SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier

Product code: H-130
Product Name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION

Other means of identification

Synonyms: No information available
CAS #: Mixture
RTECS #: Not available
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against: No information available

Supplier:

Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com
Emergency telephone number: Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

<table>
<thead>
<tr>
<th>Skin corrosion/irritation</th>
<th>Category 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Corrosive to metals</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label elements

Danger

Hazard statements

Causes severe skin burns and eye damage
May be corrosive to metals
Hazard not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

Precautionary Statements - Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Keep only in original container

Precautionary Statements - Response
Immediately call a POISON CENTER or doctor/physician
Absorb spillage to prevent material damage
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 doctor/physician.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Precautionary Statements - Storage
Store locked up
Store in corrosive resistant container with a resistant inner liner

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>98.2</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>1.8</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. First aider needs to protect himself.

Skin Contact: Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician immediately.

Eye Contact: Flush eyes with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Product code: H-130 Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. Call a physician immediately.

Ingestion: Do not induce vomiting without medical advice. Do not give Sodium Bicarbonate (Baking Soda). Never give anything by mouth to an unconscious person. If victim is conscious, give water or milk. Immediate medical attention is required. Call a physician or Poison Control Center immediately.

Most important symptoms and effects, both acute and delayed

Symptoms

- Severe skin and eye irritation or burns
- Irritating to respiratory system
- Burning sensation of the respiratory tract
- Coughing
- Hoarseness of the voice
- Shallow respiration
- Can burn mouth, throat, and stomach
- May cause salivation
- Thirst
- May cause difficulty swallowing
- May cause abdominal pain, nausea, vomiting, diarrhea
- Weak, rapid pulse or rapid heart rate (Tachycardia)

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: No information available.

Specific hazards: For Hydrogen chloride/concentrated Hydrochloric acid: Contact with metals may evolve flammable hydrogen gas. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine. Rubidium acetylene carbide burns with slightly warm Hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas that is spontaneously flammable in air is evolved. Magnesium boride treated with
concentrated hydrochloric acid produces spontaneously flammable gas. Cesium acetylene carbide burns in hydrogen chloride gas. Cesium carbide ignites in contact with Hydrochloric acid unless acid is dilute. Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride AgClO + CCl4 Alcohols + hydrogen cyanide, Aluminum Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide Ca3P2 Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid Cesium carbide Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine Ethylene imine, Fluorine, HClO4 Hexalithium disilicide H2SO4 Metal acetylies or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propioloactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetralseelenium tetraniitride, U3P4, Vinyl acetate. Silver perchlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 deg. C.

**Special Protective Actions for Firefighters**

**Specific Methods:** No information available.

**Special Protective Equipment for Firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions:** Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

**Methods and material for containment and cleaning up**

**Methods for containment** Stop leak if you can do it without risk.

**Methods for cleaning up** Neutralize with Sodium carbonate or Sodium bicarbonate. Dilute with water. Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly.

### 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Technical Measures/Precautions:** Use only in area provided with appropriate exhaust ventilation. Keep away from incompatible materials.

**Safe Handling Advice** Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe.

**Product code:** H-130

**Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
vapors or spray mist. Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

**Technical Measures/Storage Conditions:**
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. May corrode metallic surfaces. Do not store in uncoated metallic containers. Store in a segregated and approved area. Store away from incompatible materials.

**Incompatible Materials:**
- Oxidizing agents
- Metals
- Bases
- Organic materials

---

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**

**National occupational exposure limits**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
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<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WEEL</th>
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<td>None</td>
<td>None</td>
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<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>5 ppm Ceiling</td>
<td>5 ppm Ceiling</td>
<td>2 ppm Ceiling</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 mg/m³ Ceiling</td>
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</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Canada - Alberta</th>
<th>Canada - British Columbia</th>
<th>Canada - Ontario</th>
<th>Canada - Quebec</th>
</tr>
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<tbody>
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<td>None</td>
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<td>Hydrogen chloride</td>
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<td>2 ppm Ceiling</td>
<td>2 ppm Ceiling</td>
<td>2 ppm Ceiling</td>
<td>5 ppm Ceiling</td>
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<tr>
<td></td>
<td></td>
<td>3 mg/m³ Ceiling</td>
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<td>7.5 mg/m³ Ceiling</td>
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<table>
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<th>Components</th>
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<th>Mexico</th>
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<tr>
<td>Water</td>
<td>7732-18-5</td>
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<td>None</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>None</td>
<td>5 ppm Ceiling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7 mg/m³ Ceiling</td>
</tr>
</tbody>
</table>

