**SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

**MSDS Name:** Hydrochloric Acid 0.01 to 2.0N

**CAS#**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>%</th>
<th>EINSCS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>0.03-6.1</td>
<td>231-395-7</td>
</tr>
<tr>
<td>Water</td>
<td>92.3-99</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

**SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS**

**Hazard Symbols:** C
**Risk Phrases:** 34

**SECTION 3 - HAZARDS IDENTIFICATION**

**EMERGENCY OVERVIEW**

**Appearance:** Colorless to slight yellow.
**Odor:** Corrosive. May cause fatal 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. Sensitizer.
**Target ORGANS:** Respiratory system, eyes, skin, circulatory system.

**Potential Health Effects**

**Eye:** May cause irreversible eye injury. May cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns. May cause painful sensitization to sight.

**Skin:** May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Contact with liquid is corrosive and causes severe burns and ulceration.

**Ingestion:** May cause circulatory system failure. May cause severe digestive tract irritation with possible burns. May cause corrosive and permanent tissue destruction of the esophagus and digestive tract.

**Inhalation:** May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract. 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. Prolonged exposure may cause erosion of teeth. May cause fatal 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 or keep eyes closed. Excessive irritation is required (at least 30 minutes).

**Skin:** Get medical aid immediately. Immediately flush skin with plenty of soap and 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. Give milk of magnesium.

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

**Ingestion:** Do not use sodium bicarbonate in an attempt to neutralize the acid.

**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, irritation and highly toxic gases may be generated by thermal decomposition or combustion. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool. 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:**

For large fires, use water spray, fog, or alcohol-resistant foam. Substances are nonflammable; use agent most appropriate to extinguish surrounding fire. Do NOT get water inside containers. Do NOT use straight streams of water. Most foams will react with the material and release corrosive/toxic gases. Cool containers with flowing quantities of water until well after fire is out. For small fires, use carbon dioxide (except for Cyanox), dry chemical, dry sand, and alcohol-resistant foam.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES**

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

**Spills/Leaks:**

Large spills may be neutralized with dilute alkaline solutions of soda ash, or lime. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills in the area of the spill. In the event of a spill, take precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation. Do not get water inside containers. A vapor suppressing foam may be used to reduce vapors. Cover with dry earth, dry sand, or other non-combustible material and followed with plastic sheet to minimize spreading and contact with water.

**SECTION 7 - HANDLING and STORAGE**

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before re-use. Use only in a well-ventilated area. Do NOT 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. Discard contaminated shoes. Use caution when opening. Keep from contact with moist air and steam.

**Storage:** Do not store in direct sunlight. Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosive 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 or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>5 ppm</td>
<td>C 7</td>
<td>5 ppm, IDLH</td>
</tr>
<tr>
<td></td>
<td>mg/m3</td>
<td>C 7</td>
<td>C 7 ppm</td>
</tr>
</tbody>
</table>

**Water**

<table>
<thead>
<tr>
<th>none listed</th>
<th>none listed</th>
<th>none listed</th>
<th>none listed</th>
</tr>
</thead>
</table>
OSHA Vacated PELs:
- Hydrochloric acid: No OSHA Vacated PELs are listed for this chemical.
- Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment:
- Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described in OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN 166.
- 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:** Clear liquid
**Appearance:** Colorless to slight yellow
**Odor:** Strong, pungent
**pH:** 2.02 (10% solution)
**Vapor Pressure:** 5.7 mm Hg @ 60 deg C
**Vapor Density:** 1.28
**Evaporation Rate:** 1N-butyl acetate = 1
**Viscosity:** Not available
**Boiling Point:** 81.5-110 deg C @ 760 mmHg
**Freezing Point:** -74 deg C
**Autoignition Temperature:** Not applicable
**Flash Point:** Not applicable
**NFPA Rating:** Not published
**Explosion Limits:** Lower: Not available
**Upper: Not available
**Decomposition Temperature:** Not available
**Solubility:** Miscible
**Specific Gravity/Density:** 1.0-1.2
**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, contact with water, metals, excess heat, 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 acetate, carbide, rubidium acetate carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum, carbonates, perchloric acid, calcium phosphate, metal oxides, acetates, cesium carbide, beta-propiolactone, ethylene oxide, propylene oxide, lithium sulfides, acids + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1-difluoroethylene, ethylene diamine, magnesium bromide, mercuric sulfate, silver perchlorate + carbon tetrachloride, uranium phosphide.
**Hazardous Decomposition Products:** Hydrochloric acid, chlorine, carbon monoxide, carbon dioxide, hydrogen gas.
**Hazardous Polymerization:** Will not occur.

