

MATERIAL SAFETY DATA SHEET**HYDROCHLORIC ACID <2N**

PRODUCT CODE NUMBER(S): 6029-6, 6030-6, 6031-6, CAL 0407, CAL 0423

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Hydrochloric acid <2N**Chemical Family:** Inorganic acid**Chemical Formula:** HCl in H₂O (dilute solution)**Product Use:** Laboratory reagent**Manufacturer's Name and Address:**Caledon Laboratories Ltd.
40 Armstrong Avenue
Georgetown, Ontario L7G 4R9**Telephone No:** (905) 877-0101**Fax No:** (905) 877-6666**Emergency Telephone No:** CANUTEC (613) 996-6666**HAZARDOUS INGREDIENTS OF MATERIALS**

Ingredients	%	TLV Units	CAS No.
Hydrochloric acid	<7	5 ppm	7647-01-0

PHYSICAL DATA**Physical State:** Liquid**Odour and Appearance:** Clear, colourless liquid**Odour Threshold (ppm):** 1-5 ppm (detection); 10 ppm (irritation)**Vapour Pressure (mm Hg):** Similar to water**Vapour Density (Air = 1):** Similar to water**Evaporation Rate:** Similar to water**Boiling Point (degrees C):** ~100°C**Freezing Point (degrees C):** -1 to 0°C**pH:** <1.0**Specific Gravity:** 1.00-1.02**Coefficient of Water/Oil distribution:** log P=-1.04**SHIPPING DESCRIPTION****UN:** Not regulated**T.D.G. Class:** Not regulated**Pkg. Group:** Not regulated**REACTIVITY DATA****Chemical Stability:** Stable**Incompatibility with other substances:** Contact with most metals corrodes them and forms flammable hydrogen gas. Contact of vapour or liquid with any alkali or active metal may develop enough heat to cause fire in adjacent combustible material. Reaction with aldehydes, epoxides may cause violent polymerization, generating heat and pressure. Reaction with reducing agents, oxidizing agents, acetylides, borides, carbides, silicides, sulphides, or cyanides produces heat, flammable and/or corrosive gases.**Reactivity:** Avoid high temperatures, incompatible materials, generation of mist. Can release large amounts of heat when mixed with organic solvents.**Hazardous Decomposition Products:** HCl vapour, hydrogen gas**FIRE AND EXPLOSION DATA****Flammability:** Not combustible; will not burn. However, can release flammable/explosive hydrogen gas on contact with most metals.**Extinguishing Media:** Use media compatible with acids appropriate to extinguish surrounding fire. Use water as a spray or fog to cool containers and disperse vapours, but prevent direct contact with acid. Fight fire from safe distance and protected location. Firefighters must wear protective equipment (full face-piece, positive-pressure self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of dusts or vapours, and contact with skin and eyes.**Flash Point (Method Used):** Not applicable**Autoignition Temperature:** Not applicable**Upper Flammable Limit (% by volume):** Not applicable**Lower Flammable Limit (% by volume):** Not applicable**Hazardous Combustion Products:** H₂, HCl gas**Sensitivity to Impact:** None identified**Sensitivity to Static discharge:** None identified**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** (oral, rabbit) 900 mg/kg (HCl)**LC₅₀:** (mouse) 3,100 mg/m³/30 min (388 mg/m³ aerosol/4h)**LC₁₀:** (human) 1,300 ppm/30min**Effects of Acute Exposure to Product:****Inhaled:** Irritating to the eyes, nose, throat and upper respiratory tract, coughing and choking (50 -100 ppm). Severe exposure may lead to ulceration of the oral and nasal mucosa. Symptoms may be delayed for several hours after exposure.**In contact with skin:** Severe irritation, skin burns, blisters. Prolonged or repeated contact to dilute solutions may cause irritation and dermatitis. Skin covered by perspiration or damp clothing may also be affected.**In contact with eyes:** Low concentrations, 10-35 ppm, can cause immediate irritation, redness, pain, tearing. Concentrated vapour, mist or liquid can cause severe burns, watering, conjunctivitis, permanent damage, possible blindness.**Ingested:** Severe burns to mouth, throat, esophagus and stomach, nausea, vomiting. Risk of stomach perforation, convulsions, coma and death. Aspiration of the small amounts into the lungs, which can occur during ingestion or

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vomiting, can cause chemical pneumonitis, pulmonary edema, with severe lung damage, even death.

