

SAFETY DATA SHEET

Hydrochloric Acid Solution



Section 1. Identification

GHS product identifier : Hydrochloric Acid Solution
Other means of identification : Hydrogen chloride solution, muriatic acid.
Code : HCLCUN01

Identified uses
Acidizing (activation) of petroleum wells, food industry, scale removal, metal cleaning, pH adjustment, industrial acidizing.


Supplier/Manufacturer
RESEARCH PRODUCTS, INC.
6311 HIGHWAY 90 W.
THEODORE, AL. 36590
251-653-0030
Supplier's details : To be determined.

Emergency telephone number (with hours of operation) : CHEMTREC, U.S. : 1-800-424-9300 International: +1-703-527-3887 (24/7)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : ACUTE TOXICITY (inhalation) - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :  

Signal word : Danger
Hazard statements : H332 - Harmful if inhaled.
H314 - Causes severe skin burns and eye damage.

Precautionary statements

Prevention : P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing.
P271 - Use only outdoors or in a well-ventilated area.
P261 - Avoid breathing vapor.
P264 - Wash hands thoroughly after handling.

Section 2. Hazards identification

- Response

: P304 + P340 + P310 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician.
P301 + P310 + P330 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 + P363 + P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician.
P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or physician.
- Storage

: P405 - Store locked up.
- Disposal

: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified (HNOC)

- Physical hazards not otherwise classified (PHNOC)

: None known.
- Health hazards not otherwise classified (HHNOC)

: None known.

Section 3. Composition/information on ingredients

- Substance/mixture

: Mixture
- Other means of identification

: Hydrogen chloride solution, muriatic acid.

CAS number/other identifiers

- CAS number

: Not applicable.
- Product code

: HCLCUN01

Ingredient name	%	CAS number
Water	63.1 - 90	7732-18-5
Hydrogen Chloride	10 - 36.9	7647-01-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact

: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Inhalation

: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Call a poison center or physician. Get medical attention immediately.
- Skin contact

: In case of contact, immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Get medical attention immediately.
- Ingestion

: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.



Section 4. First aid measures

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Concentrated mists, vapors or splashed liquid can cause severe irritation, burns and possibly permanent blindness. Low concentrations of mists or vapors can be irritating, causing redness.
- Inhalation** : Inhalation of acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size causes irritation of the upper respiratory tract with coughing and discomfort. Higher or prolonged inhalation exposure may lead to corrosion of mucus membranes with temporary lung irritation and cough, difficulty in breathing, shortness of breath and/or pulmonary edema (fluid accumulation in the lungs). Prolonged inhalation may also lead to dental erosion. Fatality may occur from gross overexposure.
- Skin contact** : Contact may produce irritation to corrosive skin damage, depending upon the duration of contact and concentration of the acid. Effects range from dermatitis, redness, swelling, pain, and permanent scarring, to death.
- Ingestion** : Ingestion may cause severe acid burns to the mouth, throat, esophagus, and stomach. Gross ingestion may cause death.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : **Eye Contact:**
 - Rewash with physiological solution.
 - Lower exposure:
 o Consider applying a local anesthetic only before eye examination is done.
 o Assess extent of damage. Fluorescein stain for corneal damage and vision test is needed.
 o Provide prophylactic antibiotic treatment for infection and apply eye patch.
 o Follow-up within 24 hours is needed.
 - Higher exposure:
 o Consider applying a local anesthetic only before eye examination is done.
 o Immediate referral to Ophthalmologist.
 o Cover eye with patch.
Skin Contact:
 - Rewash affected area. Cool down small burns with cold water or ice packs.
 - Evaluate exposed area and determine if irritation or pain persists. Consider pain medication.
 - If integrity of skin is compromised, use prophylactic measures such as 1% Silvadene Cream or other topical antibacterial treatment.
 - Apply dressing to protect affected area from contamination or further trauma.
 - Evaluate need for referral to hospital or local specialist based on extent of damage and skills available.



