SAFETY DATA SHEET (SDS)

in accordance with Regulation (EC) No 1907/2006 (REACH), Annex II — Regulation (EU) 2020/878

Date: 02.09.2026 | Version: 3 | EN

kwas siarkowy

sulfuric acid

CAS 7664-93-9

H_2O_4S | EC 231-639-5

MOLAR MASS	LOGP
98.08	-1.4
TPSA	**T. WRZ.**
83 Å²	337°C

HAZARD CLASSIFICATION (GHS / CLP)

Danger

H314

Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.

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

1.1 Substance name	kwas siarkowy
1.1 IUPAC name	sulfuric acid
1.1 CAS number	7664-93-9
1.1 EC number	231-639-5
1.1 PubChem CID	1118
1.1 InChIKey	QAOWNCQODCNURD-UHFFFAOYSA-N
1.1 SMILES	OS(=O)(=O)O
1.1 Molecular formula	H_2O_4S [7]
1.1 Molar mass	98.08 g/mol [7]
1.1 Exact mass	97.9674 Da [7]

1.2 Uses

For laboratory and research purposes. Not for use in the production of food, medicines or cosmetics without appropriate authorisation.

1.3 Details of the supplier

REFERENCE COPY — NO SUPPLIER DETAILS — NOT FOR DISTRIBUTION	Supplier details are not included in this reference copy. The supplier placing the substance on the market must complete this section and remains responsible for the sheet under REACH. MolGod.org prepares documentation and is not the supplier of this substance.

1.4 Emergency telephone number

Emergency telephone	+48 42 631 47 24

The number above is the Polish poison centre (CIT, Lodz, 24/7). It is NOT the poison centre designated for your country. Under Article 45 of Regulation (EC) No 1272/2008 the competent body is the centre designated in the country of placing on the market — consult it before use.

2. Hazards identification

GHS:

PPE:

Danger

Hazard statements (H) [3][4][12]

H314	Causes severe skin burns and eye damage

Precautionary statements (P) [3][4][12]

P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
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 or shower
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing
P305+P351+P338 — KONTAKT Z OCZAMI: PŁUCZ WODĄ	IF IN EYES: Rinse cautiously with water for several minutes
P310	Immediately call a POISON CENTER or doctor/physician
P321	Specific treatment
P363	Wash contaminated clothing before reuse
P405	Store locked up
P501	Dispose of contents/container to an approved waste collection point

Hazard class scope limited to the harmonised classification (CLP Annex VI); classes outside the harmonised entry may require supplier self-classification (CLP Art. 4(3)) — verify with the supplier safety data sheet.

3. Composition/information on ingredients

Substance type	pure substance
CAS Number	7664-93-9
EC number	231-639-5
Molecular formula	H_2O_4S
Concentration	≥99% (typical reagent-grade purity — to be confirmed by the supplier's specification)
Clp index no	016-020-00-8
Specyficzne stężenia graniczne / M-współczynnik (CLP Zał. VI Tab.3)	SCL: H314: C ≥ 15 %; H315: 5 % ≤ C < 15 %; H319: 5 % ≤ C < 15 % [3]

4. First aid measures

Inhalation

Move the affected person to fresh air. Keep at rest. If not breathing: artificial respiration (qualified personnel only). [1][2][17]

Skin contact

Remove contaminated clothing. Rinse skin with soap and water (min. 15 minutes). Call a physician immediately. [1][2][17]

Eye contact

Rinse eyes with running water (min. 15 minutes). Remove contact lenses if possible. If irritation persists — consult an ophthalmologist. [1][2][17]

Ingestion

Do NOT induce vomiting (unless directed by a physician). Rinse mouth with water. Never give anything by mouth to an unconscious person. Poison Centre Łódź: +48 42 631 47 24 (24/7). Emergency number: 112. [1][2][17]

Symptoms and effects

skin redness and irritation. [3][12]

Notes for physician

Requires verification

Emergency numbers: CIT Łódź: +48 42 631 47 24 (24/7) | Emergency: 112

5. Firefighting measures

Suitable extinguishing media	Adapt extinguishing media to surroundings. CO2, dry powder, foam.
Unsuitable extinguishing media	No specific restrictions.
Specific hazards	Thermal decomposition products:SOx. [18]
Advice for firefighters	Use self-contained breathing apparatus (SCBA). Full protective suit.

