# SAFETY DATA SHEET

[In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended]

## Section 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

Trade name: **SULPHURIC ACID (VI)**
Chemical name: sulphuric acid (VI) >51%
Index number: 016-020-00-8
Registration number: 01-2119458838-20-0110

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

Relevant identified uses:

Production of sulphuric acid.
Use of sulphuric acid as an intermediate in manufacture of inorganic and organic chemicals incl. fertilizers.
Use of sulphuric acid as a processing aid, catalyst, dehydrating agent, pH regulator.
Use of sulphuric acid for extractions and processing of minerals, ores.
Use of sulphuric acid in the process of surface treatments, purification and etching.
Use of sulphuric acid in electrolytic processes.
Use of sulphuric acid in gas purification, scrubbing, flue gas scrubbing.
Use of sulphuric acid in production of sulphuric acid contained batteries.
Use of sulphuric acid in maintenance of sulphuric acid contained batteries.
Use of sulphuric acid in recycling of sulphuric acid contained batteries.
Use of sulphuric acid contained batteries.
Use of sulphuric acid as laboratory chemicals.
Use of sulphuric acid in industrial cleaning.
mixing, preparation and repackaging of sulphuric acid.
For professional applications as a cleaning agent.

Uses advised against: not determined.

### 1.3. Details of the supplier of the safety data sheet

Manufacturer: Zakłady Górniczo-Hutnicze „Bolesław" Spółka Akcyjna
Address: ul. Kolejowa 37, 32-332 Bukowno, Poland
Telephone/Fax number: +48 32 295 51 00/+48 32 295 50 00
E-mail address for a competent person responsible for sds: biuro@theta-doradztwo.pl

### 1.4. Emergency telephone number

112, Factory dispatcher: +48 32 296 55 80 (on call 24h)

## Section 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Skin Corr. 1A** H314, **Eye Dam. 1** H318
Causes severe skin burns and eye damage. Causes serious eye damage.

### 2.2. Label elements

Hazard symbols and signal words

**DANGER**

Hazard statements

H314 Causes severe skin burns and eye damage.

Precautionary statements

| | |
|---|---|
| P102 | Keep out of reach of children. |
| P223 | Do not allow contact with water. |
| P260 | Do not breathe vapours/spray. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P405 | Store locked up. |

**2.3. Other hazards**

Substance does not meet the PBT or vPvB criteria in accordance with the Annex XIII of the REACH Regulation.

## Section 3: Composition/information on ingredients

**3.1. Substances**

| | |
|---|---|
| Chemical name: | sulphuric acid (VI) > 51% |
| Synonyms: | sulphuric acid concentrated (VI), sulphuric acid contact, sulphuric acid technical concentrated, sulphuric acid containing above 51% of acid |
| Range: | 100% |
| Index number: | 016-020-00-8 |
| CAS number: | 7664-93-9 |
| EINECS number: | 231-639-5 |

Substance for which Union workplace exposure limits have been assigned.

## Section 4: First aid measures

**4.1. Description of first aid measures**

Skin contact: immediately take off contaminated clothes. Wash out skin with plenty of cool water. Do not use soaps or alkaline neutralizing agents. Use aseptic dressing, immediately call a doctor.

Eye contact: immediately wash out with plenty of water with the eyelid hold wide open, for at least 10-15 min. Avoid powerful water stream – risk of cornea damage. Remove any contact lenses. Use aseptic dressing. Obtain medical attention immediately.

Ingestion: do not cause vomiting. Rinse mouth with water, then drink plenty of water. Do not give anything to drink to unconscious. Do not give agents to neutralize acids. Immediately call a doctor, show him label.

Inhalation: remove to fresh air, keep warm and calm. Consult a doctor if you feel unwell.

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

Eye contact: causes severe eyelid and eyeball burns and eye damage, redness, burning sensation, pain; can cause sight lost or permanent cornea opacity.

Skin contact: chemical burns, redness, burning sensation, pain and thermal burns (exothermic reaction with moisten skin).

Inhalation of vapours: tearing, conjunctiva and cornea burns, throat pain, cough, shortness of breath, glottis cramp, larynx edema, bronchia cramp, lungs edema, painful burns of respiratory tract.

