

SAFETY DATA SHEET

Version 8.11 Revision Date 06/24/2025 Print Date 06/25/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Nitrosylsulfuric acid solution

Product Number : 517070 Brand : Aldrich

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption

(40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by

MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.

3050 SPRUCE ST ST. LOUIS MO 63103 UNITED STATES

Telephone : +1 314 771-5765 Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-

527-3887 CHEMTREC (International) 24

Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Oxidizing liquids : Category 2

Corrosive to metals : Category 1

Acute toxicity (Oral) : Category 3

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Acute toxicity (Inhalation)

: Category 4

Acute toxicity (Dermal) : Category 3

Skin corrosion : Category 1A

Serious eye damage : Category 1

Other hazards

None known.

GHS label elements

Hazard pictograms







Signal Word : Danger

Hazard Statements : H272 May intensify fire; oxidizer.

H290 May be corrosive to metals.

H301 + H311 Toxic if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H332 Harmful if inhaled.

Precautionary statements : **Prevention:**

P210 Keep away from heat.

P220 Keep/ Store away from clothing/ combustible

materials.

P221 Take any precaution to avoid mixing with

combustibles.

P234 Keep only in original container.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/

spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this

product.

P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ protective clothing/ eye

protection/ face protection.

Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call

a POISON CENTER/ doctor. Rinse mouth.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do

NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off

immediately all contaminated clothing. Rinse skin with

water/ shower.

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P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor. P362 Take off contaminated clothing and wash before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P390 Absorb spillage to prevent material damage.

Storage:

P405 Store locked up.

P406 Store in corrosive resistant container with a resistant inner liner.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
sulphuric acid	7664-93-9*	>= 50 - < 70	-
Nitrosylsulphuric acid	7782-78-7*	>= 30 - < 50	-

^{*} Indicates that the identifier is a CAS No. Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : First aiders need to protect themselves.

Show this safety data sheet to the doctor in

attendance.

If inhaled : After inhalation: fresh air. Immediately call in

physician.

If breathing stops: immediately apply artificial

respiration, if necessary also oxygen.

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.

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In case of eye contact : After eye contact: rinse out with plenty of water.

Immediately call in ophthalmologist.

Remove contact lenses.

If swallowed : If swallowed: give water to drink (two glasses at

most). Seek medical advice immediately. In

exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and

consult a doctor as quickly as possible.

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

Protection of first-aiders : For personal protection see section 8.

Notes to physician : No data available

SECTION 5. FIREFIGHTING MEASURES

Unsuitable extinguishing

media

For this substance/mixture no limitations of

extinguishing agents are given.

Specific hazards during

fire fighting

: Has a fire-promoting effect due to release of oxygen.

Hazardous combustion

products

: Nitrogen oxides (NOx)

Sulphur oxides

Specific extinguishing

methods

: No data available

Further information : Suppress (knock down) gases/vapours/mists with a

water spray jet.

Prevent fire extinguishing water from contaminating

surface water or the ground water system.

Special protective equipment for fire-

fighters

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

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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Advice for non-emergency personnel: Do not breathe vapours, aerosols.

Avoid substance contact. Ensure adequate ventilation.

Evacuate the danger area, observe emergency

procedures, consult an expert. Advice for emergency responders: 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 carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected

area

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and

sources of ignition.

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

Avoid generation of vapours/aerosols.

Conditions for safe

storage

: No metal containers.

Further information on

storage conditions

: Tightly closed.

Keep locked up or in an area accessible only to

qualified or authorised persons.

Storage class : 5.1B, Oxidizing hazardous materials

Recommended storage

temperature

: Recommended storage temperature see product label.

Further information on

storage stability

: Handle and store under inert gas.

Packaging material : Suitable material: Poly Drum, Clear Glass Bottle/Jar

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
sulphuric acid	7664-93-9	TWA	1 mg/m3	NIOSH REL
		TWA (Thoracic particulate matter)	0.2 mg/m3	ACGIH
		TWA	1 mg/m3	OSHA Z-1
		TWA	1 mg/m3	OSHA P0

Engineering measures : No data available

Personal protective equipment

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.

Recommended Filter

type:

: Filter type ABEK

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Fluorinated rubber

Break through time : 480 min Glove thickness : 0.7 mm Protective index : Full contact

Manufacturer : Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Material : Nitrile rubber
Break through time : 30 min
Glove thickness : 0.4 mm

Protective index : Splash contact

Manufacturer : Camatril® (KCL 730 / Aldrich Z677442, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone

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+49 (0)6659 87300, e-mail sales@kcl.de, test

method: EN374

Remarks : Handle with gloves. Gloves must be inspected prior to

use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good

laboratory practices. Wash and dry hands.

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be

evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye 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 and body protection : protective clothing

Hygiene measures : Change contaminated clothing and immerse in water.

Preventive skin protection

Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : No data available

Odor : No data available

Odor Threshold : No data available pH : No data available

Melting point : No data available

Boiling point/boiling range : No data available

Flash point : No data available

Evaporation rate : No data available

Flammability (solid, gas) : No data available

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Flammability (liquids) : No data available

Burning rate : No data available

Upper explosion limit / Upper flammability limit

: No data available

Lower explosion limit / Lower flammability limit

: No data available

Vapor pressure : No data available

Relative vapour density : No data available

Relative density : No data available

Density : 1.865 g/cm3 (77 °F / 25 °C)

Water solubility : No data available

Partition coefficient: n-

octanol/water

: No data available

Autoignition temperature : No data available

Decomposition

temperature

: No data available

Viscosity, dynamic : No data available

Viscosity, kinematic : No data available

Flow time : No data available

Explosive properties : Not classified as explosive.

