

**MATERIAL SAFETY DATA SHEET****BARIUM CHLORIDE**

PRODUCT CODE NUMBER(S):2020-1

**PRODUCT IDENTIFICATION**

**Chemical Name and Synonyms:** Barium chloride; Barium dichloride; Barium chloride dihydrate  
**Chemical Family:** Inorganic salt  
**Chemical Formula:** BaCl<sub>2</sub>·2H<sub>2</sub>O  
**Product Use:** Laboratory reagent  
**Manufacturer's Name and Address:**  
Caledon Laboratories Ltd.  
40 Armstrong Avenue  
Georgetown, Ontario L7G 4R9  
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**HAZARDOUS INGREDIENTS OF MATERIALS**

Ingredients	%	TLV Units	CAS No.
Barium chloride	>98	0.5 mg/m <sup>3</sup> (as Ba)	10326-27-9

**PHYSICAL DATA**

**Physical State:** Solid  
**Odour and Appearance:** Odourless, white crystals  
**Odour Threshold (ppm):** Not applicable  
**Vapour Pressure (mm Hg):** <0.1 mm Hg @ 20°C  
**Vapour Density (Air = 1):** Not applicable  
**Evaporation Rate:** Not applicable  
**Boiling Point (degrees C):** 1560°C (anhydrous)  
**Melting Point (degrees C):** 963°C (anhydrous)  
**pH:** 5.2-8.2 (5%, aqueous)  
**Specific Gravity:** 3.86 @ 24°C (anhydrous)  
**Coefficient of Water/Oil distribution:** Not applicable

**SHIPPING DESCRIPTION**

**UN:** 1564  
**T.D.G. Class:** 6.1  
**Pkg. Group:** III

**REACTIVITY DATA**

**Chemical Stability:** Stable  
**Incompatibility with other substances:** Strong oxidizers, metals, hydrides, hydroxides, nitrates, oxides, sulphates and sulphides. Reacts violently with bromine trifluoride and 2-furan percarboxylic acid. Contact with strong acids liberates toxic gases, HCl, Cl<sub>2</sub>, NO<sub>2</sub>.  
**Reactivity:** Avoid excessive heat, incompatible materials, generation of dust.  
**Hazardous Decomposition Products:** Barium oxide, hydrochloric acid, hydrogen chloride and chlorine gases.

**FIRE AND EXPLOSION DATA**

**Flammability:** Not combustible.  
**Extinguishing Media:** Use an extinguisher appropriate to the surrounding material which is burning. Use water as spray or fog to minimize dust, absorb heat, cool containers, and disperse vapours. Fight fire from upwind, from a safe distance. Firefighters should wear protective equipment, full face-piece positive-pressure self-contained breathing apparatus, and clothing sufficient to prevent inhalation of dust or fumes, 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:** Barium oxide, hydrochloric acid, hydrogen chloride and chlorine gases  
**Sensitivity to Impact:** None identified  
**Sensitivity to Static discharge:** None identified

**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:**

**LD<sub>50</sub>:** (oral, rat) 118 mg/kg; (oral, mouse) 150 mg/kg (anhydrous)  
**LC<sub>50</sub>:** Not available

**Effects of Acute Exposure to Product:**

Barium chloride is toxic and an eye, skin and mucous membrane irritant. May be fatal if inhaled, swallowed or absorbed through the skin. Poisoning may affect the kidneys, cardiovascular and central nervous systems. Persons with chronic respiratory, cardiovascular or skin disease may be