

Material Safety Data Sheet

Hydrochloric Acid

Section 1. Product and Company Identification

Product name : Hydrochloric Acid
Product code : 317
Synonym : Muriatic Acid
Material uses : Other non-specified industry: Analytical reagent.
Manufacturer : EMD Chemicals Inc.
P.O. Box 70
480 Democrat Road
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday - Friday: 8:00 - 5:00 PM
Validation date : **4/5/2006.**
Print date : 9/5/2006.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

Section 2. Hazards Identification

Physical state : Liquid. (Colorless.)
Odor : Pungent.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : DANGER!
POISON!
MAY BE FATAL IF INHALED OR SWALLOWED.
CAUSES SEVERE EYE AND SKIN BURNS.
CAUSES SEVERE RESPIRATORY TRACT IRRITATION.
CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT, SKIN, EYE, LENS OR CORNEA.
Do not ingest. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Eyes : Severely corrosive to the eyes.
Skin : Severely corrosive to the skin.
Inhalation : Very toxic by inhalation. Severely irritating to the respiratory system.
Ingestion : Very toxic if swallowed. May cause burns to mouth, throat and stomach.
Potential chronic health effects :
Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.
Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged exposure to the substance can produce lung damage. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to the substance can produce target organs damage.
See toxicological information (section 11)

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Section 3. Composition/Information on Ingredients

United States

<u>Name</u>	<u>CAS number</u>	<u>% by Weight</u>
Hydrochloric Acid	7647-01-0	100

The 100% indicates this product is a concentrated acid. Assay (HCl) value is approximately 36-38%.

Section 4. First Aid Measures

- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Continue to rinse for at least 10 minutes. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

Section 5. Fire Fighting Measures

Flammability of the product : No specific hazard.

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Not available.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
- Special remarks on fire hazards** : Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc.

Section 6. Accidental Release Measures

- Personal precautions** : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Methods for cleaning up** : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Section 7. Handling and Storage

- Handling** : Do not ingest. Do not get in eyes or on skin or clothing. Keep container closed. Use only with adequate ventilation. Do not breathe vapor or mist. Wash thoroughly after handling.
- Storage** : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Product name

Exposure limits

United States

Hydrochloric Acid

ACGIH TLV (United States, 2003).

CEIL: 2 ppm

NIOSH REL (United States, 12/2001).

CEIL: 7 mg/m³ Form: All forms

CEIL: 5 ppm Form: All forms

OSHA PEL (United States, 8/1997).

CEIL: 7 mg/m³ Form: All forms

CEIL: 5 ppm Form: All forms

OSHA PEL 1989 (United States, 3/1989).

CEIL: 7 mg/m³ Form: All forms

CEIL: 5 ppm Form: All forms

ACGIH TLV (United States, 1/2005). Notes: Refers to Appendix A -- Carcinogens. ACGIH 2003 Adoption

CEIL: 2 ppm Form: All forms

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts.

Recommended: face shield , splash goggles

Skin

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Body: Recommended: chemical-resistant protective suit

Respiratory

- : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: PVC

Section 8. Exposure Controls/Personal Protection

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and Chemical Properties

Physical state : Liquid. (Colorless.)
Color : Colorless.
Odor : Pungent.
Molecular weight : 36.46 g/mole
Molecular formula : Cl-H
Boiling/condensation point : 110°C (230°F)
Melting/freezing point : -74°C (-101.2°F)
Critical temperature : 51.5°C (124.7°F)
Relative density : 1.2 (Water = 1)
Vapor pressure : 21.3 kPa (160 mm Hg) (at 20°C)
Vapor density : >1 (Air = 1)
Evaporation rate : >1
Solubility : Soluble in water

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
Incompatibility with various substances : Reactive or incompatible with the following materials: metals and alkalis.
Hazardous decomposition products : These products are halogenated compounds, hydrogen chloride.
Hazardous polymerization : Will not occur.
Conditions of reactivity : Flammable hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc.
 Explosive in the presence of the following materials or conditions: metals.

