TECHNICAL DATA SHEET

Nitric Acid 40%

Revised: 04/27/2026

PRODUCT IDENTIFICATION

Product Name: Nitric Acid 40%
CAS Number: 7697-37-2
Molecular Formula: HNO_3
Molecular Weight: 63.013 g/mol
Grade: Technical
Purity / Concentration: 40%
Synonyms: Nitric Acid Solution, Aqueous Nitric Acid

PRODUCT OVERVIEW

Alliance Chemical offers high-quality Technical grade Nitric Acid 40% (CAS 7697-37-2), a versatile aqueous solution essential for diverse industrial and laboratory processes. This clear, colorless liquid is characterized by a precise assay of 40.3% and exceptional purity, including low levels of iron and heavy metals at 0.1 ppm.

Grade Significance: Technical grade Nitric Acid is specifically formulated for general industrial and laboratory applications where high reliability is required but the extreme purity of reagent-grade chemicals is not necessary.

CERTIFICATE OF ANALYSIS — TYPICAL VALUES

PARAMETER	UNIT	TYPICAL	MIN	MAX	TEST METHOD
Assay (wt%)	%	40.3	39	41	Titration with NaOH
Color (APHA)	APHA	10	—	20	ASTM D1209
Specific Gravity (20°C)	g/mL	1.25	1.24	1.26	Hydrometer
Residue After Ignition	%	0.0010	—	0.0050	Gravimetric
Heavy Metals (as Pb)	ppm	0.1	—	1	ICP-OES
Iron (Fe)	ppm	0.1	—	1	ICP-OES
Chloride (Cl^-)	ppm	0.2	—	1	Ion Chromatography
Sulfate (SO_4^{2-})	ppm	1	—	5	Turbidimetry

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

PHYSICAL & CHEMICAL PROPERTIES

Appearance	Clear, colorless liquid	**Odor**	Pungent, acrid odor
Form	Liquid	**Boiling Point**	83°C (181.4°F)
Melting / Freezing Point	-42°C (-43.6°F)	**Specific Gravity**	1.31
Solubility	Miscible with water, alcohol, and most organic solvents	**Molecular Formula**	HNO_3
Molecular Weight	63.013 g/mol	**Vapor Pressure (20°C)**	0.5 mmHg
Viscosity (25°C)	1.2 cP	**Refractive Index (20°C)**	1.335
Density (25°C)	1.2 g/mL		

APPLICATIONS

1. **Metal Processing** — Used extensively for metal etching and cleaning, ensuring surfaces are properly prepared for plating or coating applications.
2. **Chemical Manufacturing** — Serves as a critical reagent in the synthesis of various organic and inorganic compounds, including fertilizers and dyes.
3. **Laboratory Research** — Utilized as a standard acid in analytical chemistry for sample digestion and the preparation of metal standard solutions.
4. **Water Treatment** — Applied in pH adjustment and cleaning processes to maintain the efficiency of industrial water systems.
5. **Electronics** — Employed in the cleaning and etching of semiconductor materials to remove contaminants and create precise circuit patterns.

STORAGE & HANDLING

Proper storage is critical because Nitric Acid 40% is a powerful oxidizer that can intensify fires and cause severe chemical burns. It must be stored in a cool, well-ventilated area away from combustible materials and incompatible substances to prevent dangerous reactions and accidental inhalation hazards.

- Store in a cool, dry, well-ventilated area away from incompatible materials.
- Use corrosion-resistant containers (e.g., HDPE, glass) for storage.
- Avoid exposure to light and heat to maintain chemical stability.
- Wear appropriate personal protective equipment (PPE) including gloves and goggles when handling.

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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