**MATERIAL SAFETY DATA SHEET**

**PRODUCT NAME:** HYDROCHLORIC/MURIATIC ACID ALL GRADES  
**DATE:** 3/4/2013  
**MANUFACTURER’S NAME:** Brenntag Great Lakes  
2130 Energy Park Drive  
St. Paul, MN 55108  
**DISTRIBUTED BY:** Horizon Chemical Co., Inc.  
2125 Energy Park Drive  
St. Paul, MN 55108

NATIONAL EMERGENCY RESPONSE CENTER: 1-800-424-8802  
FOR EMERGENCY DURING TRANSPORTATION ONLY: 1-800-535-5053

### SECTION I - PRODUCT IDENTIFICATION

<table>
<thead>
<tr>
<th>TRADE NAME:</th>
<th>HYDROCHLORIC ACID ALL GRADES</th>
<th>SYNONYMS/ COMMON NAMES:</th>
</tr>
</thead>
</table>
| PRODUCT USE: | Chemical Processing / Metal Cleaning | HCL Solution  
Aqueous Hydrogen Chloride  
Muriatic Acid |
| CHEMICAL NAME: | Hydrogen Chloride | |
| CHEMICAL FORMULA: | HCL | |
| CHEMICAL FAMILY: | | |
| CAS NO.: | | |

### SECTION II - EMERGENCY RESPONSE INFORMATION

**HEALTH HAZARDS:** See Section VI  
**FIRE OR EXPLOSION:** See Section IX  
**IMMEDIATE PRECAUTIONS:** WASH FROM EYES: Section V, First Aid  
Section X, Reactivity  
Section XI, Spill, Leak & Disposal Procedures  
**SPILLS OR LEAKS:** See Section XI  
**FIRST AID:** See Section V

### SECTION III - COMPOSITION

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>% by weight</th>
<th>PEL</th>
<th>TLV</th>
<th>OTHER</th>
<th>HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7732-18-5</td>
<td>64-91</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION IV - PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear to light amber liquid</td>
</tr>
<tr>
<td>Boiling Point, F</td>
<td>140 f (60 c) - 221 f (105 c)</td>
</tr>
<tr>
<td>Color</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>8.75 to 9.83 LB/GAL</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
<tr>
<td>Freeze Point, F</td>
<td>-29 f (-34 c) - 5 f (-15 c)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent order</td>
</tr>
<tr>
<td>pH</td>
<td>0.2% Solution has a pH of 2</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>100</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>(WATER=1) 1.05 TO 1.18</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>(AIR=1) 1.3 @ 20C</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>14.6 TO 80</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

SECTION V - FIRST AID MEASURES

EYES: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Washing eyes within several seconds is essential to achieve maximum effectiveness. Get medical attention as soon as possible.

SKIN: Flush thoroughly with cool water under shower while removing contaminated clothing and shoes. Discard non-rubber shoes. Wash clothing before reuse. Get medical attention as soon as possible.

INHALATION: Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If respiration stops, have a trained person administer artificial respiration. Get medical attention immediately.

INGESTION: Never give anything by mouth to an unconscious person. If swallowed, do not induce vomiting. Give large quantities of water. (If available, give several glasses of milk.) If vomiting occurs spontaneously, keep airway clear and give more water. Get medical attention immediately.

NOTES TO PHYSICIAN: No specialized procedures. Treat for clinical symptoms.

SECTION VI - HEALTH HAZARDS IDENTIFICATION / INFORMATION

OVERVIEW: Corrosive. Causes severe burns to eyes, skin and digestive tract. Severely irritating to respiratory tract, eyes and skin. May cause irritation if digestive tract. May cause discoloration of teeth. Clear to light amber liquid with a pungent odor.
SHORT-TERM EXPOSURE (ACUTE)

INHALATION: Breathing gas, fog, mist or spray may result in coughing and burning or choking sensation in the throat. If inhaled deeply, fluid may collect in the lungs (edema). Prolonged or repeated exposure to concentrations in excess of the exposure limits may cause discoloration of teeth.

EYES: Contact rapidly causes severe irritation of the eyes and eyelids. If not quickly removed by thorough irrigation with water, there may be prolonged or permanent visual impairment or total loss of sight. Hydrogen chloride gas escaping from the aqueous solution is immediately irritating.

SKIN: Contact may cause burns and tissue destruction.

INGESTION: Can cause severe burns to the mucous membranes of the digestive tract.