Ingestion: cause burns of oral cavity, throat, esophagus, stomach, thirst sensation, nausea, vomiting, diarrhea, alimentary canal hemorrhage, impact.

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

Physician makes a decision regarding further medical treatment after thoroughly examination of the injured. Symptomatic treatment.

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## Section 5: Firefighting measures

**5.1. Extinguishing media**

Suitable extinguishing media: substance is not flammable. Use extinguishing measures that are appropriate to the environment. Recommended extinguishing media: dry extinguishing type A,B,C.

Unsuitable extinguishing media: water. Do not let water to get into the container with acid.

**5.2. Special hazards arising from the substance or mixture**

May produce toxic and corrosive fumes of sulphur and carbon oxides if burning. Do not inhale combustion products – it can be dangerous for health.

**5.3. Advice for firefighters**

Personal protection typical in case of fire. Self-contained breathing apparatus and protective clothing should be worn. If possible remove containers from risk area to prevent bursting.

## Section 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**

Limit the access for the outsiders into the breakdown area, until the suitable cleaning operations are completed. In case of release of large amounts of the substance, it is necessary to take appropriate steps to prevent it from spreading into the environment. Ensure that the effects of the accident was removed only by trained personnel. Wear adequate personal protective equipment. Avoid direct contact with the product. Do not breathe vapours, ensure adequate ventilation.

**6.2. Environmental precautions**

In case of release of large amounts of the substance, it is necessary to take appropriate steps to prevent it from spreading into the environment. Do not let the substance to get through the surface or ground water, soil, sewage system, wells, basements etc. Notify relevant emergency services.

**6.3. Methods and material for containment and cleaning up**

Large spillage embank and pump out to emergency containers. Small spillage cover up with material absorbing liquids, e.g. sand, soil and acid-neutralizing agents, e.g. calcium or sodium carbonate, ground limestone, dolomite. Pick it up to labeled waste container. To remove sulphuric acid spillages do not use flammable materials, e.g. sawdust. Clean the area with lots of water and ventilate well.

**6.4. Reference to other sections**

Appropriate conduct with waste product – section 13.
Appropriate personal protective equipment – section 8.

## Section 7: Handling and storage

**7.1. Precautions for safe handling**

Handle in accordance with good occupational hygiene and safety practices. Ensure adequate ventilation. Before break and after work wash hands carefully. Avoid contact with eyes and skin. Do not form and inhale vapours and aerosol. Not used containers keep tightly closed. Do not let the substance to get to the mouth. Never add water to acid. When diluting, add slowly acid to water and mix carefully. Do not use sparkling equipment for opening vessels (possibility to create explosive gas-hydrogen, inside). Hygroscopic substance, avoid contact with water.

**7.2. Conditions for safe storage, including any incompatibilities**

Keep only in original, tightly closed, correctly labeled containers, in cool, dry and well-ventilated place. Floor in warehouse should be made of acid-proof materials. Avoid direct expose to sunlight. Protect against fire sources and heat. Protect from water and moisture. Keep away from food, beverages or feed for animals. Do not store near bases. Recommended materials for containers and fixtures:

- steel – only to contact with concentrated acid (92-98%)
- acid-proof steel
- Teflon®
- polyethylene (in 20$^{o}$C resistance in every concentration)
- polypropylene (in 20$^{o}$C resistance in every concentration)

### 7.3. Specific end use(s)

No information about the applications other than those specified in subsection 1.2.
Details relating to specific applications are provided in the exposure scenarios, annexed to the SDS.

## Section 8: Exposure controls/personal protection

### 8.1. Control parameters

Occupational exposure limit value in European Community:

| Substance | Limit value | | | | Note |
|---|---|---|---|---|---|
| | 8-hours | | Short-term | | |
| sulphuric acid (vapours) | 0,05 mg/m$^3$ | - | - | - | - |

Please check also any national occupational exposure limit values in your country.

Legal basis: Commission Directive 2000/39/EC, 2006/15/EC, 2009/161/EU, 2017/164/EU.