**Appropriate engineering controls**

**Engineering measures to reduce exposure:**
Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

**Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment**

- **Eye protection:** Face-shield or Goggles
- **Skin and body protection:** Gloves, Chemical resistant apron

**Product code:** H-130  
**Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
Long sleeved clothing  
If working with large quantities:  
Chemical resistant protective suit  
Boots  

**Respiratory protection:** Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td><strong>Physical state:</strong></td>
<td>Liquid</td>
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<tr>
<td><strong>Appearance:</strong></td>
<td>No information available</td>
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<tr>
<td><strong>Color:</strong></td>
<td>Clear. Colorless.</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>Disagreeable. Choking.</td>
</tr>
<tr>
<td><strong>Taste</strong></td>
<td>Strong.</td>
</tr>
<tr>
<td><strong>Molecular/Formula weight (g/mole):</strong></td>
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<td><strong>Flammability:</strong></td>
<td>No information available</td>
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<td><strong>Flash Point Tested according to:</strong></td>
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<td><strong>Autoignition Temperature (°C/°F):</strong></td>
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<td><strong>Lower Explosion Limit (%):</strong></td>
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<tr>
<td><strong>Upper Explosion Limit (%):</strong></td>
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<td><strong>Decomposition temperature(°C/°F):</strong></td>
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<td><strong>Boiling point/range(°C/°F):</strong></td>
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<tr>
<td><strong>Specific gravity:</strong></td>
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<tr>
<td><strong>pH:</strong></td>
<td>Acidic</td>
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<td><strong>Evaporation rate:</strong></td>
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<td><strong>Vapor density:</strong></td>
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<td><strong>Odor threshold (ppm):</strong></td>
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<tr>
<td><strong>Partition coefficient</strong></td>
<td>No information available</td>
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<tr>
<td><strong>Miscibility:</strong></td>
<td>No information available</td>
</tr>
<tr>
<td><strong>Solubility:</strong></td>
<td>Easily soluble in cold water</td>
</tr>
<tr>
<td></td>
<td>Easily soluble in hot water</td>
</tr>
<tr>
<td></td>
<td>Soluble in diethyl ether</td>
</tr>
</tbody>
</table>

### 10. STABILITY AND REACTIVITY

**Reactivity**
For Hydrogen chloride or concentrated Hydrochloric Acid:
Reacts with most metals to produce flammable Hydrogen gas.
Sodium reacts very violently with gaseous hydrogen chloride.
Calcium phosphate and Hydrochloric acid undergo a very energetic reaction.
Hydrogen chloride reacts with oxidizers releasing chlorine gas.
Hydrogen chloride gas is emitted when Hydrochloric acid comes in contact with Sulfuric acid.
Adsorption of Hydrochloric acid onto Silicon dioxide results in exothermic reaction.
Reacts violently with bases, oxidizers forming toxic chlorine gas.

**Product code:** H-130  
**Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
Reacts, often violently or vigorously or exothermically, with acetic anhydride, active metals, aliphatic amines, alkanolamines, alkylene oxides, aromatic amines, amides, 2-aminoethanol, ammonia, ammonium hydroxide, calcium phosphate, chlorosulfonic acid, ethylene diamine, ethyleneimine, epichlorohydrin, isocyanates, metal acetylides, oleum, organic anhydrides, perchloric acid, 3-propiolactone, uranium phosphide, sulfuric acid, vinyl acetate, vinylidene fluoride, alcohols + hydrogen cyanide, Aluminum phosphide, Aluminum-titanium alloys, 2-Amino ethanol, Ammonium hydroxide, Ammonium, 1,4-Benzoquinone diimine, Cesium telluroacetylated, Chlorine + dinitroanilines, Chloroacetaldehyde oxime, Cyanogen chloride, 1,1-Difluoroethylenyl, dinitroanilines, Ethylene, Ethyl 2-formylpropionate oxime, Hexalithium disilicide, Hydrogen peroxide, Methyl vinyl ether, Nitric acid + glycerol, Potassium, Potassium permanganate, beta-Propiolactone, Propylene oxide, Rubidium acetylide, Silver chlorite, Sodium 2-allyloxy-6-nitrophenylpyruvate oxime, Sodium hydroxide, Sodium teranitride, 2,4,6-Tri(2-acetyltetrabenzene, Sulfonic acid, Cesium cyanotridecahydrodecarborate(2-), Potassium ferricyanide, Vinylidene fluoride, Potassium ferrocyanide, Ammonium hexacyanoferrate (II).