Oxidizing properties : none

Molecular weight : 127.08 g/mol

Particle characteristics

Particle size : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No data available

Chemical stability : The product is chemically stable under standard

ambient conditions (room temperature).

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Possibility of hazardous

reactions

: No data available

Conditions to avoid : no information available

Incompatible materials : Metals

Hazardous decomposition: In the event of fire: see section 5

products

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Mixture

Acute toxicity

Oral: No data available

Acute toxicity estimate Oral - 233.62 mg/kg

(Calculation method)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of

perforation of the oesophagus and the stomach.

Inhalation: No data available

Acute toxicity estimate Inhalation - 4 h - 1.27 mg/l - dust/mist(Calculation method)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of

respiratory tract

Dermal: No data available

Acute toxicity estimate Dermal - 750 mg/kg

(Calculation method)

Skin corrosion/irritation

Remarks: Mixture causes severe burns.

Serious eye damage/eye irritation

Remarks: Mixture causes serious eye damage.

Risk of blindness!

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is

identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is

identified as a known or anticipated carcinogen by NTP.

No component of this product present at levels greater than or equal to 0.1% is OSHA:

on OSHA's list of regulated carcinogens.

Reproductive toxicity

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No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

Components

sulphuric acid

Acute toxicity

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

Remarks: (ECHA)

Inhalation: No data available Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Extremely corrosive and destructive to tissue.

Remarks: (IUCLID)

Serious eye damage/eye irritation

Remarks: 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 No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

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Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Nitrosylsulphuric acid

Acute toxicity

Oral: No data available LD50 Oral - 100 mg/kg

LC50 Inhalation - 4 h - 0.51 mg/l - dust/mist

(Acute toxicity estimate) LD50 Dermal - 300 mg/kg

No data available

Skin corrosion/irritation Remarks: No data available

Serious eye damage/eye irritation

Remarks: No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

sulphuric acid:

Toxicity to daphnia and : EC50 (Daphnia magna (Water flea)): > 100 mg/l

other aquatic End point: Immobilization invertebrates Exposure time: 48 h

Test Type: static test

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Method: OECD Test Guideline 202

GLP: yes

Toxicity to algae/aquatic

plants

: ErC50 (Desmodesmus subspicatus (green algae)): >

100 mg/l

Exposure time: 72 h Test Type: static test Analytical monitoring: yes

Method: OECD Test Guideline 201

GLP: yes

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Nitrosylsulphuric acid:

: Remarks: No data available Toxicity to fish

Persistence and degradability

Components:

sulphuric acid:

Biodegradability : Remarks: The methods for determining the biological

degradability are not applicable to inorganic

substances.

Nitrosylsulphuric acid:

Biodegradability : Remarks: No data available

Bioaccumulative potential

Components:

sulphuric acid:

octanol/water

Partition coefficient: n- : Remarks: Not applicable for inorganic substances

Nitrosylsulphuric acid:

Bioaccumulation : Remarks: No data available

Mobility in soil

Components:

Nitrosylsulphuric acid:

: Remarks: No data available Stability in soil

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Other adverse effects

Components:

sulphuric acid:

Results of PBT and vPvB

assessment

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex

XIII.

Additional ecological

information

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.

Nitrosylsulphuric acid:

Additional ecological

information

: No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Waste material must be disposed of in accordance

with the national and local regulations. Leave

chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product

itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 3264

Proper shipping name : Corrosive liquid, acidic, inorganic, n.o.s.

(sulphuric acid)

Class : 8 Packing group : II

Labels : Class 8 - Corrosive substances

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Packing instruction (cargo: 855

aircraft)

Packing instruction : 851

(passenger aircraft)

IMDG-Code

UN number : UN 3264

Proper shipping name : CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.

(sulphuric acid)

Class : 8 Packing group : II Labels : 8

EmS Code : F-A, S-B

Marine pollutant : no

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR Road

UN/ID/NA number : UN 3264

Proper shipping name : Corrosive liquid, acidic, inorganic, n.o.s.

(sulphuric acid)

Class : 8 Packing group : II

Labels : Class 8 - Corrosive substances

ERG Code : 154 Marine pollutant : no

Poison Inhalation Hazard : No

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
sulphuric acid	7664-93-9	1000	1666

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
sulphuric acid	7664-93-9	1000	1666

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
sulphuric acid	7664-93-9	1000

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SARA 311/312 : Acute Health Hazard Hazards : Chronic Health Hazard

SARA 313 : The following components are subject to reporting

levels established by SARA Title III, Section 313:

sulphuric acid 7664-93-9 >= 50 - < 70 %

US State Regulations

Massachusetts Right To Know

sulphuric acid 7664-93-9

Pennsylvania Right To Know

sulphuric acid 7664-93-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including sulphuric acid, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The components of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA PO : USA. Table Z-1-A Limits for Air Contaminants (1989

vacated values)

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-

1 Limits for Air Contaminants

ACGIH / TWA : 8-hour, time-weighted average

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-

hour workday during a 40-hour workweek

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OSHA P0 / TWA : 8-hour time weighted average OSHA Z-1 / TWA : 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA -Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Decomposition Temperature; SARA Superfund Amendments Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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