Material Safety Data Sheet

Hydrogen Chloride

Section 1. Chemical product and company identification

Product name : Hydrogen Chloride

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

Synonym : Hydrochloric Acid; Anhydrous hydrochloric acid; Basilin; Chlorohydric acid; Hydrochloric acid gas; Hydrochloride; Muriatic acid; Salzsaeure; HCl; Hydrochloric acid, anhydrous; Hydrogen-chloride-anhydrous-; Acide chlorhydrique; Acido cloridrico; Chloorwaterstof; Chlorowodor; Chlorwasserstoff; NA 1789; Spirits of salt; UN 1050; UN 1789; UN 2186; Anhydrous hydrogen chloride; Hydrogen chloride (acid); Marine acid; Soldering acid; Spirit of salt; Spirits of salts

MSDS # : 001028

Date of Preparation/Revision : **4/1/2013.**

In case of emergency : 1-866-734-3438

Section 2. Hazards identification

Physical state : Gas. [COLORLESS TO SLIGHTLY YELLOW LIQUEFIED COMPRESSED GAS WITH AN IRRITATING ODOR; OR COLORLESS FUMING GAS WITH A PUNGENT, IRRITATING ODOR]

Emergency overview : DANGER!

CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS.
HARMFUL IF INHALED.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

Do not puncture or incinerate container. Do not breathe gas. Do not get on skin or clothing. May cause target organ damage, based on animal data. Use only with adequate ventilation. Keep container closed. Do not get in eyes, on skin or on clothing. Avoid breathing gas. Wash thoroughly after handling.

Contact with rapidly expanding gases can cause frostbite.

Target organs : May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.

Routes of entry : Inhalation Dermal Eyes

Potential acute health effects

Eyes : Severely corrosive to the eyes. Causes severe burns. Contact with rapidly expanding gas may cause burns or frostbite.

Skin : Severely corrosive to the skin. Causes severe burns. Contact with rapidly expanding gas may cause burns or frostbite.

Inhalation : Toxic by inhalation. Severely corrosive to the respiratory system.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects

Target organs : May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.

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

Name	CAS number	% Volume	Exposure limits
Hydrogen Chloride	7647-01-0	100	**ACGIH TLV (United States, 1/2009).** C: 2 ppm **NIOSH REL (United States, 6/2009).** CEIL: 7 mg/m³ CEIL: 5 ppm **OSHA PEL (United States, 11/2006).** CEIL: 7 mg/m³ CEIL: 5 ppm **OSHA PEL 1989 (United States, 3/1989).** CEIL: 7 mg/m³ CEIL: 5 ppm

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.

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. Clean shoes thoroughly before reuse. Get medical attention immediately.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : As this product is a gas, refer to the inhalation section.

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.

Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

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 : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

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 : Use only with adequate ventilation. Wash thoroughly after handling. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Do not get in eyes, on skin or on clothing. Keep container closed. Do not get on skin or clothing. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin : 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.

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. 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.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product. Full chemical-resistant suit and self-contained breathing apparatus should be worn only by trained and authorized persons.

Product name

Hydrogen chloride

ACGIH TLV (United States, 1/2009).
C: 2 ppm
NIOSH REL (United States, 6/2009).
CEIL: 7 mg/m³
CEIL: 5 ppm
OSHA PEL (United States, 11/2006).
CEIL: 7 mg/m³
CEIL: 5 ppm
OSHA PEL 1989 (United States, 3/1989).
CEIL: 7 mg/m³
CEIL: 5 ppm

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 36.46 g/mole

Molecular formula : Cl-H

Boiling/condensation point : -85°C (-121°F)

Melting/freezing point : -113.9°C (-173°F)

Critical temperature : 51.5°C (124.7°F)

Vapor pressure : 613 (psig)

Vapor density : 1.3 (Air = 1)

Specific Volume (ft ^{3}/lb) : 10.5263

Hydrogen Chloride

Gas Density (lb/ft ^{3}) : 0.095

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: alkalis and moisture. Highly reactive or incompatible with the following materials: metals.