Reaction with oxidizers such as permanganates, chlorates, chlorites, and hypochlorites may produce chlorine or bromine gas. Reacts vigorously with alkalies and with many organic materials.

Cesium acetylene carbide burns in hydrogen chloride gas.

Lithium silicide in contact with hydrogen chloride becomes incandescent.

Magnesium boride in contact with concentrated hydrochloric acid produces spontaneously flammable gas.

Rubidium acetylene carbide burns with slightly warm hydrochloric acid.

Rubidium carbide ignites in contact with hydrochloric acid unless acid is dilute.

Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine.

Calcium carbide reacts with hydrogen chloride gas with incandescence.

Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125 deg C.

Reaction of silver perchlorate with carbon tetrachloride in presence of small amount of hydrochloric acid produces trichloromethyl perchlorate, which detonates @ 40 deg C.

Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute.

Hydrochloric acid in the presence of alcohol and glycols results in dehydration reactions.

Exothermic reaction with water

Attacks some plastics, rubber, and coatings.

Hydrogen chloride causes aldehydes and epoxides to violently polymerize.

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Stable at normal conditions.

Incompatible Materials: Oxidizing agents

Metals

Bases

Organic materials

Hazardous decomposition products:


Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Skin. Inhalation. Ingestion.

Acute Toxicity

Product code: H-130

Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
## Component Information

**Water**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>LD50/oral/rat</th>
<th>LD50/oral/mouse</th>
<th>LD50/dermal/rabbit</th>
<th>LD50/dermal/rat</th>
<th>LC50/inhalation/rat</th>
<th>LC50/inhalation/mouse</th>
<th>Other LD50 or LC50 information</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&gt; 90 mL/kg</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
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</tbody>
</table>

**Hydrogen chloride**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>LD50/oral/rat</th>
<th>LD50/oral/mouse</th>
<th>LD50/dermal/rabbit</th>
<th>LD50/dermal/rat</th>
<th>LC50/inhalation/rat</th>
<th>LC50/inhalation/mouse</th>
<th>Other LD50 or LC50 information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>238 - 277 mg/kg</td>
<td>No information</td>
<td>No information</td>
<td>No information</td>
<td>3124 ppm Inhalation LC50 Rat 1 h</td>
<td>1108 ppm 1 h</td>
<td>900 mg/kg oral LD50 Rabbit (no information on test substance)</td>
</tr>
</tbody>
</table>

## Product Information

**LD50/oral/rat**

VALUE- Acute Tox Oral = No information available

**LD50/oral/mouse**

Value - Acute Tox Oral = No information available

**LD50/dermal/rabbit**

VALUE-Acute Tox Dermal = No information available

**LD50/dermal/rat**

VALUE -Acute Tox Dermal = No information available

**LC50/inhalation/rat**

VALUE-Vapor = No information available

**LC50/inhalation/mouse**

VALUE-Vapor = No information available

**Symptoms**

**Skin Contact:** Corrosive. Severe skin irritation. Causes skin burns.

**Eye Contact:** Corrosive. Causes severe eye irritation/conjunctivitis, burns, corneal necrosis.

**Inhalation**

Irritating to respiratory system. May cause chemical burns to the respiratory tract. Inhalation of mist or vapor causes irritation of the nose, throat, bronchi, larynx.

**Product code:** H-130

**Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
(upper respiratory tract), coughing, sneezing, hoarseness of the voice and possible burns of the respiratory tract. It may affect the liver. It may affect the lungs.

**Ingestion**

Causes severe irritation and burning of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea, thirst, difficulty swallowing, salivation. May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis).

**Aspiration hazard**

No information available.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Chronic Toxicity**

Prolonged or repeated inhalation may affect respiratory tract (changes in pulmonary function, chronic bronchitis, overt respiratory tract abnormalities). Prolonged or repeated inhalation and/or ingestion may affect liver, teeth (yellowing of teeth and erosion of tooth enamel), kidneys, and behavior (excitement, muscle contraction or spasticity). Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated eye contact with vapor/mist can cause conjunctivitis.

