SAFETY DATA SHEET
SULPHURIC ACID 50% V/V

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

1.1. Product identifier

Product name SULPHURIC ACID 50% V/V

Product number 1292

REACH registration number 01-2119458838-20-0000

CAS number 7664-93-9

EC number 231-639-5

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

Identified uses Laboratory reagent. Cleaning agent.

Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier
Reagent Chemical Services
18 Aston Fields Road
Whitehouse Industrial Estate
Runcorn
Cheshire WA7 3DL

T: 01928 716903 (08.30 - 17.00)
F: 01928 716425
E: info@reagent.co.uk

1.4. Emergency telephone number

Emergency telephone OHES Environmental Ltd 24-7
Tel. 0333 333 9939 (24 hour)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Skin Corr. 1A - H314 Eye Dam. 1 - H318

Environmental hazards Not Classified

2.2. Label elements

EC number 231-639-5
SULPHURIC ACID 50% V/V

Signal word
Danger

Hazard statements
H314 Causes severe skin burns and eye damage.

Precautionary statements
P260 Do not breathe vapour/ spray.
P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective clothing, gloves, eye and face protection.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/ doctor.
P321 Specific treatment (see medical advice on this label).
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards
This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/information on ingredients

3.1. Substances
Product name SULPHURIC ACID 50% V/V
REACH registration number 01-2119458838-20-0000
CAS number 7664-93-9
EC number 231-639-5

SECTION 4: First aid measures

4.1. Description of first aid measures
General information Get medical attention immediately. Show this Safety Data Sheet to the medical personnel. Chemical burns must be treated by a physician.

Inhalation Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Get medical attention.

Ingestion Never give anything by mouth to an unconscious person. Rinse mouth thoroughly with water. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention.

Skin contact It is important to remove the substance from the skin immediately. Take off immediately all contaminated clothing. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention. Chemical burns must be treated by a physician.
SULPHURIC ACID 50% V/V

Eye contact
Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes. Get medical attention.

Protection of first aiders
First aid personnel should wear appropriate protective equipment during any rescue. If it is suspected that volatile contaminants are still present around the affected person, first aid personnel should wear an appropriate respirator or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it from the affected person, or wear gloves. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.

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

General information
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation
A single exposure may cause the following adverse effects: Severe irritation of nose and throat. Symptoms following overexposure may include the following: Corrosive to the respiratory tract.

Ingestion
May cause chemical burns in mouth, oesophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin contact
Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact
Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

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

Notes for the doctor
Treat symptomatically.

Specific treatments
No specific chemical antidote is known to be required after exposure to this product.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media
The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture
Specific hazards
Reacts violently with water. Severe corrosive hazard. Water used for fire extinguishing, which has been in contact with the product, may be corrosive.

Hazardous combustion products
Thermal decomposition or combustion products may include the following substances: Oxides of sulphur.

5.3. Advice for firefighters

Protective actions during firefighting
Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.

Special protective equipment for firefighters
Wear chemical protective suit. Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing conforming to European standard EN469 (including helmets, protective boots and gloves) will provide a basic level of protection for chemical incidents.
SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Avoid contact with skin and eyes. Avoid inhalation of vapours and spray/mists. Do not touch or walk into spilled material. Avoid contact with contaminated tools and objects.

For emergency responders

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

6.2. Environmental precautions

Environmental precautions

Avoid discharge to the aquatic environment. The product may affect the acidity (pH) of water which may have hazardous effects on aquatic organisms.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up

Wear protective clothing as described in Section 8 of this safety data sheet. This product is corrosive. Small Spillages: Wipe up with an absorbent cloth and dispose of waste safely. Large Spillages: Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labelled, sealed containers. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority. Wash thoroughly after dealing with a spillage.

6.4. Reference to other sections

Reference to other sections

For personal protection, see Section 8. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions

Read and follow manufacturer’s recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimise spills. Keep container tightly sealed when not in use. Immediate first aid is imperative. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene

Take off immediately all contaminated clothing. Wash promptly if skin becomes contaminated. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Wash contaminated clothing before reuse. Change work clothing daily before leaving workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions

Store in tightly-closed, original container in a dry, cool and well-ventilated place. Store away from the following materials: Alkalis. Protect containers from damage. Bund storage facilities to prevent soil and water pollution in the event of spillage.

