

Safety Data Sheet

acc. to OSHA HCS

Page 1/10

Printing date 12/30/2017

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Version number: 4

1 Identification

- **Product identifier**
- **Trade name:** Sulphuric acid 2 mol/l (4N)
- **Article number:** 183426
- **Application of the substance / the mixture** Laboratory chemical
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
AppliChem GmbH
Ottoweg 4
D-64291 Darmstadt
- **Information department:** Dept. Compliance
- **Emergency telephone number:** +49(0)6151 93570 (Inside normal business hours)

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2 Hazard(s) identification

- **Classification of the substance or mixture**
Skin Corr. 1A H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.
Carc. 1A H350 May cause cancer.
- **Label elements**
- **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
 
GHS05 GHS08
- **Signal word** Danger
- **Hazard-determining components of labeling:**
sulphuric acid 95 - 97%
- **Hazard statements**
H314 Causes severe skin burns and eye damage.
H350 May cause cancer.
- **Precautionary statements**
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 IF exposed or if you feel unwell:
P310 Immediately call a poison center/doctor.
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 3
Fire = 0
Reactivity = 0

(Contd. on page 2)

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Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 1)

• **HMIS-ratings (scale 0 - 4)**

HEALTH	3	Health = *3
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

• **Dangerous components:**

7664-93-9	sulphuric acid 95 - 97%	>15-≤50%
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4 First-aid measures

- **Description of first aid measures**
- **General information:** Involve doctor immediately.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**
Call a doctor immediately.
Clean with water and soap. If possible, also wash with polyethylene glycol 400.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
Call a doctor immediately.
In case of unconsciousness place patient stably in side position for transportation.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed**
Breathing difficulty
Coughing
Nausea
Gastric or intestinal disorders
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture**
Development of hazardous combustion gases or vapours possible in the event of fire.
(SO₂, SO₃)
Non-combustible.
- **Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 2)

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Avoid substance contact.
Do not inhale steams/aerosols.
Ensure adequate ventilation
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Use neutralizing agent.
Absorb with liquid-binding material (AppliSorb).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
Clean up affected area.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

• PAC-1:

7664-93-9	sulphuric acid 95 - 97%	0.20 mg/m ³
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• PAC-2:

7664-93-9	sulphuric acid 95 - 97%	8.7 mg/m ³
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• PAC-3:

7664-93-9	sulphuric acid 95 - 97%	160 mg/m ³
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7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
When diluting, always stir the product into standing water, not water to product.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** The product is not flammable.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Provide acid-resistant floor.
- **Information about storage in one common storage facility:** Store away from foodstuffs.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Open receptacle only under localized extractor facilities.
Store under lock and key and with access restricted to technical experts or their assistants only.
- **Recommended storage temperature:** +15 - +25°C
- **Storage class:** 8 B
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

• Components with limit values that require monitoring at the workplace:

7664-93-9	sulphuric acid 95 - 97%
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PEL	Long-term value: 1 mg/m ³
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(Contd. on page 4)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 3)

REL	Long-term value: 1 mg/m ³
TLV	Long-term value: 0.2* mg/m ³ *as thoracic fraction

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

- **Breathing equipment:**

Filter P3
Respiratory protection required when vapours/aerosols are generated.

- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **For the permanent contact gloves made of the following materials are suitable:**

Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
Value for the permeation: Level ≥ 480 min

- **As protection from splashes gloves made of the following materials are suitable:**

Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
Value for the permeation: Level ≥ 480 min

- **Eye protection:**



Tightly sealed goggles

- **Body protection:**

Use protective suit.
Acid resistant protective clothing
Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

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(Contd. on page 5)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 4)

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Fluid
Color:	Colorless
Odor:	Odorless
Odor threshold:	Not determined.

pH-value at 20 °C (68 °F): <1

Change in condition

Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.

Flash point: Not applicable.

Flammability (solid, gaseous): Not applicable.

Decomposition temperature: Not determined.

Auto igniting: Product is not selfigniting.

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

Vapor pressure at 20 °C (68 °F): >0 hPa (>0 mm Hg)

Density: Not determined.

Relative density: Not determined.

Vapor density: Not determined.

Evaporation rate: Not determined.

Solubility in / Miscibility with

Water: Fully miscible.

Partition coefficient (n-octanol/water): Not determined.

Viscosity:

Dynamic:	Not determined.
Kinematic:	Not determined.

Solvent content:

VOC content: 0.00 %
0.0 g/l / 0.00 lb/gl

Other information: No further relevant information available.

10 Stability and reactivity

Reactivity: No dangerous reactions known.

