

TECHNICAL DATA SHEET

# Ammonium Hydroxide 29% ACS Grade

ACS Grade · 29%

CAS NUMBER

1336-21-6

ALLIANCE CODE

ammonium-hydroxide-29-acsg  
grade

GENERATED

2026-07-18

## 1. IDENTITY & COMPOSITION

PRODUCT NAME

Ammonium Hydroxide 29% ACS Grade

ALLIANCE CODE

ammonium-hydroxide-29-acsggrade

GRADE

ACS Grade

CONCENTRATION

29%

CAS NUMBER

1336-21-6 [PubChem](#)

FORMULA

H5NO [PubChem](#)

MOLECULAR WEIGHT

35.046 [PubChem](#)

PRODUCT TYPE

solution

### AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

| GRADE                           | CONCENTRATION | TYPICAL ASSAY | SKU                                   |
|---------------------------------|---------------|---------------|---------------------------------------|
| <div>THIS GRADE</div> ACS Grade | 29%           | —             | current                               |
| Technical Grade                 | 29%           | —             | ammonium-hydroxide-29-technical-grade |
| —                               | —             | —             | ammonium-hydroxide-10-acsggrade       |
| —                               | —             | —             | ammonium-hydroxide-10-technical-grade |

| GRADE | CONCENTRATION | TYPICAL ASSAY | SKU                                   |
|-------|---------------|---------------|---------------------------------------|
| —     | —             | —             | ammonium-hydroxide-15-acg-grade       |
| —     | —             | —             | ammonium-hydroxide-15-technical-grade |
| —     | —             | —             | ammonium-hydroxide-20-acg-grade       |
| —     | —             | —             | ammonium-hydroxide-20-technical-grade |
| —     | —             | —             | ammonium-hydroxide-5-acg-grade        |
| —     | —             | —             | ammonium-hydroxide-5-technical-grade  |

Typical assay shown is the rolling-window mean from the sibling product's most recent lots. Grade selection drives downstream end-use — verify the sibling grade matches your specification before substitution.

## PHYSICAL & CHEMICAL PROPERTIES

### APPEARANCE

Colorless liquid [Product record](#)

### ODOR

Intense, pungent, suffocating ammonia odor  
[Product record](#)

### SPECIFIC GRAVITY (20 °C)

0.90 [Product record](#)

### BOILING POINT

Not characterized for the 29% solution  
[Product record](#)

### FLASH POINT

Not applicable [Product record](#)

### SOLUBILITY (WATER)

Miscible with water [Product record](#)

### FORM

Liquid [Product record](#)

### PH

~13.8 (29% solution) [Product record](#)

### DENSITY

0.90 (29% w/w aqueous solution, 20 °C)  
[Product record](#)

### MELTING POINT

Not characterized for the 29% solution  
[Product record](#)

### VAPOR PRESSURE

High — ammonia off-gasses from solution (~1.5 atm at 25 °C for concentrated aqueous ammonia) [Product record](#)

Strong base — hygroscopic; values may drift in opened containers. See storage guidance.

## MATERIALS OF CONSTRUCTION SERVICE ENVELOPE ≈ 29%

| MATERIAL                            | RATING          | MAX T (°C) | NOTES                                                          | SOURCE                                             |
|-------------------------------------|-----------------|------------|----------------------------------------------------------------|----------------------------------------------------|
| Buna-N (NBR)<br>Elastomer           | Fair            | 40         | Limited service life                                           | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| EPDM<br>Elastomer                   | Excellent       | 90         | Preferred elastomer                                            | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Viton (FKM)<br>Elastomer            | Poor            | —          | Not recommended above 25%                                      | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| PTFE<br>Fluoropolymer               | Excellent       | 200        | Lining and gaskets                                             | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Borosilicate Glass<br>Glass Ceramic | Fair            | 25         | Attacked above 30 % or elevated temp; avoid long-term service. | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| 304 stainless steel<br>Metal        | Good            | 80         | Acceptable for dilute caustic                                  | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| 316 stainless steel<br>Metal        | Excellent       | 95         | Standard caustic service                                       | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| 316L Stainless Steel<br>Metal       | Excellent       | 80         | Preferred metal for caustic service.                           | <a href="#">NACE TM0177</a>                        |
| Aluminium<br>Metal                  | Not recommended | —          | Rapid attack; generates hydrogen                               | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Carbon steel<br>Metal               | Good            | 50         | Acceptable to 50 °C; caustic embrittlement above               | <a href="#">Cole-Parmer Chemical Compatibility</a> |

| MATERIAL                         | RATING          | MAX T (°C) | NOTES                                                     | SOURCE                                             |
|----------------------------------|-----------------|------------|-----------------------------------------------------------|----------------------------------------------------|
| Carbon Steel<br>Metal            | Good            | 60         | Acceptable below 70 °C; caustic embrittlement risk above. | <a href="#">NACE Caustic Service Limits</a>        |
| Nickel<br>Metal                  | Excellent       | 100        | Preferred for high-temperature caustic                    | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Zinc / galvanized steel<br>Metal | Not recommended | —          | Rapid corrosion                                           | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| HDPE<br>Thermoplastic            | Excellent       | 60         | Standard drum / IBC material                              | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Polypropylene<br>Thermoplastic   | Excellent       | 80         | Excellent caustic service to 50 %.                        | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| PP<br>Thermoplastic              | Excellent       | 80         | Preferred for elevated temperature                        | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| PVC<br>Thermoplastic             | Good            | 40         | Acceptable for ambient service                            | <a href="#">Cole-Parmer Chemical Compatibility</a> |

