

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Identification:

- **Key:** 92358
- **Name:** Hydrogen Chloride Gas

Catalog Numbers:

H/1490

Synonyms:

- Muriatic acid; Chlorohydric acid; Hydrogen Chloride.

Company Identification:

Fisher Scientific UK
Bishop Meadow Road
Loughborough, Leicestershire
LE11 5RG, UK

For information, call:

- 01509 231166

For emergencies, call:

- 01509 231166

SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS #	Chemical Name	%	EINECS #
7647-01-0	Hydrogen Chloride Gas	ca. 100	231-595-7

Hazard Symbols: T C

Risk Phrases: 23 35

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Appearance: colorless gas. Danger! Corrosive. May cause fetal effects based upon animal studies. Causes eye and skin burns. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. Possible sensitizer. Toxic if inhaled.

Target Organs: Respiratory system, teeth, eyes, skin, circulatory system.

POTENTIAL HEALTH EFFECTS

Eye: May cause irreversible eye injury. Vapor or mist may cause irritation and severe burns. May cause painful sensitization to light.

Skin: Causes skin burns. May be absorbed through the skin in harmful amounts. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May cause frostbite.

Ingestion: May cause circulatory system failure. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause corrosion and permanent tissue destruction of the esophagus and digestive tract.

Inhalation: Causes chemical burns to the respiratory tract. Toxic if inhaled. Exposure to the mist and vapor may erode exposed teeth. Causes corrosive action on the mucous membranes.

Chronic: Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. May cause fetal effects. Laboratory experiments have resulted in mutagenic effects. Prolonged exposure may cause conjunctivitis, photosensitization, and possible blindness.

SECTION 4 - FIRST AID MEASURES

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes). SPEEDY ACTION IS CRITICAL!

Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Notes to Physician: Do NOT use sodium bicarbonate in an attempt to neutralize the acid.

Antidote: Do NOT use oils or ointments in eye.

SECTION 5 - FIRE FIGHTING MEASURES

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Containers may explode when heated.

Extinguishing Media: Do NOT get water inside containers. Do NOT use straight streams of water. For large fires, use water spray, fog or regular foam. Cool containers with flooding quantities of water until well after fire is out. For small fires, use dry chemical or carbon dioxide.

Autoignition Temperature: Not available.

Flash Point: Not available.

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 1

SECTION 6 - ACCIDENTAL RELEASE MEASURES

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Do not get water inside containers. Isolate spill or leak area immediately for at least 100-200 meters (330-660 feet) in all directions. Keep unauthorized personnel away. Ventilate closed spaces before entering. Many gases are heavier than air and will spread along the ground and collect in low or confined spaces.

SECTION 7 - HANDLING AND STORAGE

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Contents may develop pressure upon prolonged storage. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Use only in a chemical fume hood. Discard contaminated shoes. Use caution when opening. Keep from contact with moist air and steam.

Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Do not store in metal containers. Do not store near flammable or oxidizing substances (especially nitric acid or chlorates).

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

EXPOSURE LIMITS

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hydrogen Chloride Gas	2 ppm Ceiling	50 ppm IDLH	5 ppm Ceiling; 7mg/m ³ Ceiling

OSHA Vacated PELs:

Hydrogen Chloride Gas: No OSHA Vacated PELs are listed for this chemical.

PERSONAL PROTECTIVE EQUIPMENT

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear neoprene or polyvinyl chloride gloves to prevent exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Gas

Color: colorless

Odor: pungent odor

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: -84.8 deg C

Freezing/Melting Point: -114.3 deg C

Decomposition Temperature:

Solubility in water:

Specific Gravity/Density:

Molecular Formula: HCl

Molecular Weight: 36.46

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Mechanical shock, incompatible materials, metals, excess heat, exposure to moist air or water, bases.

Incompatibilities with Other Materials: Bases, acetic anhydride, alkali metals, aluminum, amines, copper, copper alloys, fluorine, iron, sodium hydroxide, steel, sulfuric acid, vinyl acetate, zinc, potassium permanganate, cesium acetylene carbide, rubidium acetylene carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum, carbonates, perchloric acid, calcium phosphide, metal oxides, acetates, cesium carbide, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, alcohols + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1-difluoroethylene, ethylene diamine, magnesium boride, mercuric sulfate, silver perchlorate + carbon tetrachloride, uranium phosphide.

Hazardous Decomposition Products: Hydrogen chloride, chlorine, carbon monoxide, carbon dioxide, hydrogen gas.

Hazardous Polymerization: Has not been reported

SECTION 11 - TOXICOLOGICAL INFORMATION

RTECS#:

- CAS# 7647-01-0: MW4025000 MW4031000

LD50/LC50:

- CAS# 7647-01-0: Inhalation, mouse: LC50 = 1108 ppm/1H; Inhalation, mouse: LC50 = 20487 mg/m³/5M; Inhalation, mouse: LC50 = 3940 mg/m³/30M; Inhalation, mouse: LC50 = 8300 mg/m³/30M; Inhalation, rat: LC50 = 3124 ppm/1H; Inhalation, rat: LC50 = 60938 mg/m³/5M; Inhalation, rat: LC50 = 7004 mg/m³/30M; Inhalation, rat: LC50 = 45000 mg/m³/5M; Inhalation, rat: LC50 = 8300 mg/m³/30M; Oral, rabbit: LD50 = 900 mg/kg. Hydrogen Chloride Gas concentrations of 1300ppm for 30 minutes to 2000ppm for 5 minutes have been shown to be fatal to humans.