Storage class

Corrosive storage.

7.3. Specific end use(s)

Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

Usage description

Use product under conditions described in this datasheet. Avoid exposure of operators and others who may be affected by its use. Avoid overuse of the product which would create waste and potential spillages. Always use recommended personal protective equipment. Only use the product for its intended use in a safe manner, do not use for other purposes.

SECTION 8: Exposure Controls/personal protection
SULPHURIC ACID 50% V/V

8.1. Control parameters

DNEL

- Industry - Inhalation; Short term: 0.1 mg/m³
- Industry - Inhalation; Long term: 0.05 mg/m³

PNEC

- Fresh water: 0.0025 mg/l
- Marine water: 0.00025 mg/l
- STP: 8.8 mg/l
- Sediment: 0.002 (freshwater) mg/kg
- Sediment: 0.002 (marine water) mg/kg

8.2. Exposure controls

Protective equipment

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures.

Eye/face protection

Wear tight-fitting, chemical splash goggles or face shield. Personal protective equipment for eye and face protection should comply with European Standard EN166.

Hand protection

Wear protective gloves. To protect hands from chemicals, gloves should comply with European Standard EN374. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. For exposure up to 8 hours, wear gloves made of the following material: Viton rubber (fluoro rubber). Thickness: ~ 0.4 mm Frequent changes are recommended.

Other skin and body protection

Wear suitable protective equipment for prolonged exposure and/or high concentrations of vapours, spray or mist.

Hygiene measures

Provide eyewash station and safety shower. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Warn cleaning personnel of any hazardous properties of the product.

Respiratory protection

Full face mask respirators with replaceable filter cartridges should comply with European Standard EN136. Half mask and quarter mask respirators with replaceable filter cartridges should comply with European Standard EN140. Gas and combination filter cartridges should comply with European Standard EN14387. Wear a respirator fitted with the following cartridge: Acid gas filter. Check that the respirator fits tightly and the filter is changed regularly.

Environmental exposure controls

Keep container tightly sealed when not in use. Store in a demarcated bunded area to prevent release to drains and/or watercourses.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance

Liquid.

Colour

Colourless.
SULPHURIC ACID 50% V/V

Odour
Odourless.

Odour threshold
No information available.

pH
pH (concentrated solution): <1

Melting point
Approx. -1.1°C (98% Sulphuric acid)°C

Initial boiling point and range
330°C

Flash point
Technically not feasible.

Evaporation rate
No information available.

Evaporation factor
No information available.

Flammability (solid, gas)
Scientifically unjustified.

Upper/lower flammability or explosive limits
Scientifically unjustified.

Vapour pressure
49 Pa @ °C

Vapour density
No information available.

Relative density
~ 1.50 @ 20°C

Bulk density
Not applicable.

Solubility(ies)
Soluble in water.

Partition coefficient
Scientifically unjustified.

Auto-ignition temperature
Scientifically unjustified.

Decomposition Temperature
Not determined.

Viscosity
22.5 mPa s @ 20°C

Explosive properties
Not considered to be explosive.

Explosive under the influence of a flame
No

Oxidising properties
Does not meet the criteria for classification as oxidising.

9.2. Other information
Other information
None.

SECTION 10: Stability and reactivity

10.1. Reactivity
Reactivity
The reactivity data for this product will be typical of those for the following class of materials: Strong acids.

10.2. Chemical stability
Stability
Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions
Possibility of hazardous reactions
In contact with some metals can generate hydrogen gas, which can form explosive mixtures with air. Reactions with the following materials may generate heat: Water, moisture. The following materials may react violently with the product: Strong alkalis.

10.4. Conditions to avoid
SULPHURIC ACID 50% V/V

Conditions to avoid

Never add water directly to this product as it may cause a vigorous reaction or boiling. When exposed to air, this product will absorb moisture.

