MATERIAL SAFETY DATA SHEET

U·E·I Systems
A UEI GROUP COMPANY
www.ueisystems.com

SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: MURIATIC ACID

Additional Names: HYDROCHLORIC ACID
MURIATIC ACID 20 degree

General Use: Used to deoxidize photoengraving metal plates

Company: UEI® Systems, A UEI Group Company
Address/Phone: 9090 Nieman Road
Overland Park, KS 66214
(800) 221-9059 or (913) 541-0503

Emergency Contact Number: CHEMTREC – Available 24 hrs/day, 7 days/week
Domestic North America: 800-424-9300
International: 703-527-3887

SECTION II HAZARDOUS INGREDIENTS / IDENTITIY INFORMATION

Hazardous Components	Cas No.	%	OSHA (PEL/TWA)	ACGIH TLV	MSHA (PET/TWA)
Hydrogen Chloride (Hydrochloric Acid)	7647-01-0	20	5 ppm (Ceiling)	5 ppm (Ceiling)	Not Available

SECTION III HAZARD IDENTIFICATION

Identification: Clear to pale yellow corrosive liquid with a pH below 2. Causes burns upon contact to eyes, skin, and respiratory tract.

Routes of Entry: Inhalation, Ingestion, Skin Absorption.

Health Hazards (Acute and Chronic): Causes Severe Burns, **VERY CORROSIVE.** Contact to eyes could cause severe damage and even blindness (**very rapidly**). Causes burns to the skin. Breathing of mist or dust can cause damage to nasal and respiratory passages. Ingestion results in severe damage to mucous membranes and deep tissues. Can result in death on penetration to vital areas.

Carcinogenicity: NA

Sign and Symptoms of Exposure: Irritation or burning to eyes, skin or other contact to body. Headache, burning sensation, coughing, wheezing, laryngitis, nausea, vomiting, and shortness of breath.

SECTION IV FIRST AID MEASURES

In all cases call a physician IMMEDIATELY.

Ingestion: DO NOT induce vomiting!

Inhalation: Remove to fresh air. If not breathing, give artificial respiration.

Eye Contact: Flush eyes with large amounts of water for at least 15 minutes.

Skin Contact: Flush skin with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes promptly and clean before re-use.

SECTION V FIRE FIGHTING MEASURES

Flash Point: NA **Flammable Limits:** NA **Auto-ignition temperature:** NA

Extinguishing Media: Water Spray, Carbon Dioxide, Dry Chemical Powder or Appropriate Foam.

Special Fire Fighting Procedures: NA

Unusual Fire and Explosion Hazards: NA

SECTION VI ACCIDENTAL RELEASE MEASURES

Evacuate area. Ventilate the area of the leak or spill. Clean-up personnel should wear protective clothing. Neutralize with soda ash or lime and dispose of by approved method. Wash area with dilute soda ash solution and dispose of by approved method. Ensure compliance with local, state, and federal regulations.

SECTION VII HANDLING AND STORAGE

Keep container closed. Store in polyolefin, fiberglass, or rubber-lined containers.

Electrostatic Accumulation Hazards: None
Usual Shipping Containers: DOT approved tank cars, tank trucks and drums as specified in 49 CFR
Storage/Transport Temp: Ambient
Storage/Transport Pressure: Ambient
Load/Unload Temp: Ambient
Storage/Handling Materials: Polyester-coated steel, rubber (Hypalon) and teflon are suitable

SECTION VIII EXPOSURE CONTROLS AND PERSONAL ROTECTION

Engineering Controls: Use only in a well-ventilated area. Wear chemical resistant gloves and goggles. Emergency shower and eye wash station should be located in the work area.
Adequate ventilation to reduce levels of air contaminates below that which may cause personnel injury or illness. (See exposure guideline for this section.)

Personal Protective Equipment

Eyes: Wear chemical goggles or safety shield. Where splashing is possible, wear full-face shield.
Skin: Full protective acid-resistant clothing, boots, and gloves to prevent any contact with this material.
Respiratory Protection: NIOSH approved acid−gas air purifying canister, or air−supplied equipment.

