

SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II

Section 1: Identification of the substance and of the company

Product Name: Sulphuric Acid

Chemical Name: Sulphuric Acid ó 94 ó 97%

Company Identification

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Supercedes:01
Health & Safety Manager: A. Holland
REACH Reg No.150605
CAS Number: 7664-93-9

Section 2: Hazards Identification

Most Important Hazards:

- **Adverse Human Effects:** Corrosive. Cause severe burns.
Repeated inhalation of aerosols may cause adverse effects on health.
- **Environmental Effects:** If the product is not neutralised, it may have harmful effects on the aquatic environment.

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Physical and chemical hazards:

Fire or explosion: May ignite organic materials.

Further hazards:

- Reacts violently on contact with water.
- Risk of splashing
- Hazardous reactions may occur on contact with many chemicals.(Refer to the list of incompatible materials section 10 (Stability-Reactivity)).
- On contact with water or humidity: Corrosive solutions are formed.
- Very corrosive to metals. Releases Hydrogen which forms explosive mixtures in air.

Specific hazards: According to EC regulations, this product is classified as: CORROSIVE.

Section 3: Chemical composition/Information on Ingredients

- Substance Strength: 94% - 97% w/w (H₂SO₄ + H₂O)
- Specific Gravity (g/cm³): 1,834 (95% at 20 °C)
- Ignition Residue: 50 ppm
- Dissolved SO₂: < 60 ppm
- Solubility in water: can be mixed with water in all proportions, but never pour water into concentrated acid
- Further data: Water content 4%

Section 4: First Aid

INHALATION:

Move the person away from the contaminated area.
Make the affected person rest.
Obtain medical attention.
Show this sheet to the doctor.

SKIN CONTACT:

Remove all contaminated clothing and footwear.
Wash with water.
Wash immediately and thoroughly for a prolonged period (at least 5 minutes)
Obtain medical attention.
Show this sheet to the doctor.
Use appropriate protective equipment when treating a contaminated person.

EYE CONTACT:

Immediately rinse with plenty of running water for a prolonged period, (at least 15 minutes) whilst keeping the eyes wide open.

Always obtain medical advice immediately, even if there are no symptoms.

Show this sheet to the doctor.

INGESTION:

NEVER attempt to induce vomiting.

Do not give anything to drink.

Always obtain medical attention immediately.

Show this sheet to the doctor.

PROTECTION OF FIRST-AIDERS:

Self-contained breathing apparatus.

Completely sealed equipment.

NOTES TO THE PHYSICIAN:

Symptoms of pulmonary oedema may appear after a delay of several hours and may be aggravated by physical effort.

FURTHER INFORMATION:

Use first aid techniques to restore vital functions.

Place contaminated clothing in a sealed bag for disposal.

Use appropriate protective equipment when treating a contaminated person.

Section 5: Fire fighting measures

EXTINGUISHING MEDIA:

Suitable: Carbon dioxide (CO₂), Powders.

Not Suitable: Water.

Specific hazards:

- NOT classified as flammable according to EC criteria, but may present a risk in the event of a fire.
- Reacts violently with certain extinguishing agents, such as: aqueous agents, foamsí .
- Reacts violently on contact with water: Toxic and highly flammable gases are released (explosion hazard).

Specific fire fighting methods:

- Do NOT attempt to fight the fire without suitable protective equipment.
- NEVER introduce water or any aqueous agent into tanks or containers.
- Use appropriate means for fighting adjacent fires.
- Stay upwind.
- Evacuate the personnel away from the fumes.
- Cool down the containers/equipment exposed to the heat with a water spray.
- Ensure that there is NO direct contact between the water and the product.

Protection of fire-fighters:

- Self-contained breathing apparatus.
- Boots, gloves, goggles.
- Impermeable protective equipment.
- For further information refer to section 8 "Exposure controls/personal protection".

Further information:

In the presence of water, forms corrosive solutions.

Section 6: Accidental release measures

Personal Precautions:

- Avoid contact with skin and eyes.
- Do not breathe spray.
- Prevent the product from spreading into the environment.
- If spillage occurs on the public highway, indicate the danger and notify the authorities (police, fire brigade).
- NO flames, NO sparks. Eliminate all sources of ignition.
- Do NOT attempt to take action WITHOUT suitable protective equipment.

