TECHNICAL DATA SHEET

Nitric Acid 25%

Revised: 04/27/2026

PRODUCT IDENTIFICATION

Product Name: Nitric Acid 25%
CAS Number: 7697-37-2
Molecular Formula: HNO_3
Molecular Weight: 63.013 g/mol
Grade: Technical
Purity / Concentration: 25%
Synonyms: Nitric Acid Solution, Aqueous Nitric Acid

PRODUCT OVERVIEW

Alliance Chemical offers high-quality 25% Technical Grade Nitric Acid, a versatile aqueous solution essential for industrial oxidizing and etching applications. This product features a precise 25% assay and maintains high purity levels, including a low 2 APHA color rating and minimal trace impurities like chloride and sulfate.

Grade Significance: Technical grade chemicals provide a cost-effective solution for industrial applications where commercial-grade purity is required but extreme analytical precision is not necessary. It ensures consistent performance for large-scale manufacturing and processing needs.

CERTIFICATE OF ANALYSIS — TYPICAL VALUES

PARAMETER	UNIT	TYPICAL	MIN	MAX	TEST METHOD
Assay (wt%)	%	25	24	26	Titration with standardized NaOH
Color (APHA)	APHA	2	—	5	APHA/Hazen visual comparison
Specific Gravity (20°C)	g/mL	1.115	1.1	1.12	Hydrometer or pycnometer at 20°C
Residue After Ignition	%	ND	—	0.01	Gravimetric after ignition at 550°C
Water Content	%	0.05	0	0.15	Karl Fischer titration
Aluminum (Al)	ppm	0.05	—	0.2	ICP-OES
Arsenic (As)	ppm	0.02	—	0.1	ICP-MS
Calcium (Ca)	ppm	15	—	50	ICP-OES
Chromium (Cr)	ppm	0.02	—	0.1	ICP-OES
Cobalt (Co)	ppm	0.01	—	0.05	ICP-OES
Copper (Cu)	ppm	0.02	—	0.1	ICP-OES
Heavy Metals (as Pb)	ppm	0.1	—	0.5	ICP-MS
Iron (Fe)	ppm	0.05	—	0.2	ICP-OES
Lead (Pb)	ppm	0.02	—	0.1	ICP-OES
Magnesium (Mg)	ppm	5	—	20	ICP-OES
Manganese (Mn)	ppm	0.02	—	0.1	ICP-OES
Nickel (Ni)	ppm	0.02	—	0.1	ICP-OES
Potassium (K)	ppm	10	—	30	ICP-OES
Sodium (Na)	ppm	10	—	30	ICP-OES
Zinc (Zn)	ppm	0.1	—	0.5	ICP-OES
Ammonium (NH_4^+)	ppm	1	—	5	Ion Chromatography (IC)
Chloride (Cl^-)	ppm	5	—	20	Ion Chromatography (IC) or ICP-OES
Nitrate (NO_3^-)	ppm	1500.0	—	5000.0	Ion Chromatography (IC)
Phosphate (PO_4^{3-})	ppm	1	—	5	Ion Chromatography (IC)
Sulfate (SO_4^{2-})	ppm	2	—	10	Ion Chromatography (IC)
Substances Reducing $KMnO_4$	—	Passes test	—	—	Potassium permanganate time test
Acidity (meq)	meq	0.2	—	0.5	Acid-base titration to assess residual acidity

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

PHYSICAL & CHEMICAL PROPERTIES

Appearance	Colorless to slightly yellow, fuming liquid	**Odor**	Pungent, acrid odor
Form	Liquid	**Boiling Point**	83°C (181.4°F)
Melting / Freezing Point	-42°C (-43.6°F)	**Specific Gravity**	1.2
Solubility	Soluble in water, alcohol, and other polar solvents	**Molecular Formula**	HNO_3
Molecular Weight	63.013 g/mol	**Vapor Pressure (20°C)**	45 mmHg
Viscosity (25°C)	0.89 cP	**Refractive Index (20°C)**	1.335
Density (25°C)	1.13 g/mL		

APPLICATIONS

1. **Metalworking** — Used extensively in metal etching processes to clean surfaces or create intricate patterns on components.
2. **Semiconductor Manufacturing** — Functions as a critical etchant and cleaning agent for silicon wafers and other electronic substrate materials.
3. **Water Treatment** — Applied as a reliable reagent for adjusting pH levels in industrial wastewater treatment systems.
4. **Agriculture** — Serves as a fundamental precursor in the chemical production of nitrate-based fertilizers for crop optimization.
5. **Chemical Synthesis** — Acts as a potent oxidizing agent to facilitate various complex chemical reactions in laboratory and industrial settings.

STORAGE & HANDLING

Due to its nature as a powerful oxidizer, Nitric Acid 25% must be stored in a cool, well-ventilated area away from combustible materials and organic substances. Proper containment is critical to prevent severe skin burns and inhalation hazards, ensuring the integrity of the container and the safety of the facility.

- Store in a cool, dry, well-ventilated area away from incompatible materials.
- Use corrosion-resistant containers (e.g., HDPE, glass).
- Avoid contact with reducing agents and organic materials.
- Wear appropriate personal protective equipment (PPE) including gloves and goggles.
- Ensure proper ventilation when handling to avoid inhalation of vapors.

AVAILABLE PACKAGING

- 1 Liter
- 2.5 Liter
- 55 Gallon

SAFETY SUMMARY (CROSS-REFERENCE TO SDS)

Signal Word: Danger

Hazard Statements:

- H272: May intensify fire; oxidizer [Danger Oxidizing liquids; Oxidizing solids]
- H314: Causes severe skin burns and eye damage [Danger Skin corrosion/irritation]
- H330: Fatal if inhaled [Danger Acute toxicity, inhalation]
- H271: May cause fire or explosion; strong oxidizer

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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