Chemical Name	OSHA	PEL	ACGIH	TLV
Hydrochloric Acid	Ceiling: 5 PPM	Ceiling: 5 PPM	PEL Permissible Exposure Limits TWA (Time Weighted Average): **8 hr.**	TLV Threshold Limit Value STEL (Short Term Exposure Limit): **15 min.**

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear, colorless fuming liquid	**Viscosity:**	1.484 – 1.551 cSt @ 68° F 20° C
Odor:	Pungent, suffocating odor	**Physical State:**	Liquid
Vapor Pressure @ 20° C:	7-32% (0-23.5 MMHG) (PARTIAL PRESSURE HCL) 32-38% (23.5-210 MMHG)	**Boiling Point:**	7-20% (> 100-110° C (>212 TO 230° F)) 20-38% (110-74° C (230 TO 167° F))
Vapor Density:	1.3 (Active Ingredient)	**Melting Point:**	-74° C (-101° F)
Solubility in Water:	Complete with slight evolution of heat	**Specific Gravity:**	1.16 @ 70° F / 21° C (H_2O = 1)
Freezing Point:	7% (-2° C (28° F)) 37% (-74° C (-101° F))	**pH @ 25° C:**	< 1
Specific Gravity:	1.035 – 1.188	**Volatiles, % by Vol:**	100%
Evaporation Rate:	Approx. 1 (Water = 1)	**Molecular Weight:**	36.46 (Active Ingredient)

SECTION X STABILITY AND REACTIVITY

Stability: Stable **Conditions to avoid:** Contact with metals, metal oxides, hydroxides, amines, carbonates, and other alkaline metals.

Incompatibility: Highly corrosive to many materials

Hazardous Decomposition/By-Products: Hydrogen gas formed on contact with most metals. Hydrochloric acid vapors emitted when heated. Chlorine gas may be formed by electrolysis or oxidation.

Hazardous Polymerization: Does NOT polymerize

SECTION XI TOXICOLOGICAL INFORMATION

Routes of Absorption: Oral, Dermal, Inhalation and Eye Contact

Warning Statements and Warning Properties:
May be harmful if swallowed. Causes eye, skin, digestive tract and respiratory tract burns. Can cause lung damage.

Human Dose Response Data

Odor Threshold: The odor threshold for concentrated HCL (38%) is 1-5 PPM

Irritation Threshold: Irritation threshold for concentrated HCL has been reported to be 5 PPM or greater

Immediately Dangerous to Life or Health: The IDLH for Hydrogen Chloride gas is 50 PPM

Signs, Symptoms and Effects of Exposure

Inhalation

Acute: Inhalation of the mist of vapor or hydrogen chloride gas may cause irritation of the mucous membranes and respiratory tract with symptoms of burning, choking and coughing. At exposure concentrations greater the TLV, damage may occur to the mucous membranes (ulceration of the nose and throat) and respiratory tract. At these high concentrations, severe breathing difficulties may occur which may be delayed in onset and may be due to pulmonary edema (fluid in the lung) or laryngeal edema or spasm.

Chronic: Repeated or prolonged exposure to concentrations greater than accepted occupational limits may cause dental discoloration and erosion of the teeth.

Skin

Acute: Hydrochloric acid mist may rapidly cause skin inflammation and burns. Direct contact with the liquid will be corrosive to the skin and can cause severe irritation and/or burns characterized by redness, swelling and scab formation. The potential for scarring and ulceration of the contacted tissue also exists.

Chronic: Repeated contact with the mist has been reported to cause contact dermatitis (skin rash). Prolonged or repeated exposure with the may cause permanent damage.

Eye

Acute: Exposure to the mist may result in eye irritation and/or severe burns with permanent damage and possible loss of sight. Direct contact with the liquid will be corrosive to the eye with resulting severe burns, potential visual impairment or loss of sight.

Chronic: Repeated contact with the mist has been reported to cause severe burns, potential visual impairment or loss of sight. Prolonged or repeated exposure with the may cause permanent damage.

Ingestion

Acute: Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration. Ingestion causes severe damage to the gastrointestinal tract with the potential to cause perforation.

Chronic: There are no known or reported effects from chronic exposure. Chronic ingestion of significant amounts of this product is unlikely because of its acute corrosive action.

Medical Conditions Aggravated By Exposure:
Respiratory and cardiovascular disease

Interactions With Other Chemicals Which Enhance Toxicity:
None known or reported

Animal Toxicology

Acute Toxicity
Inhalation LC50: 3124 PPM / 1 Hour (rat)
Oral LD50: 900 mg / Kg (rabbit)
Dermal LD50: No Data
Corrosive to skin and eyes; severe respiratory irritant

Aquatic Toxicity
It is the resulting pH rather than the concentration of HCL that governs it lethality to aquatic life. Only when the pH value is depressed to 5.0 or lower with hydrochloric acid prove lethal to fish. The 96-hour LC50 at 20 degrees Celsius for Bluegill Sunfish occurs when HCL lowers the pH value to 3.6. The 96-hour LC50 for Mosquito Fish (Gambusia Affinis) in turbid water is a concentration of 282 mg/L of HCL.
100% mortality to trout occurred for a 24-hour exposure at a concentration of 10 mg/L.
The toxic threshold of HCL toward Daphnia Magna has been reported to be 56 to 62 mg/L in soft water and Lake Erie water, receptively.

Acute Target Organ Toxicity
This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

Chronic Target Organ Toxicity
The only known or reported health effects from repeated exposure to hydrochloric acid are described above and are related to tissue damage to dental enamel and gums leading to erosion of the teeth. These effects would occur from exposures greater than currently accepted occupational limits.

Reproductive Toxicity
There are no known or reported effects on reproductive function or fetal development.

Carcinogenicity
This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA. IARC has classified hydrochloric acid as having inadequate evidence for carcinogenicity to humans and animals. IARC therefore considers hydrochloric acid to be not classifiable as to its carcinogenicity to humans.
The carcinogenesis response to the combined and separate exposures to formaldehyde and hydrochloric acid was investigated in male inbred sprague-dawley rats. The rats were exposed to gaseous formaldehyde, 14 PPM and hydrochloric acid, 10 PPM. No carcinogenic response was observed with hydrochloric acid alone.

Mutagenicity
Hydrochloric acid has been tested and was shown to be non-mutagenic in the battery of mutagenicity and genotoxicity assays including the following: Ames Assay, Salmonella and saccharomyces (yeast) microbial assays, L5178Y mouse lymphoma gene mutation assay, sister chromatid exchange assay, and the mammalian chromosomal aberrations assay.

SECTION XII ECOLOGICAL INFORMATION

Environmental Fate:
When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater.

Environmental Toxicity:
This material is expected to be toxic to aquatic life.

SECTION XIII DISPOSAL INFORMATION

MURIATIC ACID

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA Hazardous Waste Number: D002.

If this product becomes a waste, it will be a hazardous waste which is subject to the land disposal restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous liquid waste, it must be disposed of in accordance with local, state, and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by treatment.

Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and non-hazardous wastes.

SECTION XIV TRANSPORT INFORMATION

MURIATIC ACID (HYDROCHLORIC ACID)

This material is regulated as a DOT Hazardous Material.
Dot Description from the Hazardous Materials Table: 49 CFR 172.101
Land (U.S. DOT): Hydrochloric Acid Solution, 8, UN1789, PG II
Water (IMO): Same as Above
Air (IATA/ICAO): Same as Above
Hazard Label/Placard: Corrosive
Reportable Quantity: 5000 LBS. (Per 49 CFR 172.101, Appendix)
Emergency Guide Number: 157
Special Comments: RQ does not apply to package size.

SECTION XV REGULATORY INFORMATION

MURIATIC ACID (HYDROCHLORIC ACID)

Reportable Quantity: This product is subject to a reportable quantity with respect to Hydrochloric Acid. RQS are subject to change and reference should be made to 40 CFR 302.4 for the current requirements.
Toxic Substances Control Act: This substance is listed on the toxic substances control act inventory.
NSF Limits: NSF Maximum Drinking Water Use Concentration – 40 mg/L as Hydrochloric Acid
Superfund Amendment and Reauthorization Act, Title III
Hazard Categories, Per 40 CFR 370.2
Health: Immediate (Acute), Delayed (Chronic)
Physical: None

Emergency Planning and Community Right To Know, per 40 CFR 355, Appendix A

Extremely Hazardous Substance – Threshold Planning Quantity:	None Established
Supplier Notification Requirements, per 40 CFR 372.45:	This mixture or tradename product contains a toxic chemical or chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.
Chemicals Listed Are:	Hydrochloric Acid

SECTION XVI OTHER INFORMATION

UEI™ Systems provides the information contained herein in good faith. The information is believed to be correct. However it is not all-inclusive and should be used only as a guide. Individuals receiving the information must exercise their independent judgement in determining its appropriateness for a particular purpose. UEI™ Systems shall not be held liable for any damage resulting from handling or from contact with the product listed herein.

Abbreviations:

PEL	Permissible Exposure Limit
TLV	Threshold Limit Value
NA	Not Applicable

National Fire Rating:

Limit Value	**Hazard Rating**	**0 – Least**	**1 – slight**	**2 – moderate**	**3 – high**	**4 - extreme**
Health	3					
Fire	0					
Reactivity	1					
Special Note	none					