

# MSDS - HYDROCHLORIC ACID

20 - 22° Baume, 31.45% - 35.21%

Effective Date: 01/01/01



## 1. Product Identification

Synonyms: Muriatic acid; hydrogen chloride, aqueous

CAS No.: 7647-01-0

Molecular Weight (Hydrogen Chloride): 36.46

Chemical Formula: HCl

Manufacturer: PVS Chemical Solutions Inc., 10900 Harper Ave, Detroit, MI 313-921-1200

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrogen Chloride	7647-01-0	31.5-35.2%	Yes
Water	7732-18-5	64.8-68.5%	No

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE! LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG DAMAGE.**

### Potential Health Effects

#### Inhalation:

Corrosive! Inhalation of vapors can cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract, and in severe cases, pulmonary edema, circulatory failure, and death.

#### Ingestion:

Corrosive! Swallowing hydrochloric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

#### Skin Contact:

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolor skin.

#### Eye Contact:

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

#### Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth. Long-term exposures seldom occur due to the corrosive properties of the acid.

#### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye disease may be more susceptible to the effects of this substance.

## 4. First Aid Measures

### *Inhalation:*

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

### *Ingestion:*

**DO NOT INDUCE VOMITING!** Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### *Skin Contact:*

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

### *Eye Contact:*

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

## 5. Fire Fighting Measures

### *Fire:*

Extreme heat or contact with metals can release flammable hydrogen gas.

### *Explosion:*

Not considered an explosion hazard.

### *Fire Extinguishing Media:*

If involved in a fire, use water spray. Neutralize with soda ash or slaked lime.

### *Special Information:*

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out.

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL): 5 ppm Ceiling

-ACGIH Threshold Limit Value (TLV): 5 ppm Ceiling

### ***Ventilation System:***

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### ***Personal Respirators (NIOSH Approved):***

If the exposure limit is exceeded, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### ***Skin Protection:***

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.

### ***Eye Protection:***

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Physical and Chemical Properties

**Appearance:** Colorless, fuming liquid.

**Odor:** Pungent odor of hydrogen chloride.

**Solubility:** 82.3 gm/100gm H<sub>2</sub>O @ 0°C with slight evolution of heat

**Specific Gravity (60°F):** 1.1600 - 1.1789

**pH:** For HCl solutions: 0.1 (1.0 N), 1.1 (0.1 N)

**% Volatiles by volume @ 21°C (70°F):** 100%

**Boiling Point:** 150° - 230°F. (65.6° - 110.0°C)

**Melting Point:** -74°C (-101°F)

**Vapor Density (Air=1):** 1.27

**Vapor Pressure (mm Hg):** 78 @ 20°C; 190 @ 25°C (77°F)

**Evaporation Rate (BuAc=1):** < 1.0

## 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage. Containers may burst when heated.

### **Hazardous Decomposition Products:**

When heated to decomposition emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

### **Hazardous Polymerization:**

Will not occur.

### **Incompatibilities:**

A strong mineral acid, concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites and formaldehyde.

### **Conditions to Avoid:**

Heat and direct sunlight.

## 11. Toxicological Information

Inhalation rat LC50: 3124 ppm/1H; oral rabbit LD50: 900 mg/kg (Hydrochloric acid concentrated); investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		
	Known	Anticipated	IARC Category
Hydrogen Chloride (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

## 12. Ecological Information

### **Environmental Fate:**

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater.

### **Environmental Toxicity:**

This material is expected to be toxic to aquatic life.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### *Domestic (Land, D.O.T.)*

Proper Shipping Name: HYDROCHLORIC ACID  
UN/NA: UN1789  
Information reported for product/size: 475LB

Hazard Class: 8  
Packing Group: II

### *International (Water, I.M.O.)*

Proper Shipping Name: HYDROCHLORIC ACID  
UN/NA: UN1789  
Information reported for product/size: 475LB

Hazard Class: 8  
Packing Group: II

## 15. Regulatory Information

-----\Federal, State & International Regulations - Part 1\-----  
-SARA 302- -----SARA 313-----

Ingredient RQ TPQ List Chemical Catg.

Hydrogen Chloride (7647-01-0) 5000 500\* Yes No  
Water (7732-18-5) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
-RCRA- -TSCA-

Ingredient CERCLA 261.33 8(d)

Hydrogen Chloride (7647-01-0) 5000 No No  
Water (7732-18-5) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes  
SARA 311/312: Acute:Yes Chronic:Yes Fire:No Pressure:No  
Reactivity: No (Mixture / Liquid)

## 16. Other Information

### *NFPA Ratings:*

Health: 3 Flammability: 0 Reactivity: 0

### *Label Hazard Warning:*

**POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG DAMAGE.**

### *Label Precautions:*

Do not get in eyes, on skin, or on clothing.  
Do not breathe vapor or mist.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Store in a tightly closed container.  
Remove and wash contaminated clothing promptly.

***Label First Aid:***

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, **DO NOT INDUCE VOMITING**. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

***Product Use:***

Chemical intermediate; oil & gas well acidizing; pH control; water treatment; steel pickling and metal cleaning; ore reduction; food processing

***Revision Information:***

New 16 section MSDS format, all sections have been revised.

***Disclaimer:***

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