

Doc. # **HCl-MSDS-02**Rev. # **00**Effective Date: **01.01.2026**

**TITLE:** MATERIAL SAFETY DATA SHEET (MSDS)  
HYDROCHLORIC ACID

**Section 1: Chemical Product and Company Identification**

**Product Name:** Hydrochloric Acid**Contact Information:** ITTEHAD CHEMICALS LIMITED  
G.T.ROAD, KALA SHAH KAKU**Chemical Name:** Not applicable**Web:** www.ittehadchemicals.com/**Trade Name:** Hydrochloric Acid**E-mail:** info@ittehadchemicals.com**Synonyms:** Aqueous Hydrogen Chloride; Muriatic Acid **Phone No.** 0423-7950222-25**Chemical formula:** Not applicable**Recommended Use:** It is used in textiles, steel and galvanizing industry, metal pickling, gelatin, dyestuffs, pharmaceuticals, synthetic rubber, metal chlorides manufacturing, PVC and sugar industry.

**Section 2: Composition and Information on Ingredients**

**Hydrogen Chloride Water:** CAS # 7647-01-0

**SPECIFICATIONS**

Appearance	HCl %	Density at 25°C g/cc	Iron (Fe) ppm	Free Chlorine ppm	SO <sub>4</sub> <sup>-2</sup> %
Slight Yellowish Clear Liquid	Min. 33.0	1.164 – 1.174	Max. 3.0	Max. 50.0	Max. 0.02

## Section 3: Hazardous Identification

Regulation (EC) No 1272/2008 (CLP)

### The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.

### GHS Label elements

Signal word

Danger



Pictograms GHS05, GHS07

### Hazard statements

H290

May be corrosive to metals

H314

Causes severe skin burns and eye damage

H335

May cause respiratory irritation

### Precautionary statements

#### Precautionary statements – prevention

P280

Wear protective gloves/protective clothing/eye protection/face protection

#### Precautionary statements – response

P303+P361+P353 IF ON SKIN (or hair):

Take off immediately all contaminated clothing. Rinse skin with water [or shower]

P304+P340 IF INHALED:

Remove person to fresh air and keep comfortable for breathing

P305+P351+P338 IF IN EYES:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

H 310

Immediately Call poison Center/Doctor

## Section 4: First Aid Measures

### Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

### Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while remove contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately

### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

### Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Serious Ingestion:** Not available

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable

**Auto-Ignition Temperature:** Not applicable

**Flash Points:** Not applicable

**Products of Combustion:** Not available

**Fire Hazards in Presence of Various Substances:** of metals

**Explosion Hazards in Presence of Various Substances:**

Non-explosive in presence of open flames and sparks of shocks.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:**

Noncombustible. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphines. Rubidium acetylene carbides burns with slightly warm hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas spontaneously flammable in air is evolved. Magnesium boride treated with concentrated hydrochloric acid produces spontaneously flammable gas. Cesium acetylene carbide burns in hydrogen chloride gas. Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute. Reacts with most metals to produce flammable Hydrogen gas.

**Special Remarks on Explosion Hazards:**

Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride,  $\text{AgClO} + \text{CCl}_4$ , Alcohols + hydrogen cyanide, Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide,  $\text{Ca}_3\text{P}_2$ , Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid, Cesium carbide, Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine, Ethylene imine, Fluorine,  $\text{HClO}_4$ , Hexalithium disilicide,  $\text{H}_2\text{SO}_4$ , Metal acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone, Propylene oxide, Rubidium carbide, Rubidium, acetylene carbide, Sodium (with aqueous HCl), Sodium hydroxide, Sodium tetra selenium, Sulfonic acid, Tetra selenium tetra nitride,  $\text{U}_3\text{P}_4$ , Vinyl acetate. Silver per chlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 °C.

**Section 6: Accidental Release Measures****Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

**Large Spill:**

Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**Section 7: Handling and Storage****Precautions:**

Keep locked up. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

**Storage:**

Keep container tightly closed. Keep container in a cool, well-ventilated area.

### Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust, ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product

**Exposure Limits:**

CEIL: 5 (ppm) from OSHA (PEL) [United States] CEIL: 7 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] CEIL: 5 from NIOSH CEIL: 7 (mg/m<sup>3</sup>) from NIOSH TWA: 1 STEL: 5 (ppm) [United Kingdom (UK)] TWA: 2 STEL: 8 (mg/m<sup>3</sup>) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