Personal protective equipment:

- Self-contained breathing apparatus.
- Acid-resistant protective clothing.
- Mark out contaminated area with signs and prevent access to unauthorized personnel.
- Local evacuation is necessary (for people in close proximity to the spillage area).
- Only qualified personnel equipped with suitable protective equipment may intervene.
- Remove all incompatible materials as quickly as possible:
 - alkalis and caustic products.
 - flammable or combustible materials.
- Prevent any contact with hot surfaces.

Environmental precautions:

- Contain the spilled material by bunding.
- Do NOT discharge into drains or rivers.

Methods for cleaning up:**Recovery:**

Pump up the product into a spare container:

- suitably labelled
- acid-resistant

Neutralization:

Only neutralize the substance spilled on the floor.

Spread:

- Calcium oxide or sodium carbonate.
- Sodium bicarbonate.
- Chalk
- Sand or inert absorbent.

NEVER neutralize product whilst it is still inside packaging or in an emergency container.

Do NOT discharge into drains or waterways before neutralizing (pH between 5.5 and 8.5).

Cleaning/Decontamination:

After neutralizing, spray with large amounts of water.

Disposal:

For disposal of contaminated materials refer to section 13: Disposal considerations.

Further information:

Food or food packaging which has been in contact with the product must be destroyed.

Section 7: Handling and Storage

HANDLING

Technical Measures:

- Only use materials resistant to:
 - strong oxidizing acids
- Use suitably confined system.
- Earth the equipment.
- Install a retention tank

Measures:

- Prevent any contact with water.
- Avoid the formation or spread of mists in the atmosphere.
- Avoid any direct contact with the product.
- Avoid any contamination of the surrounding area.
- All pipes used to transfer the product must not contain any water or oxygen and must be sealed at both ends when not in use.
- Do NOT handle without glove.
- Do NOT handle if hands have any cuts or wounds.
- Do not pipette liquids using a mouth pipette.
- Smoking is forbidden.

Safe handling advice

- Carefully comply with the instructions for use.
- NEVER pour water onto this product.
- Do not mix with incompatible materials (See list section 10).

STORAGE

Technical measures:

- Under the containers, there should be a raised impermeable surface, designed in such a way that in the event of an accidental spillage the liquid flows into an impermeable tank where it would not present any risk.

Storage conditions:

- Recommended : Keep:
 - in a cool, well ventilated area
 - the container tightly closed and dry.

- Protected from heat.
 - Away from any source of ignition.
 - Away from incompatible materials.
- To be avoided:
 - Do NOT heat the storage container

Incompatible products:

- Water, humidity.
- Metals
- Organic materials.
- Alkalis and caustic products.
- Products which release harmful or toxic gas on contact with an acid.
- Refer to the detailed list of incompatible materials (section 10 δStability/Reactivityö).

Packaging:

Bulk product : consult the supplier.

Packaging materials:

Recommended : Steel, Stainless steel or vitrified steel, Teflon, Glass.
 Not suitable : All other materials.

Section 8: Exposure controls/ Personal Protection

Engineering measures:

- Extraction to remove vapours at their source.
- Ensure good ventilation of the work station.
- Avoid splashes (appropriate clothing, protective screens on machines etc.)

CONTROL PARAMETERS

Occupational limits

Limits (France) :

(for the pure product).

VME: 1 mg/m³.

VLE: 3 mg/m³.

Limits (U.S.A./A.C.G.I.H.) :

(for the pure product).

TLV (TWA) : 1 mg/m³.

TLV (STEL) : 3 mg/m³.

Surveillance procedures :

- Depending on the degree of exposure, periodic medical surveillance is required.
- Access forbidden to unauthorised personnel.
- The recommended limits SHOULD NOT be exceeded.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection:

- Rescue type personal respiratory protection must be permanently available and easily accessible with no delay.
- Keep the atmospheric concentration below the occupational exposure limits.

Hand Protection:

- Acid-resistant protective gloves.
- Use suitable chemical-resistant protective gloves (compliant with Standard EN 374-1)
- The selection of gloves must take into account the extent and duration of use at the workstation.
- Protective gloves must be chosen according to the function of the work station: other chemicals which may be handled, physical protection necessary (resistance to cutting, puncture, heat), dexterity required.
- Long protective gloves, which go over the sleeves.