Section 11. Toxicological Information

Toxicity data

United States

<u>Product/ingredient name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Hydrochloric Acid	LD50	900 mg/kg	Oral	Rabbit
	LC50	1108 ppm (1 hour/hours)	Inhalation	Mouse

Chronic effects on humans : **CARCINOGENIC EFFECTS** A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC.
 Causes damage to the following organs: lungs, upper respiratory tract, skin, eye, lens or cornea.

Other toxic effects on humans : Extremely hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, of inhalation (lung irritant).
 Hazardous in case of inhalation (lung corrosive).

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.
Mutagenic effects : No known significant effects or critical hazards.

Section 11. Toxicological Information

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : May cause burns to mouth, throat and stomach.
Inhalation : Severely irritating to the respiratory system.
Eyes : Severely corrosive to the eyes.
Skin : Severely corrosive to the skin.

Section 12. Ecological Information

Environmental precautions : No known significant effects or critical hazards.
Products of degradation : These products are halogenated compounds.
Toxicity of the products of biodegradation : The products of degradation are as toxic as the product itself.

Section 13. Disposal Considerations


Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport Information

Regulatory information	UN number	Proper shipping name	Class	PG*	Label	Additional information
DOT Classification	UN1789	HYDROCHLORIC ACID	8	II		Reportable quantity 5000 lbs. (2268 kg)

PG* : Packing group

Section 15. Regulatory Information

United States

- HCS Classification** : Highly toxic material
Corrosive material
Target organ effects
- U.S. Federal regulations** : TSCA 8(b) inventory: Listed
SARA 302/304/311/312 extremely hazardous substances: Hydrochloric Acid
SARA 302/304 emergency planning and notification: Hydrochloric Acid
SARA 302/304/311/312 hazardous chemicals: Hydrochloric Acid
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Hydrochloric Acid : Sudden release of pressure, Immediate (acute) health hazard,
Delayed (chronic) health hazard
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Hydrochloric Acid
Clean Air Act (CAA) 112 accidental release prevention: Hydrochloric Acid
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: Hydrochloric Acid

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Hydrochloric Acid	7647-01-0	100
Supplier notification	: Hydrochloric Acid	7647-01-0	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

- State regulations** : Pennsylvania RTK: Hydrochloric Acid : (environmental hazard, generic environmental hazard)
Massachusetts RTK: Hydrochloric Acid
New Jersey: Hydrochloric Acid

Canada

- WHMIS (Canada)** : Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
Class E: Corrosive material
- CEPA DSL/CEPA NDSL** : CEPA DSL: Hydrochloric Acid

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

EU regulations

- Hazard symbol/symbols** :



- Risk phrases** : R34- Causes burns.
R37- Irritating to respiratory system.
- Safety phrases** : S1/2- Keep locked up and out of the reach of children.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

International regulations

- International lists** : Australia (NICNAS): Hydrochloric Acid
China: Hydrochloric Acid
Germany water class: Hydrochloric Acid
Japan (METI): Hydrochloric Acid

Section 15. Regulatory Information

Korea (TCCL): Hydrochloric Acid

Philippines (RA6969): Hydrochloric Acid

Section 16. Other Information

Label requirements

: DANGER!
POISON!

MAY BE FATAL IF INHALED OR SWALLOWED.

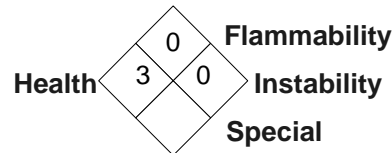
CAUSES SEVERE EYE AND SKIN BURNS.

CAUSES SEVERE RESPIRATORY TRACT IRRITATION.

CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, RESPIRATORY TRACT,
SKIN, EYE, LENS OR CORNEA.

National Fire Protection Association (U.S.A.)

:



Other special considerations

: Section 3 lists this product as 100% which indicates that it is a concentrated acid.

Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.