MATERIAL SAFETY DATA SHEET

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1. CHEMICAL PRODUCT

PRODUCT NAME: HYDROGEN CHLORIDE SYNONYMS: Hydrochloric acid, Anhydrous hydrocloric acid, HCl

2. COMPOSITION, INFORMATION ON INGREDIENTS

				Exposure Limits (PPM)			
Ingredient Name	**Formula**	**CAS #**	**Concentration**	**ACGIH TLV**	**OSHA PEL**	**MAC**	**Other STEL**
HYDROGEN CHLORIDE	HCl	7647-01-0	99+%	NE	@@NE	2	2 (c)

c = ceiling

Note: NE = NONE ESTABLISHED S/A = SIMPLE ASPHYXIANT

3. HAZARD INDENTIFICATION

* * * EMERGENCY OVERVIEW * * *

Poisonous, corrosive high pressure liquid and gas.
May cause liver damage.
Can cause eye, skin, and respiratory tract burns.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation, Skin

ACUTE EFFECTS: Inhalation of vapors may cause pulmonary edema, circulatory collapse, damage to upper respiratory tract, coughing, difficulty breathing and choking.It is severly irritating and corrosive to the eyes, mucous membranes and upper respiratory tract.Contact with liquid can cause severe burns of skin and eyes.

CHRONIC EFFECTS: None known

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPORSURE: None

CARCINOGENICITY (US ONLY):

NTP - No
IARC MONOGRAPHS - No
OSHA REGULATED - No

4. FIRST AID MEASURES

INHALATION: Immediately remove victim to fresh air.If breathing has stopped, give artificial respiration.If breathing is difficult, give oxygen.

EYE CONTACT: Flush with large amounts of water lifting upper and lower lids.

SKIN CONTACT: Rinse the affected area with flooding amounts of water and then wash it with soap and water.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: Treat respiratory effects following inhalation of hydrogen chloride using a 5% sodium bicarbonate solution in aerosol.Maintain proper fluid balance and decrease the inflammation by administering steroids on a short-term basis (2 to 4 days).

5. FIRE FIGHTING MEASURES

FLASH POINT: Nonflammable

AUTOIGNITION TEMPERATURE: N/Ap

FLAMMABLE LIMITS: Nonflammable
LOWER:
UPPER:

EXTINGUISHING MEDIA: Use what is appropriate for surrounding fire.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Remove cylinders or cool with water spray to prevent release of HCl. Special neutralization procedures, if applicable, include the application of chemically basic substances.

HAZARDOUS COMBUSTION PRODUCTS: None

UNUSUAL FIRE AND EXPLOSION HAZARDS: May emit hydrogen gas upon contact with metal. Contact with water causes formation of dense hydrochloric acid fumes.

6. ACCIDENTAL RELEASE MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat. Place waste into a clean, dry container for disposal.

SPECIALIZED EQUIPMENT: Small leaks can be detected with concentrated NH4OH by giving off white fumes. Neutralize spills with soda ash or lime.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Store away from heat, flame, and sparks. Keep valve protection cap on cylinders when not in use. No part of cylinder should be exposed to temperatures above 52 degrees celsius.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentration below exposure limits.

EYE / FACE PROTECTION: Safety glasses

SKIN PROTECTION: Impervious gloves, coveralls, boots, and/or other resistant protective clothing.

RESPIRATORY PROTECTION: In case of leakage, use self-contained breathing apparatus.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Suffocating pungent odor.

PHYSICAL PRESSURE: Liquefied gas.

VAPOR PRESSURE: @ 20 deg.C: 42.71 atm.

VAPOR DENSITY (AIR=1): 1.268

BOILING POINT (C): -84.8

SOLUBILITY IN WATER: Complete

SPECIFIC GRAVITY (H2O=1): Gas

EVAPORATION RATE: N/Av

ODOR THRESHOLD: .2 to 5 ppm

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas. Combustibles especially oils and greases.

MATERIALS TO AVOID: Corrosive to many metals when moisture is present releasing flammable hydrogen gas.Galvanized pipe, brass, copper, bronze, alkaline materials, cyanides, and sulfites. Reacts exothermic (heat producing) with many organic materials.Also reacts with fluorides, calcium carbide, rubidium carbide, and lithium silicide.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: HCl, hydrogen or chlorine gas.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): 3120 ppm, rat 1 hour.

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place. Can be neutralized with sodium hydroxide or other suitable alkali. Neutral salt solution can usually be flushed to the sewer with high dilution.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Hydrogen chloride, anhydrous
HAZARD CLASS: 2.3 (poison), Hazard Zone C
INDENTIFICATION NUMBER: UN1050
REPORTABLE QUANTITIES: 5000 lb.
LABELING: POISON GAS, CORROSIVE

ADR / RID (EU Only): Class 2, 2TC

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Material is not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for this material is500 lb.

EU NUMBER: 231-595-7

NUMBER IN ANNEX 1 OF DIR 67/548: Material is listed in annex 1.

EU CLASSIFICATION: N/Av

R: 23, 35

S: N/Av

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS: N/Ap - Not Applicable, N/Av - Not Available, NE - None Established

Use proper connections; do not use adapters. Do not force fit!!

DISCLAIMER

The information and recommendations in this Material Safety Data Sheet relate only to the specific material mentioned herein and do not relate to use otherwise ie.in combination with any other material or in any process.

The information and recommendations herein are taken from our extensive experiences and the data contained in recognized references and believed by us to be true. Refrigeration group of companies make no warranties either expressed or implied with respect there to and assume no liability in connection with the use of such information and recommendation.