

Material Safety Data Sheet



Hydrogen chloride

Section 1. Chemical product and company identification

Commercial name(s) : Hydrogen chloride
Material uses : Various.
Supplier/Manufacturer : Air Liquide Canada Inc. 1250, René-Lévesque West, Suite 1700,
Montreal, QC H3B 5E6
In case of emergency : (514) 878-1667

Section 2. Hazards identification

Physical state : Gas.
Emergency overview : DANGER!
MAY BE FATAL IF INHALED. CAUSES SEVERE RESPIRATORY TRACT BURNS. HIGH PRESSURE GAS. CAN CAUSE TARGET ORGAN DAMAGE.
Keep away from heat (<52°C/125°F). Use only with adequate ventilation. Extremely hazardous gas under pressure. Keep cylinder valve closed when the product is not used. Gas may accumulate in confined areas.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Inhalation : Very toxic by inhalation. Severely corrosive to the respiratory system.
Skin : Corrosive to skin on contact.
Eyes : Corrosive to eyes.
Ingestion : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. May cause burns to mouth, throat and stomach.

Potential chronic health effects : CARCINOGENIC EFFECTS: A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Section 3. Composition, Information on Ingredients

	CAS number	mole %
Canada Hydrogen Chloride	7647-01-0	100

This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.

See Chapters 8, 11, 14 and 15 for details.

Section 4. First aid measures

Prompt medical attention is mandatory in all cases of overexposure to this gas. Rescue personnel should wear a self-contained breathing apparatus.

Inhalation : In case of inhalation, all persons, still conscious, must be brought far from the contaminated area and allowed to breath fresh air. The short time taken for this operation is essential. All unconscious persons must be carried outside from the contaminated area and given cardiopulmonary resuscitation (CPR) with a supplementary of oxygen. Others should be treated according to their symptoms and needs. Get medical attention immediately.

- Skin contact** : In case of contact, immediately flush skin with plenty of water. Get medical attention if symptoms occur.
- Eye contact** : Individual in contact with a gas should not wear contact lenses. Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention immediately.
- Ingestion** : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation.
- Notes to physician** : Effects of contact or inhalation may be delayed. Provide general supportive measures. Oxygen may be beneficial. The medical doctor must be warned that the person inhaled a very toxic gas.

Section 5. Fire-fighting measures

- Flammability of the product** : Non-flammable.
- Products of combustion** : Decomposition products may include the following materials:
halogenated compounds
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Container explosion may occur under fire conditions or when heated.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : 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 on container or container valve, contact the closest Air Liquide Canada location.
- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up** : Immediately contact emergency personnel. Stop leak if without risk. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. 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 to the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.
- Storage** : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must 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. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no source of ignition in the storage or use area.

Section 8. Exposure controls/personal protection

Engineering controls : Use only in well-ventilated areas. Gas may accumulate in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Wear suitable gloves for the application.

Eyes : Splash goggles.

Skin/Body : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Overalls buttoned to the neck and wrist.
Metal cap, safety shoes are recommended when handling cylinders.



Some applications of this product may require additional or other specific protective clothings. Please consult your supervisor.

Personal protection in case of a major leak : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Metal cap, safety boots. Wear MSHA/NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

<u>Occupational exposure limits</u>		TWA (8 hours)			STEL (15 mins)			Ceiling		
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other
Hydrogen chloride	US ACGIH 2/2010	-	-	-	-	-	-	2	-	-
	AB 4/2009	-	-	-	-	-	-	2	3	-
	BC 9/2010	-	-	-	-	-	-	2	-	-
	ON 7/2010	-	-	-	-	-	-	2	-	-
	QC 6/2008	-	-	-	5	7.5	-	-	-	-

In Canadian provinces where no value is specifically suggested, the lowest value above should be used. Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Physical state : Gas.