Eye Protection:

Safety spectacles and a face shield.

We recommend that people who wear contact lenses, should wear corrective glasses when carrying out work in which they may be exposed to acidic vapours or aerosols.

Skin and body protection:

- Acid-resistant clothing.
- Acid resistant boots.
- Wear suitable protective clothing, gloves and eye/face protection.

Selection Criteria:

Protective equipment must be chosen according to current CEN standards and in cooperation with the supplier of protective equipment must be defined after risk assessment for the workstation.

Collective emergency equipment:

- Emergency equipment and first-aid box with instructions readily available.
- Safety shower.
- Eye fountain.

Hygiene measures:

- Use clean and correctly maintained personal protective equipment.
- Keep personal protective equipment in a clean place, away from the work area.
- Always take a shower after work.
- Always wash your hands immediately after handling this product, and once again before leaving the workplace.
- Immediately wash any contaminated clothing with plenty of water. Before re-use, thoroughly clean personal protective equipment.
- Work clothes must not be taken out of the workplace.
- Wash the floor and equipment frequently.
- Cover with waterproof dressings to avoid contamination (in case of cuts, scratches etc)
- Do NOT drink, eat or smoke in the workplace.

Further information:

Anyone who has previously shown symptoms of asthma should NOT be exposed to this product.

Section 9: Physical and Chemical Properties

APPEARANCE:

- Physical state :	Liquid
- Form :	Viscous
- Colour :	Colourless
- Odour :	None
- pH :	< 1 (Product as is)
<u>Specific Temperatures:</u>	
- Melting :	-11°C
- Freezing :	-18°C to -7°C
- Boiling :	310°C. (At 1013 hPa)
<u>Flammability characteristics:</u>	
- Flash point :	Not applicable (non-flammable liquid).
- Oxidising Properties :	Non oxidising material according to EC criteria.
- Explosive Properties :	
- Explosive limits in air :	Not applicable
- Vapour pressure :	< 0.001 hPa, at 20°C. (H ₂ SO ₄ 100%)
- Relative density (water = 1) :	1.835 at 20°C.
- Solubility :	In water = Miscible (in all proportions). In organic solvents = Soluble in diethylether
- Octanol/water partition coefficient:	Not applicable (mineral product)
- Dynamic viscosity :	20 mPa.s at 25°C
- Hygroscopicity :	Very hygroscopic product

Section 10: Stability and reactivity

Stability:

Stable at ambient temperature and under normal conditions of use.

Hazardous reactions:

- **Conditions to avoid :** May decompose on heating.

- **Materials to avoid :** Strong acid. Reacts violently with bases.
Reacts violently on contact with water.
Possible splashing of corrosive liquid.
Reacts violently with:
Carbides.
Chlorates.
Chromates.
Powdered metals.
Nitrates.
Organic materials
Alkalis and caustic products.
It releases heat when reacted with all of these chemicals.

- **Hazardous decomposition products :** On thermal decomposition (pyrolysis) releases hazardous gases. (Sulphur oxides).

- **Further information :** Attacks many metals in the presence of water or humidity.
Attacks many metals releasing highly flammable gas (hydrogen)
Which generates fire or explosion hazards.

Section 11: Toxicological Information

Note : This substance is contained in Annexe 1 of the Directive 67/548/EEC with the classification : C ; R35

Acute Toxicity:

LC50 inhalation (aerosols) (Rat) 4 h : 0.375 mg/l

LC50 inhalation (aerosols) (Mouse) 4 h : 0.850 mg/l
(Published data).

Risk of delayed pulmonary oedema. By inhalation (Human)

LD50 ingestion (Rat) : 2140 mg/kg
(Published data).

Local effects:

- Corrosive to respiratory tract (aerosols)
- Causes severe burns. (Skin, eye)
- Causes serious injury to the digestive tract.

Sensitisation:

- No information available.
- NOT considered to be : skin sensitiser.

Repeated dose Toxicity:

- Repeated dose toxicity (28 days) by inhalation (Rat) : No
- Observed adverse effect level (NOAEL) : 0.3 mg/m³. (Unpublished reports).
- system, dental erosion.

Specific effects:

- Carcinogenicity : on ingestion (Rat) (Mouse) : Weak local carcinogen.
By inhalation (Rat) (Hamster) (Guinea-pig) : No carcinogenic effects have been observed. (Published data).

Note: IARC Classification : Group 1 (Strong inorganic acid mist containing sulphuric acid)

- Mutagenicity : Point mutations : (S. Typhimurium) (E. Coli) (with or without metabolic activation) : Negative.
Chromosomal aberrations : (CHO) (with or without metabolic activation) : Positive. (Due to its pH) (Published data).
- Reproductive toxicity : Developmental toxicity study: by inhalation (Mouse) (Rabbit) : no embryotoxic or Teratogenic effects have been observed NOEL, foetal toxicity : 20 mg/m³. (Published data).

Section 12: Ecological Information

Mobility:

- Adsorption/desorption : Product readily filters into the soil.
- Expected behaviour of the product : Ultimate destination of the product = **WATER.**

Degradability:

- Abiotic degradation- Other physico-chemical reactions : Converted in the aquatic environment into Sulphates.

Biodegradability:

- Ultimate aerobic biodegradability : Not applicable (mineral product)

Bioaccumulation:

- Bioconcentration factor : Not bioaccumulable. (internal evaluation)

Ecotoxicity:

- Effects on the aquatic environment : Non neutralised product :
LC 50 (Fish: *Lepomis macrochirus*) / 96h : 29mg/l
EC 50 (Daphnia: *Daphnia magna*) / 24h : 29 mg/l.
(Published data)
Harmful to aquatic organisms tested.
NOEC (Algae) : pH 5.6 (Field study)
(Published data).
Neutralised product : The product does not have any known adverse effects on the aquatic organisms tested.

Section 13: Disposal Considerations

Residues from product:

- Prohibition : Do not allow the product to be released into the environment.
- Destruction/Disposal : Must undergo physico-chemical treatment prior to disposal.
Neutralise prior to disposal (pH between 5.5 and 8.5 inclusive) and dilute with plenty of water.

Contaminated packaging:

- Decontamination/cleaning : Wash with hot caustic soda solution (2 to 5% NaOH)
- Destruction/disposal : May be reused following decontamination.

Note : The user's attention is drawn to the possible existence of local regulations regarding disposal.

Section 14: Transport Information

Internal Regulations:

Land

Rail/Road (RID/ADR) : Class 8.
Packing group II
Hazard identification number: 80
UN number: 1830.
Labelling : 8

Sea (IMO/IMDG) : Class 8
UN number: 1830.
Labelling: 8 CORROSIF.
Packing group : II
Marine pollutant : NO
Emergency schedule (EmS) : F-A, S-B.

Air (ICAO-IATA) : Class 8
UN number : 1830
Labelling : 8 CORROSIVE.
Packing group : II.
Cargo aircraft : Packing instruction: 813 Quantity : 30 L.
Passenger aircraft: Packing instruction: 809 Quantity : 1 L.

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. However, given the possible evolution of transport regulations for hazardous materials and in the event of the SDS in your possession dating back more than 12 months, it is advisable to check their validity with your sales office.

Section 15: Regulatory Information

Labelling:

EC regulations : Mandatory labelling (prescribed) of hazardous substances: **APPLICABLE**
Identification of the

Hazardous product : Chemical name of the substance : SULPHURIC ACID 96%. EC labelling.

Classification/Symbols : **CORROSIVE (C)**

R phrases : R35 : Causes severe burns.

S phrases	:	S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30 : Never add water to this product. S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
NOTE	:	The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

Section 16: Other Information

Uses:

Prohibited uses	:	This product is only intended for industrial use.
Chemical formula	:	H ₂ SO ₄ .
Molecular Mass	:	98g

Registration numbers:

- Registered in the Korean inventory.
- Registered in the TSCA inventory.
- Registered on the MITI list.
- Registered in the Canadian inventory (CEPA DSL).
- Registered on the AICS inventory.
- Registered in the EINECS inventory.
- Registered in the Chinese inventory.

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfil his obligations regarding the use of hazardous products. This information is not exhaustive. This does not exonerate the user from ensuring that legal obligations, other than those mentioned, relating to the use and storage of the product, do not exist. This is solely his responsibility.

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