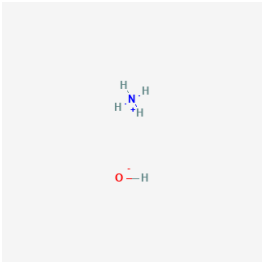
Technical Data Sheet

Ammonium Hydroxide 29% ACS Grade

ACS Grade · 29%

Alliance Code	Revised	Revision
ammonium-hydroxide-29-acs-grade	2026-10-20	1.7

CAS number 1336-21-6	UN number UN2672	Hazard class · packing group 8 · PG III
 Structure · PubChem	Grade ACS Grade · 29%	Signal word **Danger**

Hazards

Corrosive | Irritant / harmful | Environmental hazard | H290 H302 H314 H335 H400

Proper shipping name

Ammonia solution, relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia

IDENTITY & COMPOSITION

PRODUCT NAME
Ammonium Hydroxide 29% ACS Grade

ALLIANCE CODE
ammonium-hydroxide-29-acs-grade

GRADE
ACS Grade

CONCENTRATION
29% w/w as NH3

CAS NUMBER
1336-21-6 PubChem

FORMULA
NH4OH PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (NH3)	28.0-30.0 % w/w as NH3	—	Acid-base titration: transfer a cooled aliquot into 1 N sulfuric acid VS, back-titrate excess acid with 1 N sodium hydroxide VS using methyl red TS	Interpreted
Carbon dioxide (CO2)	Max 0.002%	—	—	Interpreted
Chloride (Cl)	Max 0.5 ppm	—	—	Interpreted
Heavy metals (as Pb)	Max 0.5 ppm	—	—	Interpreted
Iron (Fe)	Max 0.2 ppm	—	—	Interpreted
Nitrate (NO3)	Max 2 ppm	—	—	Interpreted
Substances reducing permanganate	To pass Test	—	—	Interpreted
Phosphate (PO4)	Max 2 ppm	—	—	Interpreted
Residue after ignition	0.002 % Maximum	—	—	Interpreted
Sulfur compounds (as SO4)	Max 2 ppm	—	—	Interpreted

Values are reproduced from the current product reference. Source labels do not by themselves establish a supplier guarantee or a test result for your lot. Confirm applicable acceptance limits and request lot-specific documentation.

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

GRADE	CONCENTRATION	TYPICAL ASSAY	SKU
THIS GRADE ACS Grade	29%	—	current
Technical Grade	29%	—	ammonium-hydroxide-29-technical-grade
ACS	20%	—	ammonium-hydroxide-20-acs-grade
Technical	20%	—	ammonium-hydroxide-20-technical-grade
ACS	15%	—	ammonium-hydroxide-15-acs-grade
Technical	15%	—	ammonium-hydroxide-15-technical-grade
ACS	10%	—	ammonium-hydroxide-10-acs-grade
Technical	10%	—	ammonium-hydroxide-10-technical-grade
ACS	5%	—	ammonium-hydroxide-5-acs-grade
Technical	5%	—	ammonium-hydroxide-5-technical-grade

Typical assay for each grade is the average of its recent lots. Confirm a grade meets your specification before substituting it.

PHYSICAL & CHEMICAL PROPERTIES

PROPERTY	VALUE	SOURCE
Appearance	Clear, colorless, volatile alkaline liquid	Adjudicated
Form	Liquid	Published reference
Color	Clear, Colorless	Interpreted
Odor	Intense, pungent, suffocating ammonia odor	Adjudicated
pH	> 12 (about 13)	Adjudicated
Specific Gravity	0.897 at 20/20 °C (water = 1)	Adjudicated
Density	0.8950 g/cm^3 at 20 °C	Adjudicated
Boiling Point	27 to 36 °C (81 to 97 °F) (aqueous solution)	Adjudicated
Melting Point	-79 to -72 °C (-110 to -98 °F), freezing point (aqueous solution)	Adjudicated
Flash Point	Not applicable	Adjudicated
Vapor Pressure	9.1 psia (627 hPa, 470 mmHg) at 15.6 °C (60 °F)	Adjudicated
Solubility (water)	Completely miscible with water	Adjudicated

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
copper and copper alloys	Not recommended	—	tannerind.com
aluminum alloys	Not recommended	—	tannerind.com
galvanized surfaces	Not recommended	—	tannerind.com

MATERIAL	RATING	CONDITIONS	SOURCE
copper, copper alloys, aluminum alloys, and galvanized surfaces	Not recommended	—	tannerind.com

Compatibility is drawn from published manufacturer and supplier documentation for this product; each rating is sourced. Confirm against your specific duty cycle before equipment selection.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN2672 49 CFR 172.101

HAZARD CLASS

8 Adjudicated

PACKING GROUP

III Adjudicated

PROPER SHIPPING NAME

Ammonia solution, relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia

Adjudicated

GHS / OSHA HCS 2024

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, P390, P391, P403+P233, P405, P406, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

50 ppm TWA OSHA 29 CFR 1910.1000

ACGIH TLV

25 ppm TWA / 35 ppm STEL (as ammonia)

Adjudicated

NIOSH REL

25 ppm TWA / 35 ppm STEL NIOSH Pocket Guide

NIOSH IDLH

300 ppm NIOSH Pocket Guide

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

HEALTH & FIRE HAZARD

ACUTE TOXICOLOGY

LD_{50} ORAL (RAT)

350 mg/kg Adjudicated

LC_{50} INHALATION (RAT, 4 H)

2,000 ppm (ammonia gas)

Adjudicated

Acute toxicology values from SDS Section 11 or NIOSH RTECS.

