SAFETY DATA SHEET

Preparation Date: 5/27/2014
Revision Date: 6/1/2017
Revision Number: G2

1. IDENTIFICATION

Product identifier

Product code: H1040
Product Name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL

Other means of identification

Synonyms:
- Muriatic Acid
- Chlorohydric acid
- Spirits of salt
- Acide chlorhydrique (French)

CAS #: 7647-01-0
RTECS #: MW4025000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use:
- In the production of chloride; refining ore in the production of tin and tantalum; for the neutralization of basic systems; as a laboratory reagent; as a catalyst and solvent in organic synthesis; for oil and gas-well treatment; in removing scale from boilers and heat exchange equipment; pharmaceutical aid (acidifier); in the manufacture of phosphoric acid and in the production of ammonium chloride; metal treating agent (steel pickling); in food processing as a starch modifier; in the manufacturer of sodium glutamate; in the manufacturer of gelatin; in the conversion of cornstarch to syrup; in the brewing industry; in sugar refining; in the manufacture of fertilizers, dyes and dyestuffs, artificial silks, pigments for paints; in electroplating, leather tanning, the photographic industry, in soap refining, in the textile industry, in the rubber industry; in petroleum activation; metal cleaning operations; recovery of zinc from galvanized iron scrap.

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)
- 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>Acute toxicity - Oral</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Inhalation (Gases)</td>
<td>Category 4</td>
</tr>
</tbody>
</table>
Skin corrosion/irritation Category 1 Sub-category A
Serious eye damage/eye irritation Category 1
Specific target organ toxicity (single exposure) Category 3

Label elements

Danger

Hazard statements
Harmful if swallowed
Harmful if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation

Hazardous not otherwise classified (HNOC)
Not Applicable

Other hazards
Not available

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
Immediately call a POISON CENTER or doctor/physician
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. Call a POISON CENTER or doctor/physician if you feel unwell. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Do NOT induce vomiting

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

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

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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>68-70</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>30-32</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.

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

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: 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 acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetraselenium tetranitride, 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.

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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. Do not flush into surface water or sanitary sewer system. 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 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
- Alkalis
- Organic materials
- Water

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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<td>Water</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>
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</tbody>
</table>

Canada

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
### Components

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

<table>
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<tr>
<th>Components</th>
<th>CAS-No.</th>
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<th>Mexico</th>
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<tbody>
<tr>
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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>
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</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

**Skin and body protection:** Chemical resistant protective suit, Gloves, Boots

**Respiratory protection:** Vapor respirator. 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

**Physical state:** Liquid

**Odor:** Pungent. Irritating.

**Molecular/Formula weight:** No information available

**Flash Point Tested according to:** Not available

**Upper Explosion Limit (%):** No information available

**Boiling point/range(°C/°F):**
- 108.58 C @ 760 mm Hg (for 20.22% HCl in water)
- 83 C @ 760 mm Hg (for 31% HCl in water)

**Appearance:** No information available.

**Taste**

**Flammability:** No information available

**Flashpoint (°C/°F):** No information available

**Autoignition Temperature (°C/°F):** No information available

**Lower Explosion Limit (%):** No information available

**Melting point/range(°C/°F):**
- -62.25°C (-80°F) (20.69% HCl in water)
- -46.2 C (31.24% HCl in water)
- -25.4 C (39.17% HCl in water)

**Decomposition temperature(°C/°F):** No information available

**Formula:** HCl

**Color:** Colorless. Light yellow.

**Product code:** H1040

**Product name:** HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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 phosphide 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 Hydchloric acid onto Silicon dioxide results in exothermic reaction.
Hydrogen chloride causes aldehydes and epoxides to violently polymerize.
Reacts violently with bases, oxidizers forming toxic chlorine gas.
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, ethylenemine, 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-Benzozquinone diimine, Cesium tellurooctylated, Chlorine + dinitroanilines, Chloroacetacetylhoxime, Cyanogen chloride, 1,1-Difluoroethylen, dinitroanilines, Ethylene, Ethyl 2-formypropionate oxime, Hexafluoride, isocyanides, Hydrogen peroxide, Methyl vinyl ether, Nicotinic acid + glycerol, Potassium, Perchloric acid, Beta-Propiolactone, Propylene oxide, Rubidium acetylide, Silver chloride, Sodium 2-allyloxy-6-nitrophosphoryluvrate oxime, Sodium hydroxide, Sodium terephthalate, 2,4,6-Tri(2-acetylyhydrazino)-1,3,5-trinitrobenzene, Sulfonic acid, Cesium cyanotridecahydrodecarborate(2-), Potassium ferricyanide, Vinyldene fluoride, Potassium ferrocyanide, Silver metacrylate, Silver 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 phosphate 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.
Hydrogen chloride gas can react with formaldehyde to form bis(chloromethyl)ether, a human carcinogen.
Exothermic reaction with water
Attacks some plastics, rubber, and coatings.