**Sensitization:**

No information available.

**Mutagenic Effects:**

For Hydrogen Chloride/Hydrochloric Acid:
Animal experiments showed mutagenic effects
Cytogenetic Analysis - chromosome aberration test (Chinese Hamster ovary):
Genotoxic effects were observed

**Carcinogenic effects:**

Not considered carcinogenic.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
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<tbody>
<tr>
<td>Water</td>
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<td>Not listed</td>
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<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Group 3 - Not classifiable - Monograph 54 (1992)</td>
<td>Not listed</td>
<td>A4 Not Classifiable as a Human Carcinogen</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

**Reproductive toxicity**

No data is available

**Reproductive Effects:**

No information available

**Developmental Effects:**

No information on developmental toxicity effects on humans was found
An increase in postnatal mortality was seen in experiments where rats were exposed to Hydrogen Chloride for 1 hour

**Teratogenic Effects:**

No information available

**Specific Target Organ Toxicity**

**STOT - single exposure**

No information available.

**STOT - repeated exposure**

No information available.

**Product code:** H-130  **Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
Target Organs: Skin. Eyes. Respiratory system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

Hydrogen chloride - 7647-01-0
Freshwater Fish Species Data: 282 mg/L LC50 Gambusia affinis 96 h
862 mg/L LC50 Leuciscus idus
Water Flea Data: <56 mg/L LC50 Daphnia magna 72h

Persistence and degradability: No information available
Bioaccumulative potential: No information available.
Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>Water</td>
<td>7732-18-5</td>
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<td>None</td>
<td>None</td>
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<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
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<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT

UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Class: No information available
Packing group: II
Emergency Response Guide Number: 157

Marine Pollutant: No data available
DOT RQ (lbs): No information available
Special Provisions: A3, A6, B3, B15, IB2, N41, T8, TP2
Symbol(s): No information available
Description: UN1789, Hydrochloric acid solution, 8, II

TDG (Canada)

UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II

Product code: H-130 Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
Marine Pollutant
Description: No Information available

ADR
UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Packing Group: II
Subsidiary Risk: No information available
Special Provisions
Description: UN1789, Hydrochloric acid solution, 8, II

IMO / IMDG
UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No information available
EMS: F-A
Description: UN1789, Hydrochloric acid solution, 8, II

RID
UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II
Special Provisions 520
Description: UN1789, Hydrochloric acid solution, 8, II

ICAO
UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II
Description: UN1789, Hydrochloric acid solution, 8, II

IATA
UN-No: UN1789
Proper Shipping Name: Hydrochloric acid
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II
ERG Code: 8L
Special Provisions
Description: UN1789, Hydrochloric acid solution, 8, II

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>PresentACTIV</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
</tr>
</tbody>
</table>

Product code: H-130    Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
U.S. Regulations

Hydrogen chloride

Massachusetts RTK: Present
Massachusetts EHS: extraordinarily hazardous
New Jersey RTK Hazardous Substance List: 1012
New Jersey (EHS) List: 1012 500 lb TPQ
2909 500 lb TPQ
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
New Jersey TCPA - EHS: 15000 lb TQ
5000 lb TQ
5600 lb TQ
2000 lb TQ
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List: Present
Michigan PSM HHC: = 5000 lb TQ
Minnesota - Hazardous Substance List: Present
New York Release Reporting - List of Hazardous Substances:
5000 lb RQ
100 lb RQ
Louisiana Reportable Quantity List for Pollutants: 5000 lb final RQAs listed in 40 CFR 117.3 Table 117.3 and 40 CFR 302.4 Table 302.4
2270 kg final RQAs listed in 40 CFR 117.3 Table 117.3 and 40 CFR 302.4 Table 302.4
5000 lb RQAs listed in Louisiana Administrative Code, Title 33, Part 1, Subpart 2, Chapter 39, Subchapter E. Applies to unauthorized emissions based on total mass emitted into or onto all media within any consecutive 24-hour period
1000 lb RQAs listed in Louisiana Administrative Code, Title 33, Part 1, Subpart 2, Chapter 39, Subchapter E. Applies to unauthorized emissions based on total mass emitted into the atmosphere
California Directors List of Hazardous Substances: Present
FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 182.1057


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Carcinogen</th>
<th>Developmental Toxicity Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

