



A Business Unit of Vulcan Materials Co

# MATERIAL SAFETY DATA SHEET

24-Hour Emergency Phone 800-835-2030

## SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

Muriatic Acid, 20° and 22° Baumé, Technical, Industrial, and Commercial Grade

### CHEMICAL NAME

Hydrogen Chloride, Aqueous Solution

### SYNONYMS

Hydrochloric Acid

### MANUFACTURER

Vulcan Chemicals, P O Box 385015, Birmingham, AL 35238-5015

## SECTION 2 COMPOSITION INFORMATION ON INGREDIENTS

<u>CHEMICAL NAME</u>	<u>CAS NUMBER</u>	<u>% RANGE</u>
*Hydrogen Chloride	7647-01-0	35

This Material Safety Data Sheet is also valid for hydrogen chloride solutions weaker than 35%. The specific gravity and vapor pressure may be different from the values listed.

\* Denotes chemical subject to reporting requirements of Section 313 of Title III of the 1986 Superfund Amendments and Reauthorization Act (SARA) and 40 CFR Part 372

## SECTION 3 HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

A clear, colorless liquid with pungent, irritating odor.

**DANGER! CORROSIVE!** Causes severe burns to skin, eyes and digestive tract.

Harmful or fatal if swallowed or inhaled.

### POTENTIAL HEALTH EFFECTS

#### INHALATION

Breathing of vapor or mist is possible. Breathing this material is harmful and may cause death. Harmful effects include burns and permanent damage to the airways, including the nose, throat, and lungs.

#### SKIN

Causes skin burns and permanent skin damage.

#### EYE

Causes burns and permanent injury to eye tissue. May cause blindness.

#### INGESTION

Swallowing this material may be harmful or cause death. Harmful effects include burns and permanent damage to the digestive tract, including the mouth, throat, stomach and intestines. Symptoms may include severe abdominal pain and vomiting of blood. Blood loss through damaged tissue may lead to low blood pressure and shock.

### SIGNS AND SYMPTOMS OF EXPOSURE

Depending upon level and duration of exposure, other possible signs and symptoms from breathing, swallowing, and/or entry of this material through the skin may include: irritation of the nose, throat, airways, and lungs with cough and difficult breathing, severe stomach or intestinal upset with pain, nausea, vomiting, and/or diarrhea, excess fluid in the lungs with difficult breathing, and shock.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

Preexisting disorders of the following organs or systems, which may be aggravated by exposure to this material include: respiratory system (including asthma and other breathing disorders), gastrointestinal system, skin.

**EFFECTS FOLLOWING REPEATED EXPOSURE**

This material may cause the following effects: respiratory tract damage (nose, throat, airways), lung damage, dental erosion, gastrointestinal effects, and skin effects.

**SECTION 4 FIRST AID MEASURES****INHALATION**

Remove individual to fresh air and get immediate medical attention. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration.

**SKIN**

Immediately wash exposed skin with plenty of soap and water while removing contaminated clothing and shoes. Get immediate medical attention. Wash clothing before reuse and throw away shoes which cannot be thoroughly cleaned.

**EYES**

Hold the eyelids apart and flush the eye gently with a large amount of water for at least 15 minutes. Get immediate medical attention.

**INGESTION**

Have person drink a glass of water immediately if able to swallow. Get medical attention immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

**NOTES TO PHYSICIAN**

Probable mucosal damage may contraindicate the use of gastric lavage.

See Section 11 for Toxicological Information

**SECTION 5 FIRE FIGHTING MEASURES****FLAMMABLE PROPERTIES****FLASH POINT**

None

**AUTOIGNITION TEMPERATURE**

None

**FLAMMABLE LIMITS IN AIR (PERCENT BY VOLUME)**

None

**HAZARDOUS COMBUSTION PRODUCTS**

None

**EXTINGUISHING MEDIA**

Nonflammable, use agent suitable for surrounding fire.

**FIRE FIGHTING INSTRUCTIONS**

Approach fire from upwind to avoid hazardous vapors. Use flooding quantities of water as fog or spray to keep fire-exposed containers cool. Extinguish fire using agent suitable for surrounding fire.

Firefighters should wear chemical protective suit with self-contained positive pressure breathing apparatus. Refer to Reactivity Data – Section 10.

**SECTION 6 ACCIDENTAL RELEASE MEASURES**

Evacuate immediate area where concentrated fumes are present. Cleanup personnel must wear proper protective equipment (see Section 8). Completely contain spilled acid with dikes, etc., and prevent run-off into ground and surface waters or into sewers. Neutralize with soda ash or dilute caustic soda. If spill occurs indoors, turn off heating and/or air conditioning systems, to prevent vapors from contaminating entire building. Neutralization products, both liquid and solid, must be recovered for proper disposal.