Effects of Chronic Exposure to Product:

Prolonged exposure causes dental erosion with brown discoloration of the teeth and damage to the enamel. Prolonged inhalation may cause bleeding of the nose and gums, gastritis, decreased lung function, possible bronchitis. Prolonged or repeated exposure to dilute solutions may cause irritation, redness, pain, drying and cracking of the skin.

Carcinogenicity: Not classifiable as human carcinogen (IARC), (ACGIH), (NTP).

Teratogenicity: No human information available. Developmental effects in animals studies at levels toxic to mother.

Reproductive Effects: No information available

Mutagenicity: No human information available. Questionable positive results in some short-term tests. Negative results in *in vitro* mammalian tests.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation advised.

Respiratory Protection: Dust/mist mask. Up to 50 ppm: chemical cartridge respirator with cartridges to protect against hydrogen chloride, or gas mask with canister to protect against hydrogen chloride. For higher or unknown concentrations, or for fire or spill conditions, positive pressure, full facepiece self contained breathing apparatus or positive pressure, full facepiece supplied-air respirator with auxiliary positive pressure self contained breathing apparatus.

Eye Protection: Chemical safety goggles

Skin Protection: Hydrochloric acid <30% for up to 8 hours; no information available for higher or lower concentrations, use with caution, or follow glove manufacturer's instructions: butyl, natural, nitrile or neoprene rubber, Viton, Viton /butyl rubber, Tychem BR/LV, Tychem SL, Tychem TK, Responder, Trelchem HPS. Other impervious protective clothing sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye-wash fountain in work area.

Leak and Spill Procedure: Do not touch spilled material. Cleanup personnel must be thoroughly trained in the handling of hazardous substances, and must wear protective equipment and clothing sufficient to prevent inhalation of mists or fumes and contact with skin, eyes and clothing. Stop and contain leak or spill. Cover with dry sand, ashes or gravel, and collect for transfer to disposal company. Ventilate area and wash site of spillage thoroughly with water.

Waste Disposal: Follow all federal, provincial and local regulations for disposal.

Handling Procedures and Equipment: TOXIC, CORROSIVE MATERIAL. Workers handling this material must be thoroughly trained in its hazards and its safe use and must wear appropriate protective equipment and clothing. Avoid all contact and inhalation. Handle with extreme care. Use smallest amount possible for the purpose in a designated area with adequate ventilation. When diluting, always add acid to water, slowly, while stirring carefully. Suitable materials for equipment and containers include: glass, rubber lined steel, polyethylene, polyester, FRP, PVC, polypropylene, teflon or Kynar.

Storage Requirements: Store in suitable, closed containers (see "Handling procedures . . ." above), in a cool, dry well-ventilated area, away from heat and ignition sources, and incompatible materials. Storage facilities (shelves, floors) should be constructed of corrosion-resistant materials (rubber-lined steel, Havel, Hastelby and tantalum are the most common), and should have raised sills to contain material in case of leaking. Inspect containers frequently for signs of damage, leaking or corrosion. Keep containers upright. Treat empty containers with caution - they may contain hazardous residues.

FIRST AID MEASURES

Specific Measures:

Eyes: Flush eyes with gently running water for at least twenty (20) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves to avoid contact during first aid procedures. Get medical attention immediately.

Skin: Remove contaminated clothing. Flush exposed area with running water for at least fifteen (15) minutes. Get medical attention.

Inhalation: IMMEDIATELY remove to fresh air. Give oxygen for breathing difficulty. If breathing has stopped give artificial respiration. If breathing and pulse are absent, give CPR. Immediately contact a physician. Stay with casualty until medical help arrives.

Ingestion: DO NOT INDUCE VOMITING. If the casualty is alert and not convulsing, give 2 to 4 glasses of water to dilute the material. Get medical attention. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water.

REFERENCES USED

CCINFO disc: Cheminfo

Budavari: The Merck Index, 12th ed., 1997

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979

Royal Society of Chemistry, Chemical Safety Data Sheets, Vol. 3, 1990

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: June 7, 1991

Revision: October 2011

MSDS: 6029-6, 6030-6, 6031-6, CAL 0407, CAL 0423

Proposed WHMIS Designation: D1A; E (conc. HCl)

Prepared by: Caledon Laboratories Ltd. (905) 877-0101
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