SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2020/878

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	:	H2SO4

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.
Zinkstraat 1
B-2490 Balen
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🖷 +32 14 81 05 31
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Nyrstar France S.A.S. on behalf of Nyrstar Sales & Marketing A.G.
Rue Jean Jacques Rousseau
F-59950 Auby
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infoSDS@nyrstar.com

Manufacturer of the product

Nyrstar Sales & Marketing SA
1 Rue de Jargonnant
CH-1207 Geneva
infoSDS@nyrstar.com

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.
Eye Dam.	category 1	H318: Causes serious 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

P305 + P351 IF IN EYES: Rinse cautiously with neutralization agent Diphoterine or equivalent neutralizing agent for several minutes and continue rinsing with water for 10 minutes.

P310 Immediately call a POISON CENTER/doctor.

2.3. Other hazards

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances
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	M-factors and ATE
sulfuric acid, conc=93-99.5% 01-2119458838-20	7664-93-9 231-639-5	93%<=C <=99.5%	Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Corr. 1A; H314: C≥15%, (CLP Annex VI (ATP 0)) Skin Irrit. 2; H315: 5%≤C<15% , (CLP Annex VI (ATP 0)) Eye Irrit. 2; H319: 5%≤C<15%, (CLP Annex VI (ATP 0))	(1)(2)(10)	Mono-constituent	

(1) For H- and EUH-statements in full: see section 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:
Observe (own) safety. If possible, approach victim and check vital functions. In case of injury and/or intoxication, call the European emergency number 112. Treat symptoms starting with most life-threatening injuries and disorders. Keep victim under observation, possibility of delayed symptoms.

After inhalation:
Remove victim into fresh air. Immediately 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. Cut clothing; never remove burnt clothing from the wound. Do not give any pain medication. Consult a doctor/medical service.

After eye contact:

Rinse cautiously with neutralization agent (BUMB, Diphoterine or equivalent neutralizing agent) for several minutes and continue rinsing with plenty of water during 10 minutes. Consult a doctor/medical service.

After ingestion:

Rinse mouth with water. Immediately after ingestion: give small amount of water to drink. Immediately consult a doctor/medical service. Do not wait for symptoms to occur to consult Poison Center.

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:

Small fire: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher, Quick-acting CO2 extinguisher.

Major fire: Class B foam (alcohol-resistant); after consulting specialist.

5.1.2 Unsuitable extinguishing media:

Small fire: Water (quick-acting extinguisher, reel); risk of puddle expansion, Quick-acting class B foam extinguisher.

Major fire: 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. Take account of toxic/corrosive precipitation water. Heat exposure: dilute toxic gas/vapour with water spray.

5.3.2 Special protective equipment for fire-fighters:

Gloves (EN 374). Face shield (EN 166). Corrosion-proof suit (EN 14605). Large spills/in enclosed spaces: self-contained breathing apparatus (EN 136 + EN 137). Large spills/in enclosed spaces: gas-tight suit (EN 943). Heat/fire exposure: self-contained breathing apparatus (EN 136 + EN 137).

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 section 8.2

6.1.2 Protective equipment for emergency responders

Gloves (EN 374). Face shield (EN 166). Corrosion-proof suit (EN 14605). Large spills/in enclosed spaces: self-contained breathing apparatus (EN 136 + EN 137). Large spills/in enclosed spaces: gas-tight suit (EN 943).

Suitable protective clothing

See section 8.2

6.2. Environmental precautions

Contain released product, collect/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 section 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. 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. Keep container tightly closed.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Store in a dry area. Keep container in a well-ventilated place. 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	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	0.5 ppm
	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	1.3 mg/m³
	Short time value (Indicative occupational exposure limit value)	1 ppm
	Short time value (Indicative occupational exposure limit value)	2.7 mg/m³
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	0.5 ppm
	Time-weighted average exposure limit 8 h	1.3 mg/m³
	Short time value	1 ppm
	Short time value	2.7 mg/m³

The Netherlands

Zwaveldioxide	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	0.7 mg/m³
	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	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 (VRI: Valeur réglementaire indicative)	0.5 ppm
	Time-weighted average exposure limit 8 h (VRI: Valeur réglementaire indicative)	1.3 mg/m³
	Short time value (VRI: Valeur réglementaire indicative)	1 ppm
	Short time value (VRI: Valeur réglementaire indicative)	2.7 mg/m³

