United States (US)

According to OSHA 29 CFR 1910.1200 HCS

**Classification of the substance or mixture**

- Corrosive to Metals 1 - H290
- Acute Toxicity Oral 4 - H302
- Skin Corrosion 1B - H314
- Serious Eye Damage 1 - H318
- Acute Toxicity Inhalation 4 - H332
- Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335

**Label elements**

OSHA HCS 2012

DANGER

**Hazard statements**

- May be corrosive to metals - H290
- Harmful if swallowed - H302
- Causes severe skin burns and eye damage. - H314
- Causes serious eye damage - H318
According to WHMIS

Classification of the substance or mixture

WHMIS
- Corrosive - E

Label elements

WHMIS
- Corrosive - E

Other hazards

WHMIS
- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

Substances

Harmful if inhaled - H332
May cause respiratory irritation - H335

Precautionary statements

Prevention
- Keep only in original container. - P234
- Do not breathe mist/vapours/spray. - P260
- Wash thoroughly after handling. - P264
- Do not eat, drink or smoke when using this product. - P270
- Use only outdoors or in a well-ventilated area. - P271
- Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response
- Absorb spillage to prevent material damage. - P390
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
- Call a POISON CENTER or doctor/physician if you feel unwell. - P312
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. - P303+P361+P353
- Wash contaminated clothing before reuse. - P363
- Specific treatment, see supplemental first aid information. - P321
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
- Immediately call a POISON CENTER or doctor/physician. - P310
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell. - P301+P312
- Rinse mouth. - P330
- Do NOT induce vomiting. - P331

Storage/Disposal
- Store in corrosive resistant/ container with a resistant inner liner. - P406
- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
- Store locked up. - P405
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

Other hazards

OSHA HCS 2012

Canada

According to WHMIS

Classification of the substance or mixture

WHMIS
- Corrosive - E

Label elements

WHMIS
- Corrosive - E

Other hazards

WHMIS
- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).
# Composition

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers</th>
<th>%</th>
<th>LD50/LC50</th>
<th>Classifications According to Regulation/Directive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>CAS:7647-01-0</td>
<td>15% TO 40%</td>
<td>Inhalation-Rat LC50 • 3124 ppm 1 Hour(s)</td>
<td>OSHA HCS 2012: Skin Corr. 1B; Eye Corr. 1; Acute Tox. 4 (oral, inh)</td>
</tr>
</tbody>
</table>

### Mixtures

- Material does not meet the criteria of a mixture.

### Section 4: First-Aid Measures

#### Description of first aid measures

**Inhalation**
- Move victim to fresh air. Administer oxygen if breathing is difficult. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give artificial respiration if victim is not breathing. Get medical attention immediately.

**Skin**
- For minor skin contact, avoid spreading material on unaffected skin. Remove and isolate contaminated clothing. Wash the contaminated area of body with soap and fresh water. Get medical attention immediately.

**Eye**
- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Get medical attention immediately.

**Ingestion**
- If swallowed, rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Do not use mouth-to-mouth method if victim ingested the substance. Obtain medical attention immediately if ingested.

#### Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

#### Indication of any immediate medical attention and special treatment needed

Notes to Physician
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### Section 5: Fire-Fighting Measures

#### Extinguishing media

**Suitable Extinguishing Media**
- Use dry chemical, CO2, water spray (fog), or foam.

**Unsuitable Extinguishing Media**
- No data available

#### Special hazards arising from the substance or mixture

**Unusual Fire and Explosion Hazards**
- Containers may explode when heated. Emits toxic fumes under fire conditions.

**Hazardous Combustion Products**
- Decomposition products may include the following materials: halogenated compounds, may release dangerous gases (chlorine).

#### Advice for firefighters
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Wear positive pressure self-contained breathing apparatus (SCBA).
Move containers from fire area if you can do it without risk.
LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.
Dike fire control water for later disposal; do not scatter the material.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Ventilate enclosed areas. Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist, vapors, spray. Do not get in eyes, on skin, or on clothing.

Emergency Procedures
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container.

Environmental precautions
- Prevent entry into waterways, sewers, basement or confined areas.

Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Stop leak if you can do it without risk. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
LARGE SPILLS: Dike far ahead of spill for later disposal.