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

Product/ingredient name	Result	Species	Dose	Exposure
Hydrogen chloride	LC50 Inhalation Gas.	Rat	3124 ppm	1 hours
	LC50 Inhalation Gas.	Mouse	1108 ppm	1 hours

IDLH : 50 ppm

Chronic effects on humans : **CARCINOGENIC EFFECTS**: A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.
May cause damage to the following organs: lungs, upper respiratory tract, skin, eyes.

Other toxic effects on humans : Extremely hazardous by the following route of exposure: of skin contact (corrosive), of eye contact (corrosive), of inhalation (lung corrosive).

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
Hydrogen chloride	-	Acute LC50 282000 ug/L Fresh water	Fish - Western mosquitofish - Gambusia affinis - Adult	96 hours
	-	Acute LC50 260000 ug/L Marine water	Crustaceans - Common shrimp, sand shrimp - Crangon crangon - Adult	48 hours
	-	Acute LC50 240000 ug/L Marine water	Crustaceans - Green or Europeon shore crab - Carcinus maenas - Adult	48 hours

Products of degradation :

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1050	HYDROGEN CHLORIDE, ANHYDROUS	2.3	Not applicable (gas).		**Reportable quantity** 5000 lbs. (2270 kg) **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: Forbidden. **Cargo aircraft** Quantity limitation: Forbidden. **Special provisions** 3
TDG Classification	UN1050	HYDROGEN CHLORIDE, ANHYDROUS	2.3	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0 **ERAP Index** 25 **Passenger Carrying Ship Index** Forbidden **Passenger Carrying Road or Rail Index** Forbidden **Special provisions** 38

Hydrogen Chloride						
Mexico Classification	UN1050	HYDROGEN CHLORIDE, ANHYDROUS	2.3	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations : **United States inventory (TSCA 8b):** This material is listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: Hydrogen chloride
SARA 302/304 emergency planning and notification: Hydrogen chloride
SARA 302/304/311/312 hazardous chemicals: Hydrogen chloride
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Hydrogen chloride: Sudden release of pressure, Immediate (acute) health hazard, Delayed (chronic) health hazard

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: Hydrogen chloride

Clean Air Act (CAA) 112 regulated flammable substances: Hydrogen chloride

Clean Air Act (CAA) 112 regulated toxic substances: Hydrogen chloride

SARA 313

		Product name	CAS number	Concentration
Form R - Reporting requirements	:	Hydrogen Chloride	7647-01-0	100
Supplier notification	:	Hydrogen Chloride	7647-01-0	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Connecticut Carcinogen Reporting:** This material is not listed.
Connecticut Hazardous Material Survey: This material is not listed.
Florida substances: This material is not listed.
Illinois Chemical Safety Act: This material is not listed.
Illinois Toxic Substances Disclosure to Employee Act: This material is not listed.
Louisiana Reporting: This material is not listed.
Louisiana Spill: This material is not listed.
Massachusetts Spill: This material is not listed.
Massachusetts Substances: This material is listed.
Michigan Critical Material: This material is not listed.
Minnesota Hazardous Substances: This material is not listed.
New Jersey Hazardous Substances: This material is listed.
New Jersey Spill: This material is not listed.
New Jersey Toxic Catastrophe Prevention Act: This material is listed.
New York Acutely Hazardous Substances: This material is listed.
New York Toxic Chemical Release Reporting: This material is not listed.
Pennsylvania RTK Hazardous Substances: This material is listed.
Rhode Island Hazardous Substances: This material is not listed.

Canada

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

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.

Section 16. Other information

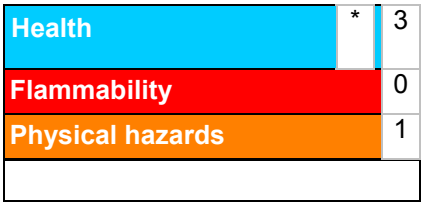
United States

Label requirements : CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS.
HARMFUL IF INHALED.
MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
CONTENTS UNDER PRESSURE.

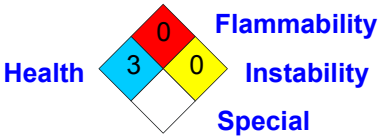
Canada

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

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



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



Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, 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 materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.