

MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME Hydrogen Chloride	CAS# 7647-01-0
TRADE NAME AND SYNONYMS Hydrogen Chloride	DOT I.D. NO. UN 1050
CHEMICAL NAME AND SYNONYMS Hydrochloric Acid, Anhydrous	DOT HAZARD CLASS Division 2.3
ISSUE DATE AND REVISIONS Revised March 2007	FORMULA HCl

HEALTH HAZARD DATA

EMERGENCY OVERVIEW Hydrogen Chloride is a corrosive high pressure liquid and gas. Hydrogen Chloride may cause liver damage. Also, it may cause eye, skin, and respiratory tract burns.
SYMPTOMS OF EXPOSURE <u>Inhalation:</u> Corrosive and irritating to the upper and lower respiratory tracts. It hydrolyzes very rapidly yielding hydrochloric acid. This is caused from exposure to volatile inorganic acids. Symptoms include tearing of eyes, cough, labored breathing and excessive salivary and sputum formation. Excessive irritation of the lungs causes acute pneumonitis and pulmonary edema that could be fatal. <u>Skin Contact:</u> Corrosive, causing severe irritation with chemical burns and ulceration of the skin exhibiting pain, redness, swelling, and early necrosis. <u>Eye Contact:</u> Immediate pain and irritation is followed by excessive watering and closure of the eyelids can cause redness, irritation of the conjunctiva and possible blindness.
TOXICOLOGICAL PROPERTIES Hydrogen Chloride is irritating and corrosive to all living tissue. Toxic level exposure to dermal tissue causes hydrochloric acid burns and skin lesions resulting in early necrosis and scarring. Chemical pneumonitis and pulmonary edema result from exposure to the lower respiratory tract and deep lung. Residual pulmonary malfunction might also occur. Burns to the eye may result in lesions and possible loss of vision. The LC 50 (ppm) is 40,989 ppm for a 5 min exposure for a rat. The LC 50 (ppm) is 3,124 ppm for a 60 min exposure for a rat.
RECOMMENDED FIRST AID TREATMENT PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO HYDROGEN CHLORIDE. RESCUERS SHOULD BE EQUIPPED WITH ADEQUATE PERSONAL PROTECTIVE APPARATUS. <u>Inhalation:</u> Conscious person should be assisted to an uncontaminated area and inhale fresh air. Unconscious persons should be moved to an uncontaminated area and given mouth-to-mouth resuscitation and supplemental oxygen. Keep the victim warm and quiet. Assure that mucus or vomited material does not obstruct the airway by positional drainage. Delayed pulmonary edema may occur. Keep patient under medical observation for at least 24 hours. <u>Eye Contact:</u> PERSONS WITH POTENTIAL EXPOSURE TO HYDROGEN CHLORIDE SHOULD NOT WEAR CONTACT LENSES. Flush contaminated eye(s) with copious quantities of water for minimum of 15 minutes. Part eyelids with fingers to assure complete flushing. <u>Skin Contact:</u> Flush affected area with copious quantities of water. Remove affected clothing as rapidly as possible.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Reacts hazardously with fluorine, calcium carbide, cesium carbide, rubidium carbide and lithium silicide. Moist Hydrogen Chloride reacts with most metals in a corrosive manner liberating flammable hydrogen gas. It reacts with many organic materials with the liberation of heat.

PHYSICAL DATA

BOILING POINT -85.1°C	CRITICAL TEMPERATURE 51.4°C
MOLAR SPECIFIC HEAT (25 oC, 1 bar abs, contact volume) 20.976J/mol°K	CRITICAL PRESSURE 82.58 bar abs
SOLUBILITY IN WATER Soluble	SPECIFIC VOLUME(21.1 oC, 1 bar abs) 661.7dm ³ /kg
EVAPORATION RATE N/A	SPECIFIC GRAVITY (AIR=1) 1.27 at 70°F
APPEARANCE AND ODOR Colorless gas with a sharp, pungent odor. Forms dense cloud on contact with the moisture in air.	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	AUTO IGNITION TEMPERATURE N/A	FLAMMABLE LIMITS % BY VOLUME LEL N/A UEL N/A
EXTINGUISHING MEDIA Nonflammable	SPECIAL FIRE FIGHTING PROCEDURES N/A	
UNUSUAL FIRE AND EXPLOSION HAZARDS Reaction of HCl with common metals will form flammable hydrogen gas.		

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable		N/A
Stable	X	
INCOMPATIBILITY (Materials to avoid) Water, organic materials.		
HAZARDOUS POLYMERIZATION		HAZARDOUS DECOMPOSITION PRODUCTS
May Occur		Hydrochloric acid on hydrolysis.
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in cylinder or cylinder valve, contact HSG for special advice.
WASTE DISPOSAL METHOD Waste disposal must be in accordance with appropriate Federal, State, and local regulations. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.	
VENTILATION Hood with forced ventilation.	SPECIAL N/A
MECHANICAL (Gen.) N/A	OTHER N/A
LOCAL EXHAUST To prevent accumulation above the Ceiling Limit for HCl.	
PROTECTIVE GLOVES Nitrile or Neoprene supported	
EYE PROTECTION Safety goggles or glasses	
OTHER PROTECTIVE EQUIPMENT Safety shoes, safety shower, eyewash “fountain”, face shield, and other protective clothing when needed.	

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION DOT Shipping Name: Hydrogen Chloride DOT Shipping Label: Poison Gas and Corrosive		DOT Hazard Class: Division 2.3 I.D. No.: UN 1050	
SPECIAL HANDLING RECOMMENDATIONS Use only in well-ventilated areas. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure piping or system. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.			
SPECIAL STORAGE RECOMMENDATIONS Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavy traffic areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a “first in-first out” inventory system to prevent full cylinders being stored for excessive periods of time.			
SPECIAL PACKAGING RECOMMENDATIONS Most metals corrode rapidly with wet Hydrogen Chloride.			
OTHER RECOMMENDATIONS OR PRECAUTIONS Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Law.			

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