



# HYDROCHLORIC ACID

## PRODUCT INFORMATION

CHEMICAL NAME: Hydrochloric acid  
SYNONYM(S): Aqueous hydrogen chloride, muriatic acid.  
CHEMICAL FAMILY: Inorganic acid  
MOLECULAR FORMULA: HCl  
SHIPPING NAME: Hydrochloric acid  
PIN - UN/NA NUMBER(S): UN1789, Cl.8,(9.2), P.G. II      WHMIS: E D. 2B  
PRODUCT USE:  
Acidizing (activation) of petroleum wells; scale removal; ore reduction;  
metal cleaning; pH adjustment.  
MANUFACTURER: Erco Worldwide Wanuskevin Rd. & 71st Street  
Saskatoon, Saskatchewan S7K-7767  
EMERGENCY TELEPHONE: Canada: (613).996.6666 USA: 1.800.424.9300  
SUPPLIER: Panther Industries Inc. Box 628 Davidson, SK S0G 1A0  
EMERGENCY TELEPHONE: (306) 567-2814

## HAZARDOUS INGREDIENTS

INGREDIENTS:	WEIGHT%	CAS REGISTRY NUMBER:
HCl	30 - 35%	7647-01-0
H <sub>2</sub> O	65 - 70%	

## PHYSICAL DATA

PHYSICAL STATE: Liquid  
ODOUR AND APPEARANCE:  
Colorless or slightly yellow, fuming liquid with pungent odour.  
ODOUR THRESHOLD: Detectable 1-5 ppm.  
VAPOUR PRESSURE: 146 mmHg at 25°C      VAPOUR DENSITY: Not available.  
EVAPORATION RATE: Not available.  
pH: 0.1 (3.6% w/v, 1N), 1.1 (0.36% w/v, 0.1N)  
BOILING POINT: 51°C      MELTING POINT: -74 °C  
SOLUBILITY IN WATER: 100%      MOLECULAR WEIGHT: 36.46  
SPECIFIC GRAVITY: 1.19 @ 20 °C (water=1 @ 4°C)  
% VOLATILE BY VOLUME: 100 @ 20 °C  
COEFFICIENT OF WATER/OIL DISTRIBUTION: Not available.

## FIRE AND EXPLOSION HAZARD

CONDITIONS OF FLAMMABILITY: Not combustible  
MEANS OF EXTINCTION:  
Use water spray to cool containers to prevent rupture and reduce vapour. Do not get water inside containers. Extinguishing agents compatible with hydrochloric acid include dry chemical, carbon dioxide, water spray and foam.  
FLASH POINT: Not combustible (does not burn)  
UPPER FLAMMABLE LIMIT: Not applicable.  
LOWER FLAMMABLE LIMIT: Not applicable.  
AUTO IGNITION TEMPERATURE: Not applicable.



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## HAZARDOUS COMBUSTION PRODUCTS:

Hydrogen and chlorine gas may form at high temperatures greater than 1500 C

## EXPLOSION HAZARDS:

Sensitivity to mechanical impact: Not available.

Sensitivity to static discharge: Not available.

## REACTIVITY DATA

STABILITY: stable      HAZARDOUS POLYMERIZATION: Does not occur.

INCOMPATIBILITY: STRONG BASES

(eg. hydroxides, carbonates, amines) can react violently and release considerable heat.

METALS - many metals react and release flammable hydrogen gas.

PHOSPHINES

May react violently and may produce toxic, spontaneously flammable phosphine gas.

ACETYLIDES, BORIDES, CARBIDES, SILICIDES

Reaction may be very hot and may yield spontaneously flammable gas.

VINYL ACETATE - may polymerize violently.

FORMALDEHYDE

Reaction with formaldehyde solutions may yield a potent human carcinogen, bis(chloromethyl)ether.

CYANIDES, SULFIDES - may release toxic gas.

HAZARDOUS DECOMPOSITION PRODUCTS: None

## HEALTH HAZARD DATA

### INHALATION:

Vapour or mist can cause irritation of the nose, throat, and upper respiratory tract. Symptoms include coughing, choking, and bleeding of the nose and gums. Severe exposure can result in pulmonary edema and corrosion of tissues in the nose and throat.

### SKIN CONTACT:

Causes severe burns if not washed off quickly.

### EYE CONTACT:

Causes eye irritation, severe burns, and permanent blindness.

### INGESTION:

Causes severe burns of the mouth, esophagus, and stomach with consequent pain, nausea and vomiting, thirst, diarrhea, circulatory collapse and possibly death.

### CHRONIC EXPOSURE EFFECTS:

#### INHALATION:

Prolonged exposure can cause erosion and discoloration of the teeth and chronic inflammation of the nose, throat and airways.

#### SKIN CONTACT:

Repeated or prolonged contact to dilute solutions can cause dermatitis.

### EXPOSURE LIMITS: CEILING EXPOSURE LIMIT (TLV-C):

5 ppm (7 mg/m<sup>3</sup>) (hydrogen chloride - ACGIH)

MUTAGENICITY: Not available.

