

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
	<p><b>Flammable material; avoid heat and sources of ignition.</b>  <b>Corrosive to eyes and skin on contact.</b>  <b>Toxic compound, do not ingest or inhale. Avoid all contact with this material.</b>  <b>CARCINOGEN. MINIMIZE EXPOSURE.</b>  <b>May form explosive peroxides.</b></p>	

**Section I. Chemical Product and Company Identification**

Chemical Name	<b>Hydrogen Chloride</b> (ca.4mol/L 1,4-Dioxane Solution)		
Catalog Number	H1062	Supplier	TCI America 9211 N. Harborage St. Portland OR 1-800-423-8616
Synonym	Not available.		
Chemical Formula	HCl		
CAS Number	7647-01-0 123-91-1 (1,4-Dioxane)	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
Hydrogen Chloride <small>(ca.4mol/L 1,4-Dioxane Solution)</small>	7647-01-0 123-91-1 (1,4-Dioxane)	-----	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.	Rat LD <sub>50</sub> (oral) 7120 mg/kg (1,4-Dioxane) Rabbit LD <sub>50</sub> (dermal) 7600 mg/kg (1,4-Dioxane) Rat LD <sub>50</sub> (inhalation) 3124 ppm/1H Rabbit LD <sub>50</sub> (oral) 900 mg/kg Mouse LD <sub>50</sub> (intraperitoneal) 40.142 mg/kg

**Section III. Hazards Identification**

Acute Health Effects	<p>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.</p> <p>Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death.</p> <p>Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.</p>
Chronic Health Effects	<p><b>CARCINOGENIC EFFECTS</b> : Carcinogenic by RTECS criteria.  <b>MUTAGENIC EFFECTS</b> : Not available.  <b>TERATOGENIC EFFECTS</b> : Tumorigenic Effects. (1,4-Dioxane)  Rat TDLo Oral 185 gm/kg/2 years continuous  <b>TOXIC Effects</b>:  Tumorigenic - Carcinogenic by RTECS criteria.  Sense Organs and Special Senses - Tumors  Liver - Tumors  Mouse TDLo Oral 239 gm/kg/90 weeks continuous  <b>TOXIC Effects</b>:  Tumorigenic - Carcinogenic by RTECS criteria.  Liver - Tumors  <b>DEVELOPMENTAL TOXICITY</b>Reproductive Effects.  Rat TCLo Inhalation 450 mg/33/1 hour, female 1 day prior to mating  Effects on Embryo or Fetus - Fetotoxicity  Specific Developmental Abnormalities - Homeostasis.  <b>DEVELOPMENTAL TOXICITY</b>Reproductive Effects. (1,4-Dioxane)  Rat TDLo Oral 10 gm/ka, female 6-15 days of pregnancy  <b>TOXIC Effects</b>:  Effects on Embryo or Fetus - Fetotoxicity  Specific Developmental Abnormalities - Musculoskeletal system  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. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.</p>

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**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 for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
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	Flammable.	Auto-Ignition	180°C (356°F) (1,4-Dioxane)
Flash Points	17°C (62.6°F).	Flammable Limits	LOWER: 2% (1,4-Dioxane) UPPER: 22% (1,4-Dioxane)
Combustion Products	These products include toxic carbon oxides (CO,CO <sub>2</sub> ), halogenated compounds. 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.		
Fire Fighting Media and Instructions	Flammable liquid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Consult with local fire authorities before attempting large scale fire-fighting operations.		

**Section VI. Accidental Release Measures**

Spill Cleanup Instructions	Flammable Material. Corrosive Material. Toxic Material. Carcinogenic Material. Keep away from heat. Mechanical exhaust required. 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. Consult federal, state, and/or local authorities for assistance on disposal.
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**Section VII. Handling and Storage**

Handling and Storage Information	FLAMMABLE. CORROSIVE. TOXIC. CARCINOGEN. Keep locked up.. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, reducing agents, alkalis (bases).
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**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. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
	
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen.

**Section IX. Physical and Chemical Properties**

Physical state @ 20°C	Liquid. (Clear, colorless.)	Solubility	Fully Miscible. Exothermic reaction with water.
Specific Gravity	1.05 (water=1)		
Molecular Weight	36.46	Partition Coefficient	Not available.
Boiling Point	101°C (213.8°F) (1,4-Dioxane)	Vapor Pressure	Not available.
Melting Point	Not available.	Vapor Density	Not available.
Refractive Index	1.415	Volatility	Not available.
Critical Temperature	Not available.	Odor	Not available.
Viscosity	Not available.	Taste	Not available.

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Emergency phone number (800) 424-9300

**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.
Incompatibilities	Reactive with strong oxidizing agents, reducing agents, halogens, strong alkalis (bases), oxygen, amines, alkali metal copper, copper alloys.

**Section XI. Toxicological Information**

RTECS Number	MW4025000 JG8225000 (1,4-Dioxane)
Routes of Exposure	Eye Contact. Ingestion. Inhalation.
Toxicity Data	Rat LD <sub>50</sub> (oral) 7120 mg/kg (1,4-Dioxane) Rabbit LD <sub>50</sub> (dermal) 7600 mg/kg (1,4-Dioxane) Rat LD <sub>50</sub> (inhalation) 3124 ppm/1H Rabbit LD <sub>50</sub> (oral) 900 mg/kg Mouse LD <sub>50</sub> (intraperitoneal) 40.142 mg/kg
Chronic Toxic Effects	<b>CARCINOGENIC EFFECTS</b> : Carcinogenic by RTECS criteria. <b>MUTAGENIC EFFECTS</b> : Not available. <b>TERATOGENIC EFFECTS</b> : Tumorigenic Effects. (1,4-Dioxane) Rat TDLo Oral 185 gm/kg/2 years continuous TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria. Sense Organs and Special Senses - Tumors Liver - Tumors Mouse TDLo Oral 239 gm/kg/90 weeks continuous TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria. Liver - Tumors <b>DEVELOPMENTAL TOXICITY</b> Reproductive Effects. Rat TCLo Inhalation 450 mg/33/1 hour, female 1 day prior to mating Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Homeostasis. <b>DEVELOPMENTAL TOXICIT</b> Reproductive Effects. (1,4-Dioxane) Rat TDLo Oral 10 gm/ka, female 6-15 days of pregnancy TOXIC Effects: Effects on Embryo or Fetus - Fetotoxicity Specific Developmental Abnormalities - Musculoskeletal system 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. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
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. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

**Section XII. Ecological Information**

Ecotoxicity	Not available.
Environmental Fate	Not available.

**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.
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**Section XIV. Transport Information**

DOT Classification	DOT CLASS 3: Flammable liquid. DOT CLASS 8: Corrosive material.
PIN Number	UN2924
Proper Shipping Name	Flammable liquids, corrosive, n.o.s.
Packing Group (PG)	II
DOT Pictograms	 

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Emergency phone number (800) 424-9300

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

TSCA Chemical Inventory (EPA)	This compound is <b>ON</b> the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	On DSL.
EINECS Number (EEC)	231-595-7
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R34- Causes burns. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R45- May cause cancer.
Japanese Regulatory Data	ENCS No. 1-215

**Section XVI. Other Information**

**Version 1.0**  
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**Notice to Reader**

TCl 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.

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