



HYDROCHLORIC ACID

This MSDS complies with the style format specified by ANSI Z400 1-1993

SECTION 1: CHEMICAL PRODUCT - COMPANY IDENTIFICATION

TETRA Technologies, Inc. (281) 367-1983
25025 I-45 North (800) 327-7817
The Woodlands, Texas 77380

(800) 424-9300 **CHEMTREC (24-Hour Emergency Response)**
(800) 222-1222 **POISON CONTROL**

SUBSTANCE: Hydrochloric Acid
SYNONYMS: Chlorohydric acid; Hydrogen chloride; Muriatic acid
CHEMICAL FAMILY: Inorganic acid
MSDS CREATION DATE: 10 JUL 95
MSDS REVISION DATE: 19 MAY 03

SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	PERCENTAGE
Hydrochloric Acid	7647-01-0	8-38%
Water	7732-18-5	62-92%

SECTION 3: HAZARDS IDENTIFICATION

NFPA and HMIS RATINGS: (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1

EMERGENCY OVERVIEW: Clear, colorless liquid with pungent, suffocating odor. Corrosive to eyes, skin, digestive tract. High inhalation and ingestion hazard. Avoid skin and eye contact or inhalation of vapors. May react with ordinary metals and generate highly flammable hydrogen gas. Closed containers may generate internal gas pressure (hydrogen) due to corrosion. Overpressure may rupture container. Store in a cool, dry place.

POTENTIAL HEALTH EFFECTS:

INHALATION: Vapor is a severe irritant causing coughing, discomfort and difficulty breathing. High concentrations may cause injury to lungs and may be life threatening. Excessive concentrations may cause nervous system depression, headache, and weakness leading to unconsciousness and impairment of vision.

SKIN CONTACT: Corrosive – may cause severe skin irritation.

EYE CONTACT: Corrosive - contact with product or vapors may cause severe irritation and possible damage to the cornea and impairment of vision.

INGESTION: Corrosive to digestive tract.

CARCINOGEN STATUS:

OSHA: No NTP: No IARC: No

SECTION 4: FIRST AID MEASURES

INHALATION: Remove from exposure area to fresh air. Get medical attention.

SKIN CONTACT: Remove contaminated clothing and shoes. Immediately flush with water for at least 15 minutes. Call physician. Wash clothing before reuse.

EYE CONTACT: Flush eyes with large amounts of water for at least 20-30 minutes. Get immediate medical attention.

INGESTION: Do not induce vomiting. Get medical attention.



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NOTE TO PHYSICIAN: Assess airways if inhaled and/or ingested. Provide oxygen and /or ventilation assistance if needed. If swallowed, DO NOT INDUCE VOMITING.
Assess extent and severity of tissue injury by appropriate diagnostic studies and procedures.

SECTION 5: FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD: Contact with ordinary metals may generate highly flammable hydrogen gas. Released gases may accelerate the burning of other combustible materials. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Overpressure can also occur, rupturing closed containers.

EXTINGUISHING MEDIA: Water spray/waterfog for cooling. Waterspray for large fires. Dry chemical or CO₂ extinguisher for small fires.

FIREFIGHTING: Use water spray/fog for cooling. Use self-contained breathing apparatus and body-covering protective clothing (neoprene and butyl rubber). Heat may cause pressure build up causing rupture of closed containers. Avoid frothing/steam explosion. Avoid contact or inhalation of product/vapors.

HAZARDOUS COMBUSTION PRODUCTS: Flammable hydrogen gas by reaction with many metals. Also, chlorine gas is released by reaction with oxidizing agents.

SECTION 6: ACCIDENTAL RELEASE MEASURES AND DISPOSAL

OCCUPATIONAL SPILL:

Prevent flow into sewer/public waters. Notify fire and environmental authorities. Stop leak if you can do it without risk. Evacuate/limit access. Impound/recover large land spill. Soak up small spills with inert solids and place into non-corrodible containers for disposal. Flush/dilute with water. Neutralize collected waste before discharge.

On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion.

WASTE DISPOSAL:

Contaminated product/soil/water may be RCRA/OSHA hazardous waste (corrosive) based upon pH. Landfill solids at permitted sites. Use registered transports. Acidic or alkaline aqueous waste may be discharged to public waters after it has been diluted, neutralized or treated and is free of floating oil. Comply with applicable regulations.

SECTION 7: HANDLING AND STORAGE

Observe all federal, state, and local regulations when storing this liquid. Store in a tightly closed container in a cool, dry place. Avoid exposure to sunlight. Store away from incompatible substances.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:

ACGIH (1992)	Ceiling	5 ppm	7.5 mg/m³
OSHA (1989) and NIOSH	Ceiling	5 ppm	7 mg/m³

IDLH concentration is 50 ppm

RESPIRATORY: If exposure can exceed exposure limits, use a NIOSH/MSHA approved full face acid gas respirator.

EYE PROTECTION: Wear safety chemical splash goggles and face shield. Contact lenses must not be worn.

SKIN: Impervious protective suit with integral or tight-fitting gloves, boots, and full head and face protection must be worn. Recommended material: Neoprene. Equipment must be cleaned thoroughly after each use.



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VENTILATION: If handling results in mist or aerosols, special ventilation may be required.
EMERGENCY WASH FACILITIES: An eye wash fountain and quick drench shower should be available within the immediate work area for emergency use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

DESCRIPTION: Clear, colorless liquid with pungent, suffocating odor
MOLECULAR WEIGHT: 36.46 for Hydrochloric Acid.
MOLECULAR FORMULA: HCL
SPECIFIC GRAVITY: 1.179 for 35.21% HCL at 60° F
BOILING POINT: 7-20% (>212 TO 230°f)
20-38% (230 – 176°f)
FREEZING POINT: 7% (28°F)
37% (-101°F)
VAPOR PRESSURE: 7-32% (0-23.5 mmHg)
32-38% (23.5-210 mmHg (partial pressure Hydrochloric acid)
VAPOR SPECIFIC GRAVITY: AP 1.3 (Hydrochloric Acid)
WATER SOLUBILITY: Complete
SOLVENT SOLUBILITY: Miscible in glycerol
VOLATILES % BY VOLUME: AP 100%
FLASH POINT: Not applicable

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: Stable under normal temperatures and pressures.
INCOMPATIBILITIES: Alkaline materials: Aluminum; Amines; Carbonates; Iron; Sulfuric Acid, Hydroxides; Leather and other fabrics; Metal oxides; Magnesium; Oleum; Perchloric acid; Zinc
HAZARDOUS DECOMPOSITION: Flammable hydrogen gas by reaction with many metals. Also, chlorine gas is released by reaction with oxidizing agents.
POLYMERIZATION: Does not occur under normal temperatures and pressures.
CONDITIONS TO AVOID: Heat, exposure to sunlight.

SECTION 11: TOXICOLOGICAL INFORMATION

No data available.

SECTION 12: ECOLOGICAL INFORMATION

No data available.

SECTION 13: DISPOSAL INFORMATION:

Observe all federal, state and local regulations when disposing of this liquid. See Section 6.

SECTION 14: TRANSPORT INFORMATION

US DOT SHIPPING NAME: Hydrochloric acid solution, 8, UN1789 PG II
US DOT HAZARD CLASS or DIVISION: 8
US DOT IDENTIFICATION NUMBER: UN1789
US DOT PACKING GROUP: II
US DOT LABEL CODES: 8



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REPORTABLE QUANTITY: 5000 Pounds (2,270 Kilograms) Hydrochloric acid
13,158 Pounds based on material

This product contains a DOT Hazardous Substance or Substances. If the product's shipping container holds at least 13,158 pounds (lbs) of product as a solution reflected in this MSDS, then the DOT information must be accompanied with RQ notation, or, an otherwise "Not Regulated" product will be classified as Environmentally Hazardous (solid/liquid) n.o.s., 9, unless the product qualifies for the petroleum exemption (49 CFR 171.8).

US DOT PACKAGING (refer to): **Exceptions:** 49 CFR § 173.154
Non-Bulk: 49 CFR § 173.202
Bulk: 49 CFR § 173.242

US DOT QUANTITY LIMITATIONS: **Passenger Aircraft/Rail:** 1 L
Cargo Aircraft Only: 30 L

SECTION 15: REGULATORY INFORMATION

TSCA STATUS:	Yes
WHMIS CLASIFICATION:	Yes
CERCLA SECTION 103:	Yes
Hydrochloric acid (HCL)	5000 Pounds RQ
SARA SECTION 302/304	Yes
Hydrochloric acid (HCL)	500 Pounds TPQ
SARA SECTION 313:	Yes
SARA HAZARD CATEGORIES, SARA SECTIONS 311/312	
ACUTE HAZARD:	Yes
CHRONIC HAZARD:	Yes
CALIFORNIA PROPOSITION 65:	No

SECTION 16: OTHER INFORMATION

Individuals handling this product should be informed of the recommended safety precautions and should have access to this information.

This information relates to the specific product designated and may not be valid for such product used in combination with any other materials or in any other processes. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability, or completeness. It is the users' responsibility to satisfy themselves as to the suitability and completeness of such information for their own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

TETRA Technologies, Inc. reserves the right to refuse shipment of this product to any consumer who fails to demonstrate the ability to consistently handle and use it safely and in compliance with all applicable laws, rules and regulations. Such demonstration may require on-site inspection of any or all storage, processing, packaging and other handling systems that come in contact with it.

Customers are responsible for compliance with local, state and federal regulations that may be pertinent in the storage, application and disposal of this product.