CARCINOGENICITY: Not carcinogenic (IARC and ACGIH)

SENSITIZATION TO PRODUCT: Not available.



# HYDROCHLORIC ACID

REPRODUCTIVE TOXICITY: Not available.

NAMES OF TOXICOLOGICALLY SYNERGISTIC PRODUCTS: Not available.

ANIMAL TOXICITY DATA:

LC50 (rat): 3,124 ppm/1-hour exposure. (100% HCl)

LC50 (rat, inhalation of mists): 5,666 ppm/30 min. (100% HCl)

LC50 (mouse, inhalation of mist): 2,142 ppm/30 min. (100% HCl)

LD50 (rabbit, oral): 900 mg/kg. (100% HCl)

## FIRST AID MEASURES

**INHALATION:**

Remove source of contamination or move victim to fresh air. If victim is unconscious, do not give anything by mouth. Check breathing and pulse. If breathing has stopped, give victim artificial respiration. If heart is stopped give cardiopulmonary resuscitation (CPR) immediately. If breathing becomes rapid and bubbly, place the person in a sitting position, and give oxygen if possible. Obtain medical attention immediately.

**SKIN CONTACT:**

As quickly as possible, flush contaminated area with lukewarm gently running water for at least 15 minutes. Under running water, remove contaminated clothing, shoes, and leather goods. Obtain medical attention immediately.

**EYE CONTACT:**

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes, holding the eyelid(s) open. Take care not to rinse the contaminated water into the non-affected eye. Obtain medical attention immediately.

**INGESTION:**

Unless victim is unconscious or convulsing, rinse residual hydrochloric acid from the mouth with water. If victim can swallow, give one cup (250-300 ml) of water or milk to dilute the material in the stomach. Do not induce vomiting. If vomiting occurs naturally, rinse mouth and give water again. Obtain medical attention immediately.

## PREVENTATIVE MEASURES

**RESPIRATORY PROTECTION:**

-Up to 50 ppm: Supplied air respirator, self contained breathing apparatus, chemical charge respirator, or a powered air purifying respirator both with cartridge(s) to protect against hydrogen chloride.

-Up to 100 ppm: Supplied air respirator operated in a continuous flow mode, full-facepiece supplied air respirator, or full-facepiece self contained breathing apparatus.

**SKIN PROTECTION:**

Impervious gloves, body suits, boots, and/or other resistant protective clothing. An eye-wash and safety shower should be located near any area where hydrochloric acid is handled.

**EYE/FACE PROTECTION:**

Chemical safety goggles or face shield for emergency or nonroutine conditions.



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## MATERIALS FOR PROTECTIVE CLOTHING:

Natural rubber, neoprene, buna-N, polyethylene or PVC (polyvinyl chloride).

## HANDLING PROCEDURES:

When diluting or preparing solutions, slowly add acid to water to avoid boiling and splattering always use in a well ventilated area, preferably with local ventilation.

## STORAGE REQUIREMENTS:

Store closed containers in a clean, cool, open or well ventilated area, preferably with local ventilation.

## ENGINEERING CONTROLS:

Local ventilation is normally required when handling this chemical. Enclosed systems are preferred.

## SPECIAL SHIPPING REQUIREMENTS:

Transportation in Canada is governed by Transport Canada. Refer to the Transportation of Dangerous Goods (TDG) Regulations for special shipping requirements for HCl. Transport in the U.S. is governed by the Department of Transport (DOT). Refer to DOT regulations (CFR 49) for special shipping requirements for HCl (UN 1789).

## ENVIRONMENTAL PROTECTION DATA

### STEPS IN THE EVENT OF A SPILL OR LEAK:

Only persons wearing protective equipment should be allowed in areas of leaks. Ventilate area. Vapours evolved from a spill or leak can be knocked down with water fog or spray. Contain spill using absorbent materials. Prevent entry into bodies of water or sewer systems. Absorbent materials which have been tested and recommended for concentrated hydrochloric acid are: anionic polyacrylamide (R 1779), nonionic polyacrylamide (Versicol W25), and cellosize WP3H (hydroxyethylcellulose)

DEACTIVATING CHEMICALS: Soda ash, lime, limestone

### WASTE DISPOSAL:

Consult appropriate Federal, State/Provincial and local regulatory authorities to ascertain disposal procedures. Waste hydrochloric acid or acid contaminated water, must never be discharged directly into sewers or surface water. Contaminated material should be neutralized with soda ash ( $\text{Na}_2\text{CO}_3$ ), lime ( $\text{CaO}$ ), or limestone ( $\text{CaCO}_3$ ). The residual sludge can be shovelled into containers for disposal.

## PREPARATION INFORMATION

MSDS prepared by: TECHNICAL DEPARTMENT Panther Industries Inc. Ph.(306) 567-2814

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### REFERENCES:

1. Manufacturer's MSDS