

# Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	Corrosive to eyes and skin on contact. Harmful compound, minimize exposure.	

## Section I. Chemical Product and Company Identification

Chemical Name	<b>Hydrochloric Acid (2mol/L)</b>		
Catalog Number	H1203	Supplier	TCI America 9211 N. Harbortgate St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	HCl		
CAS Number	7647-01-0 (Hydrogen chloride) 7732-18-5 (Water)	In case of Emergency Call	<b>Chemtrec®</b> <b>(800) 424-9300 (U.S.)</b> <b>(703) 527-3887 (International)</b>

## Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
Hydrochloric Acid (2mol/L)	7647-01-0 (Hydrogen chloride) 7732-18-5 (Water)	7.2% 92.8%	Not available.	Rabbit LD <sub>50</sub> (oral) 900 mg/kg Mouse LD <sub>50</sub> (inhalation) 1108 ppm/1H Mouse LD <sub>50</sub> (intraperitoneal) 40142 ug/kg

## Section III. Hazards Identification

Acute Health Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	<b>CARCINOGENIC EFFECTS</b> : Not available. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Not available. <b>DEVELOPMENTAL TOXICITY</b> : Reproductive effects. Rat TClO inhalation 450 mg/m <sup>3</sup> /1H female 1 day prior to mating <b>TOXIC EFFECTS</b> : Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Homeostasis Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

## Section IV. 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. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

## Section V. Fire and Explosion Data

Flammability	May be combustible at high temperature.	Auto-Ignition	Not available.
Flash Points	Not available.	Flammable Limits	Not available.
Combustion Products	WARNING: Highly toxic HCl gas is produced during combustion.		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		

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Emergency phone number (800) 424-9300

Fire Fighting Media  
and Instructions

SMALL FIRE: Use DRY chemical powder.  
LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet.  
Consult with local fire authorities before attempting large scale fire-fighting operations.

**Section VI. Accidental Release Measures**Spill Cleanup  
Instructions

Corrosive material. Harmful material.  
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. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Consult federal, state, and/or local authorities for assistance on disposal.

**Section VII. Handling and Storage**Handling and Storage  
Information

CORROSIVE. HARMFUL. May develop pressure. Open carefully. Keep container dry. Keep away from heat. Mechanical exhaust required. When not in use, tightly seal the container and store in a dry, cool place. Avoid excessive heat and light. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible. Treat symptomatically and supportively. Always store away from incompatible compounds such as metals, alkalis (bases).

**Section VIII. 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 station and safety shower is proximal to the work-station location.

## Personal Protection

Face shield. Lab coat. Vapor respirator. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent.



## Exposure Limits

Not available.

**Section IX. Physical and Chemical Properties**

## Physical state @ 20°C

Liquid. (Clear, colorless.)

## Solubility

Not available.

## Specific Gravity

1.03 (water=1)

## Molecular Weight

36.46

## Partition Coefficient

LOG P<sub>ow</sub>: 0.25 (Hydrogen chloride)

## Boiling Point

Not available.

## Vapor Pressure

Not available.

## Melting Point

Not available.

## Vapor Density

1.3 (Air = 1) (Hydrogen chloride)

## Refractive Index

Not available.

## Volatility

Not available.

## Critical Temperature

Not available.

## Odor

Not available.

## Viscosity

Not available.

## Taste

Not available.

**Section X. Stability and Reactivity Data**

## Stability

This material is stable if stored under proper conditions. (See Section VII for instructions)

## Conditions of Instability

Avoid excessive heat and light. May develop pressure. Open carefully.

## Incompatibilities

Reactive with metals, alkalis (bases), amines, alkali metals.

**Section XI. Toxicological Information**

## RTECS Number

MW4025000

## Routes of Exposure

Eye Contact. Ingestion. Inhalation. Skin contact.

## Toxicity Data

Rabbit LD<sub>50</sub> (oral) 900 mg/kg  
Mouse LD<sub>50</sub> (inhalation) 1108 ppm/1H  
Mouse LD<sub>50</sub> (intraperitoneal) 40142 ug/kg

## Chronic Toxic Effects

**CARCINOGENIC EFFECTS** : Not available.  
**MUTAGENIC EFFECTS** : Not available.  
**TERATOGENIC EFFECTS** : Not available.  
**DEVELOPMENTAL TOXICITY**: Reproductive effects.  
Rat TCLo inhalation 450 mg/m<sup>3</sup>/1H female 1 day prior to mating  
**TOXIC EFFECTS**:  
Effects on Embryo or Fetus - Fetotoxicity  
Specific Developmental Abnormalities - Homeostasis  
Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

## Acute Toxic Effects

Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Harmful if ingested or inhaled. Minimize exposure to this material. Severe overexposure can result in injury or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

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**Section XII. Ecological Information**

Ecotoxicity Not available.

Environmental Fate Hydrogen chloride and hydrochloric acid's production and use in the production of chemicals, or for applications such as a metal pickling, ore refining, food processing, manufacture of fertilizers and dyes, and in the rubber and textile industries may result in the release of hydrogen chloride or hydrochloric acid to the environment through various waste streams. Hydrogen chloride can be formed during the burning of many plastics. Hydrochloric acid is found in the gases evolved from volcanoes, particularly ones found in Mexico and South America. Hydrochloric acid is also found in the digestive tract of most mammals. If released to air, hydrogen chloride will be removed by rainfall. If released to water, hydrogen chloride dissociates readily in water to chloride and hydronium ions, decreasing the pH of the water. A Henry's law constant of  $2.04 \times 10^{-6}$  mol/L atm ( $4.90 \times 10^{-10}$  cu m atm/mol) has been reported for hydrochloric acid. This Henry's Law constant indicates that hydrochloric acid is expected to be essentially nonvolatile from water surfaces. If released to soil, hydrogen chloride will evaporate from dry soil surfaces and dissociate into chloride and hydronium ions in moist soil. Hydrogen chloride does not accumulate in the food chain. Occupational exposure to hydrogen chloride or hydrochloric acid may occur through inhalation and dermal contact with these compounds at workplaces where hydrogen chloride or hydrochloric acid is produced or used. Use data indicate that the general population may be exposed to hydrogen chloride or hydrochloric acid via inhalation and dermal contact with consumer products containing these compounds.

**Section XIII. Disposal Considerations**

Waste Disposal Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.

**Section XIV. Transport Information**

DOT Classification DOT CLASS 8: Corrosive material

PIN Number UN1789

Proper Shipping Name Hydrochloric acid

Packing Group (PG) III

DOT Pictograms

**Section XV. Other Regulatory Information and Pictograms**

TSCA Chemical Inventory (EPA) This compound is **ON** the EPA Toxic Substances Control Act (TSCA) inventory list.

WHMIS Classification (Canada) CLASS E: Corrosive liquid.  
On DSL.

EINECS Number (EEC) 231-595-7

EEC Risk Statements R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.  
R34- Causes burns.

Japanese Regulatory Data ENCS No. 1-215

**Section XVI. Other Information**

**Version 1.0**  
**Validated on 2/10/2009.**  
**Printed 2/10/2009.**

**Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.