Hydrochloric Acid 37% Solution
11155

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Hydrochloric Acid 37% Solution
Catalog Numbers:
Synonyms:
Chlorohydric acid, hydrogen chloride, muriatic acid, spirits of salt.

Company Identification: Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201 706 7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

<table>
<thead>
<tr>
<th>CASH</th>
<th>Chemical Name</th>
<th>%</th>
<th>EINECS/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>7047-01-0</td>
<td>Hydrogen chloride</td>
<td>30-38%</td>
<td>231-595-7</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>62-64%</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

Hazard Symbols: C
Risk Phrases: 34 37

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear, colorless.
Danger! Corrosive. Sensitizer. Causes eye and skin burns. May cause severe respiratory and digestive tract irritation with possible burns.
Target Organs: None.

Potential Health Effects
Eye:
May cause irreversible eye injury. Vapor or mist may cause irritation and severe burns. Contact with liquid is corrosive to the eyes and causes severe burns. May cause painful sensitization to light. May cause conjunctivitis.

Skin:
May be absorbed through the skin in harmful amounts. Contact with liquid is corrosive and causes severe burns and ulceration. May cause photosensitization in certain individuals.

Ingestion:
May cause circulatory system failure. Causes severe digestive tract burns with abdominal pain, vomiting, and possible death. May cause corrosion and permanent tissue destruction of the esophagus and
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digestive tract.
Inhalation:
Causes severe irritation of upper respiratory tract with coughing, burns, breathing difficulty, and possible coma. May cause pulmonary edema and severe respiratory disturbances.

Chronic:
Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. May cause conjunctivitis and photosensitization.

**** SECTION 4 - FIRST AID MEASURES ****

Eyes:
Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

Skin:
Get medical aid. Rinse area with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Ingestion:
Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

Inhalation:
Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

Notes to Physician:
Treat symptomatically and supportively.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool.

Extinguishing Media:
Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Autoignition Temperature: Not available.
Flash Point: Not available.
NFPA Rating: Not published
Explosion Limits, Lower: Not available.
Upper: Not available.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Large spills may be neutralized with dilute alkaline solutions of soda ash, or lime. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

Storage:
Keep away from heat and flame. Do not store in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances.
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*** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ***

Engineering Controls:
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen chloride</td>
<td>C 5 ppm, C 7.5</td>
<td>50 ppm IDLH</td>
<td>C 5 ppm; C 7 mg/m³</td>
</tr>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

OSHA Vacated PELs:
Hydrogen chloride:
No OSHA Vacated PELs are listed for this chemical.
Water:
No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes:
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

*** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Physical State: Liquid
Appearance: clear, colorless
Odor: strong odor, pungent odor
pH: 1.1 (0.1N sol.)
Vapor Pressure: 160 mm Hg
Vapor Density: 1.257 (Air=1)
Evaporation Rate: 2.0 (Butyl acetate=1)
Viscosity: Not available.
Boiling Point: 230 deg F
Freezing/Melting Point: -101 deg F
Decomposition Temperature: 3239.6 deg F
Solubility: 0.23g/l. water at 32F.
Specific Gravity/Density: 1.16-1.19 (Water=1)
Molecular Formula: HCl
Molecular Weight: 36.46

*** SECTION 10 - STABILITY AND REACTIVITY ***

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Incompatible materials, light.
Incompatibilities with Other Materials:
Acetate, acetic anhydride, alcohols + hydrogen cyanide,
2-aminoethanol, ammonium hydroxide, calcium carbide, calcium phosphate, cesium acetylene carbide, cesium carbide, chlorosulfonic
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acid, 1,1-difluoroethylene, ethylene diamine, ethyleneimine, fluorine, lithium silicide, magnesium boride, mercuric sulfate, oleum, perchloric acid, potassium permanganate, b-propiolactone, propylene oxide, rubidium acetylene carbide, rubidium carbide, silver perchlorate + carbon tetrachloride, sodium, sodium hydroxide, sulfuric acid, uranium phosphide, vinyl acetate. Substance polymerizes on contact with aldehydes or epoxides.


**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS #: 
CASH 7647-01-0: MW40250000
CASH 7732-18-5: ZC01100000
LD50/LC50: 
CASH 7647-01-0: Inhalation, mouse: LC50 =1108 ppm/1H; Inhalation, rat: LC50 =3124 ppm/1H; Oral, rabbit: LD50 = 800 mg/kg.
CASH 7732-18-5: Oral, rat: LD50 = >90 mL/kg.
Carcinogenicity: Hydrogen chloride -
IARC: Group 3 carcinogen

Water -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology:
No information available.

