Safety Data Sheet
Hydrogen Chloride

Section 1: Product and Company Identification

Middlesex Gases & Technologies
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Product Code: Hydrogen Chloride

Section 2: Hazards Identification

Danger

Hazard Classification:
Acute Gas Inhale Toxicity (Category 3)
Gases Under Pressure
Skin Corrosion (Category 1.A)

Hazard Statements:
Causes severe skin burns and eye damage
Contains gas under pressure; may explode if heated
Toxic if inhaled

Precautionary Statements
Prevention:
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Do not breathe dust/fume/gas/mist/ vapors/spray..
[In case of inadequate ventilation] wear respiratory protection.
Wear protective gloves, protective clothing, eye protection and face protection.

Response:
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Immediately call a poison center or doctor.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
Protect from sunlight.
Store locked up.

Disposal:
Dispose of contents and/or container in accordance with applicable regulations.

Section 3: Composition/Information on Ingredients

CAS #
7647-01-0

Chemical Substance	Chemical Family	Trade Names
HYDROGEN CHLORIDE, ANHYDROUS	halogenated, gas	HYDROCHLORIC ACID, ANHYDROUS; HYDROGEN CHLORIDE; SPIRITS OF SALT; MURIATIC ACID; HYDROCHLORIC ACID; HYDROCHLORIC ACID GAS; ANHYDROUS HYDROCHLORIC ACID; HYDROGEN CHLORIDE (HCl); UN 1050; ClH

Section 4: First Aid Measures

Skin Contact	Eye Contact	Ingestion	Inhalation	Note to Physicians
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.	Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.	Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. Give large amounts of water or milk. Allow vomiting to occur. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. Avoid mouth-to-mouth contact by using mouth guards or shields.	For inhalation, consider oxygen. Avoid gastric lavage or emesis.

Section 5: Fire Fighting Measures

Suitable Extinguishing Media	Products of Combustion	Protection of Firefighters
Hydrogen chloride does not burn. Use extinguishing agents compatible with hydrogen chloride and appropriate for the surrounding fire.	Decomposes under intense fire conditions to form extremely flammable and potentially explosive hydrogen gas and very toxic and corrosive chlorine gas.	▪ Any self-contained breathing apparatus with a full facepiece. ▪ Any self-contained breathing apparatus with a full facepiece.

Section 6: Accidental Release Measures

Personal Precautions	Environmental Precautions	Methods for Containment

Personal Precautions	Environmental Precautions	Methods for Containment
Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. Ventilate closed spaces before entering. Evacuation radius: 150 feet.	Prevent contamination of the surrounding environment.	Stop leak if possible without personal risk. Reduce vapors with water spray. Do not get water directly on material. Do not get water inside container. Dig holding area such as lagoon, pond or pit for containment.

Methods for Cleanup	Other Information
Small spills: Flood with water. Large spills: Dike for later disposal. Collect runoff for disposal as potential hazardous waste. Absorb with sand or other non-combustible material. Add an alkaline material (lime, crushed limestone, sodium bicarbonate, or soda ash).	Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Section 7: Handling and Storage

Handling	Storage
Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Protect from physical damage. Store in a cool, dry place. Store in a well-ventilated area. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).	Keep separated from incompatible substances.

Section 8: Exposure Controls/Personal Protection

Exposure Guidelines
HYDROGEN CHLORIDE, ANHYDROUS: HYDROGEN CHLORIDE (HYDROCHLORIC ACID): 5 ppm (7 mg/m3) OSHA ceiling 2 ppm ACGIH ceiling 5 ppm (7 mg/m3) NIOSH recommended ceiling

Engineering Controls

Handle only in fully enclosed systems.

Eye Protection	Skin Protection	Respiratory Protection
Wear splash resistant safety goggles with a face shield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.	Wear appropriate chemical resistant clothing.	Any self-contained breathing apparatus with a full facepiece.

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

Physical State	Appearance	Color	Change in Appearance	Physical Form	Odor	Taste
Gas	Colorless	Colorless	N/A	Gas	Irritating odor	N/A

Flash Point	Flammability	Partition Coefficient	Autoignition Temperature	Upper Explosive Limits	Lower Explosive Limits
Non-flammable gas (does not burn).	Not available	Not available	Nonflammable	Nonflammable	Nonflammable

Boiling Point	Freezing Point	Vapor Pressure	Vapor Density	Specific Gravity	Water Solubility	pH	Odor Threshold	Evaporation Rate	Viscosity
-121 F (-85 C)	-175 F (-115 C)	30400 mmHg @ 17.8 C	1.268 (Air=1)	1.187 @ -85 C	82.3% @ 0 C	Acidic in solution	1-5 ppm	Not applicable	Not available

Molecular Weight	Molecular Formula	Density	Weight per Gallon	Volatility by Volume	Volatility	Solvent Solubility
36.46	H-Cl	0.095 lb/ft3	Not available	100%	Not applicable	Soluble: Alcohol, ether, benzene, methanol

Section 10: Stability and Reactivity

Stability	Conditions to Avoid	Incompatible Materials
May react with evolution of heat on contact with water.	May react with evolution of heat on contact with water.	Cyanides, metals, amines, bases, metal carbide, oxidizing materials, acids, halo carbons, combustible materials, halogens, metal salts, formaldehyde, fluorine, alcohols

Hazardous Decomposition Products	Possibility of Hazardous Reactions
Chlorine	Will not polymerize.

Section 11: Toxicology Information

Acute Effects

Oral LD50	Dermal LD50	Inhalation
900 mg/kg oral-rabbit LD50	Not available	Burns

Eye Irritation	Skin Irritation	Sensitization
Burns	Burns	Respiratory tract burns, skin burns, eye burns, mucous membrane burns. The gas absorbs moisture from the air and can form an acid fog in damp air.

Chronic Effects

Carcinogenicity	Mutagenicity	Reproductive Effects	Developmental Effects
IARC: Human Inadequate Evidence, Animal Inadequate Evidence, Group 3; ACGIH: A4 -Not Classifiable as a Human Carcinogen	Available.	Available.	No data

Section 12: Ecological Information

Fate and Transport

Eco toxicity	Persistence / Degradability	Bioaccumulation / Accumulation	Mobility in Environment
Fish toxicity: Acute LC50 282000 ug/L Fresh water Fish - Western mosquitofish - Gambusia affinis - Adult 96 hours; 21900 ug/L 96 hour(s) LC50 (Mortality) Fathead min Invertibrate toxicity: 560 ug/L 48 hour(s) EC50 (Immobilization) Water flea (Daphnia magna) Algal toxicity: 800 ug/L 1600 week(s) EC50 (Population Size Reduction) Green algae (Chlorella pyrenoidosa) Phyto toxicity: 1000 ug/L 4-48 week(s) (Residue) Water-hyacinth (Eichhornia crassipes) Other toxicity: Not available	Not available	Not available	Not available

Section 13: Disposal Considerations

Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002. Dispose in accordance with all applicable regulations.

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

Proper Shipping Name	ID Number	Hazard Class or Division	Packing Group	Labeling Requirements	Passenger Aircraft or Railcar Quantity Limitations	Cargo Aircraft Only Quantity Limitations	Additional Shipping Description
Hydrogen chloride, anhydrous	UN1050	2.3	Not applicable	2.3; 8	Forbidden	Forbidden	Toxic-Inhalation Hazard Zone C

Canadian Transportation of Dangerous Goods

Shipping Name	UN Number	Class	Packing Group / Risk Group
Hydrogen chloride, anhydrous	UN1050	2.3; 8	Not applicable

Section 15: Regulatory Information

U.S. Regulations

CERCLA Sections	SARA 355.30	SARA 355.40
5000 LBS RQ (liquid)	500 LBS TPQ (gas)	5000 LBS RQ (gas)

SARA 370.21

Acute	Chronic	Fire	Reactive	Sudden Release
Yes	No	No	Yes	Yes

SARA 372.65

HYDROGEN CHLORIDE (HYDROCHLORIC ACID): except non-aerosol forms

OSHA Process Safety

5000 LBS TQ (gas)

State Regulations

CA Proposition 65
Not regulated.

Canadian Regulations

WHMIS Classification
A, D1A, E

National Inventory Status

US Inventory (TSCA)	TSCA 12b Export Notification	Canada Inventory (DSL/NDSL)
Listed on inventory.	Not listed.	Not determined.

Section 16: Other Information

NFPA Rating
HEALTH=3 FIRE=0 REACTIVITY=1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard