

MATERIAL SAFETY DATA SHEET**ALUMINUM CHLORIDE HYDRATED**

PRODUCT CODE NUMBER(S): 1080-1

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Aluminum chloride, hydrated; Aluminum trichloride**Chemical Family:** Inorganic aluminum compound**Chemical Formula:** $AlCl_3 \cdot 6H_2O$ **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.
Aluminum chloride hydrated	>99	2 mg/m ³ (Al, soluble salts)	7784-13-6

PHYSICAL DATA**Physical State:** Solid**Odour and Appearance:** Colourless crystals or white or slightly yellow deliquescent, crystalline powder. Slight odour of hydrogen chloride**Odour Threshold (ppm):** Not available**Vapour Pressure (mm Hg):** 1.0 mm Hg at 100°C**Vapour Density (Air = 1):** Not applicable**Evaporation Rate:** Not available**Boiling Point (degrees C):** Not applicable**Melting Point (degrees C):** 100°C (decomposes)**pH:** 2.5 - 3.5 (5%, aqueous)**Specific Gravity:** 2.44 @ 25°C**Coefficient of Water/Oil distribution:** Not available**SHIPPING DESCRIPTION****UN:** Not regulated**T.D.G. Class:** Not regulated**Pkg. Group:** Not regulated**REACTIVITY DATA****Chemical Stability:** Normally stable to air and light. Deliquescent (absorbs moisture from the air and forms wet solids or solutions).**Incompatibility with other substances:** Reaction with water or steam produces heat and toxic or corrosive fumes; reaction can be violent. Violent reactions with oxidizing agents, ethylene oxide, nitrobenzene/phenol, alkenes. Can react explosively with strong bases, organic nitro compounds plus organic matter, active metals. Dry powder is non corrosive to metals, but when wet corrodes steel, stainless steel, cast iron, copper, brass, bronze, aluminum, lead.**Reactivity:** Avoid contact with water. Avoid excessive heat, moisture, generation of dust, all incompatible materials.**Hazardous Decomposition Products:** HCl**FIRE AND EXPLOSION DATA****Flammability:** Not combustible. Will not burn or support combustion.**Extinguishing Media:** Use extinguisher appropriate for surrounding fire. DO NOT USE A WATER since it will react violently. Use water to cool containers, if it can be used without contacting aluminum chloride. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes (Bunker Gear may not be adequate, chemical splash suit may be necessary). Closed containers may explode in heat of fire; withdraw immediately in case of rising sound from venting device, or discoloration in container.**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:** HCl fumes**Sensitivity to Impact:** None identified**Sensitivity to Static discharge:** None identified**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** (oral, rat) 3,311 mg/kg; (oral, mouse) 1,990 mg/kg**LC₅₀:** Not available**Effects of Acute Exposure to Product:****Inhaled:** Irritates. Reacts with moisture in mucous membranes to form corrosive hydrogen chloride. Symptoms of inhalation include irritation, coughing, sneezing, choking. Severe overexposure may cause spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema, and death. Symptoms of pulmonary edema can be delayed for several hours.**In contact with skin:** Reacts with moisture (such as perspiration) to form corrosive hydrochloric acid, which will cause redness, irritation, and possible thermal and acid burns from brief (few minutes) contact. Severity of damage depends on the concentration and duration of exposure.**In contact with eyes:** Reacts with moisture in eyes to cause redness, pain, blurred vision and burns to the outer layer of the eye. Effects usually clear within a few days if exposure is terminated. However, severe overexposure can cause permanent damage even blindness. Severity of damage depends on the concentration and duration of exposure.**Ingested:** Not a typical route of industrial exposure. Reacts with moisture in gastrointestinal tract causing sore throat, burns of the mouth, nausea, vomiting, abdominal pain and diarrhea.

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Effects of Chronic Exposure to Product:

Prolonged exposure to hydrochloric acid fumes released when aluminum chloride comes into contact with moisture may cause tooth decay. Prolonged introduction of aluminum salts directly into the bloodstream (as in kidney dialysis) may cause neurological disorders resembling senility. This is not relevant to workplace exposure. Prolonged ingestion of aluminum salts may cause phosphate deficiency. Prolonged skin exposure may cause dermatitis and scarring, and numbing of the fingers.

