Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name:	Hydrogen chloride	**Trade Name:**	Hydrogen chloride
Product Use:	Many.		
Chemical Name:	Hydrogen chloride	**Synonym:**	Anhydrous hydrochloric acid
Chemical Formula:	HCl	**Chemical Family:**	Inorganic Acid Anhydride
Telephone:	**Emergencies:** * 1-800-363-0042	**Supplier /Manufacture:**	Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
		Phone:	905-803-1600
		Fax:	905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD_{50} (Species & Routes)	LC_{50} (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Hydrogen chloride	100	7647-01-0	Not applicable.	1560 ppm	2 ppm Ceiling

3. Hazards Identification

Emergency Overview


DANGER! Toxic, corrosive high pressure gas. May cause liver damage. .Causes eye, skin and respiratory tract burns. Self-contained breathing apparatus must be worn by rescue workers.

ROUTES OF EXPOSURE: Inhalation. Swallowing. Skin contact. Skin absoprtion. Eye contact.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Overexposure to vapour concentrations moderately above the Threshold Limit Value (TLV) of 5 ppm is irritating to the upper respiratory tract. Intolerable concentrations are in the range of 50 – 100 ppm for 60 minutes or 10 – 50 ppm for several hours. Inhalation of high concentration (e.g., greater than 50 ppm) causes choking, coughing, burning of the throat, and severe irritation of the upper respiratory tract; additionally, there is the possibility of pulmonary edema, general lung injury, and ulceration of the nose, throat, and larynx. Exposure to concentration of 1500 – 2000 ppm for a few minutes is life-threatening. Liver and kidney injury has been reported after exposure to vapours.

SKIN CONTACT:

	May cause severe irritation and chemical burns with ulceration and scarring of the skin. Repeated exposure of the skin may result in cumulative dermatitis.
SKIN ABSORPTION:	Prolonged or widespread skin contact with the liquid may result in the absorption of harmful amounts of material.
SWALLOWING:	A highly unlikely route of exposure. This product is a gas at room temperature and pressure. May cause chemical burns of the mouth throat, esophagus, and stomach with severe abdominal and chest pain, nausea, diarrhea, vomiting, dizziness, drowsiness, weakness, and collapse.
EYE CONTACT:	May cause pain, tearing, and closing of the eyelids.. The severity of the injury depends on the concentration and duration of contact and may range from slight excess redness and irritation to conjunctiva to total corneal opacification and blindness.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:
Causes damage to the following organs: liver, upper respiratory tract, skin, eyes.

Prolonged or repeated exposure may cause discoloration or erosion of teeth, bleeding of nose and gums, and ulceration of the nasal mucosa.

OTHER EFFECTS OF OVEREXPOSURE:

None known

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MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
Breathing of vapour (and/or mist) may aggravate asthma and inflammatory or fibrotic pulmonary disease. The skin irritating effects of the material may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:
Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. Keep patient warm.

SKIN CONTACT:

Immediately flush affected areas with water for at least 15 minutes while removing contaminated clothing and shoes. Discard clothing and shoes.

SWALLOWING:

Rinse mouth with water. Give two glasses of water. Do not induce vomiting. Call a physician.

EYE CONTACT:

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN:

Victims of overexposure should be observed for at least 24 - 48 hours. The hazards of this material are mainly due to its severe irritant and corrosive properties on the skin and mucosal surfaces. There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE :	No.	**IF YES, UNDER WHAT CONDITIONS?**	Not applicable.
FLASH POINT (test method)	Not applicable.	**AUTOIGNITION TEMPERATURE**	Not applicable.
FLAMMABLE LIMITS IN AIR, % by volume:	**LOWER:** Not applicable.	**UPPER:**	Not applicable.

EXTINGUISHING MEDIA:

This product cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

DANGER! Evacuate all personnel from danger area. Do not approach area without self-contained breathing apparatus and protective clothing. Immediately cool containers with water spray from maximum distance until cool, then move cylinders away from fire area if without risk. If containers are leaking, reduce vapours with water spray or fog. Do not spray water directly on leak as this may cause leak to increase. Shut off leak if without risk. Move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Container may rutpure due to heat of fire. Vapours are extremely irritating. Contact may cause burns to skin and eyes. No part of a container should be subjected to a temperature higher than 52 C. Contact with most metals, in the presence of moisture, produces flammable hydrogen. Reverse flow into cylindermay cause rupture.