Section 4. First aid measures

- Follow-up is needed, especially to detect delayed infection or any complications.
- Ingestion:**
 - Irrigate mouth with large quantities of water. Determine presence or absence of burns. If severe burns occur in the mouth then esophageal burns may exist. Hospital should provide standard treatment for ingestion of corrosives.
- Inhalation:**
 - Individuals with pre-existing lung conditions may have increased susceptibility to the toxicity of excessive exposure.
 - Persons exposed by inhalation to large concentrations of the material should be given 100% humidified oxygen (6 liters per minute).
 - Assess patient while continuing oxygen treatment. Evaluate for respiratory tract irritation, bronchitis, and pneumonia. Evaluate for nasopharyngeal burns.
 - Symptoms may vary from mild chest discomfort and slight cough to wheezing and extreme shortness of breath. Physical examination may be normal or may reveal mild rhonchi, wheezes or moist rales. Chest x-rays are usually normal at first than changes may develop over 24-48 hours showing pulmonary edema or infiltrates.
 - Give oxygen for 15 minutes and reevaluate, if asymptomatic observe for 15-30 minutes.
 - If symptomatic, give oxygen for another 15 minutes.
 - If patient is still symptomatic, transport to hospital.
 - If patient is not referred to hospital, closely monitor respiratory function for 12-24 hours to assure that pulmonary edema does not develop.
 - Keep patient calm and warm, give reassurance. Ask the patient to breath slow and deep.
 - If exposure was severe or if patient is symptomatic, consider providing Dexamethasone (or equivalent) 8 mg IM.
 - If patient has extreme anxiety or severe nausea, consider providing Hydroxyzine (or equivalent).
 - For laryngeal spasm or bronchospasm, provide bronchodilators.
 - If pulmonary edema develops, Positive End Expiratory Pressure (PEEP) therapy should be instituted. Blood gases and cardiopulmonary function should be monitored. Diuretics should be given as needed.

- Specific treatments** : No specific treatment.
- Protection of first-aiders** : 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 it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Hydrochloric acid fumes may be released from heating under fire conditions.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials: halogenated compounds



Section 5. Fire-fighting measures

- Special protective actions for fire-fighters** : No special measures are required.
- 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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Spill** : Stop leak if without risk. Prevent entry into sewers, water courses, basements or confined areas. Protect persons downwind from vapors using shelter-in-place procedures, as corrosive vapors will evolve from Hydrochloric acid solution until its concentration is below 20%. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

United States

Occupational exposure limits

Ingredient name	Exposure limits
Hydrogen Chloride	ACGIH TLV (United States, 4/2014). CEIL: 2 ppm NIOSH REL (United States, 10/2013). CEIL: 7 mg/m³ CEIL: 5 ppm OSHA PEL (United States, 2/2013). CEIL: 7 mg/m³ CEIL: 5 ppm

Canada

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m³	Other	ppm	mg/m³	Other	ppm	mg/m³	Other	Notations
Hydrogen Chloride	US ACGIH 4/2014	-	-	-	-	-	-	2	-	-	[3]
	AB 4/2009	-	-	-	-	-	-	2	3	-	
	BC 7/2013	-	-	-	-	-	-	2	-	-	
	ON 1/2013	-	-	-	-	-	-	2	-	-	
	QC 1/2014	-	-	-	5	7.5	-	-	-	-	

[3]Skin sensitization

Mexico

Ingredient name	Exposure limits
Hydrogen Chloride	NOM-010-STPS (Mexico, 9/2000). LMPE-Pico: 7 mg/m³ LMPE-Pico: 5 ppm

- Appropriate engineering controls

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

- 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.
- Eye/face protection

: 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: Chemical splash goggles or face shield.
- Skin protection

Hand protection

: 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: Nitrile gloves.

Section 8. Exposure controls/personal protection

Body protection	: 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. Recommended: Overalls.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, air-purifying or supplied air 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. Recommended: Vapor respirator.

Section 9. Physical and chemical properties

Appearance	
Physical state	: Liquid.
Color	: Colorless to light yellow.
Odor	: Pungent.
Odor threshold	: Not available.
pH	: <1
Melting point	: -62.5°C (-80.5°F)
Boiling point	: 84°C (183.2°F)
Flash point	: Not applicable.
Evaporation rate	: >1 (Butyl acetate = 1)
Flammability (solid, gas)	: Non-flammable.
Lower and upper explosive (flammable) limits	: Not applicable.
Vapor pressure	: 4.7 kPa (35 mm Hg) [room temperature]
Vapor density	: Not available.
Relative density	: 1.16
Solubility	: Soluble.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Volatility	: 100% (w/w)
VOC (w/w)	: 0 % (w/w)

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: Elevated temperatures. Take any precaution to avoid mixing with incompatibles.

Section 10. Stability and reactivity

Incompatible materials : Highly reactive or incompatible with the following materials: metals.
Reactive or incompatible with the following materials: strong oxidizers, hydroxides, amines, sulfides, carbonates, hypochlorites, formaldehyde and alkalis.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
There is no data available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hydrogen Chloride	Eyes - Mild irritant	Rabbit	-	0.5 minutes 5 mg	-
	Skin - Mild irritant	Human	-	24 hours 4%	-

Sensitization
There is no data available.

Carcinogenicity

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH	EPA	NIOSH
Hydrogen Chloride	-	3	-	A4	-	-

Specific target organ toxicity (single exposure)
There is no data available.

Specific target organ toxicity (repeated exposure)
There is no data available.

Aspiration hazard
There is no data available.