Color : Yellowish. [Light]

Odor : Pungent. [Strong]

Molecular weight : 36.46 g/mole

Molecular formula : HCl

Boiling/condensation point : -85.1°C (-121.2°F)

Melting/freezing point : -114.2°C (-173.6°F)

Critical temperature : 51.5°C (124.7°F)

Specific gravity : 1.19

Vapor density : 1.267 [Air = 1]

LogK_{ow} : The product is more soluble in water; log(octanol/water) = 0.25

Solubility : Miscible in water.

Section 10. Stability and reactivity

- Stability and reactivity** : The product is stable.
- Incompatibility with various substances** : Highly reactive or incompatible with the following materials: metals and alkalis.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Hazardous polymerization** : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Toxicity data

Canada

Acute toxicity

IDLH : 50 ppm

Acute Effects

- Inhalation** : Very toxic by inhalation. Severely corrosive to the respiratory system.
- Skin** : Corrosive to skin on contact.
- Eyes** : Corrosive to eyes.
- Ingestion** : Since the product is a gas, it will probably be inhaled rather than ingested. Consider first the preventive measures in case of inhalation. May cause burns to mouth, throat and stomach.

Potential chronic health effects : CARCINOGENIC EFFECTS: A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.
MUTAGENIC EFFECTS: Not available.
TERATOGENIC EFFECTS: Not available.

Target organs : Causes damage to the following organs: mucous membranes, upper respiratory tract, skin, eyes.

Section 12. Ecological information

Ecotoxicity data

Canada

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Hydrogen chloride	Acute LC50 240000 ug/L Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
	Acute LC50 282000 ug/L Fresh water	Fish - Gambusia affinis - Adult	96 hours

Products of degradation : Not applicable.





Section 13. Disposal considerations

Disposal : Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to Air Liquide Canada for proper disposal. For emergency disposal, contact the closest Air Liquide Canada location.

Section 14. Transport information

NAERG : 125

Hydrogen chloride

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label
TDG Classification	UN1050	HYDROCHLORIC ACID	2.3 (8)	II	 
IMDG Class	UN1789	HYDROCHLORIC ACID	2.3 (8)	II	
IATA-DGR Class	UN1789	HYDROCHLORIC ACID	2.3 (8)	II	

PG* : Packing group

Additional information

Cylinders should be transported in a secure position, in a well ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards and should be discouraged.

UN

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TDG

Explosive Limit and Limited Quantity Index
0

ERAP Index
500

Passenger Carrying Ship Index
Forbidden

Passenger Carrying Road or Rail Index
Forbidden

IMDG

Emergency schedules (EmS)
F-A, S-B

IATA

Passenger and Cargo Aircraft Quantity limitation: 1 L
Packaging instructions: 851
Cargo Aircraft Only Quantity limitation: 30 L
Packaging instructions: 855
Limited Quantities - Passenger Aircraft Quantity limitation: 0.5 L
Packaging instructions: Y840

Section 15. Regulatory information

Canada

WHMIS (Canada)

- : Class A: Compressed gas.
- Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
- Class E: Corrosive material



Canadian lists

- : **CEPA Toxic substances:** This material is not listed.
- Canadian ARET:** This material is not listed.
- Canadian NPRI:** This material is listed.
- Alberta Designated Substances:** This material is not listed.
- Ontario Designated Substances:** This material is not listed.
- Quebec Designated Substances:** This material is not listed.

Canada inventory (DSL/NDL)

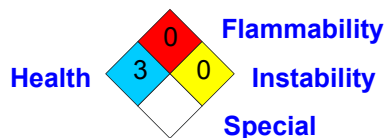
- : This material is listed or exempted.

Section 16. Other information

Hazardous Material Information System (U.S.A.)

Health	*	3
Fire hazard		0
Physical Hazard		0
Personal protection		G

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. CGA C-7 Guide to the Preparation of Precautionary Labels and Marking of Compressed Gas Containers. CGA P-20 Standard for Classification of Toxic Gas Mixtures. CGA P-23 Standard for Categorizing Gas Mixtures Containing Flammable and Nonflammable Components.

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