 1)
In case of human accident of sulfuric acid, severe eye damage with lysed anterior chamber of the eyes was recognized. 5% solutions caused mild irritation on rabbit eyes, and 10% solutions caused severe irritation on rabbit eyes. So it was classified into category 1.
- Respiratory sensitization or Skin sensitization
: Respiratory sensitization : Not possible to classify because of insufficient data.
Skin sensitization : Out of category
Sulfuric acid has no human skin sensitization.
- Mutagenicity : Not possible to classify because of insufficient data.
In vivo studies regarding both germ cells and somatic cells have no data, in vitro mutagenicity, the single index of chromosomal abnormality test is positive, but other indexes are negative, so the classification is impossible due to insufficient data.
- Carcinogenic effects : Not possible to classify because of insufficient data
- Effects on the reproductive system
: Out of category
In sulfuric acid inhalation test during the fetal organogenetic period in rabbits and mice, at dosing levels not toxic to dams, no fetotoxicity or teratogenicity was seen in either species. In chronic toxicity studies and carcinogenicity tests, no effects on the reproductive organ of both sexes were observed. The main toxicity was direct effect by irritation/corrosion. Thus, sulfuric acid is judged to have no reproductive toxicity.
- Specific target organ systemic toxicity single exposure
: Cause damage to organs (respiratory organs) (category 1)
Based on the descriptions on sulfuric acid that in the inhalation exposure of low concentration by humans, airway irritation such as cough and breath shortness was identified, and at high exposure levels, acute effects such as cough, breath shortness and hemoptysis shedding, and permanent effects such as functional depression of lungs, fibrosis and emphysema were identified, and that hemorrhage in lungs and dysfunction were identified by 8-hour inhalation exposure in guinea pigs, sulfuric acid is classified into category 1 (respiratory organs)
- Specific target organ systemic toxicity repeated exposure
: Cause damage to organs (respiratory organs) through prolonged or repeated exposure(category 1)

In the 28-day inhalation exposure test in rats, cell proliferation in laryngeal mucosa was noted within the guidance value range of category 1, and in the 14 to 139-day repetition inhalation exposure test in guinea pigs within the guidance value range of category 1, respiratory and lung disorder, such as nasal-septum dropsy, pulmonary emphysema, atelectasis, hyperemia, dropsy, bleeding and thrombosis of bronchioles were noted, and further in the 78-week inhalation exposure test in cynomolgus monkeys, histological changes such as cell hyperplasia and wall thickening in bronchioles of lungs were noted in the dosage (0.048 mg/L, 23.5 Hr/Day) of the guidance value range of category 1, so sulfuric acid is classified into category 1 (respiratory organs).

Aspiration hazard : Not possible to classify because of insufficient data.

12. Ecological information

Ecotoxicity

Fish toxicity : Harmful to aquatic life(category 3)
Very toxic to aquatic life with long lasting effects(category 1)
Fish (bluegill) LC50=16-28mg/L/96H
Fish (western mosquitofish) NOEC=0.025mg/L/45-day

Persistence and degradability

: Not available

Bioaccumulative potential : Low or no bioconcentration or bioaccumulation potential in fish or shells.

Mobility in soil : It is expected to have high mobility in soil.

13. Disposal consideration

Residual disposal : Add alkali such as calcium hydroxide, sodium carbonate gradually to neutralize and then flush in a drain with a large amount of water. Or entrust approved waste disposal companies with the disposal.

Containers : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

UN class : Class 8(Corrosive substances) P. G. II

UN number : 1830

Marine regulation information

UN No. : 1830
Proper shipping name : SULPHURIC ACID
Class : 8
Sub risk : -
Packing group : II
Marine pollutant : P

Aviation regulation information

UN No. : 1830
Proper shipping name : Sulphuric acid
Class : 8
Sub risk : -
Packing group : II

15. Regulatory information

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

16. Other information

References

Encyclopaedia Chemica, Kyoritsu Shuppan Co., Ltd. (1963)

Handbook of dangerous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001)

Dangerous Properties of Industrial Materials, 6th ed. N. I. Sax Van Nostrand Reinhold Company (1984)

Handbook of Dangerous Substances Springer-Verlag Tokyo (1991)

Handbook of 16817 Chemical Products, The Chemical Daily Co. (2017)

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.