

# MATERIAL SAFETY DATA SHEET

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NO. 30A

HYDROCHLORIC ACID  
Revision A

DATE June 1984

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: ~~HYDROCHLORIC ACID~~

DESCRIPTION: This material is a water solution of hydrogen chloride gas.

OTHER DESIGNATIONS: Muriatic Acid, Concentrated Hydrochloric Acid, GE Material D4A3,  
CAS# 007 647 010, Aqueous Hydrochloric Acid

MANUFACTURER: Available from many suppliers.

## SECTION II. INGREDIENTS AND HAZARDS

	%	HAZARD DATA
Hydrogen Chloride (HCl)	<38	8-hr TWA 5 ppm or 7 mg/m <sup>3</sup> (C)*
Impurities (depends on acid grade)	Traces	Human, Inhalation LCLo 1300ppm/30 M
Water	Balance	Rabbit, Oral LD50 900 mg/kg Rat, Oral (20°Be') LD50 700 mg/kg Rabbit, Skin (20°Be') LD50 >5g/kg, 24 H-C

\*Current OSHA PEL and ACGIH (1983) TLV Ceiling Level.

## SECTION III. PHYSICAL DATA

	18°Be'	20°Be'	22°Be'	23°Be'
Weight % HCl -----	27.9	31.5	35.2	37.1
Boiling pt, 1 atm, deg F -----	208	182	144	123
Freezing point, deg F (approx) --	-43	-63	-86	-101
Specific gravity, 60/60 F -----	1.142	1.162	1.179	1.189
Vap. Press., 25C, HCl/Total, mm Hg ~7/15	~25/33	~87/92	~186/190	

All materials are completely water soluble with ~100% volatiles and pH <1.

Appearance & Odor: Clear, colorless to lt. yellow, fuming\* liquid with a pungent, irritating odor. 1-5 ppm HCl detected by smell; 5-10 ppm is disagreeable.

\*Higher conc. tend to be fuming liquids at room temperature.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	Lower	Upper
N/A	N/A	N/A	-	-

Extinguishing media: Select that suitable for surrounding fire. Use a water spray to cool fire exposed containers to prevent rupture.

Nonflammable, but acid can react with many metals, such as iron, to produce flammable hydrogen gas. (Flammable conc. may accumulate inside metal equipment.) Neutralize acid with limestone, slaked lime or soda ash to minimize formation of potentially explosive hydrogen gas.

Firefighters should use full protective clothing and self-contained breathing apparatus when this material is involved in a fire situation.

## SECTION V. REACTIVITY DATA

This material is stable when properly contained and handled. It is a strong mineral acid and is, thus, highly reactive with materials such as metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials. It is highly corrosive to many materials; it must have proper containment for handling and storage.

It liberates significant levels of HCl gas by vapor pressure at room temperature when concentrated and large amounts of HCl when heated.

Reaction with most metals will produce flammable hydrogen gas.

Incompatible with materials such as cyanides, sulfides, sulfites and formaldehyde (may release HCN, H<sub>2</sub>S, SO<sub>2</sub>, bischloromethyl ether, respectively).

SECTION VI. HEALTH HAZARD INFORMATION	TLV 5 ppm Ceiling Level (as HCl)
<p>Aqueous HCl and its vapors are strong irritants of the eyes, mucous membranes, and skin. Severity of eye injury from splashes [from irritation to severe burns] depends on quantity, conc. and duration of contact. Excessive acute exposure to HCl vapors/mists promptly irritates the upper respiratory tract and can result in coughing, burning of the throat, choking sensation and, if inhaled deeply, pulmonary edema. Prolonged or repeated low level exposure may cause teeth erosion. Skin exposure can cause burns; repeated or prolonged exposure to dilute soln. may cause dermatitis. Ingestion can cause severe burns and possible laryngeal spasm.</p> <p><b>FIRST AID:</b>  <u>Eye Contact:</u> Contact physician! <u>Immediately</u> flush with running water for 15 min. including under eyelids.  <u>Skin Contact:</u> Flush affected area well with water. Remove grossly contaminated clothing under safety shower. Get medical help if large skin area contacted or if irritation persists.  <u>Inhalation:</u> Remove to fresh air. Restore and/or support breathing as needed. Use O<sub>2</sub> therapy for coughing, difficult breathing. Get medical help. Keep warm and at rest.  <u>Ingestion:</u> If victim is conscious, give 2-3 glasses of water, then milk of magnesia or limewater. Contact physician! <u>Do not induce vomiting!</u></p>	
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES	
<p>Report large spills to safety personnel. Evacuation may be needed; keep upwind. Remove sources of ignition if H<sub>2</sub> is a hazard. Provide optimum ventilation. Those involved in clean-up of large spills must use full protective clothing, boots, and self-contained breathing apparatus.</p> <p>Small spills and residues can be covered with excess of a mixture of soda ash and slaked lime to neutralize, and the slurry picked up for landfill burial or flushed with much water.</p> <p>Contain large spills. Collect or flush with water to holding area for neutralization. Do not flush directly to sewer or surface waters.</p> <p><b>DISPOSAL:</b> Dispose of acid via licensed contractor or neutralize with limestone, soda ash or slaked lime. Flushing to sewer depends on allowable neutral salt concentrations in effluent water. Follow Federal, State and Local regulations. Consider use of waste acid to neutralize alkaline wastes. EPA (CWA) RQ is 5000 lb. (40 CFR 117)</p>	
SECTION VIII. SPECIAL PROTECTION INFORMATION	
<p>Provide adequate exhaust ventilation to meet TLV requirements. Face velocity of hoods should exceed 100 lfm. Use approved respirator or self-contained breathing apparatus for emergency or non-routine conditions with full facepiece above 50 ppm.</p> <p>Those handling hydrochloric acid should use protective clothing and equipment to prevent body contact with the liquid. Use rubber gloves or gauntlets, apron, boots, long sleeved shirt, body suit, etc. Use chemical safety goggles and/or face shield for eye protection against splashing of acid.</p> <p>An eyewash station, washing facilities, and safety shower must be readily available to areas of use and handling.</p>	
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS	
<p>Store closed containers out of direct sunlight, in a clean, cool, open or well-ventilated area, away from oxidizing agents, away from alkaline material and sources of heat. Area should have acid resistant floor and approved drainage. Protect containers from physical damage. Use nonsparking tools in areas around tanks and pipes where hydrogen might be generated.</p> <p>Use with good ventilation. Avoid inhalation of HCl vapors. Odor of HCl gives adequate warning for a prompt voluntary withdrawal from excessive exposure. Do not get in eyes or on skin or clothing. Wash thoroughly after handling.</p> <p>Provide emergency neutralization materials and equipment near storage and use areas.</p> <p>DOT Classification: CORROSIVE MATERIAL I.D. No. UN1789 Label: CORROSIVE  IMO Class 8</p> <p>DATA SOURCE(S) CODE: 1-12, 14-16, 27, 31, 34, 37, 38, 47-49</p>	
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