

# Material Safety Data Sheet



## Hydrochloric Acid

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Hydrochloric Acid

**OTHER/GENERIC NAMES:** Muriatic Acid

**PRODUCT USE:** Electronics

**MANUFACTURER:** General Chemical Corporation  
90 East Halsey Road  
Parsippany, NJ 07054

**FOR MORE INFORMATION CALL:** 973-515-1840  
(Monday-Friday, 9:00am-4:30pm)

**IN CASE OF EMERGENCY CALL:** 800-631-8050  
(24 Hours/Day, 7 Days/Week)

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Hydrochloric acid	7647-01-0	35-38
Water	7732-18-5	Balance

Trace impurities and additional material names not listed above may appear in Section 15 of this MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

**OSHA Hazard Communication Standard:** *This product is considered hazardous under the OSHA Hazard Communication Standard.*

### 3. HAZARDS IDENTIFICATION

**EMERGENCY OVERVIEW:** A colorless liquid with a pungent odor. Causes burns to the skin, eyes and respiratory tract. Harmful if swallowed. Corrosive.

#### POTENTIAL HEALTH HAZARDS

**SKIN:** Causes severe irritation and/or burns. Severe pain and brownish or yellow stains: usually penetrates the full thickness of the skin. Lesser exposures may cause dermatitis and photosensitization.

**EYES:** Causes severe irritation and/or burns. Liquid contact can cause conjunctival edema and corneal destruction that may cause blindness. Symptoms include pain, tearing and photophobia. Vapor contact causes irritation.

**INHALATION:** Can completely destroy mucous membrane and can cause choking, coughing, headache and dizziness. Pulmonary edema may follow after several hours.

**INGESTION:** Severe burning of the mouth, pharynx, and abdomen, followed by vomiting. Weakness from falling blood pressure. Asphyxia may occur from edema of the glottis.

**DELAYED EFFECTS:** None known.

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Ingredients found on one of the three OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section.			

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#### **4. FIRST AID MEASURES**

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**SKIN:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing while washing. Get medical attention. Continue flushing with water if medical attention is not immediately available.

**EYES:** Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention. Continue flushing with water if medical attention is not immediately available.

**INHALATION:** Remove to fresh air. Observe for possible delayed reaction. If not breathing, give artificial respiration. If breathing is difficult, give oxygen provided a qualified individual is present. Get medical attention.

**INGESTION:** Do not induce vomiting. If conscious, give large quantities of milk (preferred) or water. Get medical attention.

**ADVICE TO PHYSICIAN:** Treat symptomatically.

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#### **5. FIRE FIGHTING MEASURES**

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##### **FLAMMABLE PROPERTIES**

<b>FLASH POINT:</b>	Not applicable.
<b>FLASH POINT METHOD:</b>	Not applicable.
<b>AUTOIGNITION TEMPERATURE:</b>	Not applicable.
<b>UPPER FLAME LIMIT (volume % in air):</b>	Not applicable.
<b>LOWER FLAME LIMIT (volume % in air):</b>	Not applicable.
<b>FLAME PROPAGATION RATE (solids):</b>	Not applicable.
<b>OSHA FLAMMABILITY CLASS:</b>	Not flammable.

##### **EXTINGUISHING MEDIA:**

If involved in a fire, use water spray or other suitable agent for fires adjacent to non-leaking tanks or other containers of hydrochloric acid. Avoid spraying water into containers. Do not use solid water streams near ruptured tanks or spills of hydrochloric acid. If only a small amount of combustibles is present, smother fire with dry chemical.

##### **UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Acid reacts with steel and many other common metals to produce hydrogen gas which is a serious fire and explosive hazard.

##### **SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:**

Wear self-contained breathing apparatus.

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#### **6. ACCIDENTAL RELEASE MEASURES**

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**IN CASE OF SPILL OR OTHER RELEASE:** (See section 8 for recommended personal protective equipment.)

Dilute small spills or leaks cautiously with plenty of water. Neutralize residue with alkali such as soda ash or lime. Adequate ventilation is required for soda ash due to release of carbon dioxide gas. Major spills must be handled by a predetermined plan. Diking with soda ash is recommended. Attempt to keep out of sewer.

**Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.**

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#### **7. HANDLING AND STORAGE**

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**NORMAL HANDLING:** (See section 8 for recommended personal protective equipment.)

Avoid contact with skin, eyes and clothing. Avoid breathing vapor. Keep away from metals and incompatible chemicals.

**STORAGE RECOMMENDATIONS:**

Store in a dry, well-ventilated area away from heat and highly flammable substances. Store out of the sun. Do not store near oxidizing substances (nitric acid, etc.) or other incompatible materials. Protect from physical damage and keep containers closed and upright.

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#### **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**ENGINEERING CONTROLS:**

Provide ventilation sufficient to reduce vapor and acid mists to permissible levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems. Corrosion-proof construction is recommended. Closed ventilation systems (e.g., vapor hoods) are frequently used in the electronics industry.

**PERSONAL PROTECTIVE EQUIPMENT**

- SKIN PROTECTION:** Specialized Handling (e.g., bottles): As a minimum, wear acid-resistant (preferably neoprene or nitrile-butadiene rubber) gloves.  
Heavy Handling (e.g., cases, drums, tank trucks): As a minimum, wear acid-resistant (preferably neoprene or nitrile-butadiene rubber) apron, protective clothing, boots and gauntlet gloves for routine product use. For increased protection, include acid-resistant trousers and jacket.  
For leak or spill or other emergency, use full protective clothing.
- EYE PROTECTION:** Specialized Handling (e.g., bottles): As a minimum, wear safety glasses with non-perforated sideshields. Add a face shield if pouring liquid.  
Heavy Handling (e.g., cases, drums, tank trucks): As a minimum, wear hard hat, chemical safety goggles, full-face plastic shield.  
Do not wear contact lenses.

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**RESPIRATORY PROTECTION:**

Specialized Handling (e.g., bottles): Generally not required.  
Heavy Handling (e.g., cases, drums, tank trucks): Where required, use a NIOSH-approved respirator for hydrogen chloride gas or hydrochloric acid mist, as applicable. For the gas up to 50 ppm: chemical cartridge respirator with an acid gas cartridge. Up to 100 ppm: 1) same with full facepiece, 2) gas mask with acid gas canister, 3) supplied-air respirator with full facepiece, 4) self-contained breathing apparatus, with full facepiece. For mist 3 and 4 are recommended up to 100 ppm. For leak or spill or other emergency, use a NIOSH-approved respirator for this service.

**ADDITIONAL RECOMMENDATIONS:**

Eyewash and quick drench shower facilities. Neutralization equipment and supplies.

**EXPOSURE GUIDELINES****INGREDIENT NAME**

Hydrochloric acid

**ACGIH TLV**

5 ppm Ceiling

**OSHA PEL**

5 ppm Ceiling

**OTHER LIMIT**

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<sup>1</sup> = Limit established by General Chemical Corporation.

<sup>2</sup> = Workplace Environmental Exposure Level (AIHA).

<sup>3</sup> = Biological Exposure Index (ACGIH).

**OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:**

None.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

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**APPEARANCE:**

Colorless liquid

**PHYSICAL STATE:**

Liquid

**MOLECULAR WEIGHT:**

36.46

**CHEMICAL FORMULA:**

HCl + H<sub>2</sub>O

**ODOR:**

Pungent

**SPECIFIC GRAVITY (water = 1.0):**

1.19

**SOLUBILITY IN WATER (weight %):**

Complete

**pH:**

1.1 (0.1N)

**BOILING POINT:**

51C

**MELTING POINT:**

-74C

**VAPOR PRESSURE:**

30 (as HCl)

**VAPOR DENSITY (air = 1.0):**

1.3 (estimated)

**EVAPORATION RATE:**

>1

**COMPARED TO:** Ether

**% VOLATILES:**

100

**FLASH POINT:**

Not applicable

(Flash point method and additional flammability data are found in Section 5.)

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**10. STABILITY AND REACTIVITY**

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**NORMALLY STABLE? (CONDITIONS TO AVOID):**

Stable under normal conditions.

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**INCOMPATIBILITIES:**

Most metals, alkalis, metallic oxides, amines, strong oxidants, including fluorine; vinyl acetate, propiolactone (beta), propylene oxide. Also water reactive materials such as concentrated sulfuric acid, oleum and acetic anhydride. Also, carbonates, cyanides, and sulfides in contact with this acid liberate toxic gases.

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Hydrogen chloride evolution is accelerated by heating or contact with water reactive materials such as concentrated sulfuric acid.

**HAZARDOUS POLYMERIZATION:**

Will not occur.

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### **11. TOXICOLOGICAL INFORMATION**

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**IMMEDIATE (ACUTE) EFFECTS:**

LC<sub>50</sub> (inhl, rat): 3124 ppm / 1 hr

LD<sub>50</sub> (oral, rabbit): 900 mg/kg

**DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:**

Data not available.

**OTHER DATA:**

None.

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### **12. ECOLOGICAL INFORMATION**

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282 ppm/96 hr/mosquito fish/TL<sub>m</sub>/fresh water

100-330 ppm/48 hr/shrimp/LC<sub>50</sub>/salt water

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### **13. DISPOSAL CONSIDERATIONS**

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**RCRA**

Is the unused product a RCRA hazardous waste if discarded? Yes

If yes, the RCRA ID number is: D002

**OTHER DISPOSAL CONSIDERATIONS:**

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

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### **14. TRANSPORT INFORMATION**

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**US DOT HAZARD CLASS:** 8, PG II

**US DOT ID NUMBER:** UN1789

**PROPER SHIPPING NAME:** Hydrochloric acid, solution

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For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

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**15. REGULATORY INFORMATION**

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**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

**TSCA INVENTORY STATUS:** Listed on the TSCA Inventory.

**OTHER TSCA ISSUES:** None.

**SARA TITLE III/CERCLA**

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
Hydrochloric acid	5000	-----

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

**SECTION 311 HAZARD CLASS:** Immediate.

**SARA 313 TOXIC CHEMICALS:**

The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
Hydrochloric acid	None

**STATE RIGHT-TO-KNOW**

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section.		

**ADDITIONAL REGULATORY INFORMATION:**

None.

**WHMIS CLASSIFICATION (CANADA):**

Class D1A and E

**FOREIGN CHEMICAL CONTROL INVENTORY STATUS:**

Listed on the Canadian DSL and EU EINECS.

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**16. OTHER INFORMATION**

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**CURRENT ISSUE DATE:** November, 2001

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**PREVIOUS ISSUE DATE:** July, 1990

**CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:**  
New format.

**OTHER INFORMATION:** None