

Safety Data Sheet

Product name: Sulfuric acid

CAS No.: 7664-93-9

Prepared in accordance with GB/T 16483, GB/T 17519

SECTION 1: Identification of the substance/mixture and of the company/undertaking

>Product identifier

- Product name: Sulfuric acid
- CBnumber: CB9675634
- CAS: 7664-93-9
- EINECS Number: 231-639-5
- Synonyms: sulfuric acid, Concentrated sulfuric acid

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

- Relevant identified uses: For R&D use only. Not for medicinal, household or other use.
- Uses advised against: none

>Company Identification

- Company: Linyi Tuohui New Materials Co., Ltd.
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SECTION 2: Hazards identification

>GHS Label elements, including precautionary statements

- Symbol(GHS)



- Signal word Warning

Precautionary statements

P264 Wash hands thoroughly after handling.

P264 Wash skin thoroughly after handling.

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

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

Rinse SKIN with water/shower.

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

P321 Specific treatment (see ... on this label).

P332+P313 IF SKIN irritation occurs: Get medical advice/attention.

P337+P313 IF eye irritation persists: Get medical advice/attention.

P405 Store locked up.

Hazard statements

H314 Causes severe skin burns and eye damage

H315 Causes skin irritation

H318 Causes serious eye damage

H319 Causes serious eye irritation

SECTION 3: Composition/information on ingredients

>Substance

- Product name: Sulfuric acid
- Synonyms: sulfuric acid, Concentrated sulfuric acid
- CAS: 7664-93-9
- EC number: 231-639-5
- MF: H₂O₄S
- MW: 98.08

SECTION 4: First aid measures

>Description of first aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

>Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

>Indication of any immediate medical attention and special treatment needed

No data available

>Notes to physician

No data available

SECTION 5: Firefighting measures

>Extinguishing media**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

>Special hazards arising from the substance or mixture

Sulfur oxides Not combustible.

Ambient fire may liberate hazardous vapours.

>Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

>NFPA 704

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SECTION 6: Accidental release measures

>Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

>Environmental precautions

Do not let product enter drains.

>Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent and neutralising material (e.g. Chemisorb H, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

>Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

>Precautions for safe handling

For precautions see section 2.2.

>Conditions for safe storage, including any incompatibilities

> Storage conditions

Tightly closed.

SECTION 8: Exposure controls/personal protection

>control parameter

Hazard composition and occupational exposure limits

Does not contain substances with occupational exposure limits.

>Exposure controls

Appropriate engineering controls

Change contaminated clothing and immerse in water. Preventive skin protection Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact Material: Viton

Minimum layer thickness: 0.7 mm Break through time: 480 min

Material tested: Vitoject (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.7 mm Break through time: 120 min Material tested: Butoject (KCL 898)

Body Protection

Acid-resistant protective clothing

Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains.

Exposure limits

TLV-TWA air 1 mg/m³ (ACGIH, MSHA, and OSHA); TLV-STEL 3 mg/m³ (ACGIH). .

SECTION 9: Physical and chemical properties

>Information on basic physicochemical properties

- Appearance colorless clear, liquid
- Odour odorless

- Odour Threshold Not applicable
- pH 1.2 at 5 g/l
- Melting point/freezing point Melting point: 10.31 °C
- Initial boiling point and boiling range 290 °C - lit.
- Flash point 11 °C
- Evaporation rate No data available
- Flammability (solid, gas) No data available
- Upper/lower flammability or explosive limits No data available
- Vapour pressure 1.33 hPa at 145.8 °C
- Vapour density 3.39 - (Air = 1.0)
- Relative density 1.84
- Water solubility soluble
- Partition coefficient: n-octanol/water Not applicable for inorganic substances
- Autoignition temperature No data available
- Decomposition temperature No data available
- Viscosity Viscosity, kinematic: No data available Viscosity, dynamic: 23 mPa.s at 20 °C
- Explosive properties No data available
- Oxidizing properties No data available

>Other safety information

Surface tension 55.1 mN/m at 20 °C

Relative vapor density

3.39 - (Air = 1.0)

SECTION 10: Stability and reactivity

>Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

>Possibility of hazardous reactions

A risk of explosion and/or of toxic gas formation exists with the following substances: Water

Alkali metals alkali compounds Ammonia Aldehydes acetonitrile

Alkaline earth metals alkalines

Acids

alkaline earth compounds Metals

metal alloys

Oxides of phosphorus phosphorus

hydrides

halogen-halogen compounds oxyhalogenic compounds permanganates

nitrites carbides

combustible substances organic solvent acetylene

Nitriles

organic nitro compounds anilines

Peroxides picrates nitrides lithium silicide

iron(III) compounds bromates

chlorates Amines perchlorates

hydrogen peroxide

>Conditions to avoid

no information available

>Incompatible materials

animal/vegetable tissues Contact with metals liberates hydrogen gas.

>Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

>Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male and female - 2,140 mg/kg

Remarks: (ECHA)

Inhalation: Corrosive to respiratory system. Dermal

Skin corrosion/irritation

Skin - Rabbit

Result: Extremely corrosive and destructive to tissue. Remarks: (IUCLID)

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium Result: negative

Remarks: (HSDB)

Carcinogenicity**Reproductive toxicity****Specific target organ toxicity - single exposure****Specific target organ toxicity - repeated exposure****Aspiration hazard****Toxicity**

LD50 orally in rats: 2.14 g/kg (Smyth)

SECTION 12: Ecological information

>Toxicity

Toxicity to daphnia and other aquatic invertebrates

static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae

static test ErC50 - Desmodesmus subspicatus (green algae) - > 100 mg/l - 72 h

(OECD Test Guideline 201)

>Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

>Bioaccumulative potential

No data available

>Mobility in soil**>Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

>Toxics Screening Level

The chronic ITSL for sulfuric acid, sulfur trioxide, and for oleum is 1 µg/m³ based on annual averaging time. The acute ITSL for sulfuric acid, sulfur trioxide, and for oleum is 120 µg/m³ based on a 1-hour averaging time.

>Other adverse effects

Biological effects:

Harmful effect due to pH shift. Caustic even in diluted form.

Does not cause biological oxygen deficit.

Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities.

Neutralisation possible in waste water treatment plants. Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

>Waste treatment methods

Incompatibilities

Sulfuric acid is a powerful oxidizer and may ignite or explode on contact with many materials. Avoid storage in close proximity to water, most common metals, organic materials, strong reducing agents, combustible materials, strong bases, carbonates, sulfides, cyanides, strong oxidizing agents, and carbides.

> Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Waste Disposal

Add slowly to solution of soda ash and slaked lime with stirring; flush to drain with large volumes of water. Recovery and reuse of spent sulfuric acid may be a viable alternative to disposal, and processes are available.

SECTION 14: Transport information

>UN number

ADR/RID: 1830 IMDG: 1830 IATA-DGR: 1830

>UN proper shipping name

ADR/RID: SULPHURIC ACID IMDG: SULPHURIC ACID IATA-DGR: Sulphuric acid

>Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA-DGR: 8

>Packaging group

ADR/RID: II IMDG: II IATA-DGR: II

>Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA-DGR: no

>Special precautions for user

Based on chemical properties, choose appropriate tools and conditions of transport. Transporting tools shall be equipped with appropriate and sufficient firefighting equipment and emergency leaking installations. If transporting by road, please go along the specified route.

>Incompatible materials

animal/vegetable tissues Contact with metals liberates hydrogen gas.

SECTION 15: Regulatory information

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

Regulations on the Safety Management of Hazardous Chemicals

China Catalog of Hazardous chemicals 2015: Listed. website: <https://www.mem.gov.cn/>

Measures for Environmental Management of New Chemical Substances

Chinese Chemical Inventory of Existing Chemical Substances (China IECSC): Listed. website: <https://www.mee.gov.cn/>

EC Inventory: Listed.

European Inventory of Existing Commercial Chemical Substances (EINECS): Listed. website: <https://echa.europa.eu/>

Korea Existing Chemicals List (KECL): Listed. website: <http://ncis.nier.go.kr>

New Zealand Inventory of Chemicals (NZIoC): Listed. website: <https://www.epa.govt.nz/>

Philippines Inventory of Chemicals and Chemical Substances (PICCS): Listed. website: <https://emb.gov.ph/>

United States Toxic Substances Control Act (TSCA) Inventory: Listed. website: <https://www.epa.gov/>

Vietnam National Chemical Inventory: Listed. website: <https://chemicaldata.gov.vn/>

SECTION 16: Other information

>Abbreviations and acronyms

- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- CAS: Chemical Abstracts Service
- EC50: Effective Concentration 50%
- IATA: International Air Transportation Association

- IMDG: International Maritime Dangerous Goods
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- STEL: Short term exposure limit
- TWA: Time Weighted Average

>References

- 【1】 CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- 【2】 ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- 【3】 ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>
- 【4】 eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- 【5】 ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- 【6】 Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- 【7】 HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- 【8】 IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- 【9】 IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- 【10】 Sigma-Aldrich, website: <https://www.sigmaaldrich.com/>

>Other Information

The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. IARC considers mists of strong inorganic acid to be carcinogenic (group 1). However there is no information available on the carcinogenicity of other physical forms of this substance. Therefore no classification for carcinogenicity under GHS has been applied. NEVER pour water into this substance; when dissolving or diluting always add it slowly to the water. Rinse contaminated clothing with plenty of water because of fire hazard. Other UN numbers: UN1831 Sulfuric acid, fuming, hazard class 8, subsidiary hazard 6.1, pack group I; UN1832 Sulfuric acid, spent, Hazard class 8, Pack group II.