CATALOG EQUIVALENTS CROSS-REFERENCE VS MAJOR CHEMICAL SUPPLIERS

SIGMA-ALDRICH

SKU	GRADE	CONC.	MATCH	NOTES
320145	ACS reagent	28–30%	Unverified candidate	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.

APPLICATIONS

Acid neutralization tannerind.com

Used in the chemical and petroleum industries and in agriculture, resins, polymers, acid neutralization, water treatment, cogeneration NOx scrubbing and explosives

tannerind.com

Feedstock for preparing other ammonium compounds such as urea, ammonium carbonate and ammonium sulfate

laballey.com

Laboratory solvent, pharmaceutical manufacturing, polymer manufacturing, household cleaning reagent, and food additive / acidity regulator

laballey.com

Buffers, ceramics, collagen sausage casing, detergents, fertilizer, hair bleaching and hair colorants, I&I cleaners, ink, photographic chemistry, rayon, refrigeration, selective catalytic reduction (SCR), textiles and window cleaner

chemceed.com

Reagent for compounding analytical test solutions uspbpep.com

Applications are drawn from published manufacturer and supplier documentation; each is sourced. Suitability for a specific use is the buyer's to confirm.

STORAGE & HANDLING

RECOMMENDED STORAGE

Store tightly closed in a cool, well-ventilated area out of sunlight; open containers slowly, as pressure may build up. Use steel or polyethylene, never copper, brass, bronze, zinc or galvanized fittings. Keep away from bleach, acids and halogens.

Adjudicated

HANDLING PRECAUTIONS

Use in ventilation or with respiratory protection — vapour is the primary exposure. Chemical splash goggles and gloves. Open and transfer cool; pressure can build in warm sealed containers. Neutralization with acid is exothermic.

Class-level guidance — not product-specific; the SDS controls.

INCOMPATIBILITIES

Bleach and other hypochlorites, chlorine, bromine and iodine (toxic chloramines and explosive compounds); mercury, silver and silver oxide, gold (explosive compounds); strong acids (violent, heat); strong oxidizers. Corrodes copper, brass, bronze, zinc, galvanized surfaces and aluminum alloys.

Adjudicated

SHELF LIFE

Consult Technical Services for product-specific shelf life

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, relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia, 8, PG III
```

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

NMFC CLASS	PLACARD	PACKING GROUP
65	Corrosive	PG III

REVISION HISTORY

Last reviewed 2026-10-20 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.7	2026-10-20	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • `density` · canonical change (coa.data_provenance / adjudication) • `specificGravity` · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.6	2026-10-07	Canonical data updated: 23 fields changed via the provenance/adjudication pipeline. • synonyms · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • odorThreshold · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • vaporPressure · canonical change (coa.data_provenance / adjudication) • specificGravity · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • explosiveLimits · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · canonical change (coa.data_provenance / adjudication) • oel_other · canonical change (coa.data_provenance / adjudication) • incompatible_materials · canonical change (coa.data_provenance / adjudication) • conditions_to_avoid · canonical change (coa.data_provenance / adjudication) • hazardous_decomposition_products · canonical change (coa.data_provenance / adjudication) • storage_precautions · canonical change (coa.data_provenance / adjudication) • rcra_waste_codes · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication) • dot_transport_note · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • ghsClassification · canonical change (coa.data_provenance / adjudication) • hazard_h_codes · canonical change (coa.data_provenance / adjudication) • hazard_p_codes · canonical change (coa.data_provenance / adjudication)	canonical_change
1.5	2026-09-30	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • boilingPoint · canonical change (coa.data_provenance / adjudication) • meltingPoint · canonical change (coa.data_provenance / adjudication) • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.4	2026-08-27	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • oel_niosh_rel · canonical change (coa.data_provenance / adjudication) • oel_idlh · canonical change (coa.data_provenance / adjudication) • oel_osha_pel · canonical change (coa.data_provenance / adjudication)	canonical_change

VERSION	DATE	CHANGE	TRIGGER
1.3	2026-08-05	Canonical data updated: 4 fields changed via the provenance/adjudication pipeline. • hazardClass · canonical change (coa.data_provenance / adjudication) • packingGroup · canonical change (coa.data_provenance / adjudication) • signalWord · canonical change (coa.data_provenance / adjudication) • unNumber · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-22	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • dotSubsidiaryHazardClass · canonical change (coa.data_provenance / adjudication) • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change
1.1	2026-07-17	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). • countryOfOrigin · canonical adjudication / reground (coa.data_provenance) • ghsClassification · canonical adjudication / reground (coa.data_provenance) • hazard_h_codes · canonical adjudication / reground (coa.data_provenance) • hazard_p_codes · canonical adjudication / reground (coa.data_provenance) • hsCode · canonical adjudication / reground (coa.data_provenance) • physicalProperties · canonical adjudication / reground (coa.data_provenance)	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.