

SAFETY DATA SHEETS

According to the UN GHS revision 10

Version: 1.1
Creation Date: July 15, 2024
Revision Date: February 01, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name Ammonium Hydroxide

1.2 Other means of identification

Product number LINS001308
Other names aqueous ammonia;ammonia water;aq. ammonia

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

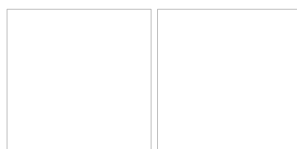
SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Skin corrosion, Sub-category 1B
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word Danger

Hazard statement(s) H314 Causes severe skin burns and eye damage
H400 Very toxic to aquatic life

Precautionary statement(s)

Prevention

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash ... thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P273 Avoid release to the environment.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P391 Collect spillage.
P405 Store locked up.
P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Storage

Disposal

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Ammonium Hydroxide	Ammonia, aqueous solution	1336-21-6	215-647-6	≈ 99%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]: TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. (ERG, 2016)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Agents causing ocular burns, steps in treatment, and special problems are described. Injuries are caused by neutral organic, acid, and alkali compounds. Contact time and pH are the most important variables in any chemical burn. The corneal epithelium and endothelium provide a barrier to water soluble substances while the stroma is a barrier to lipid soluble substances. Alkali compounds cause most severe injuries depending on the hydroxyl ion concentration and the cation. Calcium hydroxide, sodium hydroxide, and ammonium hydroxide are most often responsible for alkali burns. Ammonium hydroxide penetrates most rapidly of all alkali compounds.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]: SMALL FIRE: Dry chemical, CO2 or water spray. LARGE FIRE: Dry chemical, CO2, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material. FIRE INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. (ERG, 2016)

5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]: Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.). Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. For electric vehicles or equipment, ERG Guide 147 (lithium ion batteries) or ERG Guide 138 (sodium batteries) should also be consulted. (ERG, 2016)

5.3 Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Cautiously neutralize spilled liquid with dilute acid such as dilute sulfuric acid. Wash away remainder with plenty of water.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: complete protective clothing including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Cautiously neutralize spilled liquid with dilute acid such as dilute sulfuric acid. Wash away remainder with plenty of water.

6.3 Methods and materials for containment and cleaning up

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs. See Chemical Dangers. Cool. Well closed. Keep in a well-ventilated room. See Notes.Keep cool in strong glass, plastic, or rubber stoppered bottles not completely filled. Ammonia water: 28-29%

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 18 mg/m³, 25 ppm, as TWA; 27 mg/m³ as STEL.MAK: 14 mg/m³, 20 ppm; peak limitation category: I(2); pregnancy risk group: C

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Ammonium hydroxide is a colorless aqueous solution. Concentration of ammonia ranges up to approximately 30%. Ammonia vapors (which arise from the solution) irritate the eyes.
Colour	Colorless liquid
Odour	Intense, pungent, suffocating odor
Melting point/freezing point	-69°C(lit.)
Boiling point or initial boiling point and boiling range	145°C(lit.)
Flammability	Not combustible.
Lower and upper explosion limit/flammability limit	no data available
Flash point	37°C(lit.)
Auto-ignition temperature	1204°F
Decomposition temperature	no data available
pH	pH= 11.6 (1.0 N solution); 11.1 (0.1 N solution); 10.6 (0.01 N solution)
Kinematic viscosity	no data available
Solubility	Exists only in solution
Partition coefficient n-octanol/water	no data available
Vapour pressure	5990mmHg at 25°C
Density and/or relative density	0.9g/mL at 25°C(lit.)
Relative vapour density	1.2 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Reacts with many heavy metals and heavy metal salts. This produces explosive compounds. Attacks many metals. This produces flammable/explosive gas (hydrogen - see ICSC 0001). The solution in water is a strong base. It reacts violently with acids.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

AMMONIUM HYDROXIDE reacts exothermically with acids. Evolves toxic gaseous ammonia with strong bases. Reacts extremely violently with dimethyl sulfate [NFPA 491M 1991]. Reacts with aqueous silver nitrate sodium hydroxide to give a black precipitate of silver nitride. Such a precipitate can explode on stirring [MCA Case History 1554 1968]. Aqueous ammonia and Hg react to form an explosive solid, likely a fulminate. (Thodos, G. Amer. Inst. Chem. Engrs. J., 1964, 10, 274.).

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Caustic liq forms explosive compd with many heavy metals such as silver, lead, zinc, & their salts, especially halide salts.

10.6 Hazardous decomposition products

When heated to decomposition it emits ammonia and nitroxides.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Rat oral 350 mg/kg
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. Inhalation of high concentrations of the vapour may cause laryngeal oedema, inflammation of the respiratory tract and pneumonia. Exposure could cause asphyxiation due to swelling in the throat. The effects may be delayed.

STOT-repeated exposure

Repeated or prolonged inhalation may cause effects on the lungs.

Aspiration hazard

A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 *Lepomis macrochirus* (bluegill) 0.024-0.093 mg/l/48 hr. /Conditions of bioassay not specified
- Toxicity to daphnia and other aquatic invertebrates: LC50 *Daphnia magna* 0.66 mg/l/48 hr 22 deg C /Conditions of bioassay not specified
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2672 (For reference only, please check.) IMDG: UN2672 (For reference only, please check.) IATA: UN2672 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia (For reference only, please check.) IMDG: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia (For reference only, please check.) IATA: AMMONIA SOLUTION, relative density between 0.880 and 0.957 at 15 °C in water, with more than 10% but not more than 35% ammonia (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.) IMDG: 8 (For reference only, please check.) IATA: 8 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.) IMDG: III (For reference only, please check.) IATA: III (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: Yes IMDG: Yes IATA: Yes

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Ammonia, aqueous solution	Ammonia, aqueous solution	1336-21-6	215-647-6
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2024
Revision Date February 01, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Be aware that ammonia gas can evolve from ammonia solution. Ammonia vapour is flammable and explosive under certain conditions. See ICSC 0414. Do NOT completely fill bottles with the substance; strong solutions may develop pressure. Release caps with care. Melting points range from -3°C (4%) to -69°C (28%). Another boiling point is 25°C (32%). Other UN numbers are: UN 2073 Ammonia solution, relative density of less than 0.880 at 15°C in water, with more than 35% but no more than 50% ammonia; UN 3318 Ammonia solution, relative density of less than 0.880 at 15°C in water, with more than 50% ammonia. Depending on the degree of exposure, periodic medical examination is suggested.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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