HAZARDOUS COMBUSTION PRODUCTS:

Not applicable.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

DANGER! Corrosive, toxic gas. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus and protective clothing where needed. Reduce vapours with fog or fine water spray. Reverse flow into cylinder may cause rupture. Shut off leak if without risk. Ventilate area of leak or move leaking container to well ventilated area. Prevent runoff from contaminating surrounding evironment. Corrosive, toxic vapours may spread from spill. Before entering area, especially confined areas, check atmosphere with appropriate device.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN STORAGE:

DANGER: Toxic, corrosive, liquefied gas under pressure. Do not breathe gas. Do not get liquid or vapours in eyes, or on skin or clothing. Safety showers and eye wash fountains should be immediately available.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Use piping and equipment adequately designed to withstand pressures to be encountered. Ground all equipment. Store and use with adequate ventilation at all times. Use only in a closed system constructed of corrosion resistant materials. NOTE: Reverse flow into cylinder may cause rupture. Use a check valve or other protective apparatus in any lines or piping from the cylinder to prevent reverse flow.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Corrosive high-pressure gas. Harmful if inhaled. Do not breathe gas. Do not get vapour in eyes, on skin, or on clothing. Have safety showers and eyewash fountains immediately available. Use piping and equipment adequately designed to withstand pressures to be encountered. Use only in a closed system constructed of corrosion-resistant materials. Store and use with adequate ventilation at all times. ***Prevent reverse flow.*** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. ***Never work on a pressurized system.*** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. When returning the cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. ***Never place a compressed gas cylinder where it may become part of an electrical circuit.***

8. Exposure Controls/Personal Protection

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST:	A corrosion-resistant system is acceptable.
MECHANICAL (general):	Inadequate.
SPECIAL:	A corrosion-resistant, forced-draft fume hood is preferred.
OTHER:	Product should be used in a sealed, pressure-tight, system to prevent escape to the air.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION:	Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94., "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA.
SKIN PROTECTION:	Neoprene gloves.
EYE PROTECTION:	Wear safety glasses when handling cylinders. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.
OTHER PROTECTIVE EQUIPMENT:	Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE:	Gas. (Compressed Gas)	**FREEZING POINT:**	-114.2°C (-173.6°F)	**pH:**	Anhydrous, but forms strong acid on contact with water or moisture.
BOILING POINT	-85°C (-121°F)	**VAPOUR PRESSURE**	4325.9 kPa (@ 20°C)	**MOLECULAR WEIGHT:**	36.465 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1)	1.19 @ - 85 C	**SOLUBILITY IN WATER,**	0.823 @ 32 F		
SPECIFIC GRAVITY: VAPOUR (air = 1)	1.268 @ 20 C	**EVAPORATION RATE** (Butyl Acetate=1):	>1 compared to (Butyl Acetate = 1)	**COEFFICIENT OF WATER/OIL DISTRIBUTION:**	Not applicable.
VAPOUR DENSITY:	0.00152 @ 21.1 C	**% VOLATILES BY VOLUME:**	100% (v/v).	**ODOUR THRESHOLD:**	Not available.

APPEARANCE & ODOUR: Colourless. Odour: Pungent. Suffocating. (Strong.)

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	Avoid contact with moisture. Contact with most common metals and their alloys liberates flammable hydrogen.
INCOMPATIBILITY (materials to avoid):	Bases, unsaturated organics, most common metals and their alloys, fluorine, metal carbides, metal acetylides, potassium permanganate, sulphuric acid.
HAZARDOUS DECOMPOSITION PRODUCTS:	Decomposition may produce hydrogen and chlorine or chlorides.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS OF REACTIVITY:	None known.

11. Toxicological Information

See section 3.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Hydrogen chloride, anhydrous

HAZARD CLASS:	IDENTIFICATION #:	PRODUCT REPORTABLE QUANTITY (PRQ):
CLASS 2.3(8): Toxic and corrosive gas.	UN1050	Any accidental release in a quantity that could pose a danger to public safety or any sustained releasse of 10 minutes or more.

SHIPPING LABEL(s): Toxic gas and corrosive material.

PLACARD (when required): Toxic gas.

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

DSL (Canada) This product is on the DSL list

WHMIS (Canada) Class A: Compressed gas.
Class D-1A: Material causing immediate and serious toxic effects (VERY TOXIC).
Class E: Corrosive gas.

International Regulations

EINECS Not available.

DSCL (EEC) R20- Harmful by inhalation.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH	**3**
FLAMMABILITY	**0**
PHYSICAL HAZARD	**3**

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-330

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: CGA-634

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1	Safe Handling and Storage of Compressed Gas
P-1	Safe Handling of Compressed Gases in Containers
P-14	Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmosphere
SB-2	Oxygen-Deficient Atmospheres
V-1	Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7	Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
---	Handbook of Compressed Gases, Fifth Edition

PREPARATION INFORMATION:

DATE: **October 15, 2013**
DEPARTMENT: **Safety and Environmental Services**
TELEPHONE: **905-803-1600**

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety nformation, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

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