

# Hydrochloric Acid

Safety data sheet in the 16-section GHS format · CAS 7647-01-0

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## 1. Identification of the substance and of the supplier

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product name      | Hydrochloric Acid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Synonyms          | muriatic acid, HCl acid, spirit of salt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| C.A.S. number     | 7647-01-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Molecular formula | HCl (aqueous solution)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Grade supplied    | 30% – 33% commercial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Product group     | Mineral & Organic Acids                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Identified uses   | Steel & galvanising, Water treatment, Oil & bore wells, Food processing, Chemicals & pharma, Textiles & leather                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Supplier          | Velora Chemicals Private Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Emergency contact | Medical, fire or spill emergency — call the emergency services first: 112 (all-India), 101 fire, 108 ambulance. Velora Chemicals Private Limited does not at present operate a 24-hour chemical emergency advice line, and this sheet does not pretend otherwise. Every consignment despatched by road carries an emergency information panel under rule 134 of the Central Motor Vehicles Rules 1989 bearing a number from which expert advice on this material can be obtained, and the producer's safety data sheet issued with the consignment carries the producer's own 24-hour number where one is operated. For product, grade and documentation queries in business hours: +91 99255 22674. |

## 2. Hazards identification

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GHS signal word       | Danger                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Hazard classification | Skin Corr. 1B — H314; STOT SE 3 — H335 (EU harmonised, CLP Annex VI index 017-002-01-X; the Annex VI specific concentration limits place 25% and above into Skin Corr. 1B and 10% and above into STOT SE 3, so 30-33% carries both); Met. Corr. 1 — H290 (supplier self-classification, not in Annex VI). Note the harmonised classification steps down between 10% and 25% to Skin Irrit. 2 — H315 plus Eye Irrit. 2 — H319 with STOT SE 3 — H335, so a diluted product is classified differently |

## 3. Composition / information on ingredients

|                  |                                                                     |
|------------------|---------------------------------------------------------------------|
| Substance        | Hydrochloric Acid                                                   |
| C.A.S. number    | 7647-01-0                                                           |
| Molecular weight | 36.46 g/mol (HCl solute; not the molar mass of the 30-33% solution) |
| Composition      | 30% – 33% commercial                                                |

## 4. First-aid measures

|                     |                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Eye contact</b>  | Immediately flush the eye with plenty of gently flowing water for at least 15 minutes, holding the eyelids apart; remove contact lenses if present and easy to do, and continue rinsing. Do not use any neutralising agent. Obtain immediate medical attention and continue irrigation during transport.                                                   |
| <b>Skin contact</b> | Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes under the running water; then wash with soap and water. Do not apply neutralising agents or ointments. Get medical attention immediately. Launder contaminated clothing before reuse.                                                        |
| <b>Inhalation</b>   | Move the casualty to fresh air at once and keep at rest in a half-upright position. Give oxygen if breathing is difficult; if breathing has stopped, give artificial respiration. HCl vapour can cause delayed laryngeal oedema and pulmonary oedema — obtain immediate medical attention and insist on medical observation even if the person feels well. |
| <b>Ingestion</b>    | Do NOT induce vomiting. Do NOT give sodium bicarbonate or any other neutralising agent (gas evolution in a burned oesophagus risks perforation). Rinse the mouth with water. If the casualty is fully conscious, give small sips of water to dilute. Give nothing by mouth to an unconscious person. Get medical attention immediately.                    |

## 5. Fire-fighting measures

|                                                   |                                                                                                                                                                                                                                                                             |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flash point</b>                                | Not flammable (not applicable). Caution: reaction with metals liberates flammable hydrogen gas                                                                                                                                                                              |
| <b>Suitable extinguishing media</b>               | Water fog, foam, dry chemical powder or carbon dioxide, chosen to suit the surrounding fire. The substance itself does not contribute fuel.                                                                                                                                 |
| <b>Unsuitable extinguishing media</b>             | Do not use a high-pressure water jet: it will spread the material and the fire.                                                                                                                                                                                             |
| <b>Special hazards arising from the substance</b> | Hazardous gases and decomposition products may be formed in a fire, from this substance or from its packaging and the materials stored with it. Packaging and pallets are themselves a substantial fire load. That is true even though the contents do not contribute fuel. |
| <b>Advice for fire-fighters</b>                   | Fire-fighters must wear self-contained breathing apparatus and full protective clothing. Keep unnecessary personnel away and upwind. Prevent firefighting run-off from entering drains, surface water or groundwater.                                                       |

## 6. Accidental release measures

Keep unnecessary personnel away and upwind, and ventilate. Wear the protective equipment in section 8 before approaching. Stop the leak if it is safe to do so, then bund or dike the spill and prevent entry to drains, surface water and groundwater. Absorb with an inert absorbent and collect into labelled, closable containers for disposal under section 13. Do not return spilled material to the original container.

