

SAFETY DATA SHEET

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

1.1. Product identifier

Trade name

Sulfuric acid

Product no.

-

REACH registration number

01-2119458838-XXXX

Other means of identification

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

Relevant identified uses of the substance or mixture

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

Uses advised against

No uses advised against known.

1.3. Details of the supplier of the safety data sheet

Company and address

Boliden Odda AS

Eitrheim

5750 Odda

Norway

Tel +47 53 64 91 00

Fax +47 53 64 33 77

Contact person**E-mail**

post.odda@boliden.com

SDS date

01-06-2015

SDS Version

1.0

1.4. Emergency telephone number

999 (or 111 for non-emergency medical advice). Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service). See section 16.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Skin Corr. 1A; H314
Eye Dam. 1; H318

2.2. Label elements

Hazard pictogram(s)



Signal word

Danger!

Hazard statement(s)

Causes severe skin burns and eye damage. (H314)

Safety statement(s)	General	-
	Prevention	Do not breathe dust/fume/gas/mist/vapours/spray. (P260). Wear protective gloves/protective clothing/eye protection/face protection. (P280).
	Response	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. (P301+P330+P331) IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. (P304+P340) Immediately call a POISON CENTER or doctor/physician. (P310) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338).
	Storage	-
	Disposal	-

Identity of the substances primarily responsible for the major health hazards

sulphuric acid 91-99,5%. Index-no.: 016-020-00-8

2.3. Other hazards

Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans.

Additional labelling

-

Additional warnings

-

VOC

-

SECTION 3: Composition/information on ingredients

3.1. Substances

NAME:	sulphuric acid 91-99,5%
IDENTIFICATION NOS.:	CAS-no: 7664-93-9 EC-no: 231-639-5 REACH-no: 01-2119458838-XXXX Index-no: 016-020-00-8
CONTENT:	91-99,5%
CLP CLASSIFICATION:	Skin. Corr. 1A H314

(*) See full text of H-phrases in chapter 16. Occupational exposure limits are listed in section 8, if these are available.

3.2. Mixtures

-

Other informations

SECTION 4: First aid measures**4.1. Description of first aid measures****General information**

In the case of accident: Contact a doctor or casualty department – take the label or this safety data sheet. Contact a doctor, if in doubt about the injured person's condition or if the symptoms continue. Never give an unconscious person water or similar.

Inhalation

Get the person into fresh air and stay with them.

Skin contact

Remove contaminated clothing and shoes at once. Skin that has come in contact with the material must be washed thoroughly with water and soap. Skin cleanser can be used. DO NOT use solvents or thinners.

Eye contact

Remove contact lenses. Flush eyes with plenty of water (20-30°C) for at least 30 minutes and continue until irritation stops. Make sure you flush under the upper and lower eyelids. Contact a doctor at once.

Ingestion

Give the person plenty to drink and stay with the person. If the person feels unwell, contact a doctor immediately and take this safety data sheet or the label from the product with you. Do not induce vomiting. In the event of spontaneous vomiting, hold head facing down so that no vomit runs back into the mouth and throat. Do not ingest activated carbon.

Burns

Rinse with water until the pain stops and continue for 30 minutes.

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

Tissue damaging effects: This product contains substances which are corrosive. If vapour or aerosols are inhaled, it can result in damage to lungs, irritation and burns in the respiratory organs as well as coughing. Corrosive substances cause irreversible damage to eyes and acid burns to skin.

Irritation effects: This product contains substances which cause irritation to skin and eyes, or when inhaled. Contact with locally irritative substances can cause the area of contact to be more prone to absorb damaging substances such as allergens.

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

Administer oxygen if necessary by trained/qualified individual - Obtain immediate medical attention.

Therapeutic measures: basic aid, decontamination, symptomatic treatment.

In case of inhalation medical follow-up during at least 48 hours as delayed pulmonary oedema may develop.

See Chapter 11 for information on toxicology.

Information to medics

Bring this safety data sheet.

SECTION 5: Firefighting measures**5.1. Extinguishing media**

Recommended: alcohol-resistant foam, carbonic acid, powder, water mist. Water jets should not be used, since they can spread the fire.

5.2. Special hazards arising from the substance or mixture

Hot acid splashes. Heating can release hazardous gases and/or mist. Formation of H₂ with metals.

