

TECHNICAL DATA SHEET

Hydrochloric Acid 20% ACS Grade

|            |                                 |            |
|------------|---------------------------------|------------|
| CAS NUMBER | ALLIANCE CODE                   | GENERATED  |
| 7647-01-0  | hydrochloric-acid-20-accs-grade | 2026-07-17 |

1. IDENTITY & COMPOSITION

|                                   |                                 |
|-----------------------------------|---------------------------------|
| PRODUCT NAME                      | ALLIANCE CODE                   |
| Hydrochloric Acid 20% ACS Grade   | hydrochloric-acid-20-accs-grade |
| GRADE                             | CONCENTRATION                   |
| —                                 | —                               |
| CAS NUMBER                        | FORMULA                         |
| 7647-01-0 <a href="#">PubChem</a> | ClH <a href="#">PubChem</a>     |
| MOLECULAR WEIGHT                  | PRODUCT TYPE                    |
| 36.46 <a href="#">PubChem</a>     | solution                        |

AVAILABLE GRADES SAME CAS, ALTERNATE GRADES AND CONCENTRATIONS

| GRADE                        | CONCENTRATION | TYPICAL ASSAY | SKU                                         |
|------------------------------|---------------|---------------|---------------------------------------------|
| <a href="#">THIS GRADE</a> — | —             | —             | current                                     |
| ACS Reagent                  | 37%           | —             | hydrochloric-acid-37-accs-reagent-grade     |
| Technical Grade              | 37%           | —             | hydrochloric-acid-37-hcl-37-technical-grade |
| ACS                          | 31%           | —             | hydrochloric-acid-31-accs-grade             |
| Technical Grade              | 31%           | —             | hydrochloric-acid-31-technical-grade        |
| —                            | 25%           | —             | hydrochloric-acid-25-accs-grade             |

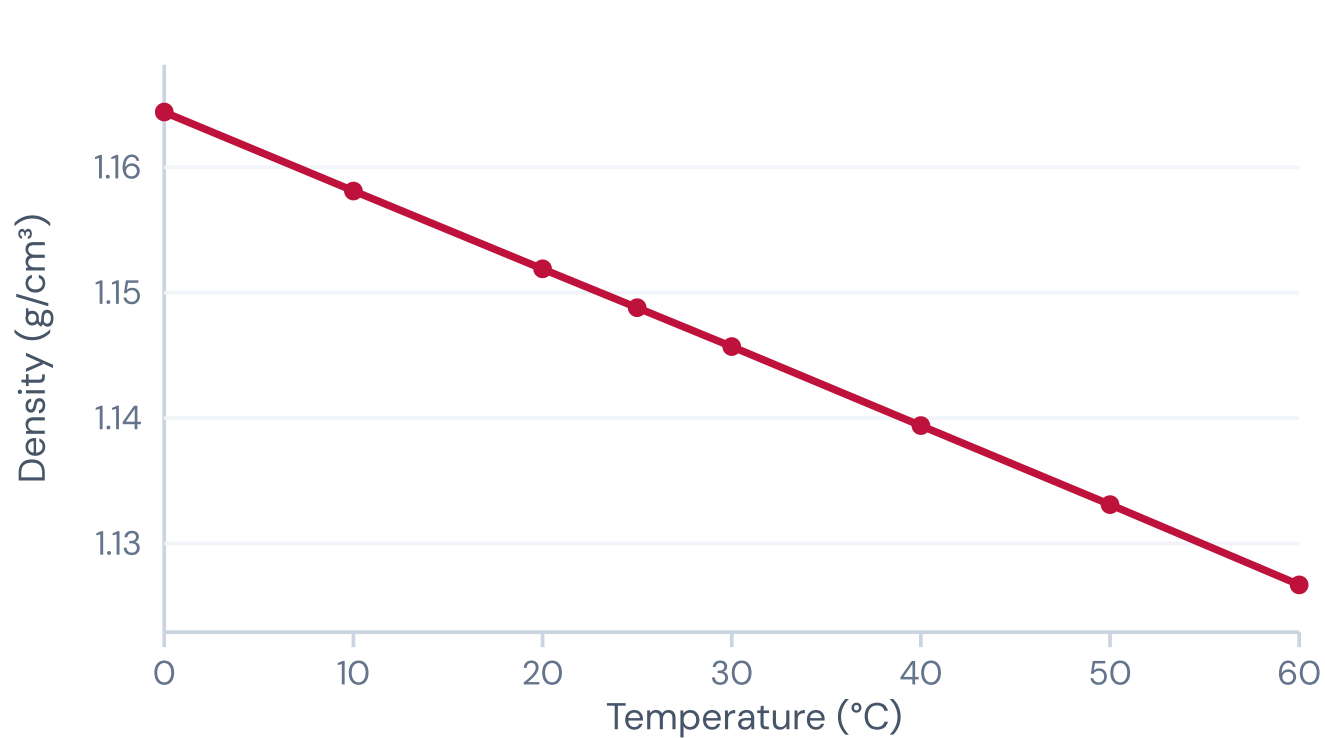
| GRADE              | CONCENTRATION | TYPICAL<br>ASSAY | SKU                                  |
|--------------------|---------------|------------------|--------------------------------------|
| —                  | 25%           | —                | hydrochloric-acid-25-technical-grade |
| ACS                | 15%           | —                | hydrochloric-acid-15-acs-grade       |
| Technical<br>Grade | 15%           | —                | hydrochloric-acid-15-technical-grade |
| ACS                | 5%            | —                | hydrochloric-acid-5-acs-grade        |
| Technical<br>Grade | 5%            | —                | hydrochloric-acid-5-technical-grade  |
| —                  | —             | —                | hydrochloric-acid-10-acs-grade       |
| —                  | —             | —                | hydrochloric-acid-10-technical-grade |

