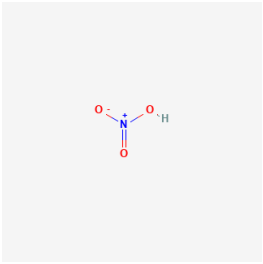
Technical Data Sheet

Nitric Acid 25% Technical Grade

Technical · 25% w/w

Alliance Code	Revised	Revision
nitric-acid-25	2026-11-19	1.8

CAS number 7697-37-2	UN number UN2031	Hazard class · packing group 8 · PG II
 Structure · PubChem	Grade Technical · 25% w/w	Signal word **Danger**

Hazards

Corrosive | Irritant / harmful | H290 H314 H332

Proper shipping name

Nitric acid, other than red fuming, with more than 20 percent and less than 65 percent nitric acid

IDENTITY & COMPOSITION

PRODUCT NAME
Nitric Acid 25% Technical Grade

ALLIANCE CODE
nitric-acid-25

GRADE
Technical

CONCENTRATION
25% w/w

CAS NUMBER
7697-37-2 PubChem

FORMULA
HNO3 PubChem

PRODUCT TYPE
Solution

SPECIFICATIONS

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Assay (HNO3)	24.5 - 25.5 % w/w	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Color (APHA)	<= 100	—	—	Interpreted
Nitrite (NO2)	<= 100 ppm	—	—	Interpreted
Chloride (Cl)	<= 10 ppm	—	—	Interpreted
Iron (Fe)	<= 10 ppm	—	—	Interpreted
Phosphate (PO4)	0.0001 % max	—	Molybdenum blue colorimetric	Interpreted
Substances reducing permanganate (as HNO2)	0.00019 % max	—	Titrimetric, KMnO4 decolorization	Interpreted
Lead (Pb)	0.0000025% max	—	—	Interpreted
Residue after Ignition	5.1 ppm max	—	—	Interpreted
Sulfates (SO4)	1.8 ppm max	—	—	Interpreted
Fluoride	1.9 ppm max	—	—	Interpreted
Oxides of nitrogen	38 ppm max	—	—	Interpreted
Oxidizable constituents as HNO2	5.8 ppm max	—	—	Interpreted
Non-volatiles	0.019 % max	—	—	Interpreted

TEST	SPECIFICATION	TYPICAL	METHOD	SOURCE
Composition	25 % nitric acid in deionized water, by weight	—	By formulation; batch weights (scale ticket)	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 Technical	25% w/w	—	current
ACS Grade	70% w/w	—	nitric-acid-70-acs-grade-low-particle
Technical	70% w/w	—	nitric-acid-70-technical-grade
ACS Grade	69% w/w	—	nitric-acid-acs-69-55-gallon-drum
Technical	69% w/w	—	nitric-acid-69-technical-grade
ACS Grade	65% w/w	—	nitric-acid-65
Technical	65% w/w	—	nitric-acid-65-technical-grade
Technical	40% w/w	—	nitric-acid-40
Technical	30% w/w	—	nitric-acid-30
Technical	20% w/w	—	nitric-acid-20
Technical	5% w/w	—	nitric-acid-5

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 to pale yellow liquid	Adjudicated
Form	Liquid	Published reference
Odor	Acrid, pungent odor	Adjudicated
pH	< 1	Adjudicated
Specific Gravity	1.149 at 20/20 °C (water = 1)	Adjudicated
Density	1.1469 g/cm^3 at 20 °C	Adjudicated
Boiling Point	Not characterized for the 25% solution	Published reference
Melting Point	Not characterized for the 25% solution	Published reference
Flash Point	Not applicable	Adjudicated
Vapor Pressure	Not characterized for the 25% solution	Adjudicated
Solubility (water)	Completely miscible with water (releases heat)	Adjudicated

Strong acid — density and vapor-pressure values shown are at 20 °C; values shift markedly with concentration and temperature. Reference concentration-temperature curves before specifying equipment.