6. Accidental release measures

Personal precautions	Use personal protective equipment (see Section 8). Avoid breathing vapours. [1][2][17]
Environmental precautions	Prevent entry into sewers, groundwater and surface water. [1][2][17]
Methods for containment and cleaning up	Contain the spill with a barrier. Absorb with inert material (sand, vermiculite, diatomaceous earth). Collect into sealed, labelled containers. Do not release into drains. [1][2][17]
Related sections	8; 13

7. Handling and storage

Precautions	Work in a fume hood or with adequate ventilation. No eating, drinking or smoking in the work area. [1][2][17]
Storage temperature	Store at room temperature (15-25°C) or as indicated on the label. [1][2][17]

Humidity	Store in a dry place (<60% RH). [1][2][17]
Light	Protect from direct sunlight. [1][2][17]
Incompatible materials	Strong oxidizers, strong bases, Base metals (hydrogen evolution). [18]

8. Exposure controls/personal protection

8.1 Control parameters

OEL — NDS (Poland)	NDS = 0.05 mg/m³ (TWA) — Rozp. MRiPS Dz.U.2024 poz.1017 [24]
OEL (EU)	The EU OEL value has not been verified against the available dataset — check the IOELV/BOELV directives; do not assume the absence of a value.
DNEL	No data available.
PNEC	No data available.

8.2 Personal protective equipment (PPE) [5][6][19]

9. Physical and chemical properties

UWAGA: Substancja może zestalać się w temperaturze poniżej 10.3°C.

Property (item 9.1)	Value	Source
Physical state	Liquid	
Colour	No data available.	
Odour	No data available.	
pH (1% aqueous solution)	No data available.	
Melting point	10.31°C [7][12]	pubchem_exp
Boiling point	337°C (experimental data) [7]	pubchem_exp
Flash point	No data available.	
Flammability	No data available.	
Lower and upper explosion limit	No data available.	
Density (20°C)	1.841 g/cm³ (experimental data) [7]	pubchem_exp
Vapour pressure	0.133 kPa (1 mmHg, 146°C) (experimental data) [7]	pubchem_exp
Relative vapour density	3.39 [23]	
Dynamic viscosity	21 mPa·s [7]	
Kinematic viscosity	No data available.	
Refractive index nD^{20}	1.4183 [8]	
Auto-ignition temperature	No data available.	

Property (item 9.1)	Value	Source
Decomposition temperature	Not applicable	
Surface Tension	55 mN/m [8]	
Stała dysocjacji (pKa)	pKa_1 = -3 / pKa_2 = 1.99 [8]	
Rozpuszcz. w wodzie	Miscible with water in all proportions. [8]	
Particle characteristics	Not applicable (REACH 9.1(r))	
Partition coefficient n-octanol/water (log value)	-1.4 [8]	
Molar mass	98.08 g/mol [7] ✓86%	pubchem, cache
Molecular formula	H_2O_4S [7] ✓86%	pubchem, cache
Lipinski rule (RO5)	PASS	

Where a property above reads "No data available", no measured value was found in the public sources consulted for this substance. The property has not been determined by MolGod.org and no value is inferred. "Not applicable" means the property has no meaning for this substance in the form supplied.

10. Stability and reactivity

Reactivity	Stable under normal storage and handling conditions.
Chemical stability	Thermally stable under recommended conditions.
Hazardous reactions	No hazardous reactions known under normal conditions.
Conditions to avoid	High temperatures, direct sunlight, moisture.
Incompatible materials	Strong oxidizers, strong bases, Base metals (hydrogen evolution).
Decomposition products	Thermal decomposition products:SOx.