Typical assay shown is the rolling-window mean from the sibling product's most recent lots. Grade selection drives downstream end-use — verify the sibling grade matches your specification before substitution.

## PROPERTY CURVES

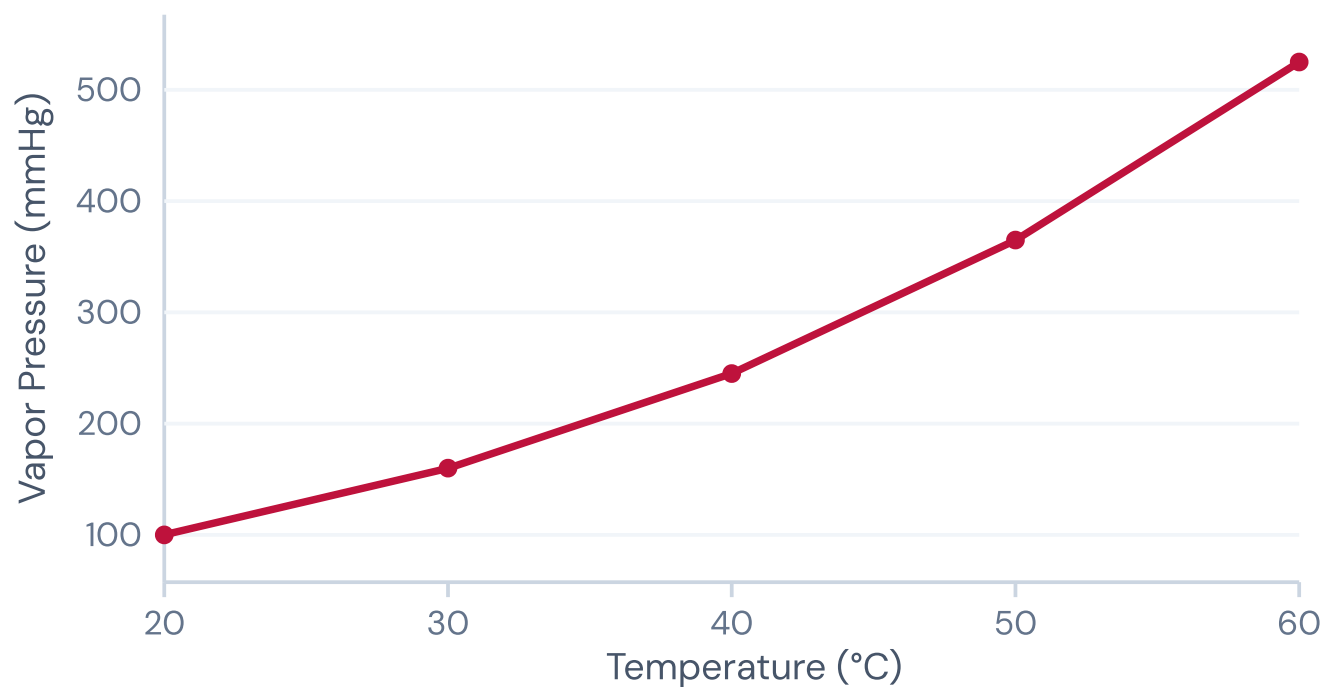
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### Density vs. Temperature (31%)



Source: [Perry's Chemical Engineers' Handbook \(31% reference\)](#)

### Vapor Pressure vs. Temperature (31%)



Source: [Perry's Chemical Engineers' Handbook \(31% reference\)](#)

Reference curves drawn from public engineering data. For engineering use, consult the cited source for the underlying tabulated values.