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL

Density (g/cm3):
No information available

Vapor pressure @ 20°C (kPa):
No information available

Specific gravity:
1.1 - 1.19 (Water = 1)
1.10 (20% and 22% HCl solutions)
1.12 (24% HCl solution)
1.15 (29.57% HCl solution)
1.16 (32% HCl solution)
1.186 - 1.19 (37% and 38% HCl solutions)

pH:
No information available

Evaporation rate:
No information available

Vapor density:
1.267

Odor threshold (ppm):
0.25 to 10 ppm

Partition coefficient:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

VOC content (g/L):
No information available

Partition coefficient:
(n-octanol/water):
No information available

Viscosity:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

Density:
No information available

Vapor pressure:
No information available

Evaporation rate:
No information available

Odor threshold:
0.25 to 10 ppm

Partition coefficient:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

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Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL

Density (g/cm3):
No information available

Vapor pressure @ 20°C (kPa):
No information available

Specific gravity:
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1.186 - 1.19 (37% and 38% HCl solutions)

pH:
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Evaporation rate:
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Vapor density:
1.267

Odor threshold (ppm):
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Solubility:
Soluble in Ether
Soluble in Water

VOC content (g/L):
No information available

Partition coefficient:
(n-octanol/water):
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Viscosity:
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Miscibility:
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Soluble in Water

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Vapor pressure:
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Evaporation rate:
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Partition coefficient:
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Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL

Density (g/cm3):
No information available

Vapor pressure @ 20°C (kPa):
No information available

Specific gravity:
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1.15 (29.57% HCl solution)
1.16 (32% HCl solution)
1.186 - 1.19 (37% and 38% HCl solutions)

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Evaporation rate:
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Vapor density:
1.267

Odor threshold (ppm):
0.25 to 10 ppm

Partition coefficient:
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Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

VOC content (g/L):
No information available

Partition coefficient:
(n-octanol/water):
No information available

Viscosity:
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Miscibility:
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Solubility:
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Soluble in Water

Density:
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Vapor pressure:
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Evaporation rate:
No information available

Odor threshold:
0.25 to 10 ppm

Partition coefficient:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL

Density (g/cm3):
No information available

Vapor pressure @ 20°C (kPa):
No information available

Specific gravity:
1.1 - 1.19 (Water = 1)
1.10 (20% and 22% HCl solutions)
1.12 (24% HCl solution)
1.15 (29.57% HCl solution)
1.16 (32% HCl solution)
1.186 - 1.19 (37% and 38% HCl solutions)

pH:
No information available

Evaporation rate:
No information available

Vapor density:
1.267

Odor threshold (ppm):
0.25 to 10 ppm

Partition coefficient:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

VOC content (g/L):
No information available

Partition coefficient:
(n-octanol/water):
No information available

Viscosity:
No information available

Miscibility:
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Solubility:
Soluble in Ether
Soluble in Water

Density:
No information available

Vapor pressure:
No information available

Evaporation rate:
No information available

Odor threshold:
0.25 to 10 ppm

Partition coefficient:
No information available

Miscibility:
No information available

Solubility:
Soluble in Ether
Soluble in Water

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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, Alkalis, Organic materials, Water


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

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (inhalation-gas) 4115-7810 ppm; (4-hr)

Component Information

<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>LC50/dermal/rat</th>
<th>LC50/dermal/mouse</th>
<th>Other LD50 or LC50 information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&gt; 90 mL/kg</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>238 - 277 mg/kg</td>
<td>Oral LD50 Rat</td>
<td>Oral LD50 Rat (test substance: 31.5% hydrochloric acid solution)</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
</tr>
</tbody>
</table>

Product code: H1040  Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
LD50/dermal/rat = No information available
LC50/inhalation/rat = 3124 ppm Inhalation LC50 Rat 1 h
1562 ppm 4 h
1.68 mg/L Inhalation LC50 Rat 1 h
LC50/inhalation/mouse = 1108 ppm 1 h
Other LD50 or LC50 information = 900 mg/kg oral LD50 Rabbit (no information on test substance)

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 700 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = > 5010 mg/kg

LD50/dermal/rat
VALUE - Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact:
Causes skin burns.

Eye Contact:
Causes eye burns.

Inhalation
Harmful by inhalation. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion
Harmful if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomiting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophageal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute ingestion can also cause erosion of tooth enamel.

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 and/or ingestion may affect liver, and cause bleeding of nose and gums, nasal and oral mucosal ulceration, conjunctivitis. It may also affect respiratory tract (changes in pulmonary function, chronic bronchitis, overt respiratory tract abnormalities), teeth (yellowing of teeth and erosion of tooth enamel), kidneys, and behavior/central nervous system (muscle contraction or spasticity). Prolonged or repeated skin contact may cause

Product code: H1040  Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
dermatitis. Prolonged or repeated eye contact with vapor/mist can cause conjunctivitis.