11. Toxicological information

LD50 (oral)	2140 mg/kg (rat) [9]
LD50 (dermal)	No data available.
LC50 (inhalation)	LC50 510 mg/m3 (rat) [10][11][12]
Skin irritation	Category 1 (H314) — corrosive; sub-category (1A/1B/1C) per CLP Annex VI entry. [3][12]
Eye irritation	Serious eye damage — covered by the corrosive classification (H314; CLP Annex I 3.3.2.1). [3][12]
Sensitisation	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]
Mutagenicity	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]
Carcinogenicity	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]
IARC classification (carcinogenicity)	No individual IARC monograph for this CAS — this is not confirmation of the absence of carcinogenicity (cf. CLP/GHS classification in section 2).
Reproductive toxicity	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]
STOT — single exposure	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]
STOT — repeated exposure	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]

Aspiration hazard	Not classified for this hazard (outside the scope of the harmonised classification in CLP Annex VI; verify supplier self-classification) [3][12]

12. Ecological information

Aquatic toxicity	No data available.
Persistence / biodegradability	No data available.
Bioaccumulative potential	log Kow = -1.4 [8]. Low bioaccumulation potential (log Kow < 4.5 — PBT/vPvB screening criterion per ECHA Guidance R.11). [20][21]
Mobility in soil	No data available.
PBT/vPvB assessment	Insufficient data to assess PBT/vPvB.
Endocrine disrupting properties	Zgłoszone efekty na układ hormonalny w badaniach na zwierzętach (dane ekotoksykologiczne, US EPA ECOTOX; nie stanowią regulacyjnej klasyfikacji ED wg 2018/605). Zgłoszone efekty endokrynne u organizmów wodnych (dane ekotoksykologiczne, US EPA ECOTOX; nie stanowią regulacyjnej klasyfikacji ED wg 2018/605). [PL] [22]

13. Disposal considerations

Disposal method	Hand over for disposal to licensed contractors in accordance with national and local regulations. Do not discharge into sewers.
Waste code (EWC)	16 05 06* — Laboratory and analytical chemicals (np. chemical reagents) zawierajace substancje niebezpieczne. EWC code verification required. [16]
Packaging	Cleaned packaging may be recycled. Contaminated packaging must be treated as hazardous waste.

14. Transport information

Class 8 — Corrosive substances

UN number	UN 1830 [15]
Proper shipping name	Sulfuric acid (>51%) [15]
Transport hazard class	8 [15]
Packing Group	II [15]
Environmental hazard	Not classified as environmentally hazardous for transport (no H400/H410/H411 in CLP Annex VI; no marine pollutant mark required) [3]
Special precautions	Handle as dangerous goods according to the assigned class (ADR/IMDG/IATA); apply the precautions appropriate to that class.
CN/HS code	CN/HS code: verification required in the Eurostat Combined Nomenclature.
Notes	Transport classification per ADR / UN Model Regulations (UN number, class and packing group above). Verify the ADR/IMDG/IATA edition in force on the date of shipment. [15]

15. Regulatory information

SVHC status	SVHC status not verified against the available dataset — check the current ECHA Candidate List; do not assume absence. [1]
REACH Annex XIV	Not verified against the ECHA Authorisation List — check REACH Annex XIV. [1]

REACH Annex XVII	Not confirmed in the available Annex XVII dataset — verify against the current ECHA list before placing on the market; do not assume absence of restriction. [1]
Drug precursor (EU)	Category 3 drug precursor under Regulation (EC) No 273/2004 (Annex I). Intra-EU trade requires no operator licence or registration. Obligations: transaction documentation and notification of suspicious transactions to the competent authorities (Art. 8). Trade with third countries (import/export) is governed by Regulation (EC) No 111/2005: transactions are subject to documentation and export to certain countries requires a pre-export notification; verify the requirements for the country of destination. [13][14]

16. Other information

Legal status of classification: harmonised under CLP Annex VI — Reg. (EC) No 1272/2008 (as at the date of issue).Entries with an entry-into-force date after27.08.2026 were omitted as future (not yet applicable).

Data aggregated automatically from public reference databases (PubChem, ECHA, NIST and others).

