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

1.1 Product identifier

Catalogue No. 112080
Product name Sulfuric acid 98% for analysis EMSURE®

REACH Registration Number A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. 7664-93-9

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

Identified uses Reagent for analysis, Chemical production
For additional information on uses please refer to the Merck Chemicals portal (www.merckgroup.com).

1.3 Details of the supplier of the safety data sheet

Company Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department EHS Manager *+61 (3) 8727 6300 * Monday through Friday, 8:00am to 5:00pm (EST)
Regional representation Merck Pty. Limited
ABN 80 001 239 818
Ground Floor, Building 1
885 Mountain Highway
Bayswater VIC 3153 Australia
www.merckmillipore.com

1.4 Emergency telephone +61 (3) 8727 6300
SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Corrosive to metals, Category 1, H290
Skin corrosion, Category 1A, H314

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word
Danger

Hazard statements
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements
Prevention
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response
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.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Reduced labelling (<125 ml)

Signal word
Danger

Hazard statements
H314 Causes severe skin burns and eye damage.

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.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Index-No. 016-020-00-8

2.3 Other hazards
None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

<table>
<thead>
<tr>
<th>Formula</th>
<th>H₂SO₄</th>
<th>H₂O₄S (Hill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index-No.</td>
<td>016-020-00-8</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>231-639-5</td>
<td></td>
</tr>
<tr>
<td>Molar mass</td>
<td>98.08 g/mol</td>
<td></td>
</tr>
</tbody>
</table>
Hazardous components (REGULATION (EC) No 1272/2008)

Chemical name (Concentration)

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Registration number</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-93-9</td>
<td>(*)</td>
<td>Corrosive to metals, Category 1, H290</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin corrosion, Category 1A, H314</td>
</tr>
</tbody>
</table>

*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-Statements mentioned in this Section, see Section 16.

3.2 Mixture
Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

General advice
First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

Risk of blindness!
Irritation and corrosion, Cough, Shortness of breath
Nausea, Vomiting, Diarrhoea, pain

**4.3 Indication of any immediate medical attention and special treatment needed**
No information available.

---

### SECTION 5. Firefighting measures

**5.1 Extinguishing media**

*Suitable extinguishing media*
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

*Unsuitable extinguishing media*
For this substance/mixture no limitations of extinguishing agents are given.

**5.2 Special hazards arising from the substance or mixture**
Not combustible.
Ambient fire may liberate hazardous vapours.
Fire may cause evolution of:
Sulphur oxides

**5.3 Advice for firefighters**

*Special protective equipment for firefighters*
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*
Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

### SECTION 6. Accidental release measures

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

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:
Protective equipment see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).
Take up with liquid-absorbent and neutralising material (e.g. Chemizorb® H⁺, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Observe label precautions.

Hygiene measures
Change contaminated clothing and immerse in water. Preventive skin protection Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers
No metal containers.

Storage conditions
Tightly closed.

Recommended storage temperature see product label.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
SECTION 8. Exposure controls/personal protection

8.1 Control parameters

$sulphuric acid\ (7664-93-9)$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU OEL Short Term Exposure Limit (STEL):</td>
<td>3 mg/m³</td>
</tr>
<tr>
<td>Time Weighted Average (TWA):</td>
<td>1 mg/m³</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Tightly fitting safety goggles

Hand protection

full contact:

Glove material: Viton (R)
Glove thickness: 0.7 mm
Break through time: > 480 min

splash contact:

Glove material: butyl-rubber
Glove thickness: 0.7 mm
Break through time: > 120 min
The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 890 Vitoject® (full contact), KCL 898 Butoject® (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet<>, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment
Acid-resistant protective clothing

Respiratory protection
required when vapours/aerosols are generated.
Recommended Filter type: filter ABEK
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls
Do not let product enter drains.