CERCLA/SARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>5000 lb final RQ</td>
<td>2270 kg final RQ</td>
<td>5000 lb EPCRA RQ</td>
<td>None</td>
<td>1.0 % de minimis concentration</td>
</tr>
</tbody>
</table>

U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

Canada

Product code: H-130
Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
WHIMIS 2015 - GHS Classifications

WHIMIS 2015 Hazard Classification Information:

Component
Water
7732-18-5 (98.2)

WHMIS 2015 Hazard Classification
Not a dangerous product according to HPR classification criteria

Hydrogen Chloride: Gases under pressure - Liquefied gas: H280
Contains gas under pressure, may explode when heated.; Corrosive to Metals - Category 1: H290 May be corrosive to metals. (potentially corrosive to metals; the supplier should be contacted for more information); Acute toxicity - Inhalation - Category 3: H331 Toxic if inhaled.; Health Hazard Not Otherwise Classified - Category 1: Causes severe damage to the respiratory tract; Skin corrosion/irritation - Category 1: H314 Causes severe skin burns and eye damage.; Serious Eye Damage/Eye Irritation - Category 1: H318 Causes serious eye damage.

Hydrochloric Acid: Corrosive to Metals - Category 1: H290 May be corrosive to metals. (potentially corrosive to metals; the supplier should be contacted for more information); Acute toxicity - Oral - Category 4: H302 Harmful if swallowed. (3.6% in aqueous solution); Acute toxicity - Inhalation - Category 2: H330 Fatal if inhaled.; Health Hazard Not Otherwise Classified - Category 1: Causes severe damage to the respiratory tract; Skin corrosion/irritation - Category 1: H314 Causes severe skin burns and eye damage.; Skin corrosion/irritation - Category 2: H315 Causes skin irritation. (3.6% in aqueous solution); Serious Eye Damage/Eye Irritation - Category 1: H318 Causes serious eye damage.; Serious Eye Damage/Eye Irritation - Category 2: H319 Causes serious eye irritation. (3.6% in aqueous solution)

Canada Hazardous Products Regulation
This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHIMIS 1988 Hazard Class
E Corrosive material

Components
Water
Hydrogen chloride

WHMIS 1988
Uncontrolled product according to WHMIS classification criteria
A,D1A,E
D1A,E
E 0.036% in aqueous solution, 0.36% in aqueous solution, 3.6% in aqueous solution
D1B,E 28% in aqueous solution
D1A,E 31.45% in aqueous solution, 35.2% in aqueous solution

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

<table>
<thead>
<tr>
<th>Components</th>
<th>WHMIS Ingredient Disclosure List -</th>
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<tbody>
<tr>
<td>Hydrogen chloride</td>
<td>1 %</td>
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Inventory

<table>
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<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
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</thead>
<tbody>
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<td>Water</td>
<td>7732-18-5</td>
<td>Present</td>
<td>Not Listed</td>
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<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Present</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>CEPA Schedule I - Toxic Substances</th>
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</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Not listed</td>
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<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Not listed</td>
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</tbody>
</table>

Product code: H-130  Product name: HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
### EU Classification - CLP 1272/2008

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>No information</td>
<td></td>
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</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Hydrogen Chloride:</td>
<td>0.02%&lt;C&lt;0.2%; Xi; R36/37/38</td>
<td>S1/2 - Keep locked up and out of the reach of children.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>T; R23</td>
<td>0.2%&lt;C&lt;0.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C; R35</td>
<td>0.5%&lt;C&lt;1%; C; R20-34</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>+ hydrochloric acid</td>
<td></td>
<td>For Hydrogen Chloride:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>..%</td>
<td></td>
<td>S1/2 S9 S26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C; R34 - Xi; R37</td>
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<td>S36/37/39 S45</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hydrochloric Acid:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(1/2)-S26-S45</td>
</tr>
</tbody>
</table>

**R-phrase(s)**

R36/37/38 - Irritating to eyes, respiratory system and skin.

**S-phrase(s)**

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).

**Product code:** H-130  
**Product name:** HYDROCHLORIC ACID, 0.5 N, AQUEOUS SOLUTION
The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Xi - Irritant.

16. OTHER INFORMATION

Preparation Date: 09/04/2015
Revision Date: 7/23/2018
Prepared by: Sonia Owen

Disclaimer:
All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet