Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

REAGENT CHEMICAL & RESEARCH, INC.
115 US Hwy 202 Ringoes, NJ 08551

REVISED DATE: 1/1/2006 VALID UNTIL 1/1/2011

IDENTITY
Hydrochloric Acid, 20° or 22° Baume

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I - Product Information

Product Name	CAS #
Hydrochloric Acid	7647-01-0
Synonym	Chemical Formula
Muriatic Acid	HCl
Chemical Name	Chemical Family
Hydrochloric Acid Solution	Inorganic Acid

Section II - Manufacturers Information

Manufacturers Name	Address
Reagent Chemical & Research, Inc.	115 US Hwy 202 Ringoes, NJ 08551
Emergency Contact	Country
Robert Dritschel	United States
Emergency Telephone	Emergency Telephone #2
1-409-962-5769	CHEMTREC 1-800-424-9300

Section III - Ingredients/Regulatory Information

Substance Description	Percent	CAS #
Hydrogen Chloride	26.00 - 37.00	7647-01-0
Water	63.00 - 74.00	7732-18-5

EXPOSURE LIMITS/REGULATORY INFORMATION

Substance	PEL	TLV	STEL	TWA	CEILING
Hydrogen Chloride	C-7 mg/m3	C-5 ppm	50 ppm	N/D	5 ppm
Water	N/D	N/D	N/D	N/D	N/D

N/D - Not Determined C = Ceiling Level

Section IV - Hazards Identification

Appearance & Odor	Statement of Hazards
Clear/Pale Yellow Liquid/Pungent Odor	Severe and painful burns upon contact

Primary Route of Exposure
Skin, eye and inhalation contact are the primary routes of exposure to this product

Inhalation Acute Exposure Effects
Inhalation of excessive concentrations of Hydrogen Chloride vapors immediately produces severe irritation of the upper respiratory tract; resulting in coughing, burning of the throat, and a choking sensation. Reactions encountered in man have usually been limited to inflammation occasional ulceration of the nose, throat and larynx. If inhaled deeply, edema of the lungs may occur.

Skin Contact Acute Exposure Effects
Concentrated solutions are destructive to clothing and on contact with skin, causes severe burns unless promptly washed off. Repeated skin contact with dilute solutions may lead to the development of dermatitis. Exposure to the concentrated vapors of Hydrogen Chloride may also result in burns and dermatitis.

Section IV - Hazards Identification (continued)

Eye Contact Acute Exposure Effects

Contact of the eyes with Hydrogen Chloride, either as a gas or in solution, rapidly causes severe irritation and painful burns of the eyes and eyelids. If the acid is not quickly removed by thorough irrigation with water, there may be prolonged or permanent visual impairment or total loss of sight.

Ingestion Acute Exposure Effects

When concentrated Hydrochloric Acid is swallowed, it causes severe burns of the mucous membranes of the mouth, esophagus and stomach. The lips and mouth usually turn white, and later brown. There is pain in the throat and stomach, difficulty in swallowing, intense thirst, nausea and in severe cases, collapse and unconsciousness

Fire and Explosion Hazards

Non-flammable, but Hydrochloric Acid reacts with all metals, except gold and platinum, with rapid evolution of Hydrogen which is flammable and explosive in air Firefighters exposed to Hydrochloric Acid vapors should wear Scott Air-Pak, or equivalent. Hydrogen Chloride vapors are extremely irritating to the respiratory tract and may cause breathing difficulty.

Carcinogenicity

IARC	…No	OSHA	…No	ACGIH	…No

Section V - First Aid Measures

General

If a known exposure occurs or is suspected, immediately initiate the recommended procedures below. Simultaneously contact a physician, or the nearest Poison Control Center. Inform the person contacted of the type and extent of exposure, describe the victim's symptoms and follow the advice given. For additional information, call day or night, Reagent Chemical (409) 962-5769 or Chemtrec (800) 424-9300.

Inhalation

Remove from contaminated atmosphere. If breathing has ceased, clear the victim's airway and start mouth-to-mouth artificial respiration, which may be supplemented by the use of a bag-mask respirator, or a manually-triggered, oxygen supply capable of delivering 1 liter/second or more. If the victim is breathing, oxygen may be administered from a demand-type or continuous-flow inhalator, preferably with a physician's advice. Contact a physician immediately.

Eye Contact

Immediately flush the eyes with large quantities of running water for 15 minutes Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eyes and lids with water. DO NOT attempt to neutralize with chemical agents Obtain medical attention as soon as possible. Oils or ointments should not be used Continue the flushing for an additional 15 minutes if the physician is not available

Section V - First Aid Measures (continued)

Skin Contact
Immediately remove contaminated clothing under a safety shower. Flush all affected areas with large amounts of water for 15 minutes. DO NOT attempt to neutralize with chemical agents. Obtain medical advice.

