Safety Data Sheet

Ammonium Hydroxide 28%

SECTION 1: Identification

1.1 GHS Product identifier

Product name	Ammonium Hydroxide 28%
Substance name	Ammonia, aqueous solution
EC no.	215-647-6
CAS no.	1336-21-6
Index no.	007-001-01-2

1.2 Other means of identification

Aqueous ammonia, Ammonia solution

1.3 Recommended use of the chemical and restrictions on use

For laboratory and manufacturing use only.

1.4 Supplier's details

Name	High Purity Products
Address	14546 N. Lombard Street Portland OR 97203 United States of America
Telephone	503-227-1616
email	help.desk@highpp.com

1.5 Emergency phone number

CHEMTREC: 1-800-424-9300

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200)

- Acute toxicity, oral, Cat. 4
- Acute toxicity, inhalation, Cat. 4
- Skin corrosion/irritation, Cat. 1B

- Serious eye damage/irritation, Cat. 1

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word **Danger**

Hazard statement(s)

H302	Harmful if swallowed
H332	Harmful if inhaled
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

Precautionary statement(s)

P234	Keep only in original container.
P260	Do not breathe vapors.
P262	Do not get in eyes, on skin, or on clothing.
P264	Wash hands thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	In case of inadequate ventilation wear respiratory protection.
P301+P310	IF SWALLOWED: Immediately call POISON CENTER
P302+P361+P354	IF ON SKIN: Take off Immediately all contaminated clothing. Immediately rinse with water for 15 minutes.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P390	Absorb spillage to prevent material damage.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

SECTION 3: Composition/information on ingredients

3.1 Mixture

Components	CAS #	Percent (weight)
Ammonium Hydroxide	1336-21-6	27-29%
Water	7732-18-5	71-73%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled	Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
In case of skin contact	Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover

	wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.
In case of eye contact	Rinse immediately with plenty of water for 15 minutes. Cover eyes aseptically. Do not apply neutralizing agents. Take victim to an ophthalmologist.
If swallowed	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms/effects, acute and delayed
Causes burns by all exposure routes. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media
EXTINGUISHING MEDIA FOR SURROUNDING FIRES: All extinguishing media allowed

5.2 Specific hazards arising from the chemical
Nitrogen oxides (NOx)
Not combustible.
Ammonia solution itself is not flammable, but can form an ignitable ammonia/air-mixture by outgassing.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of: nitrogen oxides

5.3 Special protective actions for fire-fighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.2 Environmental precautions
Should not be released into the environment.

6.3 Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

7.2 Conditions for safe storage, including any incompatibilities
No metal or light-weight-metal containers.
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ammonia (CAS # 7664-41-7)
NIOSH REL: TWA 25 ppm (18 mg/m3)

8.2 Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

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

Pictograms

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Gas mask with filter type K. High vapor/gas concentration: self-contained respirator.

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid
Appearance	Clear, Colorless
Color	Clear
Odor	Strong, ammonia
Odor threshold	5 - 50 ppm
pH	13.8
Melting point/freezing point	-69.2 °C (-92.6 °F)
Boiling point or initial boiling point and boiling range	38-100°C (100-212°F)
Flash point	Not Flammable
Evaporation rate	No Data Available
Flammability	Not Flammable
Vapor pressure	476.29 mmHg at 20°C (68°F)
Relative vapor density	0.6
Density and/or relative density	0.90
Solubility	Water: Complete
Partition coefficient n-octanol/water (log value)	No Data Available
Auto-ignition temperature	651°C
Decomposition temperature	No Data Available
Kinematic viscosity	No Data Available

SECTION 10: Stability and reactivity

10.1 Reactivity

On heating: release of toxic/corrosive/combustible gases/vapors (ammonia). On burning: release of toxic and corrosive gases/vapors (nitrous
vapors). Concentrated solution violent to explosive reaction with many compounds e.g.: with (some) halogens compounds, with (strong) oxidizers and with (some) acids.

10.2 Chemical stability
Ammonia solution itself is not flammable, but can form an ignitable ammonia/air-mixture by outgassing.

10.3 Possibility of hazardous reactions
Reacts vigorously with strong oxidizers and acids.

10.4 Conditions to avoid
High temperature. Incompatible materials.

10.5 Incompatible materials
May react violently with acids.

10.6 Hazardous decomposition products
Gaseous ammonia.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
LD50 - oral - rat - 350 mg/kg
LDLo – inhalation – human – 5000 ppm

Skin corrosion/irritation
Skin - Rabbit
Result: Severe irritations
Remarks: (29% solution)
Dermatitis Necrosis

Serious eye damage/irritation

Respiratory or skin sensitization
LC50 = 9850 mg/m3 (Rat) 1 h
LC50 = 13770 mg/m3 (Rat) 1 h

Germ cell mutagenicity
Mutagenic for bacteria and/or yeast.

Carcinogenicity
No data available

Reproductive toxicity
No data available

STOT-single exposure
No data available

STOT-repeated exposure
No data available

SECTION 12: Ecological information

Toxicity

24 Hr LC50 rainbow trout: 0.008 mg/L;
96 Hr LC50 fathead minnow: 8.2 mg/L;
48 Hr LC50 bluegill: 0.024 mg/L;
48 Hr EC50 water flea: 0.66 mg/L

Persistence and degradability
Readily biodegradable in water. Ozonation in water. Biodegradable in the soil.

Bioaccumulative potential
No data available.

Mobility in soil
No data available.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations.
Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.
EPA Waste Code: **D002**

SECTION 14: Transport information

DOT (US)
UN Number: UN2672
Class: 8
Packing Group: III
Proper Shipping Name: Ammonia solution (with 28% Ammonia)
Reportable quantity (RQ): 1,000 lbs
Marine pollutant: Yes
Poison inhalation hazard: No

IMDG
UN Number: UN2672
Class: 8
Packing Group: III
Proper Shipping Name: Ammonia solution (with 28% Ammonia)

IATA
UN Number: UN2672
Class: 8
Packing Group: III
Proper Shipping Name: Ammonia solution (with 28% Ammonia)

SECTION 15: Regulatory information

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

Massachusetts Right To Know Components
Chemical name: Ammonium hydroxide
CAS number: 1336-21-6

New Jersey Right To Know Components
Common name: AMMONIUM HYDROXIDE
CAS number: 1336-21-6

Pennsylvania Right To Know Components
Chemical name: Ammonium hydroxide
CAS number: 1336-21-6

Canadian Domestic Substances List (DSL)
Chemical name: Ammonium hydroxide ((NH4)(OH))
CAS: 1336-21-6

CERCLA RQ Hazardous Substances
Ammonium Hydroxide: 1,000 lbs.

EPCRA Section 313 Toxic chemicals
Ammonium Hydroxide

CAA 112(r) TQ Regulated Chemicals for Accidental Release Prevention
Ammonia (conc 20% or greater): 20,000 lbs.

HMIS Rating

Ammonium Hydroxide 28%	
HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA Rating

SECTION 16: Other information

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