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## Technical Bulletin - KPM-103

# Safe Use and Handling of Hydrochloric Acid (PV) - HCl

CAS Number: **7647-01-0**

Packing Group: **II**

Hazard Classification: **8, Corrosive**

## About Us

Kredence Electronics Materials India Pvt. Ltd has been providing high quality, Photovoltaic and Electronic grade chemicals to their customers throughout India and internationally since 2015. We at Kredence are committed to customer satisfaction achieved by clearly understanding the customers' needs and fulfilling those requirements through continual improvement of products, services, and the quality management system. In addition to that, **our company values the safety and well-being of our employees, customers, community, and the environment surrounding us. Our highly trained and experienced staff uses specialized equipment and technology to certify our customers receive quality service. Kredence Electronics Materials performs routine sample analysis to ensure grade specification requirements are met.**

## Purpose

When working with hazardous materials on a day-to-day basis, it is important to be aware of the chemicals' properties, risks, and safety precautions that need to be followed. This Technical Bulletin serves the purpose to educate our customers and employees about the chemical nature, safety, and provisions associated with Hydrochloric Acid (HCl).

Hydrochloric Acid EL / PV Grade 36.5 +/- 1% is currently provided by Kredence Electronics Materials India Pvt. Ltd. (Other concentrations/ specifications can be available)

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## Product Overview

Hydrochloric Acid is a strong, clear, colorless to light yellow acid with a pungent odor. HCl's reactivity is stable under normal conditions. Although HCl (in very small concentrations) is produced in the human body, it is very harmful to our skin, eyes, mucous membranes, and respiratory tract if exposed to high concentrations. Hydrochloric acid applications include: remove rust/iron oxides from iron and steel, produce inorganic compounds, control pH, lab use as acidifying reagent and for titrations, and others. Hydrochloric Acid 36.5 +/- 1% PV/ EL grade (HCl), which is offered by our company, is used in: photovoltaic industry to purify silicon by absorbing metallic residues from wafer surfaces. Hydrofluoric acid can be harmful to your health if exposed to greater concentrations for a long period of time. Refer to [OSHA](#) for exposure limit guidelines.

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## Safety

ALWAYS wear PPE - goggles, gloves, acid-resistant clothing, respiratory protection (only in the presence of vapors and aerosols)

Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

Make sure work area is well ventilated

First-Aid Kit should ALWAYS be readily available

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## Handling

Wash thoroughly after handling HCl.

Handle with precaution to avoid spillage/splashing and exposure.

DO NOT let material enter drain

Use only outdoors or in a well-ventilated area.

When handling HCl, DO NOT carry the bottles by caps or necks.

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## Storage

Store in a cool, dry, ventilated area. It is preferable to store HCl outdoors as the building can corrode due to hydrochloric acid mist. Indoor storage is allowable if buildings are coated with acid-resistant paint or acid-resistant material is used in the construction.

Containers for storage should be tightly closed

Keep only in original packaging.

Keep away from strong bases and metals.

Keep away from incompatible materials such as oxidizing agents, organic materials, metals and alkalis.

Store hydrochloric acid apart from oxidants (in particular, nitric acid or chlorates) and combustibles, as well as cyanides or sulfides.

Refer to Figure 1 on Page 3 for appropriate storage.

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## Transport

Safely use forklift and trolley to transport materials within the facility; if transporting containers that hold HCl, ALWAYS use a cart whether material is present in the container or not.

Before transporting, ALWAYS inspect the containers for damage and/or leaks

Can be transported by air, land, and water; however, ensure there are no leaks and all lids are tightly sealed.

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## First-Aid

- If inhaled, move the individual to fresh air and contact a medical doctor.

- If ingested, do not induce vomiting. Instead, give two glasses of water and contact a medical doctor.

- If exposed to skin, remove contaminated clothing and wash the area with plenty of water. Contact a medical doctor.

- If exposed to eyes, wash with plenty of water and remove contact lenses. Contact an Ophthalmologist.

