

### PRODUCT IDENTIFICATION



**Product Name:** Ammonium Hydroxide 29% ACS Grade

**CAS Number:** 1336-21-6

**Molecular Formula:**  $\text{H}_5\text{NO}$

**Molecular Weight:** 35.046 g/mol

**Grade:** ACS Grade

**Purity / Concentration:** 29%

**Synonyms:** Aqueous Ammonia, Ammonium Hydroxide Solution

### PRODUCT OVERVIEW

Ammonium Hydroxide 29% ACS Grade is a high-purity aqueous ammonia solution designed for demanding laboratory and industrial applications. This clear, volatile alkaline liquid maintains strict quality standards, evidenced by a minimal residue on evaporation of only 5 ppm and non-detected chloride levels. It serves as a vital reagent for analytical procedures and precise pH adjustment in sensitive chemical processes.

**Grade Significance:** ACS Grade signifies that this product meets the rigorous specifications set by the American Chemical Society, ensuring the high purity and low impurity profile required for reliable analytical and research results.

### CERTIFICATE OF ANALYSIS — TYPICAL VALUES

| PARAMETER                      | UNIT | TYPICAL | MIN   | MAX   | TEST METHOD        |
|--------------------------------|------|---------|-------|-------|--------------------|
| Assay (Titration)              | %    | 29      | 28.5  | 29.5  | Titration          |
| Specific Gravity (20°C)        | g/mL | 0.895   | 0.893 | 0.897 | Hydrometer @ 20°C  |
| Residue On Evaporation         | ppm  | 5       | —     | 20    | Evaporation        |
| Arsenic As                     | ppm  | 0.0050  | 0     | 0.01  | ICP-MS             |
| Copper Cu                      | ppm  | 0.2     | 0     | 0.5   | ICP-MS             |
| Heavy Metals As Pb             | ppm  | 0.05    | 0     | 0.5   | ICP-MS (as Pb)     |
| Lead Pb                        | ppm  | 0.2     | 0     | 0.5   | ICP-MS             |
| Manganese Mn                   | ppm  | 0.2     | 0     | 0.5   | ICP-MS             |
| Sodium Na                      | ppm  | 2       | 0     | 5     | ICP-MS             |
| Chloride ( $\text{Cl}^-$ )     | ppm  | ND      | 0     | 1     | Ion chromatography |
| Nitrate ( $\text{NO}_3^-$ )    | ppm  | 1       | 0     | 2     | Per specification  |
| Sulfate ( $\text{SO}_4^{2-}$ ) | ppm  | 1       | 0     | 2     | Ion chromatography |

ND = Not Detected. Values are typical and may vary by lot.

## PHYSICAL & CHEMICAL PROPERTIES

|                                 |                                                              |                         |                                        |
|---------------------------------|--------------------------------------------------------------|-------------------------|----------------------------------------|
| <b>Appearance</b>               | Clear, colorless, volatile alkaline liquid                   | <b>Odor</b>             | Pungent ammonia odor                   |
| <b>Form</b>                     | Liquid                                                       | <b>Boiling Point</b>    | Not characterized for the 29% solution |
| <b>Melting / Freezing Point</b> | Not characterized for the 29% solution                       | <b>Flash Point</b>      | Not applicable                         |
| <b>Specific Gravity</b>         | 0.9                                                          | <b>Solubility</b>       | Complete water miscibility             |
| <b>Molecular Formula</b>        | H <sub>5</sub> NO                                            | <b>Molecular Weight</b> | 35.046 g/mol                           |
| <b>Vapor Pressure (20°C)</b>    | 33 mmHg                                                      | <b>Viscosity (25°C)</b> | 0.89 cP                                |
| <b>Refractive Index (20°C)</b>  | 1.333                                                        | <b>Density (25°C)</b>   | 0.897 g/mL                             |
| <b>Decomposition Temp.</b>      | Not applicable (stable under recommended storage conditions) |                         |                                        |

## APPLICATIONS

1. **Water Treatment** — Used as a precise buffering agent to raise the pH of water, ensuring optimal conditions for chemical treatment processes.
2. **Pharmaceutical Manufacturing** — Acts as a critical precursor in the synthesis of various pharmaceutical compounds, where high chemical purity is essential for safety.
3. **Industrial Cleaning** — Utilized in heavy-duty cleaning and degreasing formulations to effectively break down organic contaminants.
4. **Analytical Chemistry** — Functions as a reliable reagent in laboratory titrations and complex analytical procedures requiring high-grade reagents.

## STORAGE & HANDLING

Ammonium hydroxide is a volatile liquid that must be stored in a cool, well-ventilated area to prevent pressure buildup and exposure to hazardous vapors. Because it is corrosive to metals, containers must be kept tightly sealed and stored away from incompatible substances to mitigate the risk of severe skin burns or toxic gas release.

- Store in a cool, well-ventilated area away from incompatible materials.
- Use containers made of HDPE or glass to prevent reactions.
- Avoid exposure to light and heat to maintain stability.
- Wear appropriate personal protective equipment (PPE) including gloves and goggles.
- Ensure adequate ventilation when handling to minimize inhalation exposure.

## AVAILABLE PACKAGING

- 1 Quart
- 1 Gallon
- 5 Gallon
- 15 Gallon
- 55 Gallon
- 275 Gallon
- 330 Gallon

## SAFETY SUMMARY (CROSS-REFERENCE TO SDS)

Signal Word: **Danger**



### Hazard Statements:

- H290: May be corrosive to metals
- H302: Harmful if swallowed
- H314: Causes severe skin burns and eye damage
- H335: May cause respiratory irritation
- H400: Very toxic to aquatic life

**Emergency Contact:** CHEMTEL - 800-255-3924 (24 Hours/Day, 7 Days/Week)

*For complete safety information, refer to the Safety Data Sheet (SDS) for this product.*

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