Reportable Quantity (RQ) is 5000 lbs. Notify National Response Center (800/424-8802) of uncontained releases to the environment in excess of the RQ.

For all transportation accidents, call CHEMTREC at 800/424-9300.

**SECTION 7 HANDLING AND STORAGE****HANDLING**

Do not get in eyes, on skin or on clothing. Avoid breathing vapors or mist. Do not taste or swallow. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any protective clothing, or shoes that become contaminated with hydrochloric acid should be removed immediately, and laundered before wearing again. Follow protective controls set forth in Section 8 when handling this product.

Carefully monitor handling, use and storage to avoid spills and leaks. Follow protective controls set forth in Section 8 when handling this product. Do not use in poorly ventilated or confined spaces. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.

**STORAGE****STORAGE CONDITIONS**

Store in closed, properly labeled, rubber-lined steel, acid-resistant plastic, or glass containers. Do not store near strong alkalis or reactive materials. Do not remove or deface label or tag. Hydrogen chloride can react with cyanide, forming lethal concentrations of hydrocyanic acid.

**INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT**

Aluminum equipment should not be used for storage and/or transfer.

**SECTION 8 EXPOSURE CONTROLS, PERSONAL PROTECTION****ENGINEERING CONTROLS****VENTILATION**

Ventilate as necessary to maintain air concentration below 2 ppm, at all times. Monitoring should be performed regularly to determine exposure level(s). See Exposure Guidelines below.

**PERSONAL PROTECTIVE EQUIPMENT****EYE AND FACE PROTECTION**

Wear splashproof chemical goggles. A face shield should be worn in addition to goggles where splashing or spraying is a possibility.

**SKIN PROTECTION**

Wear impervious clothing, boots, and gloves.

**RESPIRATORY PROTECTION**

Where vapor concentration exceeds or is likely to exceed 2 ppm, a NIOSH approved full-face respirator with acid gas canister is acceptable. A NIOSH approved self-contained breathing apparatus with full-face piece is required for air concentrations above 50 ppm and for spills and/or emergencies. Follow any applicable respirator use standards or regulations.

**GENERAL**

Safety showers and eyewash station must be available in immediate area. Protective equipment and clothing should be selected, used, and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer.

**EXPOSURE GUIDELINES**

Vulcan Chemicals recommends that its customers minimize employee exposure. For the purpose of evaluating employee exposure, customers should adopt the lower of the current OSHA PEL or the ACGIH TLV.

**ACGIH:** 2 ppm Ceiling (2003)

(based on irritation and corrosion effects)

**OSHA:** 5 ppm Ceiling

**IMMEDIATELY DANGEROUS TO LIFE OR HEALTH**

IDLH: 50 ppm

**ODOR THRESHOLD**

Odor threshold is approximately 0.3 ppm.

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES****CHEMICAL FORMULA**

HCl

**MOLECULAR WEIGHT**

36.46

**APPEARANCE AND ODOR**

clear, colorless liquid with  
pungent, irritating odor

**SPECIFIC GRAVITY**

20° Be: 1.1600 @ 15.6/15.6°C;  
22° Be: 1.1789 @ 15.6/15.6°C

**VAPOR PRESSURE**

78 mm Hg @ 20°C

**VOLATILES, PERCENT BY VOLUME**

35

**BOILING POINT**

150°F - 230°F (65.6°C - 110.0°C)

**VAPOR DENSITY**

1.27 (Air = 1)

**EVAPORATION RATE**

(Butyl Acetate = 1) < 1.00

**SOLUBILITY IN WATER**

Complete

**SECTION 10 STABILITY AND REACTIVITY****CHEMICAL STABILITY**

Stable

**CONDITIONS TO AVOID**

Contact with strong bases can cause violent reaction generating large amounts of heat. Reactions with metals can release flammable hydrogen gas.

**INCOMPATIBILITY WITH OTHER MATERIALS**

Bases, metals, mercuric sulfate, perchloric acid, carbides of calcium, cesium, rubidium, acetylides of cesium and rubidium, phosphides of calcium and uranium and lithium silicide.

**HAZARDOUS DECOMPOSITION PRODUCTS**

None (Refer to Conditions to Avoid)

**HAZARDOUS POLYMERIZATION**

Will not occur.