### Section 9: Physical and Chemical Properties

<b>Appearance:</b>	Liquid.
<b>Color:</b>	Colorless to light yellow.
<b>Odor:</b>	Pungent. Irritating (Strong.)
<b>Taste:</b>	Not available
<b>Molecular Weight:</b>	Not applicable
<b>pH (1% soln/water):</b>	Acidic
<b>Boiling Point:</b>	108.58°C @ 760 mm Hg (for 20.22% HCl in water) 83 C @ 760 mm Hg (for 31% HCl in water), 50.5°C (for 37% HCl in water)
<b>Melting Point:</b>	-62.25°C (-80°F) (20.69% HCl in water) -46.2°C (31.24% HCl in water), -25.4°C (39.17% HCl in water)
<b>Critical Temperature:</b>	Not available
<b>Specific Gravity:</b>	1.1- 1.19 (Water = 1) 1.10 (20% and 22% HCl solutions) 1.12 (24% HCl

	solution) 1.15 (29.57% HCl solution) 1.16 (32% HCl solution) 1.19 (37% and 38%HCl solutions)
<b>Vapor Pressure:</b>	16 kPa (@ 20°C) average
<b>Vapor Density:</b>	1.267 (Air = 1)
<b>Volatility:</b>	Not available
<b>Odor Threshold:</b>	0.25 to 10 ppm
<b>Water/Oil Dist. Coeff.:</b>	Not available
<b>Ionicity (in Water):</b>	Not available
<b>Dispersion Properties:</b>	See solubility in water, diethyl ether.
<b>Solubility:</b>	Soluble in cold water, hot water, diethyl ether.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, water

**Incompatibility with various substances:**

Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, water.

**Corrosivity:**

Extremely corrosive in presence of aluminum, of copper, of stainless steel (304), of stainless steel-316. Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125°C. Sodium reacts very violently with gaseous hydrogen chloride. Calcium phosphide and hydrochloric acid undergo very energetic reaction. It reacts with oxidizers releasing chlorine gas. Incompatible with, alkali metals, carbides, borides, metal oxides, vinyl acetate, acetylides, sulphides, phosphides, cyanides, carbonates. Reacts with most metals to produce flammable Hydrogen gas. Reacts violently (moderate reaction with heat of evolution) with water especially when water is added to the product. Isolate hydrogen chloride from heat, direct sunlight, alkalis (reacts vigorously), organic materials, and oxidizers (especially nitric acid and chlorates), amines, metals, copper and alloys (e.g. brass), hydroxides, zinc (galvanized materials), lithium silicide (incandescence), sulfuric acid (increase in temperature and pressure) Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid. Adsorption of Hydrochloric Acid onto silicon dioxide results in exothermic reaction. Hydrogen chloride causes aldehydes and epoxides to violently polymerize.

**Special Remarks on Corrosively:**

Highly corrosive. Incompatible with copper and copper alloys. It attacks nearly all metals (mercury,

gold, platinum, tantalum, silver, and certain alloys are exceptions). It is one of the most corrosive of the no oxidizing acids in contact with copper alloys. No corrosively data on zinc, steel. Severe Corrosive effect on brass and bronze

**Polymerization:** Will not occur.

## **Section 11: Toxicological Information**

### **Routes of Entry:**

Absorbed through skin. Dermal contact. Eye contact. Inhalation.

### **Toxicity to Animals:**

Acute oral toxicity (LD50): 900 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 1108 ppm, 1 hours [Mouse]. Acute toxicity of the vapor (LC50): 3124 ppm, 1 hour [Rat].

### **Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth.

### **Other Toxic Effects on Humans:**

Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion. Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

### **Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Doses (LDL/LCL) LDL [Man] -Route: Oral; 2857 ug/kg LCL [Human] - Route: Inhalation; Dose: 1300 ppm/30M LCL [Rabbit] - Route: Inhalation; Dose: 4413 ppm/30M

### **Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects (fetotoxicity). May affect genetic material.

### **Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Corrosive. Causes severe skin irritation and burns. Eyes: Corrosive. Causes severe eye irritation/conjunctivitis, burns, corneal necrosis. Inhalation: May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid fumes produces nose, throat, and laryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, hoarseness, laryngeal spasms, upper respiratory tract edema, chest pains as well as headache and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasoseptal perforation, glottal closure occur particularly if exposure is prolonged.

May affect the liver. Ingestion: May be fatal if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomiting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophageal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute exposure via inhalation or ingestion can also cause erosion of tooth enamel. Chronic Potential Health Effects: dyspnea, bronchitis. Chemical pneumonitis and pulmonary edema.

### Section 12: Ecological Information

**Eco toxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:**

The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:** Waste must be disposed of in accordance with federal, state and local environmental control regulations.

### Section 14: Transport Information

**DOT Classification:** Class 8: Corrosive material

**Identification:** Hydrochloric acid, solution UNNA: 1789 PG: II

**Special Provisions for Transport:** Not available.

### Section 15: Other Regulatory Information

**Not Available**

## Section 16: Other Information

### References:

Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

**Other Special Considerations:** Not available

**Created on:** 01.01.2026

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.