

**MATERIAL SAFETY DATA SHEET**

REV. 1 Issued: November 3, 2005

**1. Chemical Product And Company Information**

**Chemical Name:** Hydrochloric Acid

**Synonyms/Trade Names:** Aqueous hydrogen chloride, muriatic acid

**Names:**

**Chemical Family:** Inorganic acid

**Formula:** HCl

**Molecular Weight:** 36.46

**CAS No.:** 7647-01-0

**Uses:** Acidification (activation) of petroleum wells; scale removal; ore reduction; metal cleaning; industrial acidification.

**Manufacturer & Supplier:**

ERCO Worldwide  
a division of Superior Plus Inc.  
302 The East Mall, Ste. 200  
Toronto, Ontario Canada M9B 6C7  
(416) 239-7111

ERCO Worldwide  
Wanuskewin Rd. & 71st Street  
Saskatoon, Saskatchewan S7K 3R3  
(306) 931-7767

ERCO Worldwide (USA) Inc.  
101 Highway 73 South  
Nekoosa, Wisconsin 54457  
(715) 887-4000

**Transportation Emergency Telephone:**

CANADA: (613) 996-6666  
CANUTEC

USA: 1-800-424-9300  
CHEMTREC

**Emergency Information:**

Call toll-free 24 hours a day:

866-855-6947

**WHMIS Classification(s):**

D1A (Toxic)



E(Corrosive)



## 2. Composition / Information On Ingredients

Name:	Conc. % By Weight	CAS No.
Hydrogen chloride	35%	7647-01-0
Water	Balance	7732-18-5

## 3. Hazard Identification

**Emergency Overview:** Extremely corrosive. The severity of damage depends on the concentration of the acid and the duration of the exposure. In general, solutions and mists with a pH of 3 or less are a significant health concern. Contact with water will generate considerable heat. Contact with most metals will generate flammable hydrogen gas.

**Routes of Entry:** Inhalation, Skin Contact, Eye contact, Ingestion

### Symptoms of Exposure:

#### Inhalation:

HCl is a very strong acid. Solutions can be extremely corrosive. The severity of effects depends on the concentration of the solution and the duration of contact. In general, HCl solutions and mist with a pH of 3 or less are a significant health concern.

Vapour or mist from concentrated solutions can cause severe nasal irritation, sore throat, choking, coughing and difficulty breathing (50-100 ppm).(2) Prolonged exposures can cause burns and ulcers to the nose and throat.

Severe exposures (e.g., 1000-2000 ppm), for even a few minutes, can cause a life-threatening accumulation of fluid in the lungs (pulmonary edema).(2) Symptoms of pulmonary edema such as shortness of breath can be delayed for several hours after the exposure.

#### Skin Contact:

Hydrochloric acid liquid can cause severe irritation (redness, swelling, and pain) and corrosive skin damage with permanent scarring (or even death).

High vapour or mist concentration may cause redness, irritation and burns to skin if contact is prolonged. Skin covered by perspiration-dampened clothing can also be affected.

#### Eye Contact:

Low concentrations of vapour or mist (10-35 ppm) can be immediately irritating, causing redness.(2) Concentrated vapour, mist or splashed liquid can cause severe irritation, burns and permanent blindness.

#### Ingestion:

HCl solutions can cause corrosive burns to mouth, throat, esophagus and stomach. Symptoms may include difficulty in swallowing, intense thirst, nausea, vomiting, diarrhea and in severe cases, collapse and death.

Small amounts of acid which enter the lungs during ingestion or vomiting (aspiration) can cause serious lung injury and death.

### 4. First Aid Measures

**Skin:** As quickly as possible, flush contaminated area with lukewarm, gently running water for at least 20 minutes. Under running water, remove contaminated clothing, shoes and leather goods. Obtain medical attention immediately.

**Eyes:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20 minutes, holding the eyelid(s) open. Take care not to rinse contaminated water into the nonaffected eye. Obtain medical attention immediately.

**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, trained personnel should give artificial respiration. If heart has 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.

**Ingestion:** Never give anything by mouth to an unconscious or convulsing person. Otherwise, rinse residual hydrochloric acid from the mouth with water. If the victim can swallow, give one cup 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.

### 5. Fire-Fighting Measures

**Conditions Of Flammability:** Not flammable

**Means To Extinguish:** Does not burn. Use extinguishing agents compatible with acid and appropriate for the burning material. Use water spray to keep fire-exposed containers cool.

**Hazardous Combustion Products:** Hydrogen and chlorine gas may form at temperatures greater than 1,500°C.

**Flash Point & Method:** Not combustible (does not burn)

**Upper Flammability Limit:** Not applicable

**Lower Flammability Limit:** Not applicable

**Auto-Ignition Temperature:** Not applicable

**Mechanical Impact Sensitivity:** Not available

**Static Discharge Sensitivity:** Not sensitive

### **6. Accidental Release Measures**

**Leak Or Spill Procedures:** Only persons wearing protective equipment should be allowed in areas of leaks. Ventilate area. Vapors evolved from spill or leak can be knocked down with water fog or spray. Small spills and residues can be neutralized with alkalies such as soda ash or lime. This will release carbon dioxide, so use caution. Large spills should be contained, and if not recoverable, then diluted with water or flushed to holding area and neutralized.

**Waste Control Procedures:** 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 materials 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 shoveled into containers for disposal.

### **7. Handling Storage**

**Handling Procedures And Equipment:** 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:** Store closed containers in a clean, cool, open or well ventilated area. Keep out of sun. Keep away from incompatible materials.

