

# Material Safety Data Sheet

## Hydrochloric Acid 1 N or 1 M Solution

ACC# 95544

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Hydrochloric Acid 1 N or 1 M Solution**Catalog Numbers:** NC9647629, SA48-1, SA48-1LC, SA48-20, SA48-200, SA48-20LC, SA48-4, SA48-500**Synonyms:** Muriatic acid.**Company Identification:**

Fisher Scientific  
 1 Reagent Lane  
 Fair Lawn, NJ 07410

**For information, call:** 201-796-7100**Emergency Number:** 201-796-7100**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	96.35	231-791-2
7647-01-0	Hydrochloric acid	3.65 %	231-595-7

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid.

**Warning!** May cause eye, skin, and respiratory tract irritation. Corrosive to metal.**Target Organs:** No data found.

#### Potential Health Effects

**Eye:** May cause eye irritation.**Skin:** May cause skin irritation.**Ingestion:** May cause irritation of the digestive tract. May cause circulatory system failure.**Inhalation:** May cause respiratory tract irritation. Exposure to the mist and vapor may erode exposed teeth.**Chronic:** Prolonged or repeated skin contact may cause dermatitis. Repeated exposure may cause erosion of teeth. Repeated exposure to low concentrations of HCl vapor or mist may cause bleeding of nose and gums. Chronic bronchitis and gastritis have also been reported.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Do NOT use sodium bicarbonate in an attempt to neutralize the acid. Treat symptomatically and supportively.

**Antidote:** Do NOT use oils or ointments in eye.

## 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. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Not flammable, but reacts with most metals to form flammable hydrogen gas. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Reaction with water may generate much heat which will increase the concentration of fumes in the air. Containers may explode when heated. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products.

**Extinguishing Media:** For large fires, use water spray, fog, or alcohol-resistant foam. Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. Do NOT use straight streams of water. Most foams will react with the material and release corrosive/toxic gases. Cool containers with flooding quantities of water until well after fire is out. For small fires, use carbon dioxide (except for cyanides), dry chemical, dry sand, and alcohol-resistant foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 0; Instability: 1

## 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 (sodium carbonate,  $\text{Na}_2\text{CO}_3$ ), or lime (calcium oxide,  $\text{CaO}$ ). Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation. Do not get water inside containers. A vapor suppressing foam may be used to reduce vapors. Cover with dry earth, dry sand, or other non-combustible material followed with plastic sheet to minimize spreading and contact with water.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Use with adequate ventilation. Contents may develop pressure

upon prolonged storage. Avoid contact with eyes, skin, and clothing. Do not breathe dust, mist, or vapor. Keep container tightly closed. Avoid ingestion and inhalation. Discard contaminated shoes. Use caution when opening. Keep from contact with moist air and steam.

**Storage:** Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Corrosives area. Do not store in metal containers. Do not store near flammable or oxidizing substances (especially nitric acid or chlorates). Store away from alkalies.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Hydrochloric acid	2 ppm Ceiling	50 ppm IDLH	5 ppm Ceiling; 7 mg/m <sup>3</sup> Ceiling

**OSHA Vacated PELs:** Water: No OSHA Vacated PELs are listed for this chemical. Hydrochloric acid: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear neoprene or polyvinyl chloride gloves to prevent exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** clear, colorless

**Odor:** pungent odor

**pH:** 1.1 (0.1N solution)

**Vapor Pressure:** 4.0 atm @ 17.8 deg C

**Vapor Density:** Not available.

**Evaporation Rate:** >1

**Viscosity:** Not available.

**Boiling Point:** 100 deg C

**Freezing/Melting Point:** 0 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Soluble in water.

**Specific Gravity/Density:** 1.0 - 1.2

**Molecular Formula:** HCl

**Molecular Weight:** 36.46

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, bases, acetic anhydride, alkali metals, aluminum, amines, copper, copper alloys, fluorine, iron, sodium hydroxide, steel, sulfuric acid, vinyl acetate, zinc, potassium permanganate, cesium acetylene carbide, rubidium acetylene carbide, rubidium carbide, sodium, chlorosulfonic acid, oleum, carbonates, perchloric acid, calcium phosphide, metal oxides, acetates, cesium carbide, beta-propiolactone, ethyleneimine, propylene oxide, lithium silicides, alcohols + hydrogen cyanide, 2-aminoethanol, ammonium hydroxide, calcium carbide, 1,1-difluoroethylene, ethylene diamine, magnesium boride, mercuric sulfate, uranium phosphide.

**Hazardous Decomposition Products:** Hydrogen chloride.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS# 7732-18-5:** ZC0110000

**CAS# 7647-01-0:** MW4025000; MW4031000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 7647-01-0:

Inhalation, mouse: LC50 = 1108 ppm/1H;

Inhalation, mouse: LC50 = 20487 mg/m<sup>3</sup>/5M;

Inhalation, mouse: LC50 = 3940 mg/m<sup>3</sup>/30M;

Inhalation, mouse: LC50 = 8300 mg/m<sup>3</sup>/30M;

Inhalation, rat: LC50 = 3124 ppm/1H;

Inhalation, rat: LC50 = 60938 mg/m<sup>3</sup>/5M;

Inhalation, rat: LC50 = 7004 mg/m<sup>3</sup>/30M;

Inhalation, rat: LC50 = 45000 mg/m<sup>3</sup>/5M;

Inhalation, rat: LC50 = 8300 mg/m<sup>3</sup>/30M;

Oral, rabbit: LD50 = 900 mg/kg;

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 7647-01-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** Female rats were exposed to 450 mg/m<sup>3</sup> of HCl for 1 hour either prior to mating or on day 9 of pregnancy. Developmental effects were observed in the offspring. However, this exposure caused toxic effects, including mortality, in the mothers.

**Reproductive Effects:** No information found

**Mutagenicity:** See actual entry in RTECS for complete information.

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Fish: Bluegill/Sunfish: 3.6 mg/L; 48 Hr; Lethal (unspecified)  
Fish: Bluegill/Sunfish: LD50; 96 Hr; pH 3.0-3.5

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	HYDROCHLORIC ACID	HYDROCHLORIC ACID SOLUTION
<b>Hazard Class:</b>	8	8
<b>UN Number:</b>	UN1789	UN1789
<b>Packing Group:</b>	III	II

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 7647-01-0 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.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

CAS# 7647-01-0: 500 lb TPQ (gas only)

#### SARA Codes

CAS # 7647-01-0: immediate.

#### Section 313

This material contains Hydrochloric acid (CAS# 7647-01-0, 3.65%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

#### Clean Air Act:

CAS# 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:**

CAS# 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:**

CAS# 7647-01-0 is considered highly hazardous by OSHA.

**STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 7647-01-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65**

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:**

Not available.

**Risk Phrases:**

**Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

**WGK (Water Danger/Protection)**

CAS# 7732-18-5: No information available.

CAS# 7647-01-0: 1

**Canada - DSL/NDSL**

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 7647-01-0 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of E.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 7647-01-0 is listed on the Canadian Ingredient Disclosure List.

**Section 16 - Additional Information**

**MSDS Creation Date:** 6/05/1998

**Revision #6 Date:** 1/11/2008

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*