



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

**Material name** TRONOX® Hydrochloric Acid  
**Version #** 02  
**Revision date** 09-29-2009  
**CAS #** Mixture  
**Product Code** Hydrochloric Acid  
**MSDS Number** B-5003  
**Product use** Reactant  
**Manufacturer information** Tronox LLC  
3301 NW 150th Street  
Oklahoma City, OK 73134 US  
ChemProdSteward@tronox.com  
1-405-775-5000 (24-hours)  
**Emergency** CHEMTREC 1-800-424-9300

## 2. Hazards Identification

**Physical state** Liquid.  
**Emergency overview** DANGER  
Causes skin, eye and digestive tract burns. May be fatal if inhaled.  
**OSHA regulatory status** This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).  
**Potential health effects**  
**Routes of exposure** Inhalation. Skin contact. Eye contact. Lung. Teeth. Digestive tract  
**Eyes** Corrosive. Causes chemical burns.  
**Skin** Causes skin burns.  
**Inhalation** May be fatal if inhaled. Irritating to respiratory system. May cause lung edema.  
**Ingestion** Causes digestive tract burns. May cause burns in mucous membranes, throat, esophagus and stomach.  
**Chronic effects** Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May cause lung damage. Symptoms may be delayed. Erosion of exposed teeth.  
**Signs and symptoms** Contact with this material will cause burns to the skin, eyes and mucous membranes. Symptoms include itching, burning, redness and tearing. Coughing. Shortness of breath.  
**Potential environmental effects** The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

## 3. Composition / Information on Ingredients

Components	CAS #	Percent
Hydrogen chloride	7647-01-0	25 - 28.5
Water	7732-18-5	Balance

**Composition comments** All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## 4. First Aid Measures

### First aid procedures

**Eye contact** Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes. Make sure to remove any contact lenses from the eyes before rinsing.

**Skin contact** Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Chemical burns must be treated by a physician.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion**

DO NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration. Call a physician or poison control center immediately.

**Notes to physician**

Treat symptomatically. Keep victim under observation. Symptoms may be delayed.

**General advice**

In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

**5. Fire Fighting Measures****Flammable properties**

Not flammable by WHMIS criteria.

**Extinguishing media****Suitable extinguishing media**

Use fire-extinguishing media appropriate for surrounding materials.

**Protection of firefighters****Protective equipment and precautions for firefighters**

Firefighters should wear full protective clothing including self contained breathing apparatus. Selection of respiratory protection for fire fighting: follow the general fire precautions indicated in the workplace.

**Specific methods**

In the event of fire, cool tanks with water spray. Move container from fire area if it can be done without risk.

**6. Accidental Release Measures****Personal precautions**

Ventilate closed spaces before entering. If leakage cannot be stopped, evacuate area. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Local authorities should be advised if significant spillages cannot be contained.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods for containment**

Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Collect and dispose of spillage as indicated in Section 13 of the MSDS. Prevent entry into waterways, sewers, basements or confined areas.

**Methods for cleaning up**

Do not touch or walk through spilled material. Absorb in vermiculite, dry sand or earth and place into containers. Collect in approved containers and seal securely. Containers with collected spillage must be properly labeled with correct contents and hazard symbol. Should not be released into the environment. Clean surface thoroughly to remove residual contamination. For waste disposal, see Section 13 of the MSDS.

**Other information**

Clean up in accordance with all applicable regulations.

**7. Handling and Storage****Handling**

Should be handled in closed systems, if possible. Do not breathe vapors or spray mist. Wear suitable protective clothing, gloves and eye/face protection. Use only with adequate ventilation. Wash thoroughly after handling. Avoid release to the environment.

**Storage**

Store in tightly closed original container in a dry, cool and well-ventilated place. Protect against direct sunlight. Use care in handling/storage. Store away from incompatible materials.

**8. Exposure Controls / Personal Protection****Occupational exposure limits****ACGIH****Components****Type****Value**

Hydrogen chloride (7647-01-0)

Ceiling

2 ppm

**U.S. - OSHA****Components****Type****Value**

Hydrogen chloride (7647-01-0)

Ceiling

5 ppm  
7 mg/m<sup>3</sup>

**Canada - Alberta****Components****Type****Value**

Hydrogen chloride (7647-01-0)

Ceiling

5 ppm  
7,5 mg/m<sup>3</sup>

**Canada - British Columbia**

Components	Type	Value
Hydrogen chloride (7647-01-0)	Ceiling	2 ppm

**Canada - Ontario**

Components	Type	Value
Hydrogen chloride (7647-01-0)	Ceiling	2 ppm

**Canada - Quebec**

Components	Type	Value
Hydrogen chloride (7647-01-0)	Ceiling	5 ppm 7,5 mg/m3

**Mexico**

Components	Type	Value
Hydrogen chloride (7647-01-0)	Ceiling	5 ppm 7 mg/m3

**Engineering controls**

Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors. Eye wash facilities and emergency shower must be available when handling this product.

**Personal protective equipment****Eye / face protection**

Avoid contact with eyes. Wear chemical goggles. Face-shield.

**Skin protection**

Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

**Respiratory protection**

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use positive pressure air supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Not available.
<b>Color</b>	Colorless, or Yellow.
<b>Odor</b>	Sharp. Pungent.
<b>Odor threshold</b>	Not available.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	Not available.
<b>Melting point</b>	Not available.
<b>Freezing point</b>	Not available.
<b>Boiling point</b>	206.6 °F (97 °C)
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Vapor pressure</b>	Not available.
<b>Vapor density</b>	Not available.