On heating: release of toxic and corrosive gases/vapors: sulfur oxides.

5.3. Advice for firefighters

PROTECTION AGAINST ACID: Wear corrosion proof suite of PVC or fluorinated material. Self contained breathing apparatus must be worn where there is a risk of sulfuric acid decomposition by heat.

Cool tanks/drums with water spray/remove them into safety

If necessary, absorb toxic gases with water spray. Avoid water contaminated with acid to reach surface and ground water.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Avoid direct contact with spilled substances. Avoid inhalation of vapours from waste material.

6.2. Environmental precautions

According to EC-Regulation 1907/2006 (REACH)

Avoid contamination of groundwater, drainage water and surface water.

6.3. Methods and material for containment and cleaning up

Use sand, earth, vermiculite, diatomaceous earth to contain and collect non-combustible absorbent materials and place in container for disposal, according to local regulations. Solvents should be avoided.

LARGE SPILLS:

Dam up the liquid spill in suitable containers. Consider to treat with lime or sodium carbonate.

Comply with local regulations in case of discharge.

6.4. Reference to other sections

See section on "Disposal considerations" with regard to the handling of waste. See section on 'Exposure controls/personal protection' for protective measures.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid breathe gas/mist/vapors.

Use only acid-resistant equipment, see section 8.

Reduce/avoid exposure and/or contact

Observe strict hygiene. Keep container tightly closed.

Do not discharge the residue/waste into drain systems.

Avoid contact of the substance with water.

Remove contaminated clothing immediately.

7.2. Conditions for safe storage, including any incompatibilities

Store in dry area at ambient temperature.

Keep container tightly closed. Store locked up.

Do not pour water into acid.

Keep away from: heat sources, combustible materials, reducing agents, bases, metals, organic materials, oxidizing agents

Materials for packaging:

Suitable materials: cast iron, steel with PTFE-lining, carbon steel, PTFE, PE, PP, glass, stoneware/porcelain.

For tank carriers: stainless steel no. 4539 in compliance with DIN

Materials to avoid: monel steel, lead, aluminium, iron, copper, zinc, nickel, bronze.

Storage temperature

Ambient temperature

7.3. Specific end use(s)

This product should only be used for applications described in Section 1.2

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

OEL

sulphuric acid 91-99,5%

Long-term exposure limit (8-hour TWA reference period): - ppm | 0,05 mg/m³ thoracic fraction

Short-term exposure limit (15-minute reference period): - ppm | - mg/m³

DNEL / PNEC

DNEL (sulphuric acid 91-99,5%): 0.1 mg/m³ - Duration: Short term – Local effects

DNEL (sulphuric acid 91-99,5%): 0.05 mg/m³ - Duration: Long term – Local effects

PNEC (sulphuric acid 91-99,5%): 8.8 mg/l - Exposure: Sewage Treatment Plant - Remarks: In the second tier assessment all waste acid is neutralized and removed before it enters any biological phase of an STP. As such there is no exposure and no risk. PEC 0 mg/l. PEC/PNEC 0

PNEC (sulphuric acid 91-99,5%): 0.0025 mg/l - Exposure: Freshwater - Remarks: Safe use demonstrated in tier 2. PEC 5.9 x 10⁻⁷ mg/l. PEC/PNEC 2.3 x 10⁻⁴

PNEC (sulphuric acid 91-99,5%): 0.002 (EPM) mg/l - Remarks: Sediment. Safe use demonstrated in tier 2. PEC 4.75 x 10⁻⁷ mg/l. PEC/PNEC 2.35 x 10⁻⁴

PNEC (sulphuric acid 91-99,5%): 0.002 (EPM) mg/l - Exposure: Marine water sediment - Remarks: Safe use demonstrated in tier 2. PEC 3 x 10⁻⁹ mg/l. PEC/PNEC 1 x 10⁻⁶

PNEC (sulphuric acid 91-99,5%): 0.00025 - Remarks: Marine. Safe use demonstrated in tier 2. PEC 8.56 x 10⁻⁸ mg/l. PEC/PNEC 3.4 x 10⁻⁵

8.2. Exposure controls

According to EC-Regulation 1907/2006 (REACH)

Compliance with the stated exposure limits values should be checked on a regular basis. Prevent the product to reach groundwater, drainage water and surface water.

