SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830

sulfuric acid, conc=93-99.5%

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

1.1. Product identifier

Product name	: sulfuric acid, conc=93-99.5%
Synonyms	: sulfuric acid
Registration number REACH	: 01-2119458838-20-0102 (Nyrstar Belgium NV/SA) 01-2119458838-20-0086 (Nyrstar Budel BV) 01-2119458838-20-0103 (Nyrstar France SAS)
Product type REACH	: Substance/mono-constituent
CAS number	: 7664-93-9
EC index number	: 016-020-00-8
EC number	: 231-639-5
Molecular mass	: 98.08 g/mol
Formula	: H_2SO_4

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

1.2.1 Relevant identified uses

IU01: Production of sulphuric acid (ES1)

IU02: Use of sulphuric acid as an intermediate in manufacture of inorganic and organic chemicals incl. fertilizers (ES2)

IU03: Use of sulphuric acid as a processing aid, catalyst, dehydrating agent, pH regulator (ES3)

IU04: Use of sulphuric acid for extractions and processing of minerals, ores (ES4)

IU05: Use of sulphuric acid in the process of surface treatments, purification and etching (ES5)

IU06: Use of sulphuric acid in electrolytic processes (ES6)

IU07: Use of sulphuric acid in gas purification, scrubbing, flue gas scrubbing (ES7)

IU08: Use of sulphuric acid in production of sulphuric acid contained batteries (ES8)

IU09: Use of sulphuric acid in maintenance of sulphuric acid contained batteries (ES9)

IU10: Use of sulphuric acid in recycling of sulphuric acid contained batteries (ES10)

IU11: Use of sulphuric acid contained batteries (ES11)

IU12: Use of sulphuric acid as laboratory chemicals (ES12)

IU13: Use of sulphuric acid in industrial cleaning (ES13)

IU14: mixing, preparation and repackaging of sulphuric acid (ES14)

For more detailed information regarding the Identified Uses and the associated Exposure Scenarios: see attached annex

1.2.2 Uses advised against

No uses advised against known

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

Nyrstar Belgium N.V. on behalf of Nyrstar Sales & Marketing A.G.
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B-2490 Balen
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Nyrstar France S.A.S. on behalf of Nyrstar Sales & Marketing A.G.
Rue Jean Jacques Rousseau
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Manufacturer of the product

NYRSTAR Sales & Marketing AG
Tessinerplatz 7
CH-8002 Zürich
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1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch):

+32 14 58 45 45 (BIG)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Skin Corr.	category 1A	H314: Causes severe skin burns and eye damage.

2.2. Label elements

Signal word	Danger
H-statements	
H314	Causes severe skin burns and eye damage.
P-statements	
P280	Wear protective gloves, protective clothing and eye protection/face protection.
P260	Do not breathe vapours/mist.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P352	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse simultaneously with neutralizing agent Diphoterine or equivalent neutralizing agent. Use complete bottle. Rinse under emergency shower for 1 to 2 minutes and continue rinsing under regular shower for 10 minutes with water at 35-36°C
P310	Immediately call a POISON CENTER/doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with neutralization agent Diphoterine or equivalent neutralizing agent for several minutes and continue rinsing with water for 10 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

2.3. Other hazards

Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans

SECTION 3: Composition/information on ingredients

3.1. Substances

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark
sulfuric acid, conc=93-99.5% 01-2119458838-20	7664-93-9 231-639-5	93%<=C <=99.5%	Skin Corr. 1A; H314	(1)(2)(10)	Mono-constituent

(1) For H-statements in full: see heading 16
(2) Substance with a Community workplace exposure limit
(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact:

Take off immediately all contaminated clothing and simultaneously rinse with neutralizing agent (BUMB, Diphoterine or equivalent neutralizing agent). Use complete bottle. Continue rinsing under emergency shower for 1 to 2 minutes and continue rinsing under regular shower for 10 minutes with water at 35-36°C. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

After eye contact:

Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with neutralization agent (BUMB, Diphoterine or equivalent neutralizing agent) for several minutes and continue rinsing with plenty of water during 10 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give small amount of water to drink. Do not induce vomiting. Do not give activated charcoal. Do not give chemical antidote. Immediately consult a doctor/medical service.