Chemical stability

Thermal decomposition / conditions to be avoided: Strong heating

Possibility of hazardous reactions

Corrosive action on metals.

Reacts with metals forming hydrogen.

Reacts with strong acids and alkali.

Reacts with oxidizing agents.

Diluting or dissolving in water always causes rapid heating.

When diluting, always add acid to water, never vice versa.

Conditions to avoid: No further relevant information available.

Incompatible materials: different metals

(Contd. on page 6)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 5)

- **Hazardous decomposition products:** In the event of fire: See chapter 5
- **Additional information:**
hygroscopic
Incompatible with:
animal tissues
vegetable tissues

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**

Components	Type	Value	Species
7664-93-9 sulphuric acid 95 - 97%			
Inhalative	LC50/2 h	510 mg/l (rat)	

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:**
Strong caustic effect.
Strong irritant with the danger of severe eye injury.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)			
7664-93-9	sulphuric acid 95 - 97%		1

NTP (National Toxicology Program)			
7664-93-9	sulphuric acid 95 - 97%		K

OSHA-Ca (Occupational Safety & Health Administration)			
None of the ingredients is listed.			

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:**

Type of test	Effective concentration	Method	Assessment
7664-93-9 sulphuric acid 95 - 97%			
EC50	2,500 mg/l (Bakterien)		
	1.2 mg/l (fish)		
EC50/96 h	10 mg/l (Aquatic plants)		
EC50/24 h	29 mg/l (daphnia magna)		
	(bezogen auf die Reinsubstanz)		

- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.

(Contd. on page 7)

Trade name: Sulphuric acid 2 mol/l (4N)



(Contd. of page 6)

- **Additional ecological information:**
- **General notes:**
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values.
A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow to enter waters, waste water, or soil.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Chemicals must be disposed of in compliance with the respective national regulations.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:**
Disposal must be made according to official regulations.
Packagings that cannot be cleansed are to be disposed of in the same manner as the product.

14 Transport information

- | | |
|---|-----------------------------|
| • UN-Number | |
| • DOT, ADR, IMDG, IATA | UN2796 |
| • UN proper shipping name | |
| • DOT, ADR | Sulfuric acid solution |
| • IMDG, IATA | SULPHURIC ACID solution |
| • Transport hazard class(es) | |
| • DOT | |
|  | |
| • Class | 8 Corrosive substances |
| • Label | 8 |
| • ADR | |
|  | |
| • Class | 8 (C1) Corrosive substances |
| • Label | 8 |

(Contd. on page 8)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 7)

• **IMDG, IATA**



• **Class** 8 Corrosive substances
• **Label** 8

• **Packing group**
• **DOT, ADR, IMDG, IATA** II

• **Environmental hazards:**
• **Marine pollutant:** No

• **Special precautions for user** Warning: Corrosive substances
• **Danger code (Kemler):** 80
• **EMS Number:** F-A,S-B
• **Segregation groups** Acids
• **Stowage Category** B

• **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

• **Transport/Additional information:**

• **ADR**
• **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

• **IMDG**
• **Limited quantities (LQ)** 1L
• **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

• **UN "Model Regulation":** UN 2796 SULFURIC ACID SOLUTION, 8, II

15 Regulatory information

• **Safety, health and environmental regulations/legislation specific for the substance or mixture**
• **Sara**

• **Section 355 (extremely hazardous substances):**

All ingredients are listed.

• **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

• **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

• **Proposition 65**

• **Chemicals known to cause cancer:**

None of the ingredients is listed.

• **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

• **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

(Contd. on page 9)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 8)

• **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

• **Cancerogenity categories**

• **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

• **TLV (Threshold Limit Value established by ACGIH)**

7664-93-9 sulphuric acid 95 - 97%

A2

• **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

• **GHS label elements**

The product is classified and labeled according to the Globally Harmonized System (GHS).

• **Hazard pictograms**



GHS05 GHS08

• **Signal word** Danger

• **Hazard-determining components of labeling:**

sulphuric acid 95 - 97%

• **Hazard statements**

H314 Causes severe skin burns and eye damage.

H350 May cause cancer.

• **Precautionary statements**

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P309 IF exposed or if you feel unwell:

P310 Immediately call a poison center/doctor.

• **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

• **Department issuing SDS:** Dept. Compliance

• **Date of preparation / last revision** 12/30/2017 / 3

• **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

(Contd. on page 10)

Trade name: Sulphuric acid 2 mol/l (4N)

(Contd. of page 9)

PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Carc. 1A: Carcinogenicity – Category 1A

• *** Data compared to the previous version altered.**

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