Germany

Schwefeldioxid	Time-weighted average exposure limit 8 h (TRGS 900)	1 ppm

Schwefeldioxid	Time-weighted average exposure limit 8 h (TRGS 900)	2.7 mg/m³
Schwefelsäure	Time-weighted average exposure limit 8 h (TRGS 900)	0.1 mg/m³

Austria

Schwefelsäure	Tagesmittelwert (MAK)	0.1 mg/m³
	Kurzzeitwert Mow 8x (MAK)	0.2 mg/m³

UK

Sulphuric acid (mist)	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	0.05 mg/m³

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/m³ (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 Threshold 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/m³	
	Acute local effects inhalation	0.1 mg/m³	
	Long-term local effects inhalation	1.3 mg/m³	SO2
	Acute local effects inhalation	2.7 mg/m³	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/m³	SO2

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. Do not eat, drink or smoke during work.

a) Respiratory protection:

Full face mask with filter type E, at concentrations in air higher than the exposure limit for sulfur dioxide (SO2). Dust/aerosol mask with filter type P3 at concentrations in air higher than the exposure limit for sulfuric acid (H2SO4).

b) Hand protection:

Protective gloves against chemicals (EN 374).

Materials	Measured breakthrough time	Thickness	Protection index	Remark
butyl rubber	> 120 minutes	0.5 mm	Class 4	
viton	> 480 minutes	0.4 mm	Class 6	
natural rubber				Poor resistance
nitrile rubber				Poor resistance
neoprene (chloroprene rubber)				Poor resistance
leather				Poor resistance

c) Eye protection:

Face shield (EN 166). Protective goggles (EN 166).

d) Skin protection:

Corrosion-proof clothing (EN 14605).

8.2.3 Environmental exposure controls:
See sections 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquid
Viscosity	Oily
Odour	Odourless
Odour threshold	No data available in the literature
Colour	Colourless to brown
Translucency	Clear
Particle size	Not applicable (liquid)
Explosion limits	Not applicable
Flammability	Not classified as flammable
Log Kow	Not relevant
Dynamic viscosity	22.5 mPa.s ; 20 °C ; 95 %
	15 mPa.s ; 20 °C ; 75 %
Kinematic viscosity	No data available in the literature
Melting point	10 °C ; 100 % ; Equivalent to OECD 102
	3 °C ; 98 % ; Equivalent to OECD 102
Boiling point	190 °C ; 98 % ; Equivalent to EU Method A.2
	330 °C ; 96 % ; Equivalent to EU Method A.2
Relative vapour density	No data available in the literature
Vapour pressure	0.49 hPa ; 20 °C ; 75 % ; Equivalent to OECD 104
	2.14 hPa ; 20 °C ; 65 % ; Equivalent to EU Method A.4
	0.06 hPa ; 20 °C ; 90 % ; Equivalent to EU Method A.4
Solubility	Water ; miscible ; EU Method A.6
Relative density	1.84 ; 20 °C ; 93 % - 100 % ; Equivalent to OECD 109
Absolute density	1840 kg/m³ ; 20 °C ; Equivalent to OECD 109 ; 93 % - 100 %
Decomposition temperature	No data available in the literature
Auto-ignition temperature	Not applicable
Flash point	Not applicable
pH	No data available in the literature

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

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

Precautionary measures

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 hazard classes as defined in Regulation (EC) No 1272/2008

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						Data waiving	
Inhalation (aerosol)	LC50	Equivalent to OECD 403	0.38 mg/l 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	Serious eye damage; category 1					Annex VI	
Skin	Highly corrosive; category 1A					Annex VI	

Conclusion

Causes severe skin burns and eye damage.

Not classified as irritating to the respiratory system

Respiratory or skin sensitisation

sulfuric acid, conc=93-99.5%

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin						Data waiving	
Inhalation						Data waiving	

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
Oral								Data waiving
Dermal								Data waiving

Inhalation (aerosol)	LOAEC	OECD 412	0.3 mg/m³ air	Respiratory tract	Histopathology	4 weeks (6h / day, 5 days / week)	Rat (female)	Experimental value
Inhalation		Human observation	> 1 mg/m³ air	Lungs	Lung tissue affection/degeneration		Human	Weight of evidence

Conclusion

Not classified for subchronic toxicity

Mutagenicity (in vitro)

sulfuric acid, conc=93-99.5%

Result	Method	Test substrate	Effect	Value determination	Remark
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value	
Negative with metabolic activation, negative without metabolic activation	EU Method B.10	Chinese hamster lung fibroblasts (V79)		Experimental value	
Negative with metabolic activation, negative without metabolic activation	OECD 476	Mouse (lymphoma L5178Y cells)		Experimental value	