Scientific citations (10)

Bożenna Pisarska. Waste-free method for conversion of sodium sulfate to sulfuric acid and sodium hydroxide Bezodpadowa metoda przerobu siarczanu(VI) sodu na kwas siarkowy(VI) i wodorotlenek sodu. PRZEMYSŁ CHEMICZNY (2017). DOI: 10.15199/62.2017.3.30

Andrzej Biskupski. Chemical reactions in the phosphorite-sulfuric acid-urea-water system in relation to process security and product quality. Part 1. System CO(NH2)2-H2SO4-H2O Reakcje chemiczne w układzie fosforyt-kwas siarkowy-mocznik-woda a bezpieczeństwo procesowe i jakość produktu. Cz. I. Układ CO(NH2)2-H2SO4-H2O. PRZEMYSŁ CHEMICZNY (2015). DOI: 10.15199/62.2015.7.15

Sebastian Schab. Chemical reactions in the phosphorite-sulfuric acid-urea-water system in relation to process safety and product quality. Part 3. System CO(NH2)2-H3PO4-Ca(H2PO4)2-CaHPO4-H2O Reakcje chemiczne w układzie fosforyt-kwas siarkowy(VI)-mocznik-woda a bezpieczeństwo procesowe i jakość produktu. Cz. III**. Układ CO(NH2)2-H3PO4-Ca(H2PO4)2-CaHPO4-H2O. PRZEMYSŁ CHEMICZNY (2016). DOI: 10.15199/62.2016.9.14

Sebastian Schab. Chemical reactions in the phosphorite-sulfuric acid-urea-water system in relation to process safety and product quality. Part 2. System CO(NH2)2-H2SO4-H3PO4-CaSO4-Ca(H2PO4)2-CaHPO4-H2O Reakcje chemiczne w układzie: fosforyt-kwas siarkowy(VI)-mocznik-woda a bezpieczeństwo procesowe i jakość produktu. Cz. II**. Układ CO(NH2)2-H2SO4-H3PO4-CaSO4-Ca(H2PO4)2-CaHPO4-H2O. PRZEMYSŁ CHEMICZNY (2016). DOI: 10.15199/62.2016.9.13

Wang T, Le T, Hu J et al.. Ultrasonic-assisted ozone degradation of organic pollutants in industrial sulfuric acid.. Ultrasonics sonochemistry (2022). DOI: 10.1016/j.ultsonch.2022.106043

Full text of H statements

H314	Causes severe skin burns and eye damage

Full text of P statements

P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection
P301+P330+P331	IF SWALLOWED: Rinse mouth; Do NOT induce vomiting
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P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing
P305+P351+P338 — KONTAKT Z OCZAMI: PŁUCZ WODĄ	IF IN EYES: Rinse cautiously with water for several minutes
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P321	Specific treatment
P363	Wash contaminated clothing before reuse
P405	Store locked up
P501	Dispose of contents/container to an approved waste collection point

Abbreviations

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate

CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging (Reg. (EC) 1272/2008)
CMR	Carcinogenic, Mutagenic, toxic to Reproduction
DNEL	Derived No-Effect Level
EC	European Community number
EPI	Personal protective equipment
GHS	Globally Harmonized System
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
SDS	Safety Data Sheet
LC50	Lethal Concentration, 50%
LD50	Lethal Dose, 50%
NDS	Maximum admissible concentration (workplace, PL)
NDSCh	Short-term exposure limit (PL)
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Reg. (EC) 1907/2006)
STOT	Specific Target Organ Toxicity
SVHC	Substance of Very High Concern
TPSA	Topological Polar Surface Area
vPvB	very Persistent and very Bioaccumulative

Version history

v3 (27.08.2026)	Based on ECHA harmonised classification (Annex VI to CLP, ATP 23).

References

[1] EP and Council. Reg.(EC) No 1907/2006 (REACH). Art.31, Annex II. OJ EU L 396/2006. URL: https://eur-lex.europa.eu/eli/reg/2006/1907/oj Accessed: 2026-08-27.

[2] European Commission. Reg.(EU) 2020/878 — amending Annex II REACH. OJ EU L 203/2020. From 01.01.2023. URL: https://eur-lex.europa.eu/eli/reg/2020/878/oj Accessed: 2026-08-27.

[3] EP and Council. Reg.(EC) 1272/2008 (CLP) + ATP 23. OJ EU L 353/2008. (2026-07-07) URL: https://eur-lex.europa.eu/eli/reg/2008/1272/oj Accessed: 2026-08-27.

[4] United Nations. GHS Rev.9. ST/SG/AC.10/30/Rev.9. New York and Geneva: United Nations, 2021. URL: https://unece.org/transport/dangerous-goods/ghs-rev9-2021 Accessed: 2026-08-27.