**DNEL values**

| Route | Exposure pattern | DNEL (workers) |
|---|---|---|
| Inhalation | Acute - local effects | 0,1 mg/m$^3$ (exposure 15 min.) |
| | | 0,05 mg/m$^3$ (exposure 8h) |
| | Long-term - systemic effects | 0,1 mg/m$^3$ (exposure 15 min.) |
| | | 0,05 mg/m$^3$ (exposure 8h) |

The extensive toxicity database for sulphuric acid demonstrates an absence of systemic toxicity. Effects seen in all studies are local (site of contact) and are attributable to the corrosive nature of the substance. The substance will dissociate under physiological conditions to form hydrogen and sulphate ions, both of which are naturally present. Exposure must be eliminated or minimized through the use of engineering controls and PPE.

**PNEC values**

| PNEC | Assessment factor | Value |
|---|---|---|
| freshwater | 10 | 0,0025 mg/l |
| marine water | — | 0,00025 mg/l |
| sewage treatment plant | 10 | 8,8 mg/l |
| sediment, freshwater | — | 0,002 mg/kg d.w. |
| sediment, marine water | — | 0,002 mg/kg d.w. |

### 8.2. Exposure controls

Use the product in accordance with good occupational hygiene and safety practices. When handlings do not eat, drink or smoke. Before break and after work carefully wash hands. Avoid skin and eyes contamination. Do not create and inhale vapours. In the workplace Ensure adequate generally ventilation and/or locally in order to keep the concentration of noxious agent in the air below the determined permissible limits. Local exhaust ventilation is preferred because it removes impurities from the place of their formation, not allowing their spread. Provide emergency shower and eye fountain.

Hand protection

Wear the protective gloves, acid-proof. In the case of short-term contact use protective gloves on the level of effectiveness of 2 or higher (breakthrough time > 30 min.). In the case of long term contact use protective gloves on the level of effectiveness 6 (breakthrough time > 480 min.).

The material that the gloves are made of must be impenetrable and resistant to the product's effects. The selection of material must be performed with consideration of breakthrough time, penetration speed and degradation. Moreover, the selection of proper gloves depends not only on the material, but also on other quality features and changes depending on the manufacturer. The producer should provide detailed information regarding the exact breakthrough time. This information should be followed.

Body protection

Wear acid-proof protective clothes and shoes.

Eye/face protection

Wear gogles.

Respiratory protection

In case of exceeding the highest permissible concentration values, in emergency situations it is advised to use AX type absorption equipment (class 1/protection against gases of volume concentration in air the below 0,1%; class 2/ protection against gases of concentration in the air below 0,5%; class 3/ protection against gases of volume concentration in the air up to 1%). If the oxygen concentration is ≤ 19% and/or max gas concentration in the air is ≥ 1,0% of total volume, self-contained breathing apparatus must be used.

Applied personal protective equipment must comply with the requirements of the Regulation 2016/425/EU. The employer is obliged to provide protective equipment relevant to performed activities and in accordance with all quality requirements, including its maintenance and cleaning.

Environmental exposure controls

Do not allow the substance to contaminate surface water/ground water. Any emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

## Section 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | |
|---|---|
| physical state: | oily liquid |
| colour: | colorless to yellow |
| odour: | sharp, pungent |
| odour threshold: | not determined |
| pH (49 g/l, 25°C): | < 1 |
| melting point/freezing point: | -1,11÷-3,0°C (acid 98%) |
| initial boiling point and boiling range: | ok. 310°C (acid 98%) |
| flash point: | not applicable |
| evaporation rate: | not determined |
| flammability (solid, gas): | not applicable |
| upper/lower flammability or explosive limits: | not applicable |
| vapour pressure (20°C): | < 0,001 hPa (acid 96%) |
| (145,8°C): | 1,3 hPa |
| (180°C): | 2,8 hPa |
| relative vapour density: | not determined |
| vapour density: | not determined |
| density (20°C): | 1,835 g/cm$^3$ (acid 93-100%) |
| solubility(ies): | soluble in water, in ethanol |
| partition coefficient: n-octanol/water: | not determined |
| auto-ignition temperature: | not self-ignition |
| decomposition temperature: | 338°C |
| explosive properties: | not display |
| oxidising properties: | not display |
| viscosity (20°C): | 22,5 mPa·s |

### 9.2. Other information

| | |
|---|---|
| crystallization temperature: | 10,4°C (acid 98,3%) |

## Section 10: Stability and reactivity

### 10.1. Reactivity

Highly reactive substance.