## 7. Handling and storage

- Hydrochloric acid fumes. Storage tanks need venting and preferably a scrubber, and the fumes will corrode nearby steelwork and electrical fittings even without direct contact — site the tank with that in mind.
- Mild steel is not an option. Storage and lines must be FRP, rubber-lined steel, HDPE or PVC. Tankers are lined accordingly.
- Keep it away from hypochlorite. Acid plus hypo releases chlorine gas, and in Indian plants the usual route to that accident is a cleaning acid and a hypo drum sharing a bund, a pump or a hose. Hydrochloric acid also attacks most metals to release hydrogen, and contact with sulphides — in an effluent sump, for instance — releases hydrogen sulphide. Segregate it and label the lines.
- If you dilute on site, always add the acid into the water, never water into the acid, and control the rate — the mixing is exothermic.
- Class 8 corrosive. Full acid PPE including respiratory protection at the unloading point, and a safety shower within reach.

**Storage:** Store in a cool, well-ventilated area in closed, vented containers of HDPE, FRP, PVC/CPVC, rubber-lined steel or PTFE-lined equipment; Chem-Lab specifies 2-25 C. Never use uncoated metal. Keep segregated from bases, oxidisers (especially hypochlorite), metals, cyanides and sulphides, and from food and feedstuffs. The acid fumes, and the fumes corrode metal structures, switchgear and adjacent stock some distance away — locate the store accordingly and use acid-resistant bunding. Provide eyewash, safety shower and a lime or soda ash spill kit.

## 8. Exposure controls / personal protection

Engineering controls. Enclose every transfer, tipping, bag-slitting and sampling point and fit local exhaust extraction at each, and keep airborne concentrations below the limit in force at the place of use. Provide an eyewash within reach of the working position, and a safety shower wherever the material is classified corrosive or irritant or is handled in quantity. Do not eat, drink or smoke in the handling area; wash before breaks. Where no limit is stated above, occupational exposure limits vary by jurisdiction: check the limit in force at the place of use and the producer's sheet for the grade supplied, and record which value your assessment adopted. Select eye, skin and respiratory protection on the strength of a measured or modelled exposure assessment, not on this sheet alone.

## 9. Physical and chemical properties

|                                              |                                                                                                                                                                                                                      |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Appearance</b>                            | Clear, colourless to light yellow fuming liquid with a sharp, pungent, suffocating odour; commercial grade is frequently yellow-green from dissolved iron                                                            |
| <b>Physical state</b>                        | Liquid (aqueous solution, 30-33% w/w HCl)                                                                                                                                                                            |
| <b>Melting / freezing point</b>              | Approx. -30 C (INEOS SDS for 31-36.7% grade); -25 C is quoted for 37% acid (Chem-Lab SDS). Strength-dependent                                                                                                        |
| <b>Boiling point</b>                         | >100 C for the 31-36.7% grade (INEOS SDS). The value is not a single sharp figure because HCl gas is evolved on heating; a precise boiling point for 30-33% is Not available                                         |
| <b>Relative density</b>                      | 1.16-1.18 g/cm <sup>3</sup> at 20 C (31% solution, Columbus Chemical SDS); 1.16-1.19 g/cm <sup>3</sup> for the 31-36.7% range (INEOS SDS). A figure specific to exactly 30-33% should be taken from the producer CoA |
| <b>Solubility in water</b>                   | Completely miscible with water in all proportions                                                                                                                                                                    |
| <b>pH</b>                                    | <1 (as supplied, 30-33%)                                                                                                                                                                                             |
| <b>Flash point</b>                           | Not flammable (not applicable). Caution: reaction with metals liberates flammable hydrogen gas                                                                                                                       |
| <b>Auto-ignition / ignition temperature</b>  | Not available                                                                                                                                                                                                        |
| <b>Explosive / dust-explosion properties</b> | Not available                                                                                                                                                                                                        |
| <b>Vapour pressure</b>                       | Not available                                                                                                                                                                                                        |
| <b>Vapour density</b>                        | Not available                                                                                                                                                                                                        |
| <b>Partition coefficient (log Pow)</b>       | Not available                                                                                                                                                                                                        |
| <b>Particle characteristics</b>              | Not available                                                                                                                                                                                                        |
| <b>Molecular weight</b>                      | 36.46 g/mol (HCl solute; not the molar mass of the 30-33% solution)                                                                                                                                                  |

## 10. Stability and reactivity

**Incompatible materials** Bases and alkalis including caustic soda and ammonia (violent exothermic neutralisation); oxidising agents, especially sodium hypochlorite/bleach, chlorates, permanganates, chromates, nitric acid and hydrogen peroxide (evolves toxic chlorine gas); metals including aluminium, zinc, iron, mild steel, copper and galvanised steel (liberates flammable hydrogen); cyanides (evolves hydrogen cyanide); sulphides (evolves hydrogen sulphide); carbides (evolves acetylene); amines; aldehydes and formaldehyde; acetic anhydride; metal acetylides; and most plastics/elastomers not rated for concentrated HCl

**Conditions to avoid** Store in a cool, well-ventilated area in closed, vented containers of HDPE, FRP, PVC/CPVC, rubber-lined steel or PTFE-lined equipment; Chem-Lab specifies 2-25 C. Never use uncoated metal. Keep segregated from bases, oxidisers (especially hypochlorite), metals, cyanides and sulphides, and from food and feedstuffs. The acid fumes, and the fumes corrode metal structures, switchgear and adjacent stock some distance away — locate the store accordingly and use acid-resistant bunding. Provide eyewash, safety shower and a lime or soda ash spill kit.