### SECTION 11 - TOXICOLOGICAL INFORMATION

**RTCSA:**
- CAS#: 7647-01-0: MW4050000
- CAS#: 7732-18-5: ZD1010000

**LD50 (LD50):**
- CAS#: 7647-01-0: Inhalation, mouse: LC50 = 1108 ppm/1H; Inhalation, rat: LC50 = 3124 ppm/1H; Oral, rat: LD50 = 900 mg/kg
- CAS#: 7732-18-5: Oral, rat: LD50 = 900 mg/kg

**Carcinogenicity:**
- Hydrochloric acid: IARC; Group 3 carcinogen
- Water: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:**
- Experimental reproductive effects have been reported.

**Teratogenicity:**

**Embryo or Fetus:** Stunted fetus, Inhalation, rat TCL0=450 mg/m3/1H
Specific Developmental Abnormalities: Homeostasis, inf-ral TCL0=450 mg/m3/1H (female 1 days pre-mating).
**Reproductive Effects:** No information available.

**Neurotoxicity:**
- No information available.

**Mutagenicity:**
- Cytogenetic analysis: Mouse, bone marrow; Cytogenetic analysis: Mouse, liver.
- No data available.

### SECTION 12 - ECOLOGICAL INFORMATION

**Ecotoxicity:**
- Not available.

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

**Environmental Fate:**
- Rapidly hydrolyzes when exposed to water. Will exhibit extensive evaporation from soil surfaces. Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree.

**Physical/Chemical:**
- Not available.

**Other:**
- Not available.

### SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state, and local regulations.

**RCRA P-Series:** None listed.
**RCRA U-Series:** None listed.

### SECTION 14 - TRANSPORT INFORMATION

**US DOT:**
- Shipping Name: HYDROCHLORIC ACID
- Hazard Class: 8
- UN Number: UN1789

**Canadian TDG:**
- Shipping Name: HYDROCHLORIC ACID SOLUTION
- Hazard Class: 8 (9.2)
- UN Number: UN1789

### 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.
- Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.
- SARA:
  - Section 302 (ROU): CAS#: 7847-01-0: Final ROU = 5000 pounds (2270 kg)
  - Section 302 (TPQ): CAS#: 7647-01-0: TPQ = 500 pounds; ROU = 5000 pounds (does not meet toxicity criteria but because of high production volume and recognized toxicity is considered a chemical of concern)
- SARA Codes: CAS#: 7647-01-0: acute.
- Section 313: This chemical is not at a high enough concentration to be reportable under Section 313.

**Clean Air Act:**
- CAS#: 7647-01-0 is listed as a hazardous air pollutant (HAP).

**Clean Water Act:**
- CAS#: 7647-01-0 is listed as a Hazardous Substance under the CWA.

**OSHA:**
- CAS#: 7647-01-0 is considered highly hazardous by OSHA.

**STATE:**
- Hydrochloric acid can be found on the following state right to know
lists: California, New Jersey, Florida, Pennsylvania, Minnesota,
Massachusetts.
Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Levels.
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Risk Phrases:
R 34 Causes burns.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately
with plenty of water and see medical advice.
S 49 In case of accident or if you feel unwell, seek
medical advice immediately (show the label where
possible).
WGK (Water Danger Rating)
CASE 7847-01-0: 1
CASE 7732-18-5: No information available.
Canada
CASE 7847-01-0 is listed on Canada's BDL/MDL List.
CASE 7732-18-5 is listed on Canada's BDL/MDL List.
This product has a WHMIS classification of C, D3A.
CASE 7847-01-0 is not listed on Canada's Ingredient Disclosure List.
CASE 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
Exposure Limits
CASE 7847-01-0: OEL-AUSTRALIA/TWA 5 ppm (7 mg/m3)
OEL-AUSTRIA/TWA 5 ppm (7 mg/m3)
OEL-BELGIUM/STEL 5 ppm (7 mg/m3)
OEL-DENMARK/STEL 5 ppm (7 mg/m3)
OEL-FINLAND/STEL 5 ppm (7 mg/m3); STEL 5 ppm (7 mg/m3)
OEL-FRANCE/STEL 5 ppm (7 mg/m3)
OEL-GERMANY/TWA 5 ppm (7 mg/m3)
OEL-HUNGARY/STEL 5 ppm (7 mg/m3)
OEL-JAPAN/STEL 5 ppm (7,5 mg/m3)
OEL-THE NETHERLANDS/TWA 5 ppm (7,5 mg/m3)
OEL-THE PHILIPPINES/TWA 5 ppm (7 mg/m3)
OEL-POLAND/TWA 5 ppm (7 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 ACGIH TLV

**SECTION 16 - ADDITIONAL INFORMATION***

MSDS Creation Date: 4/14/1999 Revision #1 Date: 11/23/1999
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 at 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.