<b>Specific gravity</b>	1.14 @20°C
<b>Solubility (water)</b>	Completely miscible
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.

## 10. Chemical Stability & Reactivity Information

<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Conditions to avoid</b>	High temperatures.
<b>Incompatible materials</b>	Reducing agents. Oxidizing agents. Strong bases. Amines. Alkalies. Contact with most metals produces highly flammable hydrogen gas.
<b>Hazardous decomposition products</b>	Hydrogen chloride.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

## 11. Toxicological Information

### Toxicological data

Components	Test Results
Hydrogen chloride (7647-01-0)	Acute Inhalation LC50 Rat: 3124 mg/l 1 Hours
<b>Acute effects</b>	Causes burns. Fatal if inhaled. May cause lung edema.
<b>Local effects</b>	Causes burns. Irritating to respiratory system.
<b>Sensitization</b>	Not a skin sensitizer.
<b>Chronic effects</b>	Prolonged inhalation may be harmful. Erosion of exposed teeth. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis. May cause lung damage. Symptoms may be delayed.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>ACGIH Carcinogens</b>	
Hydrogen chloride (CAS 7647-01-0)	Group A4 Not classifiable as a human carcinogen.
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>	
Hydrogen chloride (CAS 7647-01-0)	3 Not classifiable as to carcinogenicity to humans.
<b>Epidemiology</b>	Not available.
<b>Mutagenicity</b>	Not available.
<b>Neurological effects</b>	Not available.
<b>Reproductive effects</b>	Not available.
<b>Teratogenicity</b>	Not available.

## 12. Ecological Information

### Ecotoxicological data

Components	Test Results
Hydrogen chloride (7647-01-0)	LC50 Western mosquitofish (Gambusia affinis): 282 mg/l 96 Hours
<b>Ecotoxicity</b>	The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.
<b>Environmental effects</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
<b>Persistence and degradability</b>	Not available.
<b>Bioaccumulation / Accumulation</b>	No data available.
<b>Mobility in environmental media</b>	The product is water soluble and may spread in water systems.

## 13. Disposal Considerations

<b>Waste codes</b>	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
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**Disposal instructions**

Do not allow this material to drain into sewers/water supplies.

**Waste from residues / unused products**

Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**14. Transport Information****DOT****Basic shipping requirements:**

<b>UN number</b>	1789
<b>Proper shipping name</b>	Hydrochloric acid (solution)
<b>Hazard class</b>	8
<b>Packing group</b>	II
<b>Additional information:</b>	
<b>Special provisions</b>	A3,A6,B3,B15,IB2,N41,T8,TP2,TP12
<b>Packaging non bulk</b>	202
<b>Packaging bulk</b>	242
<b>ERG number</b>	157

**IATA****Basic shipping requirements:**

<b>UN number</b>	1789
<b>Proper shipping name</b>	Hydrochloric acid (solution)
<b>Hazard class</b>	8
<b>Packing group</b>	II
<b>Labels required</b>	8

**IMDG****Basic shipping requirements:**

<b>UN number</b>	1789
<b>Proper shipping name</b>	Hydrochloric acid (solution)
<b>Hazard class</b>	8
<b>Packing group</b>	II
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	No
<b>Labels required</b>	8

**TDG****Basic shipping requirements:**

<b>Proper shipping name</b>	Hydrochloric acid (solution)
<b>Hazard class</b>	8
<b>UN number</b>	1789
<b>Packing group</b>	II



DOT



IATA



IMDG



TDG

## 15. Regulatory Information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
All components are on the U.S. EPA TSCA Inventory List.

**US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity**

Hydrogen chloride (CAS 7647-01-0) 5000 LBS

**US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity**

Hydrogen chloride (CAS 7647-01-0) 500 LBS

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration**

Hydrogen chloride (CAS 7647-01-0) 1.0 %

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance**

Hydrogen chloride (CAS 7647-01-0) Listed.

**CERCLA (Superfund) reportable quantity (lbs)**

Hydrogen chloride: 5000

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

**Section 302 extremely hazardous substance** No

**Section 311 hazardous chemical** Yes

**Drug Enforcement Agency (DEA)** Not controlled

**WHMIS status** Controlled

**WHMIS classification** D1B - Immediate/Serious-TOXIC  
E - Corrosive

**WHMIS labeling**



**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US - California Hazardous Substances (Director's): Listed substance**

Hydrogen chloride (CAS 7647-01-0) Listed.

**US - Massachusetts RTK - Substance: Listed substance**

Hydrogen chloride (CAS 7647-01-0) Listed.

**US - New Jersey Community RTK (EHS Survey): Reportable threshold**

Hydrogen chloride (CAS 7647-01-0) 500 LBS

**US - New Jersey RTK - Substances: Listed substance**

Hydrogen chloride (CAS 7647-01-0) Listed.

**US - Pennsylvania RTK - Hazardous Substances: Listed substance**

Hydrogen chloride (CAS 7647-01-0) Listed.

**16. Other Information**

**Further information**

HMIS® is a registered trade and service mark of the NPCA.

**HMIS® ratings**

Health: 3\*  
Flammability: 0  
Physical hazard: 0

**NFPA ratings**

Health: 3  
Flammability: 0  
Instability: 0

**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available.

**Issue date**

09-29-2009