OTHER HEALTH EFFECTS OR NOTES:


SECTION VII - TOXICOLOGICAL INFORMATION

ACUTE ORAL: LD50 (RABBIT) 900 MG/KG

ACUTE INHALATION: LC50 (RAT, 1HR) 3124 PPM

CARCINOGENICITY:

OTHER DATA:

SECTION VIII - PERSONAL PROTECTION / EXPOSURE CONTROLS

VENTILATION:

RESPIRATORY: Wear a NIOSH/MSHA approved respirator following manufacturer's recommendations, where airborne contaminants may occur.
EYE/FACE: Wear chemical safety goggles plus full face shield to protect against splashing when appropriate.

SKIN: Wear chemical resistant gloves such as rubber, neoprene or vinyl.
Whenever there is a possibility of splash or contact wear a chemical resistant full body suit and boots.

OTHER: Emergency shower and eyewash facility should be in close proximity

SECTION IX - FIRE FIGHTING MEASURES

FLASH POINT: Non-Flammable
METHOD: Not Applicable
AUTOIGNITION TEMPERATURE: Not Applicable

FLAMMABLE LIMITS IN AIR, BY % VOLUME
LOWER: Non-Flammable
UPPER: Non-Flammable

FLAMMABLE LIMITS (% BY VOLUME)
LOWER: Non-Flammable
UPPER: Non-Flammable

EXTINGUISHING MEDIA: Non-Flammable/ Non- Combustible
Use agents appropriate for surrounding fire.
Use water spray to keep fire-exposed containers cool.

FIRE FIGHTING PROCEDURES:
Keep unauthorized personnel removed and upwind. Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing.

FIRE & EXPLOSION HAZARD:
This product is nonflammable and nonexplosive under normal conditions of use. At high temperatures this product can decompose to give off hydrochloric acid and gas.
Vapors are irritating to the eyes and nose. Liquid is corrosive to the skin.
This product attacks most metals with the evolution of explosive hydrogen gas.

SENSITIVITY TO MECHANICAL IMPACT: Not Sensitive
SENSITIVITY TO STATIC DISCHARGE: Not Sensitive

NFPA RATING:
HEALTH: 3
REACTIVITY: 2
FIRE: 0
SPECIFIC HAZARD:

SECTION X - STABILITY AND REACTIVITY

STABILITY: STABLE X UNSTABLE
HAZARDOUS POLYMERIZATION: OCCURS WILL NOT OCCUR X
REACTS WITH: AIR OXIDIZERS METALS X WATER ACIDS OTHER X HEAT ALKALIS X NONE
HAZARDOUS DECOMPOSITION PRODUCTS:
Generates toxic and irritating gases at high temperatures. Reacts with metals with the evolution of hydrogen which when mixed in air may result in fire or explosion if ignited. Chlorine gas may be released by mixing with strong oxidizers.

COMMENTS: Avoid contact with alkali metals or other active metals and certain of their compounds. Do not add water directly to the product. The product may be added to water with mixing and dilution.

SECTION XI - SPILL, LEAK AND DISPOSAL PROCEDURES

PERSONAL PRECAUTIONS:
Evacuate unnecessary personnel.
Keep unprotected personnel upwind of the spill area.

- Follow protective measures provided under Personal Protection in Section 8.

ENVIRONMENTAL PRECAUTIONS:
Contain spill with dike to prevent entry into sewers or waterways.

According to 40 CFR 302 Table 302.4 (CERCLA), environmental releases that exceed the RQ must be reported to the National Response Center by calling 800-424-8802 (202-426-2675) and the state emergency response commission and the local emergency planning committee (40 CFR 355.49) as appropriate.

METHODS FOR CLEANING UP:
Large spills should be removed by vacuum truck. Smaller spills may be soaked up and neutralized with soda ash which should be placed in closed containers, labeled and stored in a safe place outdoors to await proper disposal. Spills on areas other than pavement, E.G., dirt or sand, may be handled by removing the affected soils and placing in approved containers.

Comply with all applicable governmental regulations on spill reporting, and handling of disposal waste.
DISPOSAL METHODS:

Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.

OTHER NOTES:

SECTION XII - HANDLING AND STORAGE

HANDLING: Wear personal protective equipment as described in exposure controls / personal protection
Avoid breathing vapor, use with adequate ventilation. Wear NIOSH/MSHA approved respiratory protection if there is potential for exposure above the exposure limits.
Keep away from sources of ignition because toxic, corrosive and explosive gases may be formed.
Wash thoroughly after handling
Open container carefully to avoid spurtng

SPECIAL MIXING AND HANDLING INSTRUCTIONS:
Do not add water directly to product, and do not mix with alkalies such as sodium hydroxide (caustic soda) or alkali metals, to avoid a possible violent reaction. The product may be added to water with mixing and dilution.

STORAGE: Store in a cool, ventilated area away from incompatible materials.
Dike and vent storage tanks.
Do not store in unlined containers.