Ingestion
DO NOT induce vomiting. Immediately give large quantities of water or milk, if available. If vomiting does occur, give fluids again. Never give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center

Medical Conditions Generally Aggravated by Exposu
Hydrogen Chloride will aggravate breathing disorders

Note to Physician
Attending Physician should treat exposed patients symptomatically

Section VI - Fire Fighting Measures

Flash Point	Flash Method
N.A.	N.A.

Extinguishing Method
Not Applicable

Unusual Fire and Explosion Hazards
Non-flammable, but Hydrochloric Acid reacts with metals.

Special Firefighting Procedures
Non-flammable, but Hydrochloric Acid reacts with all metals, except gold and platinum, with rapid evolution of Hydrogen which is flammable and explosive in air

Firefighters exposed to Hydrochloric Acid vapors should wear Scott Air-Pak, or equivalent. Hydrogen Chloride vapors are extremely irritating to the respiratory tract and may cause breathing difficulty.

Section VII - Accidental Release Measures

Steps to be Taken in Case Material is Released or Spille
Spills or discharges into the environment involving large quantities of Hydrochloric Acid should be controlled and cleaned-up according to a pre-determined, affirmative written Spill Prevention and Control Program. For assistance in developing a SPCP contact your nearest Reagent Sales Office.

Spills should be handled immediately by neutralization and dilution of the spilled product by the use of Soda Ash (Sodium Carbonate), Lime (Calcium Hydroxide), or Limestone (Calcium Carbonate) with large amounts of water. For an interior (inside a closed space) spill be aware that the use of Soda Ash, Lime and Limestone will evolve heat and carbon dioxide and that ample ventilation must be provided.

Waste Disposal
Under Federal RCRA, it is the responsibility of the user of products to determine, at the time of disposal, whether the product falls under RCRA as a hazardous waste This is because product uses, transformations, mixtures, etc. may render the resulting end-product hazardous.

Container Disposa
Containers should be cleaned of residual product before disposal. Empty containers should be disposed of in accordance with all applicable laws and regulations.

Section VII - Accidental Release Measures (continued)

Precautions to be Taken in Handling and Storag
Make sure all personnel involved in housekeeping and spill clean-up follow good

Industrial Hygiene practices and wear proper protective equipment.

Section VIII - Handling/Storage/Transportation

Handling
Chemical goggles and full face shield must be worn at all times by personne

exposed to or handling Hydrochloric Acid. The use of a NIOSH approved cartridge

respirator or a Scott Air-Pak should be used by all personnel exposed.

Storage
Store containers in a cool, dry location away from direct sunlight, sources of

intense heat, or where freezing may occur. Store material in acid-proof container

Keep container tightly closed when not in use. Keep container away from incompatible

materials. All loading, unloading, and storage equipment must be inspected prior to

any transfer operations are initiated.

General Comments
Impervious clothing, gloves, footwear and head gear must be worn at all times

by personnel exposed to or handling Hydrochloric Acid.

Section IX - Exposure Controls/Personal Protection

Respiratory Protection (Specify Type
Maintain airborne contaminate levels below listed guidelines. Use with adequate

ventilation. Use a mechanical fan or vent area to scrubber.

Ventilation	Local Exhaust If PEL exceeded	Special Vent fumes to appropriate scrubber
	Mechanical (General If PEL exceeded	Other Not Applicable

Skin Protection
Wear neoprene rubber gloves to minimize skin contact.

Eye Protection
Splash goggles or safety glasses. Face shields are recommended.

Other Protection
Use body protection appropriate for task. An apron or other impermeable body

protection is suggested. Full body chemical protection is recommended for

emergency response procedures.

Applicable Exposure Limits
Other than any exposure limits which may be displayed in Section 3, there are no other

known exposure limits applicable to this product or its components.

Section X - Physical and Chemical Properties

Boiling Point	230 F	Specific Gravity (H2O = 1)	1.13 - 1.19
Vapor Pressure (mm Hg)	50 - 60 mm	Freezing Point	.-12 F to -63 F
Vapor Density (AIR = 1)	N.A.	Density	9.48 - 9.61

Solubility in Water
miscible

Appearance and Odo
Clear/Slightly yellow with a sharp pungent odor

Section XI - Stability and Reactivity

Stability	Unstable		Conditions to Avoid Hydrochloric Acid is extremely reactive. Avoid contact with
	Stable	X	metal surfaces and oxidizing agents.