Carcinogenicity:

Hydrogen Chloride Gas -

- Not listed by ACGIH, IARC, or NTP.

Epidemiology:

Experimental reproductive effects have been reported.

Teratogenicity:

Embryo or Fetus: Stunted fetus, Inhalation, rat TCL0=450 mg/m³/1H Specific Developmental Abnormalities: homeostatis, Inhalation, rat TCL0=450 mg/m³/1H (female 1 days pre-mating).

Reproductive Effects:

No information available.

Neurotoxicity:

No information available.

Mutagenicity:

Cytogenetic analysis: Hamster, lung = 30 mmol/L.; Cytogenetic analysis: Hamster, ovary = 8 mmol/L.

Other Studies:

No data available.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: Bluegill/Sunfish: 3.6 mg/L; 48Hr; Lethal (unspecified)Fish:

Bluegill/Sunfish: LC50; 96 Hr; pH 3.0-3.5

SECTION 13 - DISPOSAL CONSIDERATIONS

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

SECTION 14 - TRANSPORT INFORMATION

US DOT

- No information available

Canadian TDG

- No information available.

USA RQ: CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

SECTION 15 - REGULATORY INFORMATION

US FEDERAL

TSCA

- CAS# 7647-01-0 is listed on the TSCA inventory.

Health & Safety Reporting List

- None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

- None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

- None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

- None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs

- CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

- CAS# 7647-01-0: 500 lb TPQ

SARA Codes

- CAS # 7647-01-0: acute.

Section 313

- This material contains Hydrogen Chloride Gas (CAS# 7647-01-0, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

Clean Air Act:

- CAS# 7647-01-0 is listed as a hazardous air pollutant (HAP).
- This material does not contain any Class 1 Ozone depleters.
- This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

- CAS# 7647-01-0 is listed as a Hazardous Substance under the CWA.

- None of the chemicals in this product are listed as Priority Pollutants under the CWA.
- None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

- None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

Hydrogen Chloride Gas can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

- Hazard Symbols: T C
- Risk Phrases:
 - R 23 Toxic by inhalation.
 - R 35 Causes severe burns.
- Safety Phrases:
 - S 9 Keep container in a well-ventilated place.
 - S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 - S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
 - S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

- CAS# 7647-01-0: 1

United Kingdom Occupational Exposure Limits

- CAS# 7647-01-0: OES-United Kingdom, TWA 1 ppm TWA; 2 mg/m³ TWA
- CAS# 7647-01-0: OES-United Kingdom, STEL 5 ppm STEL; 8 mg/m³ STEL (gas and aerosol mists)

United Kingdom Maximum Exposure Limits

Canada

- CAS# 7647-01-0 is listed on Canada's DSL List.
- This product has a WHMIS classification of D2A, E.
- CAS# 7647-01-0 is listed on Canada's Ingredient Disclosure List.

Exposure Limits

- CAS# 7647-01-0: OEL-AUSTRALIA:TWA 5 ppm (7 mg/m³)
- OEL-AUSTRIA:TWA 5 ppm (7 mg/m³)
- OEL-BELGIUM:STEL 5 ppm (7.7 mg/m³)
- OEL-DENMARK:STEL 5 ppm (7 mg/m³)
- OEL-FINLAND:STEL 5 ppm (7 mg/m³);Skin
- OEL-FRANCE:STEL 5 ppm (7.5 mg/m³)
- OEL-GERMANY:TWA 5 ppm (7 mg/m³)

- OEL-HUNGARY:STEL 5 mg/m3
- OEL-JAPAN:STEL 5 ppm (7.5 mg/m3)
- OEL-THE NETHERLANDS:TWA 5 ppm (7 mg/m3)
- OEL-THE PHILIPPINES:TWA 5 ppm (7 mg/m3)
- OEL-POLAND:TWA 5 mg/m3
- OEL-RUSSIA:STEL 5 ppm (5 mg/m3)
- OEL-SWEDEN:STEL 5 ppm (8 mg/m3)
- OEL-SWITZERLAND:TWA 5 ppm (7.5 mg/m3);STEL 10 ppm (15 mg/m3)
- OEL-THAILAND:TWA 5 ppm (7 mg/m3)
- OEL-TURKEY:TWA 5 ppm (7 mg/m3)
- OEL-UNITED KINGDOM:TWA 5 ppm (7 mg/m3);STEL 5 ppm (7 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

SECTION 16 - ADDITIONAL INFORMATION

MSDS Creation Date: 4/19/2002, **Revision #2 Date:** 10/05/2004

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.