

GPS Safety Summary

Substance Name:

Sulphuric acid

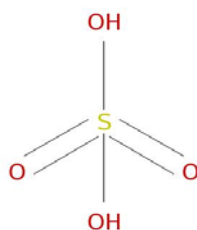
1. General Statement

Sulphuric acid is manufactured in industrial settings for various industrial purposes such as:

- Intermediate in the manufacture of organic and inorganic chemicals including fertilizers
- Processing aid,
- Catalyst,
- Dehydrating agent,
- pH regulator,
- Surface treatment agent
- Cleaning agent
- Electrolyte
- Chemicals for laboratories, ...

2. Chemical Identity

Name:	Sulphuric acid
Chemical name (IUPAC):	Sulphuric acid
CAS number(s):	7664-93-9
EC number:	231-639-5
Molecular formula:	H ₂ O ₄ S
Structure:	



3. Use and applications

Sulphuric acid is used in a variety of industrial applications such as processing aid, catalyst, dehydrating agent, pH regulator, intermediate... It is also used for the production for the sulphuric acid contained batteries to be used by the general public.

4. Physical / Chemical properties

Sulphuric acid is a strong inorganic acid with the following physicochemical properties:

Property	Value
Physical state	Liquid
Colour	Colourless
Odour	Odourless
Molecular weight	98.08 g/mol
Density	1.62 to 1.84 g/cm ³ (varies with the acid strength)
Melting point	-36°C to +11°C (varies with the acid strength)
Boiling point	+163°C to +365°C (varies with the acid strength)
Flash point – flammability	Not flammable.
Explosive properties	Not expected based on structure.
Oxidizing properties	Sulfuric acid does not meet the criteria as an oxidiser
Vapour pressure	<0.1 Pa to 214 Pa at 20°C (varies with the acid strength)
Water solubility	Completely soluble at 20°C.
Octanol-water partition coefficient (LogKow)	Not relevant (inorganic)
Dissociation constant (pK _a)	1.92 at 20°C

5. Health Effects

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	<u>Inhalation</u> : Mist or aerosol may be very irritating to the respiratory system. <u>Oral</u> : May cause burns to mouth, throat and stomach. <u>Dermal</u> : Corrosive to skin.
Irritation / corrosion Skin / eye/ respiratory tract	Classified as corrosive to skin and eye.
Sensitisation	Not expected to cause allergic skin reactions.
Toxicity after repeated exposure Oral / inhalation / dermal	Mist or aerosol of sulphuric acid may be very irritating to the respiratory system.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause adverse genetic effects.
Carcinogenicity	Mists from strong inorganic acids cause cancer of the larynx. The substance is considered to be a weak carcinogen following chronic exposure to relatively high levels.
Reproductive / Developmental Toxicity	Based on the available test, not expected to cause adverse effects on reproduction.

6. Environmental Effects

Sulphuric acid is a simple inorganic substance, which will not biodegrade but dissociate readily in water to form hydrogen ions (will be neutralised by (OH) to form water) and sulphate ions (incorporated into the various mineral species present in the environment). Some tests have shown slight toxicity to fish due to the decrease of pH (tests with adjustment of pH have shown no toxicity on aquatic organisms).

Effect Assessment	Result
Aquatic Toxicity	No toxicity observed during tests with pH adjustment.

Fate and behaviour	Result
(Bio)degradation potential	Dissociates readily in water.
Bioaccumulation potential	Sulphuric acid dissociates readily in water in hydrogen ions and sulphate ions that are naturally present in water/sediment: no bioaccumulation of these ions is predicted.
PBT / vPvB conclusion	Not considered to be PBT or vPvB.

7. Exposure

7.1 Human health

Worker exposure can occur in facilities manufacturing or using the substance. Due to the corrosive nature of sulphuric acid, the systems are highly controlled and uses mainly closed systems. Limited contacts may occur. In addition when workers are exposed, during handling, loading, mixing, sampling or maintenance operations, they should follow the recommended safety measures in the extended Safety Data Sheet (eSDS).

General population exposure to sulphuric acid is not expected during the use of batteries as the substance is sealed in the article.

7.2 Environment

Sulphuric acid is a strong mineral acid that dissociates readily in water to hydrogen ions and sulphate ions. At environmentally relevant pH's, the acid is totally dissociated and is totally miscible with water. The removal in all water systems and by sewage treatment plants is thus highly effective. In addition, emissions to the atmosphere are controlled in industrial/professional settings by air-emission abatement. As a consequence sulphuric is not expected to persist in the environment.

Exposure of the environment to sulphuric acid is not expected during the use of batteries by the general population as the substance is sealed in the article.

8. Risk Management recommendations

Human health measures	
Organizational	Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Refer to the latest available extended Safety Data Sheet (eSDS).

Engineering controls	Should be handled in well ventilated areas. Provide appropriate local exhaust ventilation at points of emission. Ensure that eye and handwash stations and safety showers are close to workstation locations.	
Protection	Eye/Face protection:	Safety glasses with side-shields,
	Skin protection:	Anti-acid suit, anti acid boots
	Hand protection:	PVC gloves according to permeation index EN 374: 4
	Respiratory protection:	In case of insufficient ventilation, wear suitable respiratory equipment (Full mask. Recommended Filter type: A2B2)
Environment protective measures		
On-site waste water treatment is required. Do not release into the environment. Do not let product enter drains. Dam up with inert material. Destroy absorbed product in accordance with local and national regulations.		

9. Regulatory Information / Classification and Labelling


9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)
- HPV chemical

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008:	
<ul style="list-style-type: none"> – Skin corrosion; Category 1A; Causes severe skin burns and eye damage – Serious eye damage; Category 1; Causes serious eye damage 	
Signal word	
Danger	
Pictogram	
– GHS05: Corrosion	
Hazard statement	
– H314: Causes severe skin burns and eye damage.	
Additional Classification according Global Harmonized System (GHS)	
<ul style="list-style-type: none"> – H402: Harmful to aquatic life – H303 : May be harmful if swallowed 	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- arkema.reach-dpt1@arkema.com
- **ICCA portal where the GPS Safety Summary is posted:**
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>

11. Date of Issues / Revision

- Date of issue: 2014/01/31
- Date of revision:

12. Disclaimer

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