Section XI - Stability and Reactivity (continued)

Incompatibility (Materials to Avoid)
Hydrochloric Acid is chemically stable when properly contained and handled. It is a strong mineral acid and reacts with many metals and metal oxides and hydroxides to form the equivalent metal chloride. It reacts with zeolites and other siliciou compounds to form Hydrosilicic Acid; it reacts with carbonates to form Carbor Dioxide and Water. It is oxidized by Oxygen or electrolysis to form Chlorine, a lethal, poisonous gas. It reacts with alkaline compounds to form a neutral salt It is a hydrolyzing agent for carbonydrates, esters and other compounds. Its reaction with most metals will produce Hydrogen, an explosive gas. Violent reactions will result when Hydrochloric Acid Reacts with acetic anhydride, 2-aminoethanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, ethylene diamine, ethylene imine, oleum (fuming sulfuric acid), perchloric acid, beta propiolactone, propylene oxide, sodium hydroxide, sulfuric acid, uranium phosphide and vinyl acetate. This listing is not all-inclusive.

Hazardous Decomposition or By-products
Extreme heat may cause the product to decompose, producing toxic fumes which may include chlorine compounds.

Hazardous Polymerization			Conditions to Avoid
	May Occur		Extreme heat and contact with incompatible materials
	Will Not Occur	X	

Section XII - Toxicological Information

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	Yes	Yes

Health Hazards (Acute and Chronic
Hydrogen Chloride, both as a gas and in a solution as Hydrochloric Acid, is a corrosive substance and can cause severe and painful burns on contact with any part of the body or if taken internally. The mucous membranes of the eyes and the upper respiratory tract are especially susceptible to the irritating effects of high atmospheric concentrations of Hydrogen Chloride. The gas or vapor is so penetrating and pungent that when high concentrations do occur, those exposed should immediately leave the contaminated area.

Carcinogenicity	NTP?	IARC Monographs?	OSHA Regulated?
	No	No	No

Signs and Symptoms of Exposure
Exposure to Hydrochloric acid may cause severe burns at the contact points

Medical Conditions Generally Aggravated by Exposu
Exposure to fumes may aggravate dermatitis and breathing disorders.

Toxicology	Inhalation Data
Hydrogen Chloride	Human LCLo - 1300 ppm/30 min
	Rat LC_{50} - 4701 ppm/30 min
	Oral (rabbit) LD_{50} - 900 mg/kg
	Mutagenic Effects Inhalation: 100 ppm/24 hrs (Chromosome damage)
	Oral:: 100 ppm (Chromosome damage)
	Parental: 20 mg (Cytogenic effects)

Section XIII - Ecological Information

Ecological Toxicity
Animals exposed to hydrochloric acid solution will experience tissue damage, burns and may be killed. Plants contaminated with hydrochloric acid solutions of low pH may be adversely effected or destroyed. High concentrations have been shown to be detrimental to aquatic life. A release into a body of water will kill fish and other aquatic life

Other Ecological Information
Hydrochloric acid is stable and found naturally in the environment. All work practices should be aimed at eliminating environmental contamination.

Chemical Fate Information
Hydrochloric acid is naturally occurring in the environment.

Other Regulatory Information
No other regulatory information is available on this product.

Section XIV - Transportation Information

Regulated Materia
Hydrochloric Acid is defined as hazardous by the US Dot and Transport Canada

DOMESTIC SHIPPING INFORMATION

Proper Shipping Name	Hydrochloric Acid	Hazard Classification	Corrosive
UN/NA Identification	UN 1789	Hazard Class	Class 8
DOT Labels Required	Corrosive	Packaging Group	II

INTERNATIONAL SHIPPING INFORMATION

Proper Shipping Name	Hydrochloric Acid	Hazard Classification	Corrosive
UN/NA Identification	UN 1789	Hazard Class	Class 8
Labels Required	Corrosive	Packaging Group	II

Section XV - Other Information

Created By Product Safety - 6/1/98	MSDS Revision Number Revision # 005
Toxic Substances Control Act TSCA listed 7647-01-0	Superfund Amendment & Reauthorization Act, Title I Hazard Categories Acute & HEALTH: Chronic
Emergency Planning & Community Right to Know EHS - Threshold Quantity: None	PHYSICAL: None
Is product Regulated Under 1990 Clean Air Act No	Does Product Contain, or is Manufactured with, CFC's No
Reportable Quantity RQ - 5000 lbs	NSF Listing Scale & Corrosion control at maximum 40 mg/l
NFPA 3 - 0 - 0 - Acid	HMIS 3 - 0 - 0 - X

Is This Product Regulated Under the EPA's Risk Management Plan
No, Hydrochloric Acid Solution under 37% is not regulated.

North American Emergency Response Guide Boo
ID # 1789 Guide #157 1996 Revision

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