Safety Data Sheet

1. Product Identifier and Company Identification

Product name : **Hydrochloric (Muriatic) Acid**
HBCC SDS number : CM15000
Synonym : Muriatic Acid, Hydrogen Chloride Solution, Chlorohydric Acid, HCl

Product use and Restrictions : Refer to label or call

Manufacturer Contact Address :

Corporate Headquarters
Hill Brothers Chemical Company
1675 North Main Street
Orange, California 92867
714-998-8800 - Office
800-821-7234 - Office

Corporate Safety & Compliance
Hill Brothers Chemical Company
7121 West Bell Road, Suite 250
Glendale, Arizona 85308
623-535-9955 - Office
623-535-9944 - Fax

Emergency telephone Number (Chemtrec) : 800-424-9300
Website : http://hillbrothers.com

2. Hazard Identification

Classification : Acute Toxicity, Inhalation; Category 3
Skin Corrosion/Irritation; Category 1A
Serious Eye Damage/Eye Irritation; Category 1
Corrosive to metals; Category 1

Signal Word : Danger

Pictogram(s) :

Hazard Statements : H331: Toxic if inhaled.
H314: Causes severe skin burns and eye damage.
H290: May be corrosive to metals

Precautionary Statements

Response : P304+P340+P310: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.
P301+P310+P330+P331: IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.

P303+P361+P353+P363+P310: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor.
P305+P351+P338+P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER of doctor.

Prevention : P280: Wear protective gloves/protective clothing/eye protection/face protection.
P271: Use only outdoors or in a well-ventilated area.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash hands thoroughly after handling.

Storage : P390 Absorb spillage to prevent material-damage.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P405: Store locked up.
P406: Store in a corrosive resistant container with a resistant inner liner.

Disposal : P501: Dispose of contents and container in accordance with all local/regional/national/international regulation.

3. Composition/Information on Ingredients

CAS Number	Ingredient Name	Weight %
7647-01-0	Hydrochloric Acid	5-35%
7732-18-5	Water	95-65%

Synonyms/ Common Names : Muriatic Acid, Hydrogen Chloride Solution, Chlorohydric Acid, HCl

4. First Aid Measures

Ingestion : If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should rinse mouth with large amounts of water. Victim should drink large amounts of water to dilute the ingested material. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Never induce vomiting or give water to someone who is unconscious having convulsions, or who cannot swallow. GET IMMEDIATE MEDICAL ATTENTION.

Inhalation : If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Do not use mouth-to-mouth method if victim ingested or inhaled the substance: induce artificial respiration with the aid of a pocket mask equipped with a

one-way valve or other proper respiratory medical device. Give Cardiopulmonary Resuscitation (CPR) if there is no pulse AND no breathing. Obtain medical attention IMMEDIATELY. Symptoms may appear up to 48 hours after exposure.

Skin : Immediately flush contaminated skin with water for at least 15 minutes and wash with soap and water. If large areas of the body are contaminated or if clothing is penetrated, immediately use safety shower preferably removing clothing while under the shower. Flush exposed areas with large amounts of water for at least 30 minutes. Keep affected area cool. GET PROMPT MEDICAL ATTENTION. Wash clothing before reuse. Destroy contaminated shoes.

Eyes : Immediately flush eyes with a directed stream of water for at least 15 minutes. Forcibly hold eyelids apart to ensure complete irrigation of all eye and lid tissue. Do not use chemical antidotes. Speed is essential. GET IMMEDIATE MEDICAL ATTENTION.

Medical Conditions : Hydrogen chloride (Hydrochloric Acid) is a respiratory irritant. Persons with impaired pulmonary function may be at increased risk from exposure. Periodic surveillance is indicated.

Effects of Overexposure : The most significant routes of occupational overexposure are inhalation and contact with skin and eyes.

Summary of Acute Health Hazards

Ingestion : If ingested, solutions can cause corrosive burns to the 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 aspiration while vomiting can cause serious lung injury and death.

Inhalation : Vapor or mist from concentrated solutions can cause severe nasal irritation, sore throat, choking, coughing and difficulty breathing (50-100 ppm). 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). Symptoms of pulmonary edema such as shortness of breath can be delayed for several hours after the exposure.

Skin : Contact with the skin may cause severe irritation, skin burns and permanent skin damage. Prolonged exposure may result in ulcerating burns which could leave scars. Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin.

Eyes : Contact with the eyes may cause severe irritation, eye burns and permanent eye damage, which may result in permanent blindness. Low concentrations of vapors or mist (10-35 ppm) can be immediately irritating, causing redness.

Note to Physicians : This product may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use

endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed. Following exposure the patient should be kept under medical review for at least 48 hours as delayed pneumonitis may occur. DO NOT attempt to neutralize the acid with weak bases since the reaction will produce heat that may extend the corrosive injury.

Summary of Chronic Health : Prolonged and repeated exposure to dilute solutions often causes irritation, redness, pain and drying and cracking of the skin. Repeated exposure to low concentrations of mist can cause brownish discoloration and damage to tooth enamel. Dental erosion becomes more severe with increased exposure. Repeated exposure to low concentrations can cause nose and gum bleeding. Chronic bronchitis and stomach pain (gastritis) have also been reported.