### 10.2. Chemical stability

The product is stable under normal conditions.

### 10.3. Possibility of hazardous reactions

In case of contact with metals hydrogen is formed, extremely flammable gas, with explosive properties. Sulphuric acid concentrated reacts with organic compounds and can cause ignition of powdery organic materials. Reactions with water and bases are rapid and strongly exothermic.

### 10.4. Conditions to avoid

Water, moisture, excessive heating above 150°C.

### 10.5. Incompatible materials

Alkaline metals, rare earth metals, basics, ammonia, phosphorus, phosphorus oxides, hydrides, permanganates, nitrates, nitrites, acetylene, chlorates, nitrates, carbides, peroxides, picrides, organic solvents, nitro compounds, aniline, oxyhalogen compounds, metals and alloys, flammable materials, compounds kind halogen-halogen.

### 10.6. Hazardous decomposition products

Not known.

## Section 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity

| | |
|---|---|
| $LD_{50}$ (rat, oral) | 2140 mg/kg |
| $LC_{50}$ (rat, inhalation) | 347 ppm/1h |
| $LC_{50}$ (mouse, inhalation) | 0,85 mg/l/4h |
| $LC_{50}$ (mouse, inhalation) | 0,6 mg/l/8h |
| $LC_{50}$ (rabbit, inhalation) | 1,47 mg/l/3,5h |
| $LC_{50}$ (guinea pig, inhalation) | 18 mg/m$^3$/8h |

Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Substance causes severe burns in skin contact.

Serious eye damage/irritation

Substance causes severe eye damage.

Respiratory or skin sensitisation

Based on available data, the classification criteria are not met.

Germ cell mutagenicity

NOAEC (inhalation) 19,3 mg/m$^3$

Negative in tests.

Carcinogenicity

Negative in tests. In spite of conduct many epidemiological tests, so far is not improved direct connection between exposure to sulphuric acid mists and laryngeal cancer. Individual studies are imprecise and do not adequately take into account confounding factors such as smoking and exposure to other occupational chemicals.

Reproductive toxicity

Negative in tests.

STOT-single exposure

Based on available data, the classification criteria are not met.

STOT-repeated exposure

Exposure repeated, target organ: larynx

NOAEC (inhalation) 0,3 mg/m$^3$

Based on available data, the classification criteria are not met.

Aspiration hazard

Based on available data, the classification criteria are not met.

**Exposure effects**

Eye contact: causes severe eyelid and eyeball burns and eye damage, redness, burning sensation, pain; can cause sight lost or permanent cornea opacity.

Skin contact: chemical burns, redness, burning sensation, pain and thermal burns (exothermic reaction with moisten skin). Burn dimension depends on concentration and time of exposure.

Inhalation: mists and smoke cause pain, tearing, conjunctiva and cornea burns, throat pain, cough, shortness of breath, glottis cramp, larynx edema, bronchia cramp, lungs edema, painful burns of respiratory tract. As a result of glottis may be death.

Ingestion: cause burns of oral cavity, throat, esophagus, stomach, thirst sensation, nausea, vomiting, diarrhea, alimentary canal hemorrhage, impact. Lethal dose is 6-8 g.

Effect of chronic exposure: long-term or repeated exposure to skin can cause inflammation; inhalation cause nose bleeding, nasal septum perforation, cavity, chest pain, bronchitis, conjunctivitis after eye contact. Workers exposed to sulphuric acid mists may complain of dermatitis, oral cavity inflammation or gastritis.