MATERIALS OF CONSTRUCTION

MATERIAL	RATING	CONDITIONS	SOURCE
chromium	Compatible	hot nitric acid; concentration not stated	itwreagents.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

UN2031 49 CFR 172.101

HAZARD CLASS

8 Adjudicated

PACKING GROUP

II Adjudicated

PROPER SHIPPING NAME

Nitric acid, other than red fuming, with more than 20 percent and less than 65 percent nitric acid

Adjudicated

GHS / OSHA HCS 2024

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H290, H314, H332 Adjudicated

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P264, P271, P280, P301+P330+P331, P303+P361+P353, P304+P340, P305+P351+P338, P310, P321, P363, P390, P405, P406, P501

Adjudicated

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

2 ppm TWA OSHA 29 CFR 1910.1000

ACGIH TLV

2 ppm TWA / 4 ppm STEL Adjudicated

NIOSH REL

2 ppm TWA / 4 ppm STEL NIOSH Pocket Guide

NIOSH IDLH

25 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

LC_{50} INHALATION (RAT, 4 H)

> 2.65 mg/L (nitric acid); the basis for the inhalation classification by dilution

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
438073	ACS Reagent	70%	Unverified candidate	ACS Reagent fuming-free 70%

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

APPLICATIONS

Used in titration, as an intermediate, as an ion exchange agent and as an oxidizing/reducing agent laballey.com

Used in the fertilizer, photo-engraving and industrial/mining explosives industries laballey.com

Production of fertilizers, dyes, and explosives. itwreagents.com

Production of soluble metal nitrates. itwreagents.com

Detection of aromatic amino acids and proteins through the xanthoprotein reaction. itwreagents.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

Keep closed in polyethylene, glass or stainless-steel containers, never ordinary metal. Keep away from bases, bleach, organics and combustibles.

Adjudicated

HANDLING PRECAUTIONS

Use full PPE including face shield, acid-resistant gloves and apron. Add acid to water slowly with stirring; never reverse. Ventilation required.

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

INCOMPATIBILITIES

Bases; combustible and organic materials, alcohols and solvents; reducing agents; cyanides and sulfides; most metals (release nitrogen oxides and hydrogen); bleach (releases chlorine).

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)

```
UN2031, Nitric acid, other than red fuming, with more than 20 percent and less than 65 percent nitric acid, 8, PG II
```

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

NMFC CLASS	PLACARD	PACKING GROUP
60	Corrosive	PG II

REVISION HISTORY

Last reviewed 2026-11-19 by Andre Taki, Chief Commercial Officer, DOT Hazmat–certified (49 CFR 172.704).

VERSION	DATE	CHANGE	TRIGGER
1.8	2026-11-19	Canonical data updated: 2 fields changed via the provenance/adjudication pipeline. • `vaporPressure` · canonical change (coa.data_provenance / adjudication) • `appearance` · canonical change (coa.data_provenance / adjudication)	`canonical_change`
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	2026-10-08	Canonical data updated: 15 fields changed via the provenance/adjudication pipeline. • synonyms · canonical change (coa.data_provenance / adjudication) • recommended_use · canonical change (coa.data_provenance / adjudication) • restrictions_on_use · canonical change (coa.data_provenance / adjudication) • odor · canonical change (coa.data_provenance / adjudication) • pH · canonical change (coa.data_provenance / adjudication) • solubility · canonical change (coa.data_provenance / adjudication) • flashPoint · canonical change (coa.data_provenance / adjudication) • oel_acgih_tlv · 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) • specificGravity · canonical change (coa.data_provenance / adjudication) • cercla_rq · canonical change (coa.data_provenance / adjudication)	canonical_change
1.5	2026-09-30	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • appearance · canonical change (coa.data_provenance / adjudication)	canonical_change
1.4	2026-08-05	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • unNumber · canonical change (coa.data_provenance / adjudication)	canonical_change
1.3	2026-07-22	Canonical data updated: 1 field changed via the provenance/adjudication pipeline. • dotProperShippingName · canonical change (coa.data_provenance / adjudication)	canonical_change
1.2	2026-07-21	Canonical data updated: 3 fields changed via the provenance/adjudication pipeline. • 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

VERSION	DATE	CHANGE	TRIGGER
1.1	2026-07-17	Canonical data re-verified: 8 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) • dotSubsidiaryHazardClass · 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) • specificGravity · 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.