Section 7 - Handling and Storage

Precautions for safe handling

Handling
- Handle and open container with care. Use only with adequate ventilation. Keep away from heat. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist, vapors, spray. Do not get in eyes, on skin, or on clothing. Do not ingest. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Conditions for safe storage, including any incompatibilities

Storage
- Keep container tightly closed. Store in a cool, dry, well-ventilated place. Keep away from incompatible materials. Keep from direct sunlight. Separate from alkalis. Do not store above the following temperature: 49°C/120°F. FOR BULK STORAGE CONTAINERS: Bulk storage tanks should be constructed of corrosion-resistant materials such as rubber- or glass-lined steel, fiberglass, or plastic and should be vented to a scrubber to remove acid fumes. Bulk storage tanks should contain a dike sufficiently large enough to contain entire contents.

Section 8 - Exposure Controls/Personal Protection

Control parameters

<table>
<thead>
<tr>
<th></th>
<th>Exposure Limits/Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Result</td>
</tr>
<tr>
<td>Hydrochloric acid (7647-01-0)</td>
<td>Ceilings</td>
</tr>
</tbody>
</table>
# Exposure Limits/Guidelines (Con’t.)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Result</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid (7647-01-0)</td>
<td>Ceilings 5 ppm Ceiling; 7 mg/m³ Ceiling</td>
<td></td>
</tr>
</tbody>
</table>

**Exposure controls**

**Engineering Measures/Controls**
- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Personal Protective Equipment**

- **Respiratory**
  - If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. 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.

- **Eye/Face**
  - Wear chemical splash goggles and face shield.

- **Skin/Body**
  - 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. 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**General Industrial Hygiene Considerations**
- 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.

**Environmental Exposure Controls**
- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

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**Key to abbreviations**

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

---

### Section 9 - Physical and Chemical Properties

**Information on Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Liquid</th>
<th>Appearance/Description</th>
<th>Colorless to a light yellow liquid with a pungent odor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td>Colorless to light yellow.</td>
<td>Odor</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td></td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>

| General Properties            |        |                             |                                                        |
| Boiling Point                 | 108 C(226.4 F) (Azeotrope @ 20.2%) |
| Melting Point                 |        |                              | No data available                                      |
| Decomposition Temperature     | No data available | pH                           | 1 [Conc. (% w/w) 0.36%]                                |

Preparation Date: 01/May/2014

Revision Date: 17/June/2014
Specific Gravity/Relative Density: 1.051 to 1.189 (Water = 1)

Water Solubility: 100%

Viscosity: No data available

Vapor Pressure: 15 to 150 mmHg (torr) @ 20°C (68°F)

Vapor Density: 1.267 (Air = 1)

Evaporation Rate: No data available

Volatiles (Wt.): 100%

Volatiles (Vol.): 100%

Flash Point: No data available

UEL: No data available

LEL: No data available

Autoignition: No data available

Section 10: Stability and Reactivity

Reactivity

- No dangerous reaction known under conditions of normal use.

Chemical stability

- Stable under recommended storage and handling conditions.

Possibility of hazardous reactions

- Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid

- When exposed to high temperatures may produce hazardous decomposition products. Avoid increased storage temperature. Pressure hazard.

Incompatible materials

- Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air. Reactive or incompatible with the following materials: 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

<table>
<thead>
<tr>
<th>CAS</th>
<th>Acute Toxicity: Ingestion/Oral-Rat LD50 • 700 mg/kg; Inhalation-Rat LC50 • 3124 ppm; Skin-Rabbit LD50 • &gt;5010 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muriatic Acid (7-23 deg. Baume/15-38%)</td>
<td>NDA</td>
</tr>
</tbody>
</table>

| Reproductive: Inhalation-Rat TCLo • 450 mg/m³ 1 Hour(s) (1D pre); Reproductive Effects: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects: Specific Developmental Abnormalities: Homeostasis |
| Hydrochloric acid (15% TO 40%) | 7647-01-0                                                                                                        |

GHS Properties

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA HCS 2012</td>
<td>Acute Toxicity - Inhalation 4; Acute Toxicity - Oral 4</td>
</tr>
<tr>
<td>Health Effect</td>
<td>OSHA HCS 2012</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
<td>Skin Corrosion 1B</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>Data lacking</td>
</tr>
<tr>
<td>STOT-RE</td>
<td>Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation</td>
</tr>
<tr>
<td>STOT-SE</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Toxicity for Reproduction</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>Data lacking</td>
</tr>
<tr>
<td>Serious eye damage/Irritation</td>
<td>Serious Eye Damage 1</td>
</tr>
</tbody>
</table>

### Route(s) of entry/exposure
- Inhalation, Skin, Eye, Ingestion

### Potential Health Effects

#### Inhalation

- **Acute (Immediate)**
  - May cause respiratory irritation.