## MATERIALS OF CONSTRUCTION

| MATERIAL                                 | RATING                 | MAX T<br>(°C) | NOTES                                             | SOURCE                                               |
|------------------------------------------|------------------------|---------------|---------------------------------------------------|------------------------------------------------------|
| Buna-N (NBR)<br>Elastomer                | Poor                   | —             | Swells and degrades                               | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| EPDM<br>Elastomer                        | Good                   | 40            | Acceptable but FKM preferred                      | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| Viton (FKM)<br>Elastomer                 | Good                   | 80            | Acceptable for HCl gaskets up to 37 %.            | <a href="#">Parker O-ring Chemical Compatibility</a> |
| PTFE<br>Fluoropolymer                    | Excellent              | 200           | Lining and gaskets                                | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| PVDF (Kynar)<br>Fluoropolymer            | Excellent              | 120           | Excellent for HCl piping at elevated temperature. | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| Borosilicate<br>Glass<br>Glass Ceramic   | Excellent              | 100           | Inert to most strong acids (avoid HF).            | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| Glass<br>(borosilicate)<br>Glass Ceramic | Excellent              | 100           | Inert under all conditions                        | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| 316 stainless<br>steel<br>Metal          | Poor                   | 25            | Severe pitting; use only for vapors               | <a href="#">Cole-Parmer Chemical Compatibility</a>   |
| 316L Stainless<br>Steel<br>Metal         | Fair                   | 25            | Limited HCl service; pitting above 10 %.          | <a href="#">NACE TM0177</a>                          |
| Aluminium<br>Metal                       | Not<br>recommen<br>ded | —             | Reacts to form H <sub>2</sub> gas                 | <a href="#">Cole-Parmer Chemical Compatibility</a>   |

| MATERIAL                              | RATING                 | MAX T<br>(°C) | NOTES                                  | SOURCE                                             |
|---------------------------------------|------------------------|---------------|----------------------------------------|----------------------------------------------------|
| Carbon steel<br>Metal                 | Not<br>recommen<br>ded | —             | Aggressive corrosion                   | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Carbon Steel<br>Metal                 | Not<br>recommen<br>ded | —             | Catastrophic corrosion;<br>never use.  | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Hastelloy C-<br>276<br>Metal          | Excellent              | 90            | Premium HCl alloy                      | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Inconel 625<br>Metal                  | Good                   | 60            | Acceptable for dilute<br>service       | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| Tantalum<br>Metal                     | Excellent              | 100           | Best-in-class but<br>expensive         | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| CPVC<br>Thermoplastic                 | Excellent              | 90            | Preferred for elevated<br>temperature  | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| FRP (vinyl<br>ester)<br>Thermoplastic | Good                   | 60            | Common bulk-storage tank<br>material   | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| HDPE<br>Thermoplastic                 | Excellent              | 60            | Standard drum / IBC<br>material        | <a href="#">Cole-Parmer Chemical Compatibility</a> |
| PVC<br>Thermoplastic                  | Excellent              | 60            | Standard piping for<br>ambient service | <a href="#">Cole-Parmer Chemical Compatibility</a> |

Ratings reflect the service envelope (concentration × temperature) shown. Always confirm against your specific duty cycle and contact-time before equipment selection. The most cautious rating across overlapping references is shown.

REGULATORY & TRANSPORT

DOT / 49 CFR

UN NUMBER

UN1789 Vendor Label

PACKING GROUP

II Adjudicated

HAZARD CLASS

8 Adjudicated

PROPER SHIPPING NAME

Hydrochloric acid Adjudicated

GHS / OSHA HAZCOM 2012

SIGNAL WORD

Danger Adjudicated

H-CODES (HAZARD STATEMENTS)

H290, H314, H335 ECHA CLP Annex VI

P-CODES (PRECAUTIONARY STATEMENTS)

P234, P260, P261, P264, P271, P280,  
P301+P330+P331, P303+P361+P353, P304+P340,  
P305+P351+P338, P310, P321, P363, P390,...