5. Fire Fighting Measures

Extinguishing : Use water spray, fog, alcohol-resistant foam, dry chemicals, CO2, or other agents as appropriate for surrounding fire. Neutralize with soda ash or slaked lime. Do NOT use straight streams of water. Most foams will react with the material and release corrosive/toxic gases. Do not use carbon dioxide if cyanides are involved in a fire. Water fog is effective for controlling vapors. Controlled water addition is an effective method to reduce vapor pressure and control vapor emissions. If possible, prevent run-off water from entering storm drains, bodies of water, or other Environmentally sensitive areas.

Special Exposure Hazards : This product is corrosive, and presents a significant inhalation and contact hazard to fire-fighters. This product will not decompose at temperatures below 1500ºC (2730ºF). Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas. Reacts with active metals (potassium, sodium, calcium, powdered aluminum, zinc, magnesium) to produce flammable hydrogen gas which can form explosive mixtures. May also form hydrogen chloride, and acid vapors. Explosive concentrations of hydrogen may accumulate inside metal equipment.

Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and full protective equipment.

Fire Fighting Procedures : N/A

NFPA Rating : Health - 3
Flammability - 0
Instability - 1

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Uniform Fire Code Rating : Class 3 Water-Reactive Material

6. Accidental Release Measures

Personal Precautions : In case of a spill, clear the affected area, protect people and respond with trained personnel.

Emergency Procedures : Spill and Leak Response: uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used.

Methods of Containment And Clean-Up : Deny access to the area. Determine isolation distance. Stop leak at source, dike area, pick up with pump as much material as possible, prevent material from entering waterway, prevent contact with other chemicals. Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with lime or soda ash or other acid-neutralizing agent. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residues in a suitable container. Dispose of in accordance with Federal, State and local hazardous waste disposal regulations (see Section XIII)

7. Handling and Storage

Safe Handling : All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. Use in a well -ventilated location.

Storage : For Non-Bulk Containers - Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Only store in acid -resistant containers. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage containers are properly labeled and not damaged. Empty containers may contain residual liquid. Therefore, empty containers should be handled with care.
Bulk Containers – All tanks and pipelines which contain this material must be labeled. All equipment must be designed for use with this product. Perform routine maintenance on tanks or pipelines which contain this

product. Report all leaks immediately to the proper personnel.

Tank Car Shipments – Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective must be used (see Section VIII). All loading and unloading equipment must be inspected prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading and unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and properly prepared, prior to starting the transfer operations. All equipment must be designed for use with this product. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

Work/Hygienic Practices : All employees who handle this product should wash their hands before eating, drinking, smoking, or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

Ventilation : Always use this product in areas where adequate ventilation is provided. Provide good general room ventilation to minimize exposure. Use local exhaust and corrosion-resistant ventilation at points of vapor emission. System should be discharged into absorption media.

Maintenance : Protective Practices During Maintenance of Contaminated Equipment – Follow practices indicated in Section VI. Make certain application equipment is locked and tagged-out safely. Decontaminate equipment before maintenance begins by a triple-rinse with water followed, if necessary, by using acid neutralizing agent and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local regulations.

8. Exposure Controls/Personal Protection

Occupational Exposure :

Chemical Name: Hydrochloric Acid				
Exposure Limits (TWAs) in Air				
CAS Number	**IDLH**	**ACGIH TLV**	**OSHA PEL**	**STEL**
7647-01-0		2 ppm	5 ppm	N/A

Protective Equipment : In the event of a large release, don proper protective equipment, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard hat. Self-Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne

concentrations in accordance with latest OSHA and/or ANSI recommendations. The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, respirator and appropriate body protection.
Protective Clothing: Wear protective gloves such as rubber or neoprene to minimize skin contact. Use of rubberized coveralls and rubber shoes are suggested. Wash thoroughly after use. In case of emergency, or where there is a possibility of considerable exposure, wear complete acid suit with hood and forced air or self-contained breathing apparatus.

Eye Protection : Wear safety glasses with side shields or chemical goggles. Person subject to hydrochloric acid exposure should not wear contact lenses. Face shields are recommended when the operation can generate splashes, sprays or mists.

Respiratory Protection : Use approved organic vapor acid-gas respirator for areas where airborne exposure is excessive. For a higher level of protection use positive pressure supplied air respiration protection or self-contained breathing apparatus or if oxygen levels are below 19.5% or are unknown.

9. Physical and Chemical Properties

	5%	15%	31%	35%
Boiling Point °F (°C)	215 (102)	225 (107)	183 (84)	150 (66)
Freezing Point °F (°C)	-20 (-29)	-70 (-57)	-49 (-45)	-26 (-32)
Vapor Pressure mmHg@20°C	17	14	25	76
Sp. Gravity 60°F /15.2°C	1.0357	1.1154	1.1581	1.1779

Chemical Formula: HCL
Odor: Pungent, suffocating odor
Appearance: Colorless to yellowish clear liquid
Flash Point: None
Flammability: N/A
pH: < 1.0
Solubility in Water: Complete
Viscosity: N/A
% Volatiles: 100
Molecular Weight: 36.46

How to detect this compound: Litmus paper will turn red upon contact with even low concentrations of this solution.