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects

- Eye contact** : Concentrated mists, vapors or splashed liquid can cause severe irritation, burns and possibly permanent blindness. Low concentrations of mists or vapors can be irritating, causing redness.
- Inhalation** : Inhalation of acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size causes irritation of the upper respiratory tract with coughing and discomfort. Higher or prolonged inhalation exposure may lead to corrosion of mucus membranes with temporary lung irritation and cough, difficulty in breathing, shortness of breath and/or pulmonary edema (fluid accumulation in the lungs). Prolonged inhalation may also lead to dental erosion. Fatality may occur from gross overexposure.
- Skin contact** : Contact may produce irritation to corrosive skin damage, depending upon the duration of contact and concentration of the acid. Effects range from dermatitis, redness, swelling, pain, and permanent scarring, to death.
- Ingestion** : Ingestion may cause severe acid burns to the mouth, throat, esophagus, and stomach. Gross ingestion may cause death.

Symptoms related to the physical, chemical and toxicological characteristics



Section 11. Toxicological information

- Eye contact

: Adverse symptoms may include the following:
pain
watering
redness
- Inhalation

: Adverse symptoms may include the following:
respiratory tract irritation
coughing
- Skin contact

: Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion

: Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects

: No known significant effects or critical hazards.
- Potential delayed effects

: No known significant effects or critical hazards.

Long term exposure

- Potential immediate effects

: No known significant effects or critical hazards.
- Potential delayed effects

: No known significant effects or critical hazards.

Potential chronic health effects

- General

: No known significant effects or critical hazards.
- Carcinogenicity

: No known significant effects or critical hazards.
- Mutagenicity

: No known significant effects or critical hazards.
- Teratogenicity

: No known significant effects or critical hazards.
- Developmental effects

: No known significant effects or critical hazards.
- Fertility effects

: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Inhalation (vapors)	12.79 mg/L

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Hydrogen Chloride	Acute LC50 240000 µg/L Marine water	Crustaceans - Carcinus maenas - Adult	48 hours
	Acute LC50 282000 µg/L Fresh water	Fish - Gambusia affinis - Adult	96 hours

Persistence and degradability

There is no data available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Hydrogen Chloride	0.25	-	low

Mobility in soil





Soil/water partition coefficient (K_{oc}) : There is no data available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Empty containers or liners may retain some product residues.

Section 14. Transport information

	DOT	TDG / NOM-003-SCT	IMDG	IATA
UN number	UN1789	UN1789	UN1789	UN1789
UN proper shipping name	HYDROCHLORIC ACID solution	HYDROCHLORIC ACID solution	HYDROCHLORIC ACID solution	HYDROCHLORIC ACID solution
Transport hazard class(es)	8 	8 	8 	8 
Packing group	II	II	II	II
Environmental hazards	No.	No.	No.	No.
Additional information	Reportable quantity >1450 gl	-	Emergency schedules (EmS) F-A, S-B	-

AERG : 157

DOT-RQ Details : Hydrogen Chloride 5000 lbs / 2270 kg

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 311: Hydrogen Chloride
Clean Air Act (CAA) 112 regulated flammable substances: Hydrogen Chloride
Clean Air Act (CAA) 112 regulated toxic substances: Hydrogen Chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List I Chemicals (Precursor Chemicals) : Listed

SARA 302/304
Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
Hydrogen Chloride	10 - 36.9	Yes.	-	-	-	-

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Hydrogen Chloride	10 - 36.9	No.	Yes.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Hydrogen Chloride	7647-01-0	10 – 36.9
Supplier notification	Hydrogen Chloride	7647-01-0	10 – 36.9

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

State regulations

Massachusetts : The following components are listed: Hydrogen Chloride

New York : The following components are listed: Hydrogen Chloride

New Jersey : The following components are listed: Hydrogen Chloride

Pennsylvania : The following components are listed: Hydrogen Chloride

California Prop. 65

No products were found.

Section 15. Regulatory information

Canada

Canadian lists

- Canadian NPRI : The following components are listed: Hydrogen Chloride
- CEPA Toxic substances : None of the components are listed.
- Canada inventory : All components are listed or exempted.

International lists

National inventory

- Australia : All components are listed or exempted.
- China : All components are listed or exempted.
- Europe : All components are listed or exempted.
- Japan : All components are listed or exempted.
- Malaysia : All components are listed or exempted.
- New Zealand : All components are listed or exempted.
- Philippines : All components are listed or exempted.
- Republic of Korea : All components are listed or exempted.
- Taiwan : Not determined.

Section 16. Other information

History

- Date of issue mm/dd/yyyy : 05/15/2015
- Date of previous issue : 07/15/2014
- Version : 6
- Prepared by : KMK Regulatory Services Inc.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.