SECTION 9. Physical and chemical properties
9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

<table>
<thead>
<tr>
<th>Catalogue No.</th>
<th>112080</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>Sulfuric acid 98% for analysis EMSURE®</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pH</strong></td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>at 49 g/l, 25 °C</td>
</tr>
<tr>
<td><strong>Melting point</strong></td>
<td>-20 °C</td>
</tr>
<tr>
<td><strong>Boiling point/boiling range</strong></td>
<td>ca. 335 °C, at 1,013 hPa</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>No information available.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>No information available.</td>
</tr>
<tr>
<td><strong>Lower explosion limit</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Upper explosion limit</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>ca.0.0001 hPa</td>
</tr>
<tr>
<td></td>
<td>at 20 °C</td>
</tr>
<tr>
<td><strong>Relative vapour density</strong></td>
<td>ca.3.4</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1.84 g/cm³</td>
</tr>
<tr>
<td></td>
<td>at 20 °C</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>No information available.</td>
</tr>
<tr>
<td><strong>Water solubility</strong></td>
<td>at 20 °C, soluble, (caution ! development of heat)</td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>No information available.</td>
</tr>
<tr>
<td><strong>Auto-ignition temperature</strong></td>
<td>No information available.</td>
</tr>
</tbody>
</table>
Decomposition temperature
No information available.

Viscosity, dynamic
ca.24 mPa.s
at 20 °C

Explosive properties
Not classified as explosive.

Oxidizing properties
Oxidizing potential

9.2 Other data
Ignition temperature
Not applicable

Bulk density
Not applicable

Corrosion
May be corrosive to metals.

SECTION 10. Stability and reactivity

10.1 Reactivity
strong oxidising agent

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
A risk of explosion and/or of toxic gas formation exists with the following substances:

Violent reactions possible with:

Water, Alkali metals, alkali compounds, Ammonia, Aldehydes, acetonitrile, Alkaline earth metals, alkalines, Acids, alkaline earth compounds, Metals, metal alloys, Oxides of phosphorus, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvent, acetylidene, Nitriles, organic nitro compounds, anilines, Peroxides, picrates, nitrides, lithium silicide, iron(III) compounds, bromates, chlorates, Amines, perchlorates, hydrogen peroxide
10.4 Conditions to avoid

no information available

10.5 Incompatible materials

animal/vegetable tissues, Metals
Contact with metals liberates hydrogen gas.

10.6 Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity
This information is not available.

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:; damage of respiratory tract

Acute dermal toxicity
This information is not available.

Skin irritation
Causes severe burns.

Eye irritation

Causes serious eye damage.
Risk of blindness!

Sensitisation
This information is not available.

Germ cell mutagenicity
This information is not available.

Carcinogenicity
This information is not available.
Reproductive toxicity
This information is not available.

Teratogenicity
This information is not available.

Specific target organ toxicity - single exposure
This information is not available.

Specific target organ toxicity - repeated exposure
This information is not available.

Aspiration hazard
This information is not available.

11.2 Further information
After inhalation of aerosols: damage to the affected mucous membranes. After skin contact: severe burns with formation of scabs. After eye contact: burns, corneal lesions. After swallowing: severe pain (risk of perforation!), nausea, vomiting and diarrhoea. After a latency period of several weeks possibly pyloric stenosis.
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity
No information available.

12.2 Persistence and degradability
No information available.

12.3 Bioaccumulative potential
No information available.

12.4 Mobility in soil
No information available.

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
Additional ecological information

Biological effects:
Forms corrosive mixtures with water even if diluted. Harmful effect due to pH shift. Endangers drinking-water supplies if allowed to enter soil or water.
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 UN number         UN 1830
14.2 Proper shipping name SULPHURIC ACID
14.3 Class         8
14.4 Packing group       II
14.5 Environmentally hazardous --
14.6 Special precautions for user yes

Tunnel restriction code E

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 112080
Product name Sulfuric acid 98% for analysis EMSURE®

14.1 UN number UN 1830
14.2 Proper shipping name SULPHURIC ACID
14.3 Class 8
14.4 Packing group II
14.5 Environmentally hazardous --
14.6 Special precautions for user no

Sea transport (IMDG)
14.1 UN number UN 1830
14.2 Proper shipping name SULPHURIC ACID
14.3 Class 8
14.4 Packing group II
14.5 Environmentally hazardous --
14.6 Special precautions for user yes
EmS F-A S-B

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not relevant

Other regulations
Hazchem Code 2P

SECTION 15. Regulatory information

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

National legislation
Storage class 8B
Standard for the Uniform S6
Scheduling of Medicines and Poisons - Poisons Schedule Number:
15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H290  May be corrosive to metals.
H314  Causes severe skin burns and eye damage.

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms

Signal word

Danger

Hazard statements

H290  May be corrosive to metals.
H314  Causes severe skin burns and eye damage.

Precautionary statements

Prevention

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

Response

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.
P308 + P310  IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 112080
Product name Sulfuric acid 98% for analysis EMSURE®

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.