

PRODUCT IDENTIFICATION

**Product Name:** Hydrochloric Acid 31% Technical Grade**CAS Number:** 7647-01-0**Molecular Formula:** ClH **Molecular Weight:** 36.46 g/mol**Grade:** Technical Grade**Purity / Concentration:** 31%**Synonyms:** Hydrochloric Acid 31%, Muriatic Acid 31%

PRODUCT OVERVIEW

Alliance Chemical offers high-quality Hydrochloric Acid 31% Technical Grade, a clear and potent corrosive liquid essential for industrial processing. With a verified assay of 31.5% and low trace impurities, this solution provides consistent performance for pH adjustment and chemical manufacturing.

Grade Significance: Technical Grade indicates that this product is manufactured for industrial and commercial applications where high-performance chemical activity is required, but pharmaceutical or food-grade purity levels are not necessary.

CERTIFICATE OF ANALYSIS — TYPICAL VALUES

PARAMETER	UNIT	TYPICAL	MIN	MAX	TEST METHOD
Assay (wt%)	%	31.5	30	32	Titration with standardized NaOH
Color (APHA)	APHA	2	—	5	APHA/Hazen visual comparison
Specific Gravity (20°C)	g/mL	1.175	1.15	1.2	Density measurement with pycnometer at 20°C
Residue After Ignition	%	0.0050	—	0.02	Gravimetric residue after ignition
Aluminum (Al)	ppm	0.05	—	0.5	ICP-OES
Arsenic (As)	ppm	0.0010	—	0.01	ICP-OES
Calcium (Ca)	ppm	0.05	—	0.5	ICP-OES
Chromium (Cr)	ppm	0.05	—	0.5	ICP-OES
Cobalt (Co)	ppm	0.05	—	0.5	ICP-OES
Copper (Cu)	ppm	0.05	—	0.5	ICP-OES
Heavy Metals (as Pb)	ppm	0.05	—	0.5	ICP-MS
Iron (Fe)	ppm	0.05	—	0.5	ICP-OES
Lead (Pb)	ppm	0.05	—	0.5	ICP-OES
Magnesium (Mg)	ppm	0.05	—	0.5	ICP-OES
Manganese (Mn)	ppm	0.05	—	0.5	ICP-OES
Nickel (Ni)	ppm	0.05	—	0.5	ICP-OES
Potassium (K)	ppm	0.05	—	0.5	ICP-OES
Sodium (Na)	ppm	0.05	—	0.5	ICP-OES
Zinc (Zn)	ppm	0.05	—	0.5	ICP-OES
Ammonium (NH ₄ ⁺)	ppm	0.5	—	5	Ion Chromatography (IC)
Chloride (Cl ⁻)	ppm	50	—	500.0	ICP-OES
Nitrate (NO ₃ ⁻)	ppm	5	—	50	Ion Chromatography (IC)
Phosphate (PO ₄ ³⁻)	ppm	10	—	50	Ion Chromatography (IC)
Sulfate (SO ₄ ²⁻)	ppm	20	—	100.0	Ion Chromatography (IC)
Substances Reducing KMnO ₄	—	Passes test	—	—	Potassium permanganate time test

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

PHYSICAL & CHEMICAL PROPERTIES

Appearance	Clear, colorless corrosive liquid	Odor	Pungent, irritating odor
Form	Liquid	Boiling Point	Not characterized for the 31% solution
Melting / Freezing Point	Not characterized for the 31% solution	Flash Point	Not applicable
Specific Gravity	1.155	Solubility	Highly water soluble, polar solvent compatible
Molecular Formula	ClH	Molecular Weight	36.46 g/mol
Vapor Pressure (20°C)	20 mmHg	Viscosity (25°C)	0.89 cP
Refractive Index (20°C)	1.334-1.335	Density (25°C)	1.18 g/mL
Partition Coefficient (log-P)	-2.0 (approximate for aqueous HCl solution)	Decomposition Temp.	Not applicable; decomposes with heat liberation of HCl gas

APPLICATIONS

1. **Water Treatment** — Used extensively to lower the pH of water in industrial and municipal treatment processes to maintain optimal chemical balance.
2. **Metalworking** — Highly effective for pickling processes, specifically removing rust and scale from metal surfaces to prepare them for finishing.
3. **Chemical Manufacturing** — Serves as a critical reagent in various synthetic chemical reactions and the production of inorganic compounds.
4. **Laboratory Analysis** — Commonly utilized in titrations and other precise analytical procedures requiring a standardized acid solution.

STORAGE & HANDLING

Due to its corrosive nature and potential to damage metal infrastructure, this acid must be stored in specialized, chemically resistant containers. Proper ventilation and secondary containment are vital to mitigate risks associated with respiratory irritation and accidental leaks.

- Store in a cool, dry, well-ventilated area away from incompatible materials.
- Use corrosion-resistant containers (e.g., HDPE, glass) for storage.
- Avoid contact with metals and strong bases to prevent exothermic reactions.
- Wear appropriate personal protective equipment (PPE) including gloves and goggles.
- Ensure proper ventilation in storage and handling areas to minimize inhalation risks.

AVAILABLE PACKAGING

- 1 Quart
- 1 Gallon
- 5 Gallon
- 15 Gallon
- 55 Gallon
- 275 Gallon
- 330 Gallon

SAFETY SUMMARY (CROSS-REFERENCE TO SDS)

Signal Word: **Danger**



Hazard Statements:

- H290: May be corrosive to metals
- H314: Causes severe skin burns and eye damage
- H335: May cause respiratory irritation

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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