OCCUPATIONAL EXPOSURE LIMITS

OSHA PEL (29 CFR 1910.1000)

5 ppm ceiling OSHA 29 CFR 1910.1000

ACGIH TLV

— unknown

NIOSH REL

5 ppm ceiling NIOSH Pocket Guide

NIOSH IDLH

50 ppm NIOSH Pocket Guide

Transport descriptions reflect 49 CFR 172.101 lookup at time of publication. Sourced data: ECHA CLP Annex VI for harmonised classifications, NIOSH Pocket Guide for REL/IDLH, OSHA Z-Tables for PEL. Always verify against the latest regulatory text before shipment-critical decisions.

Supplier Qualification Packet

One zipped download containing the TDS, SDS, latest lot COA (when available), and a fresh Letter of Continuing Guaranty for Hydrochloric Acid 20% ACS Grade. Every file included is SHA-256 hashed and listed in a manifest your QA team can audit.

CATALOG EQUIVALENTS CROSS-REFERENCE VS MAJOR CHEMICAL SUPPLIERS

HONEYWELL

| SKU                    | GRADE | CONC. | MATCH              | NOTES                  |
|------------------------|-------|-------|--------------------|------------------------|
| <a href="#">258148</a> | ACS   | 37%   | <span>Exact</span> | Fluka brand, ACS grade |

## SIGMA-ALDRICH

| SKU                    | GRADE       | CONC. | MATCH   | NOTES                                           |
|------------------------|-------------|-------|---------|-------------------------------------------------|
| <a href="#">320331</a> | ACS Reagent | 37%   | Exact   | ACS Reagent grade, 37% in water                 |
| <a href="#">258148</a> | Technical   | 37%   | Partial | Technical grade — lower spec but same chemistry |

Cross-references are informational. Confirm against the manufacturer's current specification before substitution. Competitor trademarks are property of their respective owners.

## APPLICATION GUIDANCE

Hydrochloric Acid 20% ACS Grade is a strong mineral acid used across pH control, metal pickling, food and beverage processing, and chemical synthesis. Grade and concentration determine the appropriate end-use and materials.

- Metal pickling, etching, and surface preparation
- pH adjustment in water and wastewater treatment
- Regeneration of ion-exchange resins
- Chemical manufacturing and synthesis
- Food and beverage processing (food-grade only)

Always add acid to water, never water to acid. Use lined or fluoropolymer piping rated for the concentration; carbon steel is not suitable for dilute acid service.

## STORAGE & HANDLING

### RECOMMENDED STORAGE

Cool, dry, well-ventilated area in compatible containers (lined steel, HDPE, FRP — verify per concentration). Segregate from bases, oxidizers,...

### INCOMPATIBILITIES

Bases, active metals (aluminium, zinc), cyanides, sulfides, oxidizing agents. Reacts violently with organic anhydrides.

### HANDLING PRECAUTIONS

Use full PPE including face shield, acid-resistant gloves and apron. Add acid to water slowly with stirring; never reverse. Ventilation required.

### SHELF LIFE

24 months from date of manufacture in sealed, original packaging

For full hazard, PPE, and emergency response guidance, refer to the Safety Data Sheet (SDS) for this product. The SDS controls in all cases where guidance differs.

PACKAGING & LOGISTICS

SHIPPING DESCRIPTION (US DOT)

UN1789, Hydrochloric acid, 8, PG II

Sourced from 49 CFR 172.101. Confirm against shipping documents and carrier requirements before tender.

NMFC CLASS  
60

PLACARD  
Corrosive

PACKING GROUP  
PG II

REVISION HISTORY

Last reviewed 2026-05-20 by Hossein Taki, Vice President (Vice President, Alliance Chemical · CAGE Code 1LT50 · DOT Hazmat Registrant #2188383).

| VERSION | DATE | CHANGE | TRIGGER |
|---------|------|--------|---------|
|---------|------|--------|---------|

|     |            |                                                                    |         |
|-----|------------|--------------------------------------------------------------------|---------|
| 1.0 | 2026-05-20 | Initial URL-first TDS published from canonical chemistry registry. | initial |
|-----|------------|--------------------------------------------------------------------|---------|

This Technical Data Sheet is provided for technical reference. The Safety Data Sheet (SDS) controls in all cases where guidance differs. Values reflect Alliance Chemical canonical data at time of generation; subsequent revisions are recorded in the Revision History above.

ALLIANCE CHEMICAL

Order Hydrochloric Acid 20% ACS Grade

Bulk & packaged sizes · COA/SDS ships with every order