SECTION XIII - ECOLOGICAL INFORMATION

AQUATIC ECOTOX DATA

FISH: LC50 (96 HR.) (MOSQUITO FISH) 282 MG/L
      LC100 (24 HR.) (TROUT) 10 MG/L

INVERTEBRATES:
      LC50 (48 HR.) (STARFISH) 100-330 MG/L
      LC50 (48 HR.) (SHRIMP) 100-330 MG/L
      LC50 (48HR.) (SHORE CRAB) 240 MG/L

AMPHIBIANS: No data available
Hydrochloric acid can be acutely toxic in aquatic life through reduction in aqueous pH to toxic levels. Typically most aquatic species are intolerant of pH levels lower than 5.5 for any extended length of time. Reduction in aqueous pH levels may also cause the liberation of metals such as aluminum which will also contribute to exhibited toxicity. Hydrochloric acid will dissociate in water and undergo neutralization with carbonate and other naturally occurring buffering agents. Terrestrial organisms would be subject to severe burns if exposed to HCL during an accidental release. A large HCL release could lead to a persistent reduction in pH in a poorly buffered system lacking in carbonates or other naturally occurring acid neutralizers. Care should be taken to avoid accidental releases to aquatic or terrestrial ecosystems.

**SECTION XIV - DISPOSAL CONSIDERATIONS**

The materials resulting from clean-up operations may be hazardous wastes and, therefore subject to specific regulations. Package, store, transport, and dispose of all (clean up) materials and any contaminated equipment in accordance with all applicable federal, state and local regulations.

Ensure that all responsible federal, state, and local agencies receive proper notification of spill and disposal methods.

Shipments of waste materials may be subject to manifesting requirements per applicable regulations. Appropriate disposal will depend on the nature of each waste material and should be done by a competent and properly permitted contractor.
SECTION XV - TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Hydrochloric acid, solution
DOT HAZARD CLASS: 8
DOT IDENTIFICATION NUMBER: UN1789
DOT PACKING GROUP: II
DOT HAZARDOUS SUBSTANCE(S): RQ 5,000 LBS. (Hydrochloric Acid)
DOT MARINE POLLUTANT(S): Not Applicable
ADDITIONAL DESCRIPTION RQMT: Not Applicable

SECTION XVI - REGULATORY INFORMATION

US FEDERAL REGULATIONS:

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, material safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this material safety data sheet available to your employees.

SARA/TITLE III HAZARD CATEGORIES:

IMMEDIATE (ACUTE) HEALTH: YES REACTIVE HAZARD: YES
DELAYED (CHRONIC) HEALTH: NO SUDDEN RELEASE OF PRESSURE: NO
FIRE HAZARD: NO

HMIS HAZARD RATINGS:

HEALTH HAZARD: 3 FIRE HAZARD: 0 REACTIVITY: 2
SPECIFIC HAZARD: N/A

STATE REGULATIONS:

INTERNATIONAL REGULATIONS:

Consult local laws for applicability.
SECTION XVII - OTHER INFORMATION

MSDS LEGEND:

ACGIH  AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
CAS  CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
CEILING  CEILING LIMIT (15 MINUTES)
CEL  CORPORATE EXPOSURE LIMIT
OSHA  OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PEL  PERMISSIBLE EXPOSURE LIMIT (OSHA)
STEL  SHORT TERM EXPOSURE LIMIT (15 MINUTES)
TDG  TRANSPORTATION OF DANGEROUS GOODS (CANADA)
TLV  THRESHOLD LIMIT VALUE (ACGIH)
TWA  TIME WEIGHTED AVERAGE (8 HOURS)
WHMIS  WORKER HAZARDOUS MATERIALS INFORMATION SYSTEM (CANADA)

FOR ADDITIONAL INFORMATION

CONTACT: MSDS Coordinator                   Horizon Chemical Co., Inc.              During Business Hours, Central Time
651.917.3075
Manufacturer MSDS's can also be obtained by contacting the number above. See notice below.

NOTICE

Horizon Chemical Co., Inc. ("Horizon") expressly disclaims all express or implied warranties of merchantability and fitness
for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be
liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product
specification information refer to a product specification sheet and/or a certificate of analysis. These can be obtained from
the Horizon sales office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources.
While the information is believed to be accurate, Horizon makes no representations as to its accuracy or sufficiency.
Conditions of use are beyond Horizons control and therefore users are responsible to verify this data under their own
operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of
their use, handling, and disposal of the product, or from the publication or use of, or reliance upon, information obtained
herein. This information relates only to the product designated herein, and does not relate to its use in combination with
any other material or in any other process.

END OF MSDS