

Safety Data Sheet (SDS)

Section 1: Identification

Product identifier: Ammonium hydroxide solution

Other name(s): Copper etch part B

Item number(s): 301

Identified use: SU24 Scientific research and development.

Details of the supplier of the safety data sheet:

ES Laboratory, LLC

2041 E. Gladstone St. Unit N Glendora, CA 91740 USA

Tel: 626-208-9011

Emergency telephone number:

CHEMTREC® 1-800-424-9300 (US & Canada Only)

Section 2: Hazard(s) Identification

Hazardous classification of the substance or mixture:

Hazard Class	Category code
Skin Corrosion	1B
Acute toxicity (inhalation)	4
Specific Target Organ Toxicity – Single Exposure	3
Acute aquatic toxicity	3

Signal word: Danger

Pictogram:



Hazard statement(s):

H314 Causes severe skin burns and eye damage.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H402 Harmful to aquatic life.

Precautionary statement(s):

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P261 Avoid breathing fumes/gas/mist/vapors/spray.

Response statement(s):

P264 Wash hand thoroughly after handling.

P273 Avoid release to the environment.

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 victim 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/physician.

P363 Wash contaminated clothing before reuse.

Storage statement(s):

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Disposal statement(s):

P501 Dispose of contents/container in accordance with specified local, regional, national, and international regulations for disposal.

Hazard(s) not otherwise classified: No information.

Label elements: See tables above

HMIS Ratings:

Health: 3

Flammability: 1

Reactivity: 0

NFPA Ratings:

Health: 3

Flammability: 1

Reactivity: 0

Special hazard: None

Section 3: Composition/Information on Ingredients

Component	CAS No.	Concentration (wt%)
Ammonium hydroxide	1336-21-6	10-20%

Any concentration shown as a range is to protect the confidentiality or is due to batch variation. Only hazardous components are shown.

Section 4: First-Aid Measures

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical aid immediately.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid immediately.

Skin contact: Wash the areas of contact with water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately.

Ingestion: Do not induce vomiting. Rinse mouth. Get medical aid immediately.

Most important symptoms and effects, both acute and delayed:

If inhaled, will cause nausea, vomiting, breathing difficulty, and convulsions. Shock or loss of consciousness may result from over-exposure. Vapor is irritating to the eyes. The liquid will cause burns.

Recommendation for immediate medical care and special treatment needed, when necessary: No information.

Section 5: Fire-Fighting Measures

Extinguishing media: Water, dry chemical, foam, or carbon dioxide.

Special hazards arising from the substance or mixture: The presence of oil or other combustible materials will increase the fire hazard. The explosive (flammable) range of ammonia is broadened by a mixture of oxygen replacing air and by temperature and pressure higher than atmospheric. Stop the flow of liquid. Approach fire upwind and evacuate area downwind if needed.

Special protective equipment or precautions for firefighters:

Wear full protective clothing and a self-contained respirator.

Section 6: Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures:

Approach spill from upwind and evacuate area downwind. Wear self-contained breathing apparatus and full protective clothing. Keep unprotected persons away. Ensure adequate ventilation.

Environmental precautions: Do not allow the material to be released to the environment without proper government permits.

Methods and materials for containment and cleaning up: Dike to contain the spill. Dilute with water, if necessary to reduce ammonia vaporization. Can be neutralized with diluted phosphoric or sulfuric acids. Vinegar will effectively neutralize small spills. Prevent runoff from entering streams, drinking water supply, or sewers.

Section 7: Handling and Storage

Precautions for safe handling: Wear protective equipment. Ensure good ventilation at the workplace. Open and handle container with care.

Condition for safe storage: Keep container tightly sealed. Store in an approved corrosive liquid storage container/area.

Incompatibilities: Store away from strong acids and combustible materials.

Specific storage requirement(s): No information.

Section 8: Exposure Controls/Personal Protection

Exposure Limits

Component	CAS No.	ACGIH TLV	OSHA PEL
Ammonium hydroxide	1336-21-6	25 ppm (TWA); 35 ppm (STEL)	50 ppm TWA

Engineering controls: Use general and/or local exhaust ventilation to control the vapor concentration.

Eye protection: Wear safety glasses or goggles.

Skin protection: Wear protective clothing and chemical-resistant gloves.

Respiratory protection: Use under a fume hood to control the vapor concentration. Use a self-contained respiratory device in an emergency situation.

Section 9: Physical and Chemical Properties

Appearance:	Clear liquid
Lower/Upper Explosive Limit:	16-25% by volume ammonia gas
Odor:	Pungent odor
Vapor pressure:	Not determined
Odor threshold:	Not determined
Vapor density:	0.6 @ 0°C
pH:	12-13
Relative density:	Not determined
Melting Point/Freezing point:	Not determined
Solubility in water:	100%
Boiling point/boiling range:	27 °C – 52°C @14.7 PSIA
Flashpoint:	Not applicable
Evaporation Rate:	Not determined
Flammability (solid, gas):	Not applicable
Partition coefficient (n-octanol/water):	Not determined
Auto-ignition temperature:	651 °C
Decomposition temperature:	Not determined
Viscosity:	Not determined

Section 10: Stability and Reactivity

Reactivity: Ammonia is lightly reactive, easily undergoing oxidation, substitution, and addition reactions.

Chemical stability: Stable.

Stabilizer(s): Not required.

Safety issues that may arise should the product change in appearance: No information.

Thermal decomposition/ conditions to avoid: Heat, open flames, and electrical equipment and fixtures which are not vapor-proof or grounded.

Possibility of hazardous reactions: see incompatibilities.

Incompatibilities: Contact with Mercury, chlorine, bromine, iodine, calcium, silver oxide, hypochlorite can form explosive compounds.

Hazardous decomposition products: Combustion of ammonia will yield small amounts of nitrogen and water.

Section 11: Toxicological Information

For Ammonium Hydroxide:

Acute toxicity:

Oral: rat LD50: 350 mg/kg.

Other exposure effect:

Inhalation: Cause nausea, vomiting, breathing difficulty, and convulsions. Shock or loss of consciousness may result from over-exposure.

On the Skin: Strong corrosive effect.

On the Eye: Strong corrosive effect. Vapor is irritating to the eyes.

Sensitization: No sensitizing effects were known.

Additional toxicological information: To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from NTP, IARC or OSHA.

Section 12: Ecological Information

Toxicity:

Aquatic toxicity: Harmful to aquatic life. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Do not contaminate any body of water.

Persistence and degradability: No information.

Behavior in environmental system:

Bioaccumulative potential: No information.

Mobility in soil: No information.

Additional ecological information: Avoid transfer into the environment.

Other adverse effects: No information.

Section 13: Disposal Considerations

Place in a chemical waste container for proper disposal in an approved waste disposal facility. Dispose of the content and container in accordance with local, regional, national, and international regulations.

Section 14: Transport Information

D.O.T. shipping name: Ammonia solution

D.O.T. hazard class: 8

UN number: UN2672

Packing group: III

Section 15: Regulatory Information

Not meant to be all inclusive, selected regulations represented

OSHA status: These items meet the OSHA Hazard Communication Standard (29 CFR 1910.1200) definition of a hazardous material.

TSCA status: All components are listed.

Section 16: Other Information

Disclaimer: The information above is believed to be accurate and represents the best information currently available to us.

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