**Sensitization:**
No information available.

**Mutagenic Effects:**
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>
<td>7732-18-5</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
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</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.

**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>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</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>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT

UN-No: UN1789
Proper Shipping Name: Hydrochloric acid (Solution)
Hazard Class: 8
Subsidiary Class: No information available
Packing group: II
Emergency Response Guide Number: No information available
Marine Pollutant: No data available
DOT RQ (lbs): No information available
Special Provisions: No Information available
Symbol(s): [DOT]: (R5) - Identifies a material that is a hazardous substance that has a reportable quantity (RQ) of 5000 pounds (2270 Kilograms).
Description: UN1789, Hydrochloric acid (Solution), 8, PG II

TDG (Canada)

UN-No: UN1789
Proper Shipping Name: Hydrochloric acid (Solution)
Hazard Class: 8
Subsidiary Risk: No information available
Packing Group: II
Marine Pollutant: No Information available
Description: HYDROCHLORIC ACID, 8, UN1789, PG II, Solution

ADR

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

IMO / IMDG

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

Product code: H1040  Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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>Water</td>
<td>7732-18-5</td>
<td>Present</td>
<td>Present KE-35400</td>
<td>Present</td>
<td>Not present</td>
<td>Present</td>
<td>Present</td>
<td>Present 231-791-2</td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Present</td>
<td>Present KE-20189</td>
<td>Present</td>
<td>Present (1)-215</td>
<td>Present</td>
<td>Present</td>
<td>Present 231-595-7</td>
</tr>
</tbody>
</table>

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**: Present
  5000 lb RO
  100 lb RO
- **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
  2270kg final RQAs listed in 40 CFR 117.3 Table 117.3 and 40 CFR 302.4 Table 302.4

**Product code**: H1040  **Product name**: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
5000lb 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.

1000lb 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 Reborpuctive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</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>
</tr>
</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>500 lb TPQ</td>
<td>None</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

WHIMIS 2015 - GHS Classifications

<table>
<thead>
<tr>
<th>Component</th>
<th>WHIMIS 2015 Hazard Classification Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water 7732-18-5 (68-70)</td>
<td>Not a dangerous product according to HPR classification criteria</td>
</tr>
</tbody>
</table>
| Hydrogen chloride 7647-01-0 (30-32) | 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

Product code: H1040
Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
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.

WHMIS 1988 Hazard Class

D1A  Very toxic materials
D1B  Toxic materials
E    Corrosive material

Components

Water

Hydrogen chloride

Components

Water

Hydrogen chloride

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.

Components

Water

Hydrogen chloride

Inventory

Components

Water

Hydrogen chloride

Components

Water

Hydrogen chloride

Europe Classification

EU GHS - SV - CLP 172/2008

Components

Water

Hydrogen chloride

Product code: H1040

Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
corrosion/irritation - Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (C >= 25 %); Specific target organ toxicity - Single exposure - STOT SE 3: H335 May cause respiratory irritation. (C >= 10 %)017-002-01-X

Skin corrosion/irritation - Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (C >= 25 %); Skin corrosion/irritation - Skin Irrit. 2: H315 Causes skin irritation. (10 % <= C <25 %); Serious Eye Damage/Eye Irritation - Eye Irrit. 2: H319 Causes serious eye irritation. (10 % <= C <25 %); Specific target organ toxicity - Single exposure - STOT SE 3: H335 May cause respiratory irritation. (C >= 10 %)017-002-01-X

EU - CLP (1272/2008)

R-phrase(s)
R34 - Causes burns.
R37 - Irritating to respiratory system.

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).
S 1/2 - Keep locked up and out of the reach of children.

<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>
<td></td>
</tr>
<tr>
<td>Hydrogen chloride</td>
<td>7647-01-0</td>
<td>Hydrogen Chloride T; R23 C; R35 Hydrochloric Acid: + hydrochloric acid ... % C; R34 - Xi; R37 Concentration Limit(s): C &gt;= 25 % C; R34-37 10 % &lt;= C &lt; 25 % Xi; R36/37/38</td>
<td>Hydrogen Chloride: 0.02%&lt;=C&lt;0.2% Xi;R36/37/38 0.2%&lt;=C&lt;0.5% C;R34 0.5%&lt;=C&lt;1% C;R20-34 1%&lt;=C&lt;5% C;R20-35 5%&lt;=C  T;C;R23-35</td>
<td>For Hydrogen Chloride: S1/2 S9 S26 S36/37/39 S45 Hydrochloric Acid: S(1/2)-S26-S45</td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
C - Corrosive.
Xi - Irritant.

Product code: H1040 Product name: HYDROCHLORIC ACID, 20 DEG BE, TECHNICAL
16. OTHER INFORMATION

Preparation Date: 5/27/2014
Revision Date: 6/1/2017
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