4.2. Most important symptoms and effects, both acute and delayed

4.2.1 Acute symptoms

After inhalation:

Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. ON CONTINUOUS EXPOSURE/CONTACT: Corrosion of the upper respiratory tract. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible laryngeal spasm/oedema. Risk of pneumonia. Risk of lung oedema. Respiratory difficulties.

After skin contact:

Caustic burns/corrosion of the skin.

After eye contact:

Corrosion of the eye tissue. Permanent eye damage.

After ingestion:

Nausea. Abdominal pain. Blood in stool. Blood in vomit. Burns to the gastric/intestinal mucosa. AFTER INGESTION OF HIGH QUANTITIES: Shock.

4.2.2 Delayed symptoms

No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.1.1 Suitable extinguishing media:

Adapt extinguishing media to the environment.

5.1.2 Unsuitable extinguishing media:

Water.

5.2. Special hazards arising from the substance or mixture

On burning: release of toxic and corrosive gases/vapours (sulphur oxides). Violent exothermic reaction with water (moisture): release of corrosive gases/vapours.

5.3. Advice for firefighters

5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety. When cooling/extinguishing: no water in the substance. Dilute toxic gases with water spray. Heat exposure: dilute toxic gas/vapour with water spray. Take account of toxic/corrosive precipitation water.

5.3.2 Special protective equipment for fire-fighters:

Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit. Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

No naked flames. Keep containers closed. Avoid ingress of water in the containers. Large spills/in confined spaces: consider evacuation.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gloves. Face-shield. Corrosion-proof suit. Large spills/in enclosed spaces: compressed air apparatus. Large spills/in enclosed spaces: gas-tight suit.

Suitable protective clothing

See heading 8.2

6.2. Environmental precautions

Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Neutralize spill with lime, sodium bicarbonate, soda (sodium carbonate) or soda ash. Neutralized substance: shovel into closing drums. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Keep away from naked flames/heat. Gas/vapour heavier than air at 20°C. Observe very strict hygiene - avoid contact. Keep container tightly closed. Remove contaminated clothing immediately. Do not discharge the waste into the drain. Never add water to this product. Never dilute by pouring water to the acid. Always add the acid to the water.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Store in a dry area. Ventilation at floor level. Keep locked up. Protect against frost. Store at ambient temperature. Provide for a tub to collect spills. Unauthorized persons are not admitted. Under a shelter/in the open. Aboveground. Keep only in the original container. Store only in a limited quantity. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources, combustible materials, reducing agents, (strong) bases, metals, cellulosic materials, organic materials, oxidizing agents, alcohols, amines, water/moisture.

7.2.3 Suitable packaging material:

Carbon steel, polyethylene, polypropylene, glass, stoneware/porcelain.

7.2.4 Non suitable packaging material:

Monel steel, lead, aluminium, iron, copper, zinc, nickel, bronze.

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

EU

Sulphur dioxide	Short time value (Indicative occupational exposure limit value)	1 ppm
Sulphuric acid (mist)	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.05 mg/m³

Belgium

Acide sulfurique (brume)	Time-weighted average exposure limit 8 h	0.2 mg/m³
Soufre (dioxyde de)	Time-weighted average exposure limit 8 h	2 ppm
	Time-weighted average exposure limit 8 h	5.3 mg/m³
	Short time value	5 ppm
	Short time value	13 mg/m³

The Netherlands

Zwaveldioxide	Short time value (Public occupational exposure limit value)	0.26 ppm
	Short time value (Public occupational exposure limit value)	0.7 mg/m³
Zwavelzuur (nevel), gedefinieerd als de thoracale fractie	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.012 ppm
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.05 mg/m³

France

Acide sulfurique, fraction thoracique	Time-weighted average exposure limit 8 h (VRI: Valeur réglementaire indicative)	0.05 mg/m³
	Short time value (VL: Valeur non réglementaire indicative)	3 mg/m³

