Safety Data Sheet

1. 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

MANUFACTURED BY Adwan Chemical Industries Co. Ltd.
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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
A clear, colorless liquid with pungent, irritating odor.
DANGER! Causes severe burns to skin, eyes and digestive tract.
Harmful if swallowed or inhaled.

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

SKIN
Liquid hydrochloric acid or concentrated vapors can rapidly cause burning of skin. Repeated or prolonged contact with dilute solutions, and concentrated vapors, can cause irritation and dermatitis.

EYE
Liquid or concentrated vapors can cause eye irritation, severe burns and permanent damage including blindness.

INGESTION
Can cause severe burns of mouth, esophagus and stomach. Nausea, pain and vomiting frequently occur. Depending upon amount swallowed, holes in the intestinal tract, kidney inflammation, shock and death can occur.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Asthma, bronchitis, emphysema and other lung conditions and chronic nose, sinus or throat conditions. Exposure may aggravate existing skin and/or eye conditions on contact.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY
None known.

3. COMPOSITION / INFORMATION INGREDIENTS

CHEMICAL NAME : *Hydrogen Chloride
CAS NUMBER : 7647-01-0 35
% RANGE : 35

* 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

4. FIRST AID MEASURES

INHALATION
Move person to fresh air. If breathing stops, administer artificial respiration. Get medical attention immediately.

SKIN
Remove contaminated clothing and wash skin thoroughly for a minimum of 15 minutes with large quantities of water (preferably a safety shower). Get medical attention immediately.

EYES
Wash eyes immediately with large **amounts** of water (preferably eye wash fountain), lifting the upper and lower eyelids and rotating eyeball. Continue washing for a minimum of 15 minutes. Get medical attention immediately.

INGESTION
If conscious, give large quantities of water. Do not induce vomiting. Get medical attention immediately.

See Section 11 for Toxicological Information

5. FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT
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.

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 form 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.

7. HANDLING AND STORAGE

HANDLING
Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any protective clothing, or shoes which 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.

STORAGE
STORAGE CONDITIONS
Store in closed, properly labeled, rubber-lined steel, acid-resistant plastic, or glass containers. Do not store near strong alkalies or reactive materials. Do not remove or deface label or tag. Hydrogen chloride can react with cyanide, forming lethal concentrations of hydrocyanic acid. Do not enter confined spaces such as tanks or pits without following proper entry procedures as required by 29 CFR 1910.146.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT
Aluminum equipment should not be used for storage and/or transfer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS
VENTILATION
As necessary to maintain air concentration below 5 ppm, at all times.

PERSONAL PROTECTIVE EQUIPMENT
EYE AND FACE PROTECTION
Wear chemical goggles which are splashproof and face shield.

SKIN PROTECTION
Wear impervious clothing, boots, and gloves.

RESPIRATORY PROTECTION
Where vapor concentration exceeds or is likely to exceed 5 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.

EXPOSURE GUIDELINES
To determine the exposure level(s), monitoring should be performed regularly. Safety showers and eyewash station must be available in immediate area.

ACGIH: 5 ppm Ceiling (based on irritation and corrosion effects)
OSHA: 5 ppm Ceiling

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH
IDLH: 50 ppm

ODOR THRESHOLD
Odor threshold approximately 0.3 ppm.

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 at 15.6/15.6°C 20° Be: 1.1789 at 15.6/15.6°C
VAPOR PRESSURE	78 mm Hg at 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

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.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

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

ANIMAL TOXICOLOGY
LC50: 3124 ppm for 1Hour (rat)

Inhalation LC50: 1108 ppm for 1Hour (mouse)

CHRONIC TOXICITY
Exposures of 100 ppm for 6 hours a day for 50 days caused only slight unrest and irritation to the eyes and nose of rabbits, guinea pigs and pigeons. The hemoglobin content of the blood was also slightly diminished. Monkeys receiving twenty exposures of 33 ppm for 6 hours did not display any adverse effects. Higher exposures (unspecified) have caused weight loss which paralleled the severity of exposure. Baboons exposed to 500, 5000, or 10,000 ppm for 15 minutes did not have significant alterations in any pulmonary function parameters 3 days or 3 months after exposure. In humans, long term overexposures have been associated with erosion of the teeth.

CARCINOGENICITY
No standard carcinogenicity studies for hydrogen chloride were identified. Two studies on rats were conducted to determine if hydrogen chloride increased the formation of nasal tumors or increased the carcinogenic potential of formaldehyde. In both studies the rats were exposed to 10 ppm hydrogen chloride, 6 hours per day, 5 days a week. One study lasted 84 weeks while the other lasted the animals' lifetime. Hydrogen chloride did not cause an increase in nasal tumors and did not increase the carcinogenicity of formaldehyde. Hydrogen chloride is not listed on the IARC, NTP or OSHA carcinogen lists.

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 LC50 (48 Hours, static) for Bluegill: 3.6 mg/l
Acute LC50 (96 Hours, static) for Mosquito Fish: 282 ppm

13. DISPOSAL CONSIDERATIONS

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All disposals of this material must be done in accordance with local, state and Federal 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.

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 MFAG Table No.: 700 IMDG Code Page: 8183

15. REGULATORY INFORMATION

US 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

16. OTHER INFORMATION

NFPA RATINGS
Health 3, Flammability 0, Reactivity 0