## Section 12: Ecological information

### 12.1. Toxicity

| | |
|---|---|
| $LC_{50}$ (fish) | 16-28 mg/l/96h/*Lepomis macrochirus* |
| $LC_{10}/EC_{10}$ or NOEC (fish) | 0,025 mg/l |
| $EC_{50}$ (invertebrates) | > 100 mg/l/48h/*Daphnia magna* |
| $LC_{10}/EC_{10}$ or NOEC (invertebrates) | 0,15 mg/l |
| $EC_{50}$ (algae) | > 100 mg/l/72h/*Desmodesmus subspicatus* |
| $LC_{10}/EC_{10}$ or NOEC (algae) | 100 mg/l |

Substance is not classified as hazardous for the environment.

### 12.2. Persistence and degradability

Undergoes the biological degradation.

### 12.3. Bioaccumulative potential

Bioaccumulation not expected.

### 12.4. Mobility in soil

Product can penetrate a soil; soluble in water, spread in aquatic environment.

### 12.5. Results of PBT and vPvB assessment

Substance does not meet the PBT or vPvB criteria.

### 12.6. Other adverse effects

Considering extreme pH value, mixture may present risk to aquatic system. This product has no influence on the global warming or the ozone layer depletion.

## Section 13: Disposal considerations

### 13.1. Waste treatment methods

Disposal methods for the product: disposal in accordance with the local legislation. Do not remove with household garbage. Waste product store in original containers. Consider recycling. Dispose via licensed waste disposal contractor. Sulphuric acid neutralize with 10% milk of lime.

Disposal methods for used packing: reuse/recycling/liquidation of empty containers dispose in accordance with the local legislation. Reuse tanks after commercial cleaning. Disposable containers transfer to waste contractor.

Legal basis: Directive 2008/98/EC as amended, European Parliament and Council Directive 94/62/EC as amended.

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## Section 14: Transport information

**14.1. UN number**

UN 1830


**14.2. UN proper shipping name**

SULPHURIC ACID with more than 51% acid

**14.3. Transport hazard class(es)**

8

**14.4. Packing group**

II

**14.5. Environmental hazards**

Not classified as hazardous for the environment.

**14.6. Special precautions for user**

Use appropriate personal protective equipment according to section 8.

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

Not applicable.

## Section 15: Regulatory information

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

**Regulation (EC) No 1907/2006** of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC as amended.
**Regulation (EC) No 1272/2008** of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as amended.
**Commission Regulation (EU) No 2015/830** of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
**Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives as amended.
**Commission Directive 2000/39/EC** of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.
**Commission Directive 2006/15/EC** of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC.
**Commission Directive 2009/161/EU** of 17 December 2009 establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC.
**Commission Directive 2017/164/EU** of 31 January 2017 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU.
**Regulation (EU) No 2016/425** of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

**15.2. Chemical safety assessment**

Chemical Safety Report has been prepared for identified use of substance.

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## Section 16: Other information

Clarification of aberrations and acronyms

| | |
|---|---|
| Skin Corr. 1A | Skin corrosion category 1A |
| Eye Dam. 1 | Serious eye damage category 1 |
| PNEC | Predicted no effect concentration |
| DNEL | Derived no-effect level |
| NOAEC | No Observed Adverse Effect Concentration |
| NOEC | No Observed Effect Concentration |
| PBT | Persistent, Bioaccumulative and Toxic substance |
| vPvB | very Persistent, very Bioaccumulative substance |

Trainings

Before commencing working with the product, the user should learn the Health & Safety regulations, regarding handling chemicals, and in particular, undergo a proper workplace training.
People associated with transport of hazardous materials in accordance with ADR should be adequately trained for their job responsibilities (general training, bench and safety).

Key literature references and sources of data

This sheet was prepared on the basis of on manufacturer's data, literature data, online databases, our knowledge and experience, taking into account the current legislation.

Other data

| | |
|---|---|
| Date of update: | 26.02.2019 |
| Version: | 5.0/EN |
| Changes: | sections: 1-16 |
| Safety Data Sheet made by: | **„THETA"** Doradztwo Techniczne |

**This SDS annuls and replaces all previous versions**

The information above is based on a current available data concerning the product, but also on the experience and knowledge in this field of the producer. They are neither a quality description of the product nor a guarantee of particular features. They are to be treated as aid to safety in transport, storage and usage of the product. That does not free the user from the responsibility of improper usage of the information above and also of improper compliance with the law norms in the field.