General recommendations

Observe general occupational hygiene. At work do not eat, drink, smoke or take snuff. Wash hands before breaks and after work.

Exposure scenarios

If there is an appendix to this safety data sheet, the indicated exposure scenarios must be complied.

Exposure limits

Trade users are covered by the rules of the working environment legislation on maximum concentrations for exposure. See work hygiene threshold values above.

Appropriate technical measures

Airborne gas and dust concentrations must be kept as low as possible and below the current threshold values (see above). Use for example an exhaust system if the normal air flow in the work room is not sufficient. Safety shower and eyewash should be available in the vicinity.

Hygiene measures

Whenever you take a break in using this product and when you have finished using it, all exposed areas of the body must be washed. Always wash hands, forearms and face.

Measures to avoid environmental exposure

Keep damming materials near the workplace. If possible collect spillage during work.

Individual protection measures, such as personal protective equipment



Generally

Only CE-marked personal protection equipment should be used.

Respiratory Equipment

Wear respiratory protective equipment if exposure to levels above occupational exposure limit.

In case of intensive or longer exposure, or insufficient ventilation use respiratory protection:

- gas mask with filter type E upon release of sulfur dioxide
- aerosol mask with filter type P3 upon formation of mist

Skin protection

Wear acid resistant overalls and footwear made of suitable material (for example butyl rubber or neoprene)

Hand protection

Wear protective gloves.

Glove material must be adequately resistant and impervious to the substance that is being handled.

Check for imperviousness/impermeability prior to use.

If gloves are to be reused: cleanse before removal and store in a well ventilated area.

In case of contact: it is advised to change gloves

Suitable material for gloves and breakthrough time:

FKM (fluororubber) (0.4 mm) ≥ 8 hours

Butyl (Butyl rubber) (0.5 mm) 2 hours

PVC Breakthrough time may vary depending on supplier and the norm that is used. Always be extra careful when using PVC gloves!

Unsuitable material: Cloth, Leather, NR (natural rubber/latex), CR (polychloroprene/chloroprene rubber), NBR(nitrile rubber)

Eye protection

Wear tightly fitting safety goggles or full-face shield.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Form	Colour	Odour	pH	Viscosity	Density (g/cm ³)
Liquid	Colourless	Weakly pungent	-	Dynamic: ca 20 mPa.s (93-98% 25 °C)	1,82 kg/l (93% 20 °C) 1,84 kg/l (96% 20 °C) 1,84 kg/l (98% 20 °C)

Phase changes

According to EC-Regulation 1907/2006 (REACH)

Melting point (°C)

ca -32 °C (93% 20°C)

ca -11 °C (96% 20°C)

ca 0 °C (98% 20°C)

Boiling point (°C)

282 °C (93% 20°C)

330 °C (96% 20°C)

326 °C (98% 20°C)

Vapour pressure

6 Pa (90% 20°C)

Data on fire and explosion hazards

Flashpoint (°C)

not applicable

Explosion limits (Vol %)

not applicable

Ignition (°C)

-

Oxidizing properties

-

Self ignition (°C)

-

Flammability

not applicable

Solubility

Solubility in water

Soluble

n-octanol/water coefficient

-

9.2. Other information

Solubility in fat

-

Additional information

Decomposition temperature: ca 800 °C

Molecular formula: H₂SO₄

Molar weight/molecular mass: 98.07 g/mol

Dissociation constant pK_a: 1.92

SECTION 10: Stability and reactivity

10.1. Reactivity

Violent exothermic reaction with water/moisture: release of corrosive gases

Reacts with many compounds: (increased) risk of fire/explosion

Reacts exothermically with organic material: risk of spontaneous ignition

Aqueous solutions of the product react with most metals: hydrogen release

By thinning, the solution must be poured into water, not the other way.

10.2. Chemical stability

Hygroscopic.

Stable at ambient temperature and under normal conditions of use.

Unstable on exposure to moisture.

10.3. Possibility of hazardous reactions

See, section 10.1.

10.4. Conditions to avoid

Keep away from: High temperature.

10.5. Incompatible materials

Keep away from: combustible materials, reducing agents, bases, metals, cellulosic materials, organic materials, alcohols, monel steel, lead, aluminium, iron, copper, zinc, nickel, bronze

A list of materials which may cause dangerous reactions is given below. This list is not comprehensive, but is given for information only: water, bases, organic materials, carbides, chlorates, chromates, powdered metals, alkali metals, nitrates, hydroxides and carbonates.