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**\*If exposed to Hydrochloric Acid, immediately follow First-Aid procedures as stated in MSDS.**

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## References

(1.) American Chemistry Council, "Hydrochloric acid: Muriatic acid: Chemical safety facts," May(7), 2020, Retrieved: February 04, 2021, <https://www.chemicalsafetyfacts.org/hydrochloric-acid/>.

(2.) J. G. Speight, "Industrial Inorganic Chemistry" *Environmental Inorganic Chemistry for Engineers*, Butterworth-Heinemann, 2017, Ch.3 Pages 111-169, ISBN 9780128498910.



- (3.) M. Abdollahi and S. Nikfar, "Hydrochloric Acid" *Encyclopedia of Toxicology (Third Edition)*, Academic Press, Editor(s): Philip Wexler, 2014, Pages 960-963, ISBN 9780123864550.
- (4.) M. J. Brandt, K. M. Johnson, A. J. Elphinston, D. D. Ratnayaka, "Chemical Storage, Dosing and Control" *Twort's Water Supply (7th Edition)*, Butterworth-Heinemann, 2017, Ch.12 Pages 513-552, ISBN 9780081000250.
- (5.) National Center for Biotechnology Information. "PubChem Compound Summary for CID 313, Hydrochloric acid" *PubChem*, <https://pubchem.ncbi.nlm.nih.gov/compound/Hydrochloric-acid>. Accessed 5 February, 2021.
- (6.) Permanent Committee on Technology and Safety Japan Soda Industry Association, "Safe Handling of Hydrochloric Acid," Japan Soda Industry Association, Japan, Jul.(15), 1982, Revised: Nov.(20), 2006, Accessed: 6 Feb, 2021, [https://www.jsia.gr.jp/data/handling\\_02e.pdf](https://www.jsia.gr.jp/data/handling_02e.pdf)
- (7.) S.B. DuTeaux, "Acute Health Exposure Guidelines" *Encyclopedia of Toxicology (Third Edition)*, Academic Press, Editor(s): Philip Wexler, 2014, Pages 79-83, ISBN 9780123864550.



Figure 1: Hydrochloric Acid (HCl) PV grade stored in an IBC with proper labeling. As shown above, use of color coding is incorporated for easy visual identification (black taping for HCl). All HCl at our facility are stored with compatible material.



<b>Hydrochloric Acid 36.5%</b>	<b>Photovoltaic Grade</b>
	<b>UN1789</b>
<b>Hazard messages :</b> <ul style="list-style-type: none"><li>• Toxic by Inhalation.</li><li>• Corrosive to Metals.</li><li>• Causes Severe Skin Burns.</li><li>• Causes Severe Eye Damage.</li><li>• Prolonged or Repeated Exposure May Cause Damage to Organs.</li></ul>	<b>DANGER</b>
<b>Hazard Prevention :</b> <ul style="list-style-type: none"><li>• If contact with skin, eyes flush with plenty of water and consult a physician immediately.</li><li>• If feeling uncomfortable, seek medical attention.</li><li>• Put on suitable protective clothing, wear gloves and goggles/helmet.</li><li>• Seal the container firmly and store it in a well ventilated area.</li></ul>	<b>Potassium Hydroxide</b> <b>Class 8 PG - II</b> Molecular Weight 36.46g/mol CAS No. 7647-01-0
If you need more detailed information, please refer to the SDS.	<b>Product Code : H0001</b> <b>Pack Size : 900 Ltr.</b>
<b>Important:</b> <ul style="list-style-type: none"><li>• No liability accepted for accidents arising while handling or use.</li><li>• Empty container before disposal.</li><li>• Disposal to be done as per the local Govt. rules applicable.</li></ul>	
	<small>Kredence Performance Materials (India) Pvt. Ltd. 301, Block-C, C-Square, Sarabhai Campus, Vadodara-390023, Gujarat, India.</small>
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Figure 2: Customized product label included on all IBCs and containers that customers receive from Kredence. Label includes important product information.

**DISCLAIMER: Kredence Electronics Materials India Pvt. Ltd. provides the information contained in this bulletin in good faith, but makes no representation as to its comprehensiveness or completeness. This document serves as a guide for appropriate precautionary measures of safety and handling of the material stated herein. Individuals receiving the information should**



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