



HYDROCHLORIC ACID

AUG 04 1993

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME) HYDROCHLORIC ACID (various grades)		<input checked="" type="checkbox"/> C.A.S. NO. 7647-01-0	<input type="checkbox"/> GENERAL PRODUCT CODE #
CHEMICAL NAME AND/OR SYNONYM Hydrochloric Acid Synonym: Muriatic Acid			
FORMULA HCl (37-38 wt.% in water)		MOLECULAR WEIGHT 36.46 (for the anhydrous)	
ADDRESS (No., STREET, CITY, STATE AND ZIP CODE) GENERAL CHEMICAL CORPORATION CN 1829 Morristown, N.J. 07960-1829			
CONTACT Director of Environmental Matters	PHONE NUMBER (201) 455-5630	LAST ISSUE DATE	CURRENT ISSUE DATE October 1986

B. FIRST AID MEASURES

EMERGENCY PHONE NUMBER (201) 455-3700	
<p>Eyes: Immediately flush with water, lifting eyelids occasionally to facilitate irrigation; continue flushing for 20 to 30 minutes. Do not use chemical antidotes. Get medical help. Speed is essential.</p> <p>Skin: Immediately flush with water and remove contaminated clothing if exposure to liquid acid has occurred. Do not use chemical antidotes. Continue deluge showering for at least 15 minutes. Get medical evaluation. Speed is essential.</p> <p>Inhalation: Promptly remove to fresh air (rescuers may in some situations need to wear personal protective equipment — see Section E). If breathing has stopped, apply artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen, provided a qualified operator is available. Get prompt medical attention.</p> <p>Ingestion: If conscious and free of convulsions, give large amounts of water immediately. Do not induce vomiting. Give a nongassing neutralizer such as milk, milk of magnesia or calcium hydroxide, etc. Do not give carbonates, bicarbonates, chalk. Get prompt medical attention.</p> <p>Information on hazards, precautions, first aid, etc., is abbreviated. More detailed information is contained in references cited in Section J.</p>	

C. HAZARDS INFORMATION

HEALTH

INHALATION Inhalation of vapor or mist can cause irritation or corrosive burns to the upper respiratory tract. Intense lacrimation, coughing, throat irritation, sneezing and labored breathing may occur. Following high exposures, lung irritation and pulmonary edema can also occur, sometimes delayed. LC50 (ihl-rat): 3124 ppm / 1 hour. LCLo (ihl-human): 1000 ppm / 30 minutes.	
INGESTION Although unlikely to occur, ingestion of hydrochloric acid can cause irritation and burns to the gastrointestinal tract; may perforate stomach or esophagus in extreme cases. Asphyxia may occur from edema of the larynx. Dehydration is a primary hazard with concentrated material. For more dilute solutions, the animal LD50 (rabbit) of 900 mg/kg may be pertinent (moderately toxic) - Ref. (a).	
SKIN Severity of injury will depend on quantity, concentration and duration of contact. Liquid contact: may cause severe burns, pain and brownish or yellow stains. Solution contact: irritation, dermatitis or burns. Vapor contact: irritation or burns. Mist contact: irritation.	
EYES Severity of injury will depend on quantity, concentration and duration of contact. Both liquid and vapor contact can cause irritation, corneal burns, and conjunctivitis. Permanent damage with loss of sight can occur - Reference (b).	
PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J)	BIOLOGICAL The OSHA/TWA and ACGIH/TLV are the same: 5ppm Ceiling (as Hydrogen Chloride)
UNUSUAL CHRONIC TOXICITY Excessive exposure, repeated or prolonged, may cause erosion of the teeth. Gastritis and chronic bronchitis among workers exposed to hydrochloric acid have been reported. Reference (c).	

C. HAZARDS (Cont.)**FIRE AND EXPLOSION**

FLASH POINT No flash point. <input type="checkbox"/> OPEN CUP <input type="checkbox"/> CLOSED CUP	N.A. ^{OC}	AUTO IGNITION TEMPERATURE Not applicable.	^{OC}	FLAMMABLE LIMITS IN AIR (% BY VOL.) LOWER – Not applicable UPPER – Not applicable
UNUSUAL FIRE AND EXPLOSION HAZARDS Acid reacts with steel and most other metals to generate hydrogen gas, which is a serious fire and explosive hazard. See, also, Hazardous Decomposition Products, Section G.				

D. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED If involved in a fire, use water; neutralize any spilled material with chemically basic substances such as soda ash, lime or limestone (see neutralization technique under "Spill or Leak" below).	
FIRE EXTINGUISHING AGENTS TO AVOID None known.	
SPECIAL FIRE FIGHTING PRECAUTIONS Firefighters should wear self-contained, NIOSH-approved, breathing apparatus with full facepiece and full protective clothing. Use water spray to cool fire-exposed containers. Take precautions so as not to splash this material onto other personnel.	
VENTILATION Provide corrosion-resistant ventilation sufficient to reduce acid mist and vapor concentrations to or below current TLV levels. Packaging and unloading areas and open processing equipment may require mechanical exhaust systems or local exhaust. Specialized handling (e.g., bottles) may require closed ventilated system (e.g., exhausted hood). For details on applications, see Reference (b).	
NORMAL HANDLING Do not get in eyes, on skin or clothing. Avoid breathing mist or vapor. Use only with adequate ventilation. Keep away from metals and incompatible chemicals. Wash thoroughly after handling.	
STORAGE Store in a dry, well-ventilated area away from heat, out of the sun and away from oxidizing substances (nitric acid, etc.) or other incompatible materials (see Section G). Elevated temperatures will increase the vapor pressure of this product. Use necessary caution when opening the container.	
SPILL OR LEAK (ALWAYS WEAR PERSONAL PROTECTIVE EQUIPMENT – SECTION E) Fully protected personnel (see Section E) should dilute small spills or leaks cautiously with plenty of water. Neutralize residue with alkali such as soda ash, lime or limestone. Provide ample ventilation when neutralizing to eliminate the carbon dioxide that is formed. For major spills, keep unprotected personnel away. Contain the acid by diking the spill with soil or clay. Recover the acid, if possible. Attempt to keep out of sewer. Any release to the environment of this material may be subject to federal and/or state reporting requirements. Check with appropriate agencies.	
SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS	SIGNAL WORD – DANGER!
To prevent ignition of hydrogen gas generated by accidental contact of metals with the acid, smoking, open flames and sparks must not be permitted in storage or handling areas. Medical surveillance and employee education are recommended for workers with this acid [see Reference (b)].	

E. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION Generally not required in a closed ventilation system. For spill or emergency where required, use a respirator approved by NIOSH for hydrogen chloride gas and/or mist, as applicable. Some exposures may require self-contained breathing apparatus, generally with full facepiece, or supplied-air respirator, generally with a full facepiece, helmet, or hood. For details and other choices, see Reference (b).
EYES AND FACE As a minimum, wear hard hat, chemical safety goggles, and full facepiece (if not obstructed by the respirator in use, if any). Do not wear contact lenses. In exposure to mists, chemical safety goggles are necessary; add a face shield if pouring liquid.
HANDS, ARMS, AND BODY Prevent any contact of liquid with body. As a minimum, wear acid-resistant apron, protective clothing, boots, and gauntlet gloves for routine product-handling use. For increased protection, include acid-resistant trousers and jacket. Diluted solutions also require such protection [see Ref. (b)]. Wash clothing upon contamination before reuse.
OTHER CLOTHING AND EQUIPMENT Provide eyewash stations and quick-drench shower facilities convenient to areas of handling, use or storage. Keep neutralization supplies and equipment at hand.

F. PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS): <input checked="" type="checkbox"/> LIQUID <input type="checkbox"/> SOLID <input type="checkbox"/> GAS <input type="checkbox"/> _____		APPEARANCE AND ODOR Colorless liquid with an irritating, pungent odor.	
BOILING POINT	51 °C	SPECIFIC GRAVITY (H ₂ O = 1) (liquid) 1.19 @25 °C.	VAPOR DENSITY (AIR = 1) (estimated) 1.3
MELTING POINT	-74 °C		
SOLUBILITY IN WATER (% by Weight) complete		pH 1% solution, pH: 0.8	VAPOR PRESSURE (mm Hg at 20°C) <input type="checkbox"/> (PSIG) <input type="checkbox"/> mm Hg @25 °C: ~ 186/190
EVAPORATION RATE (Butyl Acetate = 1) <input type="checkbox"/> (Ether = 1) <input checked="" type="checkbox"/> (Time to evaporate) >1		% VOLATILES BY VOLUME (At 20°C) 100	

G. REACTIVITY DATA

STABILITY <input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	CONDITIONS TO AVOID High temperatures (may cause containers to burst).
INCOMPATIBILITY (MATERIALS TO AVOID) Most <u>metals</u> (see Section C). <u>Alkalis</u> , metallic oxides, amines, esters, and certain other organics: beta-propiolactone, propylene oxide [Reference (e)] – cause exothermic reactions, possibly violent. Carbonates, cyanides, sulfides – yield toxic gases. Water-reactive materials, such as sulfuric acid, oleum and acetic anhydride – cause exothermic reaction.	
HAZARDOUS DECOMPOSITION PRODUCTS Hydrogen chloride vapors (released normally at ambient conditions) are released in increasing amounts at higher temperatures.	
HAZARDOUS POLYMERIZATION <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR	CONDITIONS TO AVOID None known.

H. HAZARDOUS INGREDIENTS (Mixtures Only)

MATERIAL OR COMPONENT / C.A.S. #	WT. %	HAZARD DATA (SEE SECT. J)
Not applicable.		

I. ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY		OCTANOL/WATER PARTITION COEFFICIENT	
Degradability: Not applicable – inorganic. Aquatic Toxicity: 282 ppm/96hr./mosquito fish/TL _m /fresh water. 100-330 ppm/48 hr./shrimp/LC ₅₀ /salt water.		Unknown. [Reference (f)].	
EPA HAZARDOUS SUBSTANCE? (CLEAN WATER ACT SECT. 311)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IF SO, REPORTABLE QUANTITY: <u>13,500</u> * (37 wt. % acid) <u>13,150</u> (38 wt. % acid)	40 CFR 116-117
WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS)			
Waste hydrochloric acid (37-38%) should be cautiously diluted with water and neutralized with an alkali. Neutralized waste must be disposed of in accordance with applicable disposal regulations. Users should review their operations in terms of applicable federal, state and local laws and regulations, then consult with appropriate regulatory agencies before discharging or disposing of waste material. Waste may have to be disposed of by an approved contractor.			
RCRA STATUS OF <u>UNUSED</u> MATERIAL IF DISCARDED:		HAZARDOUS WASTE NUMBER: (IF APPLICABLE)	
EPA "hazardous waste" (corrosive), if discarded		D002	
		40 CFR 261	

J. REFERENCES

PERMISSIBLE CONCENTRATION REFERENCES		
TWA: OSHA regulations, 29 CFR 1910.1000 (1982), "Z List". TLV: ACGIH 1985-86 List, "Threshold Limit Values and Biological Exposure Indices".		
REGULATORY STANDARDS	D.O.T. CLASSIFICATION:	49 CFR 173
DOT classification: Hazardous Materials Table, 49 CFR 172.101. FDA regulations apply to the use of food grade product (21 CFR).	Corrosive material I.D. No.: UN1789	
GENERAL		
(a) NIOSH Registry (RTECS), 1981-82, Accession No. MW4025000 (Hydrochloric Acid). (b) NIOSH/OSHA: "Occupational Health Guideline for Hydrogen Chloride", 1978. (c) ACGIH: "Documentation of Threshold Limit Values", 4th edition. (d) Tech. Guide #7, "Handbook of Hazardous Materials", Am. Mutual Ins. Alliance, 1974. (e) NFPA Manual 491M, "Manual of Hazardous Chemical Reactions", 8th edition, 1984. (f) U.S. Coast Guard CHRIS Manual; entry: Hydrochloric Acid.		

K. ADDITIONAL INFORMATION

<p>This product in various grades is not for drug use; nor is it for food use unless the product is labeled "food grade".</p>

PSDS FILE NO. GC-4010

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