**SECTION 11 TOXICOLOGICAL INFORMATION****ANIMAL TOXICOLOGY**

Oral LD<sub>50</sub>: 900 mg/kg (rabbit)  
Inhalation LC<sub>50</sub>: 3124 ppm for 1Hour (rat)  
Inhalation LC<sub>50</sub>: 1108 ppm for 1Hour (mouse)

**ACUTE TOXICITY**

Hydrogen chloride gas, mist and vapor may cause irritation of respiratory tract, with burning, choking, coughing, headaches and rapid heartbeat. Levels of 10 to 35 ppm may cause irritation of throat and 50-100 ppm is nearly unbearable for 1 hour. Inflammation, destruction of nasal passages and breathing difficulties may occur with higher concentrations and may be delayed in onset. 1000-2000 ppm can be fatal.

**EFFECTS FOLLOWING PROLONGED OR REPEATED EXPOSURE**

Repeated skin exposures to low concentrations of acid solutions, mist or vapor can cause dermatitis. Repeated inhalation exposures to low concentrations of HCl mist can cause erosion of dental enamel, nasal ulceration, dermatitis, gastritis and chronic bronchitis. Experimental evidence in various animal species confirms many of these effects.

**CARCINOGENICITY**

No standard carcinogenicity studies for hydrogen chloride were identified. In a lifetime exposure study (rats, 10 ppm for 6 h/day, 5 d/wk), there was no significant increase in mortality or tumor response among exposed animals compared to control groups.

The International Agency for Research on Cancer (IARC) has concluded there is inadequate evidence of carcinogenicity to experimental animals and inadequate evidence of carcinogenicity to humans (Group 3: not classifiable as to carcinogenicity to humans). Hydrogen chloride is not listed on the IARC, NTP or OSHA carcinogen lists.

**DEVELOPMENTAL TOXICITY**

Based on available data, it is not known whether exposure of the mother to this material can cause harm to the fetus.

**SECTION 12 ECOLOGICAL INFORMATION****ENVIRONMENTAL FATE**

Water: Hydrogen Chloride in water dissociates almost completely, and will be neutralized by natural alkalinity and carbon dioxide.

Soil: Hydrochloric acid will sink into the soil. This acid will dissolve some soil material (in particular, anything with a carbonate base), and will be somewhat neutralized. The remaining portion is thought to transport downward to the water table

**ECOTOXICITY**

Acute LC<sub>50</sub> (48 Hours, static) for Bluegill: 3.6 mg/l  
Acute LC<sub>50</sub> (96 Hours, static) for Mosquito Fish: 282 ppm

**SECTION 13 DISPOSAL CONSIDERATIONS**

All disposals of this material must be done in accordance with Federal, state, and local regulations. Waste characterization and compliance with disposal regulations are the responsibilities of the waste generator.

**SPILL RESIDUES**

Recovered solids or liquids may be sent to a licensed reclaimer or disposed of in a permitted waste management facility. Consult Federal, state, or local disposal authorities for approved procedures. Do not dump into any sewers, on the ground, or into any body of water. Any disposal must be in compliance with Federal, state, or local regulations.

**SECTION 14 TRANSPORT INFORMATION****DOT IDENTIFICATION NO.**

UN 1789

**DOT SHIPPING DESCRIPTION (49 CFR 172.101)**

Hydrochloric Acid, 8, UN 1789, PG II, RQ

**PLACARD REQUIRED**

Corrosive, 1789, Class 8

**LABEL REQUIRED**

Corrosive, Class 8

Label as required by OSHA Hazard Communication Standard, and any applicable state and local regulations.

**IMO REQUIREMENTS**

EmS No.: 8-03

**SECTION 15 REGULATORY INFORMATION****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.

**SARA HAZARD CATEGORIES (40 CFR 370.2)**

HEALTH: Immediate Health

**INTERNATIONAL REGULATIONS****CANADA****WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) CLASSIFICATION**

WHMIS Classifications applicable to this product:

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

**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

**STATE REGULATIONS****CALIFORNIA PROPOSITION 65**

Hydrochloric acid does not appear on the California Proposition 65 list.

**SECTION 16 OTHER INFORMATION****NFPA RATINGS**

Health 3, Flammability 0, Instability 0

**Emergency Information:**Call toll-free 24 hours a day:  
800-835-2030Outside USA, call:  
316-524-5751**For any other information contact:**Vulcan Chemicals, Technical Service Department  
P O Box 385015, Birmingham, AL 35238-5015

Phone: 800-873-4898

8 AM - 5 PM, Central Time, Monday through Friday

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