10.5. Incompatible materials

Materials to avoid

Avoid contact with the following materials: Alkalis. Amines.

10.6. Hazardous decomposition products

Hazardous decomposition products

Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Oxides of the following substances: Sulphur.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD₅₀
mg/kg) 2,140.0

Species Rat

Notes (oral LD₅₀) REACH dossier information.

Acute toxicity - dermal

Notes (dermal LD₅₀) Corrosive to skin.

Acute toxicity - inhalation

Acute toxicity inhalation (LC₅₀ vapours mg/l) 0.85

Species Rat

Notes (inhalation LC₅₀) REACH dossier information.

ATE inhalation (vapours mg/l) 0.85

Skin corrosion/irritation

Animal data Skin Corr. 1A - H314 Causes severe burns.

Extreme pH ≤ 2 Corrosive.

Serious eye damage/irritation

Serious eye damage/irritation Corrosivity to eyes is assumed.

Respiratory sensitisation

Based on available data the classification criteria are not met.

Skin sensitisation

Based on available data the classification criteria are not met.

Germ cell mutagenicity

Genotoxicity - in vitro Based on available data the classification criteria are not met.

Carcinogenicity

Based on available data the classification criteria are not met.

IARC carcinogenicity None of the ingredients are listed or exempt.

Reproductive toxicity

Reproductive toxicity - fertility Based on available data the classification criteria are not met.
SULPHURIC ACID 50% V/V

Reproductive toxicity - development
Based on available data the classification criteria are not met.

Specific target organ toxicity - single exposure
STOT - single exposure Not classified as a specific target organ toxicant after a single exposure.

Specific target organ toxicity - repeated exposure
STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard
Aspiration hazard Based on available data the classification criteria are not met.

General information
The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation
Corrosive to the respiratory tract. Symptoms following overexposure may include the following: Severe irritation of nose and throat.

Ingestion
May cause chemical burns in mouth, oesophagus and stomach. Symptoms following overexposure may include the following: Severe stomach pain. Nausea, vomiting.

Skin contact
Causes severe burns. Symptoms following overexposure may include the following: Pain or irritation. Redness. Blistering may occur.

Eye contact
Causes serious eye damage. Symptoms following overexposure may include the following: Pain. Profuse watering of the eyes. Redness.

Route of entry
Ingestion Inhalation Skin and/or eye contact

Target organs
No specific target organs known.

SECTION 12: Ecological Information

Ecotoxicity
The product may affect the acidity (pH) of water which may have hazardous effects on aquatic organisms.

12.1. Toxicity
Toxicity Based on available data the classification criteria are not met.

Acute toxicity - fish
LC50, 96 hours: > 16 mg/l, Lepomis macrochirus (Bluegill)

Acute toxicity - aquatic invertebrates
EC50, 48 hours: >100 mg/l, Daphnia magna

Acute toxicity - aquatic plants
EC50, 72 hours: > 100 mg/l, Scenedesmus subspicatus

Acute toxicity - microorganisms
NOEC, 37 days: 26000 mg/l, Activated sludge

Acute toxicity - terrestrial
Not available.

Chronic toxicity - fish early life stage
NOEC, : 0.31 mg/l, Freshwater fish

Short term toxicity - embryo and sac fry stages
Not determined.

Chronic toxicity - aquatic invertebrates
NOEC, : 0.15 mg/l, Marinewater invertebrates

12.2. Persistence and degradability
SULPHURIC ACID 50% V/V

Persistence and degradability
The product contains inorganic substances which are not biodegradable.

Phototransformation
Scientifically unjustified.

Stability (hydrolysis)
Scientifically unjustified.

Biodegradation
The product contains mainly inorganic substances which are not biodegradable.

Biological oxygen demand
No information available.

Chemical oxygen demand
No information available.

12.3. Bioaccumulative potential
Bioaccumulative potential
No data available on bioaccumulation.

Partition coefficient
Scientifically unjustified.