- **Chronic (Delayed)**
  - Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

#### Skin

- **Acute (Immediate)**
  - Causes severe skin burns.

- **Chronic (Delayed)**
  - Repeated or prolonged exposure to corrosive materials will cause dermatitis.

#### Eye

- **Acute (Immediate)**
  - Causes serious eye damage.

- **Chronic (Delayed)**
  - Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

#### Ingestion

- **Acute (Immediate)**
  - Harmful if swallowed. May cause irreversible damage to mucous membranes.

- **Chronic (Delayed)**
  - Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.

#### Carcinogenic Effects

- This material does contain a component that may cause cancer, however based on regulatory criteria this material is not classified as a carcinogen.

### Section 12 - Ecological Information

#### Toxicity

- Material data lacking.

#### Persistence and degradability

- Material data lacking.

#### Bioaccumulative potential

- Material data lacking.

#### Mobility in Soil

- Material data lacking.

#### Other adverse effects

- No studies have been found.
Section 13 - Disposal Considerations

Waste treatment methods

Product waste
● Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
● Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN proper shipping name</th>
<th>Transport hazard class(es)</th>
<th>Packing group</th>
<th>Environmental hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT</td>
<td>UN1789 - Hydrochloric Acid solution</td>
<td>8</td>
<td>II</td>
<td>NDA</td>
</tr>
<tr>
<td>TDG</td>
<td>UN1789 - HYDROCHLORIC ACID solution</td>
<td>8</td>
<td>II</td>
<td>NDA</td>
</tr>
<tr>
<td>IMO/IMDG</td>
<td>UN1789 - HYDROCHLORIC ACID solution</td>
<td>8</td>
<td>II</td>
<td>NDA</td>
</tr>
<tr>
<td>IATA/ICAO</td>
<td>UN1789 - Hydrochloric Acid solution</td>
<td>8</td>
<td>II</td>
<td>NDA</td>
</tr>
</tbody>
</table>

Special precautions for user
● None specified.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
● No data available

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
● Acute

Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Canada DSL</th>
<th>Canada NDSL</th>
<th>EU EINECS</th>
<th>EU ELNICS</th>
<th>TSCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Hydrochloric acid 7647-01-0 A, D1A, E (listed under Hydrogen chloride); 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 - WHMIS - Ingredient Disclosure List

• Hydrochloric acid 7647-01-0 1 %

Environment

Canada - CEPA - Priority Substances List

• Hydrochloric acid 7647-01-0 Not Listed
### United States

#### Labor

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>TQ or TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals</td>
<td>Hydrochloric acid</td>
<td>5000 lb TQ; 5000 lb TQ (anhydrous)</td>
</tr>
<tr>
<td>U.S. - OSHA - Specifically Regulated Chemicals</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

#### Environment

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>TQ or TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants</td>
<td>Hydrochloric acid</td>
<td>7647-01-0</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities</td>
<td>Hydrochloric acid</td>
<td>5000 lb final RQ; 2270 kg final RQ</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs</td>
<td>Hydrochloric acid</td>
<td>5000 lb EPCRA RQ (gas only)</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs</td>
<td>Hydrochloric acid</td>
<td>500 lb TPQ (gas only)</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Section 313 - Emission Reporting</td>
<td>Hydrochloric acid</td>
<td>1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)</td>
</tr>
<tr>
<td>U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
<tr>
<td>U.S. - TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

### United States - California

#### Environment

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>TQ or TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)</td>
<td>Hydrochloric acid</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>
Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

Section 16 - Other Information

Last Revision Date
\[ 16/June/2014 \]

Preparation Date
\[ 01/May/2014 \]

Other Information
- NSF Drinking Water Treatment Chemicals Listing - hydrochloric acid from Lake Charles, Louisiana; New Martinsville, West Virginia; Longview, Washington; or Beauharnois, Quebec, Canada, is certified for maximum use at 40 mg/l under NSF/ANSI Standard 60.

Disclaimer/Statement of Liability
- The technical data given herein is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release, and is not to be considered a warranty or quality specification. No guarantee is being given as to the end use performance. The product is sold on the basis that buyers test the product for their specific purposes. This information related to the material designated and may not be valid for such material used in combination with any other materials or in any process.

Key to abbreviations
NDA = No Data Available