Ratings reflect the service envelope (concentration × temperature) shown. Always confirm against your specific duty cycle and contact-time before equipment selection. The most cautious rating across overlapping references is shown.

## REGULATORY & TRANSPORT

### DOT / 49 CFR

UN NUMBER

UN2672 Vendor Label

PACKING GROUP

III Adjudicated

HAZARD CLASS

8 Adjudicated

PROPER SHIPPING NAME

Ammonia solution Adjudicated

### GHS / OSHA HAZCOM 2012

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H290, H302, H314, H335, H400 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P261, P264, P270, P271, P273, P280,  
P301+P312, P301+P330+P331, P303+P361+P353,  
P304+P340, P305+P351+P338, P310, P321, P363,...

### OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

— unknown

ACGIH TLV

— unknown

NIOSH REL

— unknown

NIOSH IDLH

— unknown

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: ECHA CLP Annex VI for harmonised classifications, NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

### Supplier Qualification Packet

One zipped download containing the TDS, SDS, latest lot COA (when available), and a fresh Letter of Continuing Guaranty for Ammonium Hydroxide 29% ACS Grade. Every file included is SHA-256 hashed and listed in a manifest your QA team can audit.

## CATALOG EQUIVALENTS CROSS-REFERENCE VS MAJOR CHEMICAL SUPPLIERS

### SIGMA-ALDRICH

| SKU                    | GRADE       | CONC.  | MATCH              | NOTES                   |
|------------------------|-------------|--------|--------------------|-------------------------|
| <a href="#">320145</a> | ACS reagent | 28–30% | <span>Exact</span> | Same ACS reagent grade. |

Cross-references are informational. Confirm against the manufacturer's current specification before substitution.  
Competitor trademarks are property of their respective owners.

APPLICATION GUIDANCE

Ammonium Hydroxide 29% ACS Grade (ACS Grade) is a strong base used for pH control, saponification, and chemical manufacturing.

- pH adjustment and neutralization
- Saponification and detergent manufacturing
- Pulp and paper processing
- Water treatment and softening
- Chemical synthesis (caustic-driven reactions)

Highly exothermic when diluted — control mixing rate and temperature. Hygroscopic; protect from atmospheric moisture and CO2.

STORAGE & HANDLING

RECOMMENDED STORAGE

Cool, dry, well-ventilated area in compatible containers (HDPE, lined steel — not aluminium).  
Tightly sealed; protect from atmospheric...

INCOMPATIBILITIES

Acids (violent neutralization), aluminium, zinc, tin (generates hydrogen gas), halogens, organic nitro compounds.

HANDLING PRECAUTIONS

Use full PPE including chemical splash goggles and alkali-resistant gloves. Add base to water slowly with stirring. Highly exothermic dilution.

SHELF LIFE

24 months from date of manufacture in sealed, original packaging

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

UN2672, Ammonia solution, 8, PG III

Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

|                  |                      |                         |
|------------------|----------------------|-------------------------|
| NMFC CLASS<br>65 | PLACARD<br>Corrosive | PACKING GROUP<br>PG III |
|------------------|----------------------|-------------------------|

## REVISION HISTORY

Last reviewed 2026-07-17 by Andre Taki, DOT Hazmat Specialist.

| VERSION | DATE       | CHANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | TRIGGER          |
|---------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1.1     | 2026-07-17 | <p>Canonical data re-verified: 6 fields updated against independent vendor SDSs, CLP Annex VI, 49 CFR, and OSHA HazCom 2024 (GHS classification, hazard/precautionary codes, signal word, physical properties as applicable).</p> <ul style="list-style-type: none"><li>countryOfOrigin · canonical adjudication / reground (coa.data_provenance)</li><li>ghsClassification · canonical adjudication / reground (coa.data_provenance)</li><li>hazard_h_codes · canonical adjudication / reground (coa.data_provenance)</li><li>hazard_p_codes · canonical adjudication / reground (coa.data_provenance)</li><li>hsCode · canonical adjudication / reground (coa.data_provenance)</li><li>physicalProperties · canonical adjudication / reground (coa.data_provenance)</li></ul> | canonical_change |
| 1.0     | 2026-05-20 | Initial URL-first TDS published from canonical chemistry registry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | initial          |

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.

ALLIANCE CHEMICAL

### Order Ammonium Hydroxide 29% ACS Grade

Bulk & packaged sizes · COA/SDS ships with every order