[5] ISO. ISO 7010:2019 — Graphical symbols. Safety signs. URL: https://www.iso.org/standard/72424.html Accessed: 2026-08-27.

[6] ISO. ISO 3864-1:2011 — Safety colours and safety signs. URL: https://www.iso.org/standard/51021.html Accessed: 2026-08-27.

[7] PubChem. National Center for Biotechnology Information (NIH/NLM), chemical compound database. URL: https://pubchem.ncbi.nlm.nih.gov/compound/1118

[8] Rumble, J.R., ed. CRC Handbook of Chemistry and Physics. 105th ed. Boca Raton: CRC Press, 2024. URL: https://hbcp.chemnetbase.com

[9] NIOSH. Registry of Toxic Effects of Chemical Substances (RTECS). Cincinnati: NIOSH. URL: https://www.cdc.gov/niosh/rtecs

[10] OECD. Screening Information Data Set (SIDS) — Initial Assessment Report. UNEP Publications. URL: https://hpvchemicals.oecd.org

[11] ECHA. REACH Registration Dossier (registered substance, acute toxicity study record). Helsinki: European Chemicals Agency. URL: https://echa.europa.eu/registration-dossier

[12] ECHA. European Chemicals Agency — harmonised classification inventory (CLP Annex VI). URL: https://echa.europa.eu

[13] European Parliament and Council. Regulation (EC) No 273/2004 on drug precursors, Annex I. OJ EU L 47/1. URL: https://eur-lex.europa.eu/eli/reg/2004/273/oj

[14] Council of the European Union. Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Union and third countries in drug precursors. OJ EU L 22/1. URL: https://eur-lex.europa.eu/eli/reg/2005/111/oj

[15] UNECE. European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), 2025 edition (ECE/TRANS/352). Geneva: United Nations. URL: https://unece.org/adr

[16] European Commission. Decision 2000/532/EC establishing a list of wastes (European Waste Catalogue). OJ EU L 226/3. URL: https://eur-lex.europa.eu/eli/dec/2000/532/oj

[17] European Chemicals Agency (ECHA). Guidance on the Compilation of Safety Data Sheets. Version 4.0. Helsinki: European Chemicals Agency, 2020. URL: https://echa.europa.eu/documents/10162/2324906/sds_en.pdf

[18] Urben, P.G., ed. Bretherick's Handbook of Reactive Chemical Hazards. 8th ed. Oxford: Academic Press.

[19] CEN. Personal protective equipment standards (EN ISO 374-1, EN 166, EN 149, EN 14387, EN ISO 20345). Brussels: European Committee for Standardization.

[20] ECHA. Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.11: PBT/vPvB Assessment. Helsinki: European Chemicals Agency. URL: https://echa.europa.eu/guidance-documents/guidance-on-information-requirements-and-chemical-safety-assessment

[21] European Parliament and Council. Regulation (EC) No 1907/2006 (REACH), Annex XIII — Criteria for the identification of PBT and vPvB substances. OJ EU L 396/2006 (consolidated). URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02006R1907-20140410

[22] U.S. EPA. ECOTOX Knowledgebase. Washington, DC: U.S. Environmental Protection Agency. URL: https://cfpub.epa.gov/ecotox/

[23] MOL-GOD. Value obtained by calculation from the molecular formula/molecular weight (the specific quantity and its formula are indicated at the respective field). Calculated value, not an experimental measurement. URL: https://www.nist.gov/pml/atomic-weights-and-isotopic-compositions-relative-atomic-masses

[24] MRiPS Regulation of 12.06.2018 — NDS/NDN. Journal of Laws 2024 item 1017. URL: https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20240001017 Accessed: 2026-08-27.

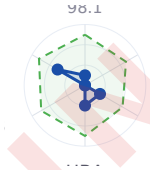
External links

NIST: https://webbook.nist.gov/cgi/cbook.cgi?ID=7664-93-9

Wikidata: https://www.wikidata.org/wiki/Q4118

ChEMBL: https://www.ebi.ac.uk/chembl/compound_report_card/CHEMBL572964

ADMET / Drug-likeness



NFPA 704 (supplementary information — NFPA/USA system; not a required element of an EU safety data sheet under REACH Annex II)