Carcinogenicity: No human or animal information available. Animal testing for other aluminum salts are negative. Not expected to be carcinogenic.

Teratogenicity: Fetotoxicity and embryotoxicity demonstrated in the absence of maternal toxicity, in animal studies. No human information available.

Reproductive Effects: No human or animal information available. Animal testing for anhydrous aluminum chloride is negative.

Mutagenicity: Insufficient information available. One positive result in cultured mammalian cells.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local, corrosion-proof, exhaust ventilation, separate from other ventilation systems.

Respiratory Protection: Dust mask. Fumehood. NIOSH approved, appropriate protective respiratory equipment for hydrogen chloride concentrations: up to 50 ppm, chemical cartridge respirator with cartridges to protect against hydrogen chloride, or supplied-air respirator. For higher or unknown concentrations, as in fire or spill conditions, positive-pressure, full face-piece self-contained breathing apparatus, or full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or face shield.

Skin Protection: Butyl rubber, neoprene, Responder™, Saranex™, Barricide™, Viton™, TrelchemHPS™, or CPF3™ gloves. Impervious apron, sleeves and other protective clothing as required to prevent contact. Guidelines are for substances resistant to hydrochloric acid.

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

Leak and Spill Procedure: Restrict access to area of spill. Do not touch spilled material. Cleanup crew must be trained in the handling of hazardous chemicals and should wear protective equipment and clothing sufficient to prevent inhalation of vapours and contact with skin, eyes, and clothing. Contain spill with earth, sand or inert absorbent. Collect in covered, labelled containers. Avoid raising dust. After clean-up is complete, flush area with water. Do not get water on spilled material or in containers.

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

Handling Procedures and Equipment: TOXIC, DANGEROUSLY REACTIVE. Use dust-tight containers and corrosion-resistant equipment and tools. Prevent accumulation of dust. Avoid generation of dust or mist. Keep away from any contact with water; post "Do Not Use Water" signs in area of use. Use smallest possible amount for the purpose, in a designated area with adequate ventilation. Keep containers closed when not in use. Empty containers may contain residues which are hazardous. Be very cautious in

opening containers, especially if material has been stored long.

Storage Requirements: Store in corrosion-resistant, labelled containers, in a cool, DRY, well-ventilated area, out of direct sunlight. Store in an area with no water service. Store away from incompatible materials. Keep containers tightly closed when not in use and when empty. Protect from moisture. Protect from damage and inspect regularly for signs of leaking. Do not store for prolonged periods; reaction with moisture may cause build-up of pressure within containers.

FIRST AID MEASURES**Specific Measures:**

Eyes: Brush away excess chemical. Flush eyes thoroughly with gently running water for twenty to thirty (20-30) minutes, holding eyelids open while flushing. Wear impervious gloves to avoid contact during first aid procedures. Take care not to flush contaminated water into unaffected eye. Get medical attention immediately.

Skin: Wear impervious gloves to avoid contact during first aid procedures. Remove contaminated clothing, including watches, rings, belts, and shoes. Brush away excess chemical. Wash skin with cool, gently running water for at least twenty to thirty (20-30) minutes. Get medical attention immediately. Decontaminate clothing before reuse, or discard.

Inhalation: Remove to fresh air. Give oxygen or get medical attention for any breathing difficulty. If breathing has stopped, give artificial respiration and get medical attention immediately. Onset of symptoms of pulmonary edema may be delayed; if victim has breathing problems during the next 24 -72 hours, get medical attention immediately.

Ingestion: If victim is alert and NOT convulsing, rinse mouth thoroughly with water, and give 2 to 4 glasses of water or milk to drink to dilute. Do not induce vomiting. If spontaneous vomiting occurs, rinse mouth and give more water or milk to drink. Get medical attention immediately.

REFERENCES USED

CCINFO disc: Cheminfo

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

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

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: February 20, 1990

Revision: January 2011

MSDS: 1080-1

Proposed WHMIS Designation: D2A; E

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