## 11. Toxicological information

The health hazards classified for this substance are listed in section 2, and the corresponding first-aid measures in section 4. Numerical toxicological endpoints are not reproduced here: refer to the producer's safety data sheet for the grade supplied, and to the ECHA and PubChem entries for the substance.

## 12. Ecological information

Where section 2 or section 14 classifies this substance as hazardous to the aquatic environment, prevent any release to drains, surface water or groundwater and treat aqueous effluent before discharge. Otherwise, refer to the producer's sheet.

## 13. Disposal considerations

Dispose of the substance and its container through an authorised facility under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 where the waste is scheduled under those Rules, and otherwise as non-hazardous industrial waste, in each case under the conditions of the State Pollution Control Board consent in force at the site. Whether a particular waste stream is scheduled depends on the substance and on what it has been mixed with, so classify the waste before consigning it. Do not reuse empty containers for any other purpose.

## 14. Transport information

**UN number** UN 1789

**Class** 8 (Corrosive)

**Packing group** II

**Proper shipping name** HYDROCHLORIC ACID

## 15. Regulatory information

Supply in India is subject to the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 where the substance is scheduled, and to any product-specific licensing named on the product page. Classification and labelling follow the GHS as adopted in the jurisdiction of use.

**Note:** Aqueous hydrochloric acid of any commercial strength ships under the single entry UN 1789; there is no separate UN number for 30% versus 35%. However the packing group does change with strength — 30-33% commercial acid is Packing Group II, and UN 1789 also carries a Packing Group III entry for weaker solutions, so the PG must be assigned from the actual strength rather than copied. Anhydrous hydrogen chloride GAS is an entirely different entry: UN 1050, Class 2.3 toxic gas with an 8 subsidiary hazard (ILO ICSC 0163) — do not transfer any data between the gas and the solution. CAS 7647-01-0 is shared by the gas and the solution, so a CAS match alone does not tell you which material a document describes. The molar mass of 36.46 g/mol is for HCl, not the solution. Indian commercial 'muriatic acid' at around 30-33% is the same material; the yellow colour is iron contamination and does not affect the classification. Never mix with bleach or hypochlorite — this is a recurring cause of chlorine gas casualties in cleaning and effluent applications.

## 16. Other information

**Version** 1.0

|                                          |                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of issue                            | 07 October 2026                                                                                                                                                                                                                                                                                                        |
| Supersedes                               | No previous version                                                                                                                                                                                                                                                                                                    |
| Regulatory basis as at the date of issue | EU CLP Regulation 1272/2008 as amended, including Annex VI harmonised classifications; UN Model Regulations and the IMDG Code Amendment 42-24, mandatory from 1 January 2026; ADR 2025; and, in India, the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 and the Central Motor Vehicles Rules 1989. |

**How this sheet was compiled and what governs.** This sheet was prepared by Velora Chemicals Private Limited as the supplier, from PubChem, the ECHA CLP inventory including Annex VI harmonised classifications, ILO International Chemical Safety Cards and published producer safety data sheets. Values that could not be confirmed from those sources are shown as "Not available" rather than estimated. **The producer's safety data sheet for the specific grade and lot supplied is the governing document** and is issued with the consignment; where the two differ, the producer's sheet prevails. This sheet carries no warranty of the properties of any particular batch. Velora Chemicals Private Limited is a bulk supplier and trader, not a manufacturer.

**Sources consulted:** [https://www.ineos.com/globalassets/ineos-group/businesses/ineos-koh/product-resources/safety-data-sheet\\_hydrochloric-acid\\_original-id-150557.pdf](https://www.ineos.com/globalassets/ineos-group/businesses/ineos-koh/product-resources/safety-data-sheet_hydrochloric-acid_original-id-150557.pdf); <https://www.columbuschemical.com/MSDS/SDS/Hydrochloric%20Acid%2031%25%20Solution%208732.pdf>; <https://deca.upc.edu/en/laboratories/latem/security/reactius-quimics/hydrochloric-acid-37-chemlab.pdf>; [https://chemicalsafety.ilo.org/dyn/icsc/showcard.display?p\\_card\\_id=0163&p\\_version=2&p\\_lang=en](https://chemicalsafety.ilo.org/dyn/icsc/showcard.display?p_card_id=0163&p_version=2&p_lang=en); <https://www.hazmattool.com/info.php?language=en&a=Hydrochloric+acid&b=UN1789&c=8>