

MATERIAL SAFETY DATA SHEET

SECTION I NAME

Product	AMMONIUM HYDROXIDE SOLUTION	
Chemical Synonyms	Ammonia Water Solution	
Formula	NH ₄ OH	
Unit(s) Size	100 ml to 4 Liter	
C.A.S. No.	1336-21-6	

CHEMTREC
800-424-9300
Day 716-226-6177
Night 716-334-4222

NFPA
HAZARD RATING
LEAST SLIGHT MODERATE HIGH EXTREME
0 1 2 3 4
Health 3
Fire 1
Reactivity 2

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

Principal Hazardous Component(s)	%	TLV Units
Ammonia gas (dissolved in water to form ammonium hydroxide).	29%	25 ppm in air by weight as ammonia
DANGER! CAUSES SKIN AND EYE BURNS-IRRITANT		See Section V

SECTION III PHYSICAL DATA

Melting Point (°F)	-77°C	Specific Gravity (H ₂ O=1)	0.896-0.902	60°/60°F
Boiling Point (°F)	Ammonia volatile above 78°F. Mixture boils -212°F	Percent Volatile by Volume (%)	100%	
Vapor Pressure (mm Hg)	584	Evaporation Rate (Ether = 1)	Greater than 1 (H ₂ O).	
Vapor Density (Air = 1)	Less than 1.			
Solubility in Water	Complete			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Liquid not flammable (NA)	Flammable Limits in Air % by Volume NH ₃ -Gas	Lower 16% Upper 25%
Extinguisher Media	Use any media suitable for extinguishing supporting fire.		

SPECIAL FIREFIGHTING PROCEDURES

Wear full protective clothing with a mask having an ammonia vapor canister or a NIOSH-approved self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS

When heated, emits toxic fumes. Ammonium hydroxide is non-combustible and non-explosive, but ammonia vapors released from solution can form an explosive mixture with air.

SECTION V HEALTH HAZARD DATA

Threshold Limited Value
TWA 50 ppm (ammonia gas); Oral rat-LD₅₀ 350 mg/Kg.

Effects of Overexposure
Causes severe irritation or burns to eyes, skin and mucous membranes; highly toxic by oral and inhalation routes. Inhalation of gas causes edema, spasm and asphyxia. **POISON**

Emergency and First Aid Procedures

EXTERNAL: Flood with water, then wash with vinegar.
EYES: Flush thoroughly with water, preferably warm, for at least 15 minutes. Then get prompt medical attention.
INTERNAL: Give large amounts of water. Follow with fruit juice and vegetable oil. Get prompt medical attention.

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SECTION VI REACTIVITY DATA

Stability	Unstable Stable	x When heated, emits toxic fumes.
Incompatibility (Materials to avoid)	Acids, acrolein, dimethyl sulfide, halogens, AgNO ₃ , AgNO ₂ .	
Hazardous Decomposition Products	Ammonia fumes.	
Hazardous Polymerization	Will Not Occur	
May Occur	x	
Conditions to Avoid		

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled
Wearing protective equipment, carefully neutralize with sodium bisulfate and flush to sewer with copious amounts of water.

Waste Disposal Method

Wearing proper protective clothing and equipment, carefully neutralize with sodium bisulfate and flush to sewer with copious amounts of water.

Discharge, treatment, or disposal may be subject to federal, state, or local laws.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiration Protection (Specify Type)	Work in a fume hood or wear a NIOSH-approved respirator with ammonia canister, if needed.
Ventilation (Local Exhaust Mechanical (General))	Recommended Special Other
Protective Gloves	Rubber
Other Protective Equipment	Goggles, shield, lab coat, apron, ventilation hood and eye wash station.
Eye Protection	Goggles, chemical safety glasses.

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing
Store in a cool, well-ventilated area away from acids and acid fumes or oxidizing agents.
Keep container tightly closed when not in use.

Other Precautions

Read label on container before using.

D.O.T. CORROSIVE MATERIAL.



FREY SCIENTIFIC
905 HICKORY LANE MANSFIELD OHIO 44905

MSDS No.
Effective Date

Approved by U.S. Department of Labor "essentially similar" to form OSHA-20

For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

Rev. No. No. 1 Date 11/2/87 Approved *Wayne H. Conwell* Chemical Safety Coordinator

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