

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 impurity levels, this product is ideal for pH adjustment and chemical synthesis.

Grade Significance: Technical Grade indicates that this product is optimized for industrial utility and manufacturing efficiency, balancing purity with cost-effectiveness for non-pharmaceutical applications.

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 as an effective agent to lower the pH levels of water in municipal and industrial treatment processes.
2. **Metalworking** — Functions as a powerful pickling agent to remove rust, scale, and surface impurities from metal components.
3. **Chemical Manufacturing** — Serves as a critical reagent in various chemical synthesis reactions and the production of organic compounds.
4. **Laboratory Analysis** — Widely utilized in titrations and analytical procedures requiring a standardized, reliable acid source.

STORAGE & HANDLING

Due to its corrosive nature, this acid must be stored in a cool, well-ventilated area in compatible, corrosion-resistant containers. Proper storage prevents the release of hazardous vapors and minimizes the risk of structural damage or chemical reactions with incompatible materials.

- 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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