### **8. Exposures Controls / Personal Protection**

**Protective Equipment:**

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

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

Non-ventilated chemical safety goggles or a full face shield.

Impervious gloves, body suits, boots and/or other protective clothing. Recommended materials for protective clothing: butyl rubber, neoprene, nitrile rubber, Teflon™, Responder™, Viton™. Have a safety shower and eye-wash fountain readily available in the immediate work area.

**Engineering Controls:**

Handling should be done in closed ventilation system (e.g. exhaust hood). In areas of heavy handling mechanical ventilation should be provided sufficient to reduce the vapour mist concentration below the permissible levels. Open processing equipment may require local exhaust systems. All must be corrosion resistant. Provide eye wash and quick drench facilities in areas of use.

### 9. Physical And Chemical Properties

<b>State:</b> Liquid	<b>Appearance:</b> Colorless or slightly yellow, fuming liquid.
<b>Odour:</b> Pungent odor	<b>Specific Gravity:</b> 1.18 @ 20°C
<b>Odour Threshold:</b> Detectable at 1-5 ppm	<b>Vapour Pressure:</b> 84 mm Hg @ 20°C
<b>Boiling Point:</b> 62°C	<b>Vapour Density:</b> 1.268 @ 20°C
<b>Melting Point:</b> not applicable	<b>Evaporation Rate:</b> Not available
<b>Freezing Point:</b> -35°C	<b>Solubility In Water:</b> Completely miscible in water
<b>pH:</b> 0.1 for 1N solution 1.1 for 0.1N solution	<b>Bulk Density:</b> Not applicable
<b>Coefficient Of Water/Oil Distribution:</b> Not available	

### 10. Stability And Reactivity

**Chemical Stability:** Stable

**Reactivity Conditions:** Large amounts of heat can be released when mixed with strong sulfuric acid or with organic solvents.

**Incompatible Substances:** Most metals, alkalies, metallic oxides, amines and water-reacting substances such as sulfuric acid, oleum and acetic anhydride. Also carbonates, cyanides, and sulfides in contact with this acid liberate toxic gases. Reaction with hypochlorites will produce toxic chlorine gas.

**Hazardous Decomposition Products:** HCl gas evolution accelerated by heating

**11. Toxicological Information**

**Skin Contact:** Can cause severe irritation (redness, swelling, and pain) and corrosive skin damage with permanent scarring (or even death). Prolonged exposure to vapour mists of high concentration will cause redness and burns to skin.

**Skin Absorption:** Usually penetrates the full thickness of the skin. Less exposure may cause dermatitis and photo sensitization.

**Eye Contact:** Low concentration of vapour or mist can be irritating, causing redness. Concentrated vapour, mist or splashed liquid can cause severe irritation, burns and permanent blindness.

**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.

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

**LD<sub>50</sub>:** 900 mg/kg (Rabbit/oral)

**LC<sub>50</sub>:** 5,666 ppm (Rat) Mist exposure 30 min.

**Exposure Limits:** ACGIH 2003 TWA-TLV (Ceiling) 2 ppm (2.8 mg/m<sup>3</sup>).  
OSHA PEL (Ceiling) 5 ppm (7 mg/m<sup>3</sup>)

**Irritancy:** Not available

**Sensitization:** Not available.

**Carcinogenicity:** IARC reports inadequate evidence of carcinogenicity in animals

**Teratogenicity & Mutagenicity** Information not available.

**Reproductive Toxicology:** Information not available.

**Toxicological Synergism:** Not available.

**12. Ecological Information**

**Ecological Information:** Hydrochloric acid dissociates in water and will be neutralized by naturally occurring alkalinity and carbon dioxide. The acid will permeate soil, dissolving some soil material and will be somewhat neutralized.

**Biodegradability:** no information

**Aquatic Toxicity:** Hydrochloric acid can be acutely toxic to aquatic life via reduction of water pH. Most aquatic species do not tolerate pH lower than 5.5 for any extended period.

LC<sub>50</sub> 282 mg/L ( Mosquito Fish - 96 hr )

LC<sub>50</sub> 3.6 mg/L ( Bluegill - 48 hr )

**13. Disposal Considerations**

**Disposal Considerations:** Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.

**14. Transportation Information**

<b>Shipping Name (TDGR)</b>	<b>UN Number</b>	<b>Hazard Class</b>	<b>Packing Group</b>
Hydrochloric Acid	1789	8	II

**15. Regulatory Information**

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**Safety**

**U S FEDERAL REGULATIONS  
SARA HAZARD CATEGORIES  
(40 CFR 370.2)**

HEALTH: Immediate Health

**CANADA**

**WORKPLACE HAZARDOUS  
MATERIALS INFORMATION  
SYSTEM (WHMIS)  
CLASSIFICATION**

WHMIS Classifications applicable to this product:

E (Corrosive Material) based on assignment to TDG Class 8

**Environmental**

**U S FEDERAL REGULATIONS**

**REPORTABLE QUANTITY (RQ)**

Reportable Quantity (RQ) is 5000 lbs.

**TOXIC SUBSTANCES**

**CONTROL ACT**

Listed on TSCA Inventory

**SUPERFUND AMENDMENTS  
AND REAUTHORIZATION ACT  
(SARA) TITLE III**

Components identified with an asterisk (\*) in Section 2 are subject to the reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372.

**CANADA**

**CANADIAN ENVIRONMENTAL  
PROTECTION ACT (CEPA)**

All components of this product are on the Domestic Substances List (DSL).

**HAZARDOUS PRODUCTS ACT**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR).

**EUROPE**

EINECS No.: 231-595-7

**Transportation**

**16. Other Information**

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**Prepared By:**

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416-239-7111

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