12.4. Mobility in soil
Mobility
The product is water-soluble and may spread in water systems.

Henry's law constant
No specific test data are available.

Surface tension
Scientifically unjustified.

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment
This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects
Other adverse effects
None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
General information
When handling waste, the safety precautions applying to handling of the product should be considered. The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

Disposal methods
Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

14.1. UN number
UN No. (ADR/RID) 1830
UN No. (IMDG) 1830
UN No. (ICAO) 1830
UN No. (ADN) 1830

14.2. UN proper shipping name
**SULPHURIC ACID 50% V/V**

<table>
<thead>
<tr>
<th>Proper shipping name (ADR/RID)</th>
<th>SULPHURIC ACID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper shipping name (IMDG)</td>
<td>SULPHURIC ACID</td>
</tr>
<tr>
<td>Proper shipping name (ICAO)</td>
<td>SULPHURIC ACID</td>
</tr>
<tr>
<td>Proper shipping name (ADN)</td>
<td>SULPHURIC ACID</td>
</tr>
</tbody>
</table>

14.3. Transport hazard class(es)

<table>
<thead>
<tr>
<th>ADR/RID class</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR/RID classification code</td>
<td>C1</td>
</tr>
<tr>
<td>ADR/RID label</td>
<td>8</td>
</tr>
<tr>
<td>IMDG class</td>
<td>8</td>
</tr>
<tr>
<td>ICAO class/division</td>
<td>8</td>
</tr>
<tr>
<td>ADN class</td>
<td>8</td>
</tr>
</tbody>
</table>

Transport labels

![Transport labels](image)

14.4. Packing group

<table>
<thead>
<tr>
<th>ADR/RID packing group</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG packing group</td>
<td>II</td>
</tr>
<tr>
<td>ADN packing group</td>
<td>II</td>
</tr>
<tr>
<td>ICAO packing group</td>
<td>II</td>
</tr>
</tbody>
</table>

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

<table>
<thead>
<tr>
<th>IMDG Code segregation group</th>
<th>1. Acids</th>
</tr>
</thead>
<tbody>
<tr>
<td>EmS</td>
<td>F-A, S-B</td>
</tr>
<tr>
<td>ADR transport category</td>
<td>2</td>
</tr>
<tr>
<td>Hazard Identification Number (ADR/RID)</td>
<td>80</td>
</tr>
<tr>
<td>Tunnel restriction code</td>
<td>(E)</td>
</tr>
</tbody>
</table>

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

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

**SECTION 15: Regulatory information**

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
SULPHURIC ACID 50% V/V

National regulations
Control of Substances Hazardous to Health Regulations 2002 (as amended). Health and Safety at Work etc. Act 1974 (as amended).

EU legislation

Guidance
Workplace Exposure Limits EH40.

Authorisations (Title VII Regulation 1907/2006)
No specific authorisations are known for this product.

Restrictions (Title VIII Regulation 1907/2006)
No specific restrictions on use are known for this product.

15.2. Chemical safety assessment
A chemical safety assessment has been carried out.

Inventories
EU - EINECS/ELINCS
All the ingredients are listed or exempt.

SECTION 16: Other information

Abbreviations and acronyms used in the safety data sheet
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
ATE: Acute Toxicity Estimate.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.
PNEC: Predicted No Effect Concentration.
LCso: Lethal Concentration to 50 % of a test population.
LDso: Lethal Dose to 50% of a test population (Median Lethal Dose).
ECso: 50% of maximal Effective Concentration.
PBT: Persistent, Bioaccumulative and Toxic substance.
vPvB: Very Persistent and Very Bioaccumulative.

Classification abbreviations and acronyms
Eye Dam. = Serious eye damage
Skin Corr. = Skin corrosion

General information
Only trained personnel should use this material.

Key literature references and sources for data

Classification procedures according to Regulation (EC) 1272/2008
SULPHURIC ACID 50% V/V

Training advice
Read and follow manufacturer's recommendations.

Revision date
22/12/2017

Revision
1

Supersedes date
15/10/2013

SDS number
21080

SDS status
Approved.

Hazard statements in full
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.