

GPS Safety Summary

Substance Name:

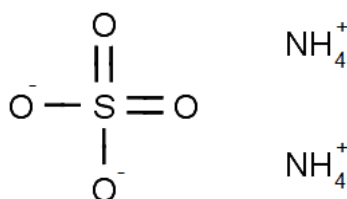
Ammonium sulphate

1. General Statement

Ammonium sulphate is an inorganic salt with a wide range of applications. It is primarily used as a soil fertilizer but is important in other industries as well. Ammonium sulphate is not considered to be hazardous to humans. Nevertheless, some precautions need to be taken for handling it safely.

2. Chemical Identity

Name:	Ammonium sulphate
Brand name:	none
Chemical name (IUPAC):	Ammonium sulphate
CAS number:	7783-20-2
EC number:	231-984-1
Molecular formula:	$\text{SO}_4^{2-}(\text{NH}_4^+)_2$
Structure:	



3. Use and applications

The main use of Ammonium sulphate is as a soil fertilizer in agriculture. It is also used in plant protection for the manufacturing of water soluble insecticides, herbicides and fungicides. Further uses include applications such as in the pharmaceutical industry and biochemistry, e.g. protein purification by selective precipitation or use as a nutrient for microorganisms in the production of enzymes. Moreover, the substance is used in the chemical industry as an intermediate, e.g. for the production of persulphates, and as a pH regulating agent. Ammonium sulphate also has industrial applications as cattle feed, for the production of fire extinguishing powders, and in water treatment and construction materials.

4. Physical / Chemical properties

Ammonium sulphate is a non-volatile inorganic solid with the following physicochemical properties:

Property	Value
Physical state	Solid at 20°C and 1013 hPa
Form	Crystalline (orthorhombic)
Particle size	> 100 µm
Colour	White
Odour	Odourless or slight
Molecular weight	132.1 g/mol
Density	1.77 g/cm ³ at 25°C
Vapour pressure	Negligible at 25°C
Melting / boiling points	> 280°C / decomposes before boiling
Flammability	Non-flammable (incl. in contact with water), non-pyrophoric
Self-ignition temperature	> 400°C
Explosive / oxidizing properties	Not expected based on structure
Water solubility	767 g/L at 25°C
Octanol-water partition coefficient (Log K _{ow})	Not applicable (inorganic)

5. Health Effects

Ammonium sulphate is of very low toxicity.

Effect Assessment	Results
Acute Toxicity Oral / inhalation / dermal	May be harmful if swallowed. Slightly harmful by inhalation or by contact with skin.
Irritation / corrosion Skin / eye/ respiratory tract	Minimally irritating to skin and eyes (mechanical effect of particles).
Sensitisation	Does not cause allergic skin reactions.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause toxicity to internal organs after repeated oral or inhalative exposure in animals.
Genotoxicity / Mutagenicity	Based on the available data, not expected to cause genetic damage.
Carcinogenicity	Does not cause cancer after lifetime oral exposure in animals.
Reproductive / Developmental Toxicity	Not expected to alter fertility or development in animals based on data on similar inorganic salts.

6. Environmental Effects

Upon short-term exposure, Ammonium sulphate is harmful to fish but not to aquatic invertebrates and algae. It is not harmful to aquatic organisms upon long-term exposure.

In water, Ammonium sulphate immediately dissolves into its ionic constituents, which are normally present in the environment. They are not expected to accumulate in the food chain because they are also normally present in organisms.

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Effect Assessment	Result
Aquatic Toxicity	Acute: harmful. Chronic: not harmful.

Fate and behaviour	Result
Degradation	Not relevant (ubiquitous salt)
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)

** : very Persistent and very Bioaccumulative (vPvB)

7. Exposure

In accordance with the REACH Regulation, no exposure scenario is required in the absence of classification for human health and for the environment according to CLP criteria.

7.1 Human health

Consumers:

Consumers may be directly exposed to Ammonium sulphate since it is an approved food additive in the U.S. and in Europe.

Indirect exposure is also possible as Ammonium sulphate is generated in the atmosphere upon degradation of sulphuric acid, and is also present in drinking water.

Workers:

Ammonium sulphate is industrially manufactured and used predominantly within closed systems, minimizing the occupational exposure potential. Exposure may occur either in manufacturing facilities or in facilities using Ammonium sulphate. Workers may be exposed during cleaning, maintenance, transfer, sampling and analysis. There can also be a professional exposure to formulated Ammonium sulphate.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure during the manufacture and use of the substance. Workers who might accidentally come into contact with the substance should follow the safety measures recommended in the Safety Data Sheet.

In the absence of classification, risks are considered to be controlled when activities are carried out under conditions recommended in the Safety Data Sheet (see Chap. 8).

7.2 Environment

Due to the large variety of uses, including consumer products, and the presence of natural Ammonium sulphate in organisms and environmental compartments, the environmental exposure pattern is widely dispersive.

Concerning industrial point sources, Ammonium sulphate is manufactured and used predominantly within closed systems in a continuous or batch process. Primary releases occur via wastewater but secondary formation can occur after release of sulphuric acid fumes. Procedures, controls and risk management measures are in place, which limit the environmental exposure.

In the absence of classification, risks are considered to be controlled when activities are carried out under conditions recommended in the Safety Data Sheet (see Chap. 8).

8. Risk Management recommendations

Human health measures	
Organizational	Collect the latest available Safety Data Sheet. Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Handle and store according to the indications of the Safety Data Sheet.
Engineering controls	Provide appropriate general or 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
	Skin protection: Protective suit
	Hand protection: Neoprene gloves
	Respiratory protection: Dust mask with P2-filter. Self-contained breathing apparatus in case of thermal decomposition of the substance.

Environment protective measures
Do not release into the environment. Do not let product enter drains. Incinerate any waste.

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has notably been registered and assessed under:

- EU Regulation EC 1907/2006 (REACH)
- OECD SIDS (Screening Information Data Set) program

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 SDS. 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 to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification, Signal word, Pictogram, Hazard statement
None
Classification according to Globally Harmonized System (GHS)
<ul style="list-style-type: none">– Acute toxicity – oral: Category 5; May be harmful if swallowed.– Acute aquatic toxicity: Category 3; Harmful to aquatic life.

10. Contact Information within Company

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

- **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: 2013/07/15
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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