Teratogenicity:
Embryo or Fetus: Stunted fetus, ihl-rat TCLo=450 mg/m3/1H Specific Developmental Abnormalities: homeostasis, ihl-rat TCLo=450 mg/m3/1H.

Reproductive Effects:
No information available.

Neurotoxicity:
No information available.

Mutagenicity:
No information available.

Other Studies:
None.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Trout LC100=10 mg/L/24H Shrimp LC50=100-330 ppm Starfish LC50=100-330 mg/L/48H Shore crab LC50=240 mg/L/48H Chronic plant toxicity=100 ppm

Environmental Fate:
Substance will neutralize soil carbonate-based components.

Physical/Chemical:
No information available.

Other:
None.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.
RCRA D-Series Maximum Concentration of Contaminants:
None listed.
RCRA D-Series Chronic Toxicity Reference Levels: None listed.
RCRA F-Series: None listed.
RCRA P-Series: None listed.
RCRA U-Series: None listed.
Not listed as a material banned from land disposal according to RCRA.

**** SECTION 14 - TRANSPORT INFORMATION ****
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Shipping Name: HYDROCHLORIC ACID
Hazard Class: 8
UN Number: UN1789
Packing Group: II
IMO
No information available.
IATA
No information available.
RID/ADR
No information available.
Canadian TDG
Shipping Name: HYDROCHLORIC ACID
Hazard Class: 8(9.2)
UN Number: UN1789

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CASH 7647-01-0 is listed on the TSCA inventory.
CASH 7732-18-5 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA
Section 302 (RQ)
CASH 7647-01-0: final RQ = 5000 pounds (2270 kg)
Section 302 (TPQ)
CASH 7647-01-0: TPQ = 500 pounds; RQ = 5000 pounds (does not meet toxicity criteria but because of high production volume and recognized toxicity is considered a chemical of concern)
SARA Codes
CASH 7647-01-0: acute.
Section 313
This material contains Hydrogen chloride (CASH 7647-01-0, 36 36%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
CASH 7647-01-0 is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CASH 7647-01-0 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
CASH 7647-01-0 is considered highly hazardous by OSHA.

STATE
Hydrogen chloride can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.
California No Significant Risk Level:
None of the chemicals in this product are listed.
European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols: C
Risk Phrases:
R 34 Causes burns.
R 37 Irritating to respiratory system.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately
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with plenty of water and seek medical advice.
S 45 In case of accident of if you feel unwell, seek
medical advice immediately (show the label where
possible).

WCK (Water Danger/Protection)
CASH 7647-01-0: 1
CASH 7732-18-5: No information available.

Canada
CASH 7647-01-0 is listed on Canada's DSL/NDSL List.
CASH 7732-18-5 is listed on Canada's DSL/NDSL List.

This product has a WHMIS classification of D1A, E.
CASH 7647-01-0 is not listed on Canada's Ingredient Disclosure List.
CASH 7732-18-5 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits
CASH 7647-01-0: OEL-AUSTRALIA:TWA 5 ppm (7 mg/m3). OEL-AUSTRIA:TWA 5
ppm (7 mg/m3). OEL-BELGIUM:STEL 5 ppm (7.7 mg/m3). OEL-DENMARK:STEL 5
ppm (7 mg/m3). OEL-FINLAND:STEL 5 ppm (7 mg/m3); Skin. OEL-FRANCE:STEL
5 ppm (7.5 mg/m3). OEL-GERMANY:TWA 5 ppm (7 mg/m3). OEL-HUNGARY:STEL
5 mg/m3. OEL-JAPAN:STEL 5 ppm (7.5 mg/m3). OEL-THE NETHERLANDS:TWA 5 p
pm (7 mg/m3). OEL-THE PHILIPPINES:TWA 5 ppm (7 mg/m3). OEL-POLAND:TWA
5 mg/m3. OEL-RUSSIA:STEL 5 ppm (5 mg/m3). OEL-SWEDEN:STEL 5 ppm (8 mg/
m3). OEL-SWITZERLAND:TWA 5 ppm (7.5 mg/m3); STEL 10 ppm (15 mg/m3). OEL
-THAILAND:TWA 5 ppm (7 mg/m3). OEL-TURKEY:TWA 5 ppm (7 mg/m3). OEL-UNI
TED KINGDOM:TWA 5 ppm (7 mg/m3); STEL 5 ppm (7 mg/m3). OEL IN BULGARIA,
COLOMBIA, JORDAN, KOREA check ACGIH TLV. OEL IN NEW ZEALAND, SINGAPO
E, VIETNAM check ACGIH TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 1/09/1995 Revision #26 Date: 12/12/1997

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information currently available to us. However, we make no warranty of
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damages, howsoever arising, even if Fisher has been advised of

the possibility of such damages.