Mutagenicity (in vivo)

sulfuric acid, conc=93-99.5%

Result	Method	Exposure time	Test substrate	Organ	Value determination
					Data waiving

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
Oral (stomach tube)	Dose level	Carcinogenic toxicity study	200 µl/week	> 1 year(s)	Mouse (male / female)	Tumours of the gastrointestinal tract	Stomach	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 (Inhalation (aerosol))	NOAEC	Equivalent to OECD 414	19.3 mg/m³ air	10 days (7h / day)	Mouse	No effect		Experimental value
Maternal toxicity (Inhalation (aerosol))	NOAEC	Equivalent to OECD 414	5.7 mg/m³ air	10 days (gestation, daily)	Mouse	No effect		Experimental value
Effects on fertility (Oral (stomach tube))	NOEL	OECD 421	1000 mg/kg bw/day	4 week(s) - 7 week(s)	Rat (male / 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%

Red skin. Dry skin. Itching. Skin rash/inflammation. Affection/discolouration of the teeth. Inflammation/damage of the eye tissue.

11.2. Information on other hazards

No evidence of endocrine disrupting properties

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; 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

Water

Biodegradability: not applicable

12.3. Bioaccumulative potential

sulfuric acid, conc=93-99.5%

Log Kow

Method	Remark	Value	Temperature	Value determination
				Not relevant

Conclusion

Not bioaccumulative

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. Endocrine disrupting properties

No evidence of endocrine disrupting properties

12.7. Other adverse effects

sulfuric acid, conc=93-99.5%

Greenhouse gases

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)

Groundwater

Groundwater pollutant

Water ecotoxicity pH

pH shift

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

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. Dispose of at authorized waste collection point.

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. Maritime transport in bulk according to IMO instruments

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	

Passenger and cargo transport

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:

Explosives precursors

Acquisition, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point.

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

Directive 2012/18/EU (Seveso III)

Not subject to registration according to Directive 2012/18/EU (Seveso III)

European drinking water standards (98/83/EC and 2020/2184)

sulfuric acid, conc=93-99.5%

Parameter	Parametric value	Note	Reference
Sulphate	250 mg/l		Listed in Annex I, Part C, of Directive (EU) 2020/2184 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 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 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 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 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 H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
· sulfuric acid, conc=93-99.5%	Substances falling within one or more of the following points: (a) substances classified as any of the following in Part 3 of Annex VI to Regulation (EC) No 1272/2008: — carcinogen category 1A, 1B or 2, or germ cell mutagen category 1A, 1B or 2, but excluding any such substances classified due to effects only following exposure by inhalation — reproductive toxicant category 1A, 1B or 2 but excluding any such substances classified due to effects only following exposure by inhalation — skin sensitiser category 1, 1A or 1B — skin corrosive category 1, 1A, 1B or 1C or skin irritant category 2 — serious eye damage category 1 or eye irritant category 2 (b) substances listed in Annex II to Regulation (EC) No 1223/2009 of the European Parliament and of the Council (c) substances listed in Annex IV to Regulation (EC) No 1223/2009 for which a condition is specified in at least one of the columns g, h and i of the table in that Annex (d) substances listed in Appendix 13 to this Annex. The ancillary requirements in paragraphs 7 and 8 of column 2 of this entry apply to all mixtures for use for tattooing purposes, whether or not they contain a substance falling within points (a) to (d) of this column of this entry.	Mixtures for tattooing purposes are subject to the restrictions of Regulation (EU) 2020/2081

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 et reprotoxiques au travail.

National legislation The Netherlands

Waterbezwaarlijkheid	A (3); Algemene Beoordelingsmethodiek (ABM)
SZW - Lijst van kankerverwekkende stoffen	zwavelzuurnevels; Listed in SZW-list of carcinogenic substances

National legislation France

No data available

National legislation Germany

Lagerklasse (TRGS510)	8 B: Nicht brennbare ätzende Gefahrstoffe
WGK	1; Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) - 18. April 2017
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 Austria

No data available

National legislation United Kingdom

No data available

Other relevant data

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

15.2. Chemical safety assessment

A chemical safety assessment has been performed.

SECTION 16: Other information

Full text of any H- and EUH-statements referred to under section 3:

H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

(*)	INTERNAL CLASSIFICATION BY BIG
ADI	Acceptable daily intake
AOEL	Acceptable operator exposure level
ATE	Acute Toxicity Estimate
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.