10.6. Hazardous decomposition products

On heating: release of toxic and corrosive gases/vapors (sulfur oxides)

Aqueous solution reacts with (some) metals: release of highly flammable gases/vapors (hydrogen)

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Substance

sulphuric acid 91-99,5%

sulphuric acid 91-99,5%

sulphuric acid 91-99,5%

Species

Rat

Rat

Mouse

Test

LD50

LC50

LC50

Route of exposure

Oral

Inhalation

Inhalation

Result

2140 mg/kg

0.375 mg/l/4h

0.850 mg/l/4h

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Data on substance: sulphuric acid 91-99,5%

Result: corrosive

Serious eye damage/irritation

Causes serious eye damage.

According to EC-Regulation 1907/2006 (REACH)

Data on substance: sulphuric acid 91-99,5%
Result: corrosive

Respiratory or skin sensitisation

Data on substance: sulphuric acid 91-99,5%
Result: No classification is proposed for skin sensitisation or respiratory sensitisation based on theoretical considerations and in the absence of any findings in exposed humans following occupational use over a long period of time.

Germ cell mutagenicity

Data on substance: sulphuric acid 91-99,5%
Result: negative

Carcinogenicity

Data on substance: sulphuric acid 91-99,5%
Result: EC carc. cat.: not listed

Data on substance: sulphuric acid 91-99,5%
Result: IARC classification: group 1

Reproductive toxicity

Data on substance: sulphuric acid 91-99,5%
Result: No classification is proposed for reproductive or developmental toxicity. The existing data and the absence of systemic exposure do not indicate that classification is required.

STOT-single exposure

No data available.

STOT-repeated exposure

Data on substance: sulphuric acid 91-99,5%
Result: Red and dry skin,
Itching,
Skin rash/inflammation,
Affection/discolouration of the teeth.
Inflammation/damage of the eye tissue.

Aspiration hazard

In case of inhalation medical follow-up during at least 48 hours as delayed pulmonary oedema may develop.

Long term effects

Tissue damaging effects: This product contains substances which are corrosive. If vapour or aerosols are inhaled, it can result in damage to lungs, irritation and burns in the respiratory organs as well as coughing. Corrosive substances cause irreversible damage to eyes and acid burns to skin.
Irritation effects: This product contains substances which cause irritation to skin and eyes, or when inhaled. Contact with locally irritative substances can cause the area of contact to be more prone to absorb damaging substances such as allergens.

SECTION 12: Ecological information

12.1. Toxicity

Substance	Species	Test	Test duration	Result
sulphuric acid 91-99,5%	Fish	LC50	96 h	42 mg/l
sulphuric acid 91-99,5%	Fish	LC50	96 h	16 mg/l
sulphuric acid 91-99,5%	Fish	LC50	24 h	82 mg/l
sulphuric acid 91-99,5%	Daphnia	EC50	24 h	29 mg/l
sulphuric acid 91-99,5%	Algae	NOEC		growth inhibition < pH 5.6

12.2. Persistence and degradability

Substance	Biodegradability	Test	Result
sulphuric acid 91-99,5%	Sulphate ion is ubiquitous in the environment and metabolised by living micro-organisms and plants.		

12.3. Bioaccumulative potential

Substance	Potential bioaccumulation	LogPow	BFC
sulphuric acid 91-99,5%	No	No data available	No data available

12.4. Mobility in soil

According to EC-Regulation 1907/2006 (REACH)

Sulphate ion is ubiquitous in the environment and metabolised by living micro-organisms and plants.

12.5. Results of PBT and vPvB assessment

The substance meets the criteria for PBT: No

12.6. Other adverse effects

Effect on waste water purification: Sludge digestion is inhibited at 58 mg/l, 50% 120 h.

Large discharges in sewers may be detrimental to waste water treatment plants through inhibition of sludge or bio-film organisms due to acidification.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

The product is covered by the regulations on dangerous waste.

Waste

EWC code

06 01 01, 15 01 10

Specific labelling

-

Contaminated packing

Packaging which contains leftovers from the product must be disposed of in the same way as the product.

SECTION 14: Transport information

This product is covered by the conventions on dangerous goods.

14.1 – 14.4

ADR/RID

14.1. UN number	1830
14.2. UN proper shipping name	SULPHURIC ACID with more than 51% acid
14.3. Transport hazard class(es)	8 Danger code: 80
14.4. Packing group	II
Notes	-
Tunnel restriction code	E

IMDG

UN-no.	1830
Proper Shipping Name	SULPHURIC ACID with more than 51% acid
Class	8
PG*	II
EmS	F-A, S-B
MP**	No
Hazardous constituent	-

IATA/ICAO

UN-no.	1830
Proper Shipping Name	SULPHURIC ACID with more than 51% acid
Class	8
PG*	II

14.5. Environmental hazards

-

14.6. Special precautions for user

Maritim transport (IMDG code) MFAG : 700

Air freight (ICAO) Instruction passenger: 809/Y809

Instruction cargo: 813

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No data available

(*) Packing group

(**) Marine pollutant

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****Restrictions for application**

People under the age of 18 must not be exposed to this product cf. Council Directive 94/33/EC.

Demands for specific education

-

Additional information

-

Sources

EC regulation 1907/2006 (REACH)

EC Regulation 1272/2008 (CLP)

EH40/2005

DIRECTIVE 2012/18/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC

COUNCIL DIRECTIVE 94/33/EC of 22 June 1994 on the protection of young people at work.

COUNCIL DIRECTIVE 92 / 85 / EEC of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding (tenth individual Directive within the meaning of Article 16 (1) of Directive 89/ 391 / EEC)

DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives

15.2. Chemical safety assessment

Yes

SECTION 16: Other information**Full text of H-phrases as mentioned in section 3**

H314 - Causes severe skin burns and eye damage.

The full text of identified uses as mentioned in section 1

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Other symbols mentioned in section 2

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Other

It is recommended to hand over this safety data sheet to the actual user of the product. Information in this safety data sheet cannot be used as a product specification.

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

A change (in proportion to the last essential change (first cipher in SDS version)) is marked with a blue triangle.

Emergency Numbers

According to EC-Regulation 1907/2006 (REACH)

Belgium: 070 - 245 245

Austria: Poison Control Centre Emergency helpline +43 1 406 43 43, 112

Portugal: Em caso de intoxicacao, ligue 808 250 143

Czech Republic: Toxikologické informační středisko Telefon: +420 224 919 293, +420 224 915 402

Estonia: 112, 16662, ((+372) 626 93 90)

Lithuania: Visuomenės sveikatos centrams +370 5 236 20 52 arba +370 687 53378

Italy: Centro antiveleni di Roma - Policlinico Umberto I tel. 06-49978000

Spain: Servicio de Información Toxicológica Teléfono: + 34 91 562 04 20 (solo emergencias toxicológicas)

Información en español (24h/365 días)

Sweden: 112, 08-331231 (vardagar kl 9-17)

United Kingdom: 999 (or 111 for non-emergency medical advice). Emergency Action: In the event of a medical enquiry involving this product, please contact your doctor or local hospital accident and emergency department or the NHS enquiry service)

Denmark: Kontakt Giftlinien på tlf.nr.: 82 12 12 12 (åbent 24 timer i døgnet).

Germany: Giftnotruf Berlin, Emergency telephone: +49 30 19240 (Tag und Nacht)

Finland: 09-4711/Myrkytystietokeskus tai suora numero 09-471977 Myrkytystietokeskus/HUS, Tukholmankatu 17, 00029 HUS (Helsinki) 112

Norway: Giftinformasjonssentralen på tlf.nr.: 22 59 13 00, 113

France: ORFILA (INRS) : + 33 (0)1 45 42 59 59. 24 heures sur 24 et 7 jours sur 7

Hungary: Telefon: 06-80-20-11-99

Iceland: Neyðarlínan: Sími 112. Eitrunarmiðstöð Landsspítalans. Sími: 543 2222.

Netherlands: 30-2748888

Bulgaria: +359 2 9154 409

Greece: +30 10 779 3777

Ireland: +353 1 8379964

Latvia: +371 704 2468

Malta: 2425 0000

Poland: +48 58301 65 16 / +48 58 349 2831

Romania: +40 21 3183606

Slovakia: +421 2 54 77 4166

Slovenia: + 386 41 650500

**Date of last essential change
(First cipher in SDS version)**

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**Date of last minor change
(Last cipher in SDS version)**

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