10. Stability and Reactivity

Reactivity : Contact with metals cause generation of flammable concentrations of hydrogen gas.

Chemical Stability : Stable

Possibility of Hazardous Reactions or Polymerizations : Hazardous polymerization will not occur

Conditions to Avoid : Heat or fire, runoff to sewer, inhalation of gas, sparks where hydrogen may be present.

Incompatible Materials : Contact with metals and strong oxidizers. Reacts exothermically with alkalis, metal oxides, amines, active metals carbonates, and sulfides. Reacts with oxidizers to give chlorine gas. Reacts with cyanides to give hydrogen cyanide gas. Reacts with sulfides to give hydrogen sulfide gas. Reacts with formaldehyde to give bischloromethyl ether (an OSHA regulated carcinogen) Reacts with amines to form ammonia. Reacts with carbonates to form carbon dioxide. Other materials to avoid are: Bases, acetic anhydride, alkali metals, aluminum, copper, copper alloys, fluorine, iron, sodium hydroxide, steel, sulfites, sulfuric acid, vinyl acetate, zinc, potassium permanganate, cesium acetylene carbide, rubidium acetylene carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum carbonates, perchloric acid, calcium phosphide, metal oxides, acetates, cesium carbide, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, alcohols + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1 -difluoroethylene, ethylene diamine, magnesium boride, mercuric sulfate, silver perchlorate + carbon tetrachloride, formaldehyde, uranium phosphide.

Hazardous Decomposition Products : Chlorine will be released by mixing with strong oxidizers. Hydrogen chloride, carbon monoxide, carbon dioxide. 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.

11. Toxicological Information

Acute and Chronic Effects : See Section 4

Routes of Exposure : This product may affect the body either through ingestion, inhalation, or contact with the eyes and/or skin.

- **Inhalation** : Yes
- **Ingestion** : Yes
- **Skin** : Yes
- **Eyes** : Yes

Symptoms related to Physical, Chemical & Toxicological Characteristics : This solution is corrosive, and can burn and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion of large quantities may be fatal.

Numerical Measures of Toxicity : LD50 (rabbit): 900 mg/kg. @ 100% HCl.
LD50 (rat): 3124 ppm/1 hour @ 100% HCl.
LC50 (inhalation, mouse) = 1108 ppm/1 hr.

Chronic Toxicity : N/A

Carcinogenicity :

Product Name: Hydrochloric Acid					
ACGIH	**IARC**	**EPA**	**NIOSH**	**NTP**	**OSHA**
	IARC Monograph: *Hydrogen Chloride - Group 3 Carcinogen* *Hydrogen Chloride*			*No*	*No*

TARGET ORGANS : N/A

12. Ecological Information

Ecotoxicity : LC50 mosquito fish = 282 mg/l 96 hours
LC50 fathead minnow = 21900 ug/l 96 hours
LC50 trout = 10 mg/l 24 hours
LC50 shrimp = 100 to 330 mg/l 48 hours (salt water)
LC50 gold fish = 178 mg/l 48 hours (salt water)

Persistence and Degradability : Rapidly hydrolyzes when exposed to water.

Bioaccumulative Potential :

Product/Ingredient	Log $_{Pow}$	BCF	Potential
N/A	N/A	N/A	N/A

Mobility in Soil : 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.

13. Disposal Considerations

Disposal of Container : 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

UN# : UN1789
Proper Shipping Name : Hydrochloric Acid

Hazard Class/Division : 8
Packing Group : PG II
Marine Pollutant : N/A
Special Precautions : N/A
Emergency Response Guidebook : N/A

Placard Advisory : 2012 ERG, Guide 157, pages 252-253

15. Regulatory Information

Section 302 Extremely Hazardous Substance (EHS) : TPQ: 500 Lbs.

Section 304 Extremely Hazardous Substance (EHS) : RQ: 5,000 Lbs.

CERCLA Hazardous Substance : 5000 Pounds (2270 Kilograms) (527.42 Gals)

Section 313 Supplier Notification

Clean Air Act (CAA) : TQ: 5,000 Lbs.

California Prop 65 : N/A

Label Warning : N/A

EPA Registration : N/A

16. Other Information

Revision date : 02/25/2015
Supersedes : 05/21/2009
First Issue : 12/01/1986

Chemical Family/Type : Inorganic Acid

Section(s) changed since last revision : MSDS to First Issue SDS Conversion

IMPORTANT! Read this SDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This SDS has been prepared in accordance with the Globally Harmonized System of Chemical and Labeling of Chemicals (GHS) Fifth Edition and the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The SDS information is based on sources believed to be reliable. Available data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control; **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks and exercise appropriate precautions for protection of employees and others prior to use.