Soufre (dioxyde de)	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	2 ppm
	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	5 mg/m^3
	Short time value (VL: Valeur non réglementaire indicative)	5 ppm
	Short time value (VL: Valeur non réglementaire indicative)	10 mg/m^3

Germany

Schwefeldioxid	Time-weighted average exposure limit 8 h (TRGS 900)	1 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	2.7 mg/m^3
Schwefelsäure	Time-weighted average exposure limit 8 h (TRGS 900)	0.1 mg/m^3

UK

Sulphuric acid (mist)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.05 mg/m^3

USA (TLV-ACGIH)

Sulfur dioxide	Short time value (TLV - Adopted Value)	0.25 ppm
Sulfuric acid	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	0.2 mg/m^3 (T)

(T): Thoracic fraction

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
NON-VOLATILE ACIDS (Sulfuric Acid)	NIOSH	7908
Sulfur Dioxide (organic and inorganic gases by Extractive FTIR)	NIOSH	3800
Sulfur Dioxide	NIOSH	6004
Sulfur Dioxide	OSHA	1011
Sulfur Dioxide	OSHA	ID 104
Sulfur Dioxide	OSHA	ID 200
Sulfuric Acid	NIOSH	7903
Sulfuric Acid	OSHA	ID 113
Sulfuric Acid	OSHA	ID 165SG

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL/DMEL - Workers

sulfuric acid, conc=93-99.5%

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.05 mg/m^3	
	Acute local effects inhalation	0.1 mg/m^3	
	Acute local effects inhalation	2.7 mg/m^3	SO2
	Long-term local effects inhalation	1.3 mg/m^3	SO2

DNEL/DMEL - General population

sulfuric acid, conc=93-99.5%

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term local effects inhalation	0.53 mg/m^3	SO2

PNEC

sulfuric acid, conc=93-99.5%

Compartments	Value	Remark
Fresh water	0.003 mg/l	
Marine water	0.00025 mg/l	
STP	8.8 mg/l	
Fresh water sediment	0.002 mg/kg sediment dw	
Marine water sediment	0.002 mg/kg sediment dw	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Keep away from naked flames/heat. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

8.2.2 Individual protection measures, such as personal protective equipment

Observe very strict hygiene - avoid contact. Keep container tightly closed. Do not eat, drink or smoke during work.

a) Respiratory protection:

Gas mask with filter type E, at concentrations in air higher than the exposure limit for sulfur dioxide (SO_2). Dust/aerosol mask with filter type P3 at concentrations in air higher than the exposure limit for sulfuric acid (H_2SO_4).

b) Hand protection:

Gloves.

Materials	Breakthrough time	Thickness
butyl rubber	> 120 minutes	0.5 mm
viton	> 480 minutes	0.4 mm

- materials (poor resistance)

Natural rubber, nitrile rubber, chloroprene rubber, leather.

c) Eye protection:

Face shield. Protective goggles.

d) Skin protection:

Corrosion-proof clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquid
Odour	Odourless
Odour threshold	Not applicable
Colour	Colourless to brown
Particle size	Not applicable (liquid)
Explosion limits	Not applicable
Flammability	Non combustible
Log Kow	Not relevant
Dynamic viscosity	0.0225 Pa.s ; 20 °C ; 95 %
Kinematic viscosity	Not determined
Melting point	10.4 °C - 10.9 °C ; 100 %
	-1.11 °C - 3.0 °C ; 98 %
	-13.89 °C - -10 °C ; 96 %
	7.56 °C ; 83 %
Boiling point	290 °C ; 100 %
	310 °C - 335 °C ; 98 %
	330 °C ; 96 %
Flash point	Not applicable
Evaporation rate	No data available
Relative vapour density	3.4
Vapour pressure	0.06 hPa ; 20 °C ; 90 %
Solubility	Water ; miscible
Relative density	1.8305 ; 20 °C ; 100 %
	1.8361 ; 20 °C ; 98 %
	1.8355 ; 20 °C ; 96 %
	1.8144 ; 20 °C ; 90 %
Decomposition temperature	No data available
Auto-ignition temperature	Not applicable
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	No data available

9.2. Other information

Absolute density	1830.5 kg/m³ ; 20 °C

SECTION 10: Stability and reactivity

10.1. Reactivity

Substance has acid reaction.

10.2. Chemical stability

Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions

Violent exothermic reaction with water (moisture): release of corrosive gases/vapours. Reacts with many compounds: (increased) risk of fire/explosion. Reacts exothermically with organic material: risk of spontaneous ignition. Reacts violently with combustible materials: (increased) risk of fire/explosion. Reacts violently with (some) bases: heat release resulting in increased fire or explosion risk. Reacts with (strong) reducers: (increased) risk of fire/explosion.

10.4. Conditions to avoid

Keep away from naked flames/heat.

10.5. Incompatible materials

Combustible materials, reducing agents, (strong) bases, metals, cellulosic materials, organic materials, oxidizing agents, alcohols, amines, water/moisture.

10.6. Hazardous decomposition products

Aqueous solution reacts with (some) metals: release of highly flammable gases/vapours (hydrogen). On burning: release of toxic and corrosive gases/vapours (sulphur oxides).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

- Toxicokinetics: summary

Basic toxicokinetics: The effects of sulphuric acid are essentially the result of the hydrogen ion (local deposition of H+, pH change) rather than an effect of the sulphate ion. Sulphuric acid (as such) is not expected to be absorbed or distributed throughout the body as the acid will rapidly dissociate; the hydrogen ion will form water. The sulphate anion will enter the body electrolyte pool, its kinetics will be governed by sulphate homeostatic mechanisms, and is therefore not predicted play a specific toxicological role. This supposition is supported by experiments which have studied the active component in inorganic acids on various endpoints, using different acids or salts. The results of these studies lead to the conclusion that the observed effects are due to the hydrogen ion, while the anion appeared to have no effect.

In a study of the clearance of radiolabeled sulphuric acid aerosol in different species, the authors observed that the sulphur from sulphuric acid was rapidly cleared (from 2 -9 minutes) from the lungs of animals into the blood following inhalation exposure (Dahl, 1983). Sulphate is a normal constituent of the blood (present at 0.8 -1.2 mg/dl) and is a normal metabolite of sulphur-containing amino acids. The body has efficient sulphate homeostatic mechanisms and excess sulphate is excreted in the urine (capacity-limited proximal tubular absorption); urinary sulphate concentrations of up to 500 umol/dl/kg bw have been reported. The body pool of this anion is large, and it is therefore unlikely that occupational exposure will significantly add to the normal body burden.

Systemic absorption of the hydrogen ion following dermal or inhalation exposure to sulphuric acid is not predicted to be significant, and the low level of hydrogen ions absorbed will be effectively controlled by the homeostatic mechanisms governing pH including the action of the enzyme carbonic anhydrase and NA+/H+ exchange in the proximal renal tubule. Although acidaemia and metabolic acidosis have been noted following cases of ingestion exposure, similar effects are not predicted following occupational inhalation exposure (which will be much lower and effectively limited by respiratory tract irritation) or following dermal exposure (due to low dermal absorption and local dermal irritation).

The deposition of sulphuric particles in the human lung has been studied extensively. Deposition is influenced by subject age, particle size and breathing rate. Sulphuric acid particles are hygroscopic and therefore will absorb moisture present in the airways, thereby increasing particle size and potentially increasing particle retention. Respiratory mucus has a limited buffering capacity and may reduce tissue contact.
The absence of systemic effects in the large number of toxicity studies performed with sulphuric acid is consistent with this assessment of its toxicokinetics.

The following information is taken into account for any hazard / risk assessment: Primary information is limited to a study of the absorption and kinetics of radiolabelled sulphate following the inhalation of sulphuric acid aerosols. Sulphuric acid immediately dissociates to the hydrogen and sulphate ions, with the hydrogen ion being responsible for the local toxicity (irritation and corrosivity) of sulphuric acid.

Dermal absorption: No dermal absorption is predicted under normal conditions of use, based on the physicochemical properties of the substance. However dermal absorption may occur when the integrity of the skin is lost (i. e. in accidental exposures resulting in burns).
The following information is taken into account for any hazard / risk assessment: No studies are proposed for scientific reasons and (given the corrosive nature of the substance), also reasons of animal welfare. No dermal absorption is predicted under normal conditions of use, based on the physicochemical properties of the substance.

Acute toxicity

sulfuric acid, conc=93-99.5%

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral	LD50	Equivalent to OECD 401	2140 mg/kg		Rat (male/female)	Experimental value	
Dermal						Not relevant, expert judgement	

Inhalation (aerosol)	LC50	Equivalent to OECD 403	375 mg/m³ air		Rat (male/female)	Experimental value	

Conclusion

Not classified for acute toxicity

Corrosion/irritation

sulfuric acid, conc=93-99.5%

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye	Highly corrosive					Literature	
Skin	Highly corrosive					Literature	

Conclusion

Causes severe skin burns and eye damage.

Respiratory or skin sensitisation

sulfuric acid, conc=93-99.5%

No (test)data available

Conclusion

Not classified as sensitizing for skin

Not classified as sensitizing for inhalation

Specific target organ toxicity

sulfuric acid, conc=93-99.5%

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Inhalation (aerosol)	LOAEC	OECD 412	0.3 mg/m³ air	Respiratory tract		4 weeks (6h/day, 5 days/week)	Rat (female)	Experimental value

Conclusion

Not classified for subchronic toxicity

Mutagenicity (in vitro)

sulfuric acid, conc=93-99.5%

Result	Method	Test substrate	Effect	Value determination
Negative	Equivalent to OECD 471	Bacteria (S.typhimurium)		Weight of evidence
Positive	Equivalent to OECD 473	Chinese hamster ovary (CHO)		Weight of evidence

Mutagenicity (in vivo)

sulfuric acid, conc=93-99.5%

No (test)data available

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

sulfuric acid, conc=93-99.5%

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Inhalation (aerosol)	NOEC		100 mg/l air		Hamster (male)	No effect		Weight of evidence
Oral	NOAEL	Carcinogenic toxicity study			Mouse (male/female)			Weight of evidence

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

sulfuric acid, conc=93-99.5%

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEC	Equivalent to OECD 414	19.3 mg/m³ air	6 days (gestation, daily) - 15 days (gestation, daily)	Mouse (female)	No effect		Experimental value

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

sulfuric acid, conc=93-99.5%

No (test)data available

Chronic effects from short and long-term exposure

sulfuric acid, conc=93-99.5%

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Red skin. Dry skin. Itching. Skin rash/inflammation. Affection/discolouration of the teeth. Inflammation/damage of the eye tissue.

SECTION 12: Ecological information

12.1. Toxicity

sulfuric acid, conc=93-99.5%

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		16 mg/l - 28 mg/l	96 h	Lepomis macrochirus	Static system	Fresh water	Experimental value; Nominal concentration
Acute toxicity crustacea	EC50	OECD 202	> 100 mg/l	48 h	Daphnia magna	Static system	Fresh water	Experimental value; GLP
Toxicity algae and other aquatic plants	ErC50	OECD 201	> 100 mg/l	72 h	Desmodesmus subspicatus	Static system	Fresh water	Experimental value; GLP
Long-term toxicity fish	NOEC		0.025 mg/l	65 day(s)	Jordanella floridae	Flow-through system	Fresh water	Experimental value; Nominal concentration
Toxicity aquatic micro-organisms	NOEC		26 g/l	37 day(s)	Activated sludge	Static system	Fresh water	Weight of evidence; Nominal concentration

Conclusion

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

12.2. Persistence and degradability

Biodegradability: not applicable

Hydrolysis in water

12.3. Bioaccumulative potential

sulfuric acid, conc=93-99.5%

Log Kow

Method	Remark	Value	Temperature	Value determination
				Not relevant

Conclusion

Bioaccumulation: not applicable

12.4. Mobility in soil

No (test)data on mobility of the substance available

12.5. Results of PBT and vPvB assessment

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

12.6. Other adverse effects

sulfuric acid, conc=93-99.5%

Fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

Ground water

Ground water pollutant

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).
06 01 01* (wastes from the manufacture, formulation, supply and use (MFSU) of acids: sulphuric acid and sulphurous acid). Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Recycle/reuse. Remove for physico-chemical/biological treatment. Remove to an authorized dump (Class I). Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1. UN number

UN number	1830

14.2. UN proper shipping name

Proper shipping name	Sulphuric acid

14.3. Transport hazard class(es)

Hazard identification number	80
Class	8
Classification code	C1

14.4. Packing group

Packing group	II
Labels	8

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Rail (RID)

14.1. UN number

UN number	1830

14.2. UN proper shipping name

Proper shipping name	Sulphuric acid

14.3. Transport hazard class(es)

Hazard identification number	80
Class	8
Classification code	C1

14.4. Packing group

Packing group	II
Labels	8

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Inland waterways (ADN)

14.1. UN number

UN number	1830

14.2. UN proper shipping name

Proper shipping name	Sulphuric acid

14.3. Transport hazard class(es)

Class	8
Classification code	C1

14.4. Packing group

Packing group	II
Labels	8

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

Sea (IMDG/IMSBC)

14.1. UN number

UN number	1830

14.2. UN proper shipping name

Proper shipping name	Sulphuric acid

14.3. Transport hazard class(es)

Class	8

14.4. Packing group

Packing group	II
Labels	8

14.5. Environmental hazards

Marine pollutant	-
Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities	Combination packagings: not more than 1 liter per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Annex II of MARPOL 73/78	Not applicable, based on available data

Air (ICAO-TI/IATA-DGR)

14.1. UN number

UN number	1830

14.2. UN proper shipping name

Proper shipping name	Sulphuric acid

14.3. Transport hazard class(es)

Class	8

14.4. Packing group

Packing group	II
Labels	8

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	
Limited quantities: maximum net quantity per packaging	0.5 L

SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

European drinking water standards (Directive 98/83/EC)

sulfuric acid, conc=93-99.5%

Parameter	Parametric value	Note	Reference

Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive 98/83/EC on the quality of water intended for human consumption.

REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· sulfuric acid, conc=93-99.5%	Liquid substances or mixtures which are regarded as dangerous in accordance with Directive 1999/45/EC or are fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: (a) hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F; (b) hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10; (c) hazard class 4.1; (d) hazard class 5.1.	1. Shall not be used in: — ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays, — tricks and jokes, — games for one or more participants, or any article intended to be used as such, even with ornamental aspects,2. Articles not complying with paragraph 1 shall not be placed on the market.3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they: — can be used as fuel in decorative oil lamps for supply to the general public, and, — present an aspiration hazard and are labelled with R65 or H304,4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met: a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: “Keep lamps filled with this liquid out of the reach of children”; and, by 1 December 2010, “Just a sip of lamp oil — or even sucking the wick of lamps — may lead to life- threatening lung damage”; b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: “Just a sip of grill lighter may lead to life threatening lung damage”; c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.’

National legislation Belgium

Additional classification	Acide sulfurique (brume); C; La mention “C” signifie que l’agent en question relève du champ d’application de l’arrêté royal du 2 décembre 1993 concernant la protection des travailleurs contre les risques liés à l’exposition à des agents cancérigènes et mutagènes au travail.

National legislation The Netherlands

Waterbezwaarlijkheid	B (3)
SZW - Lijst van kankerverwekkende stoffen	zwavelzuurnevels; Listed in SZW-list of carcinogenic substances

National legislation France

No data available

National legislation Germany

WGK	1; Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)
TRGS900 - Risiko der Fruchtschädigung	Schwefeldioxid; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden
	Schwefelsäure; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

National legislation United Kingdom

No data available

Other relevant data

IARC - classification	1; Strong-inorganic-acid mists containing sulfuric acid
TLV - Carcinogen	Sulfuric acid; A2
IARC - classification	3; Sulfur dioxide and some sulfites, bisulfites and metabisulfites
TLV - Carcinogen	Sulfur dioxide; A4

15.2. Chemical safety assessment

A chemical safety assessment has been performed.