TECHNICAL DATA SHEET

Hydrochloric Acid 31% Technical Grade

Revised: 04/27/2026

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

Hydrochloric Acid 31% Technical Grade is a highly concentrated, clear, and colorless corrosive liquid widely utilized for industrial pH control and metal surface treatment. With a verified assay of 31.5% and low impurity levels, this product provides consistent performance for demanding chemical applications.

Grade Significance: Technical Grade indicates that this product is manufactured for general industrial use where high performance is required, though it is not intended for pharmaceutical or food-grade 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**	108°C (226.4°F)
Melting / Freezing Point	-74°C (-101.2°F)	**Flash Point**	Not applicable
Specific Gravity	1.15	**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 a primary chemical to effectively lower the pH levels in municipal and industrial water treatment processes.
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 organic and inorganic chemical synthesis reactions.
4. **Laboratory Analysis** — Commonly used in analytical procedures and titrations where a reliable, standardized concentration of acid is required.

STORAGE & HANDLING

Proper storage is critical because this acid is highly corrosive and emits toxic fumes, posing severe risks to skin and respiratory health. It must be stored in a cool, well-ventilated area using compatible containment to prevent hazardous reactions and environmental exposure.

- 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:

- H314: Causes severe skin burns and eye damage [Danger Skin corrosion/irritation]
- H331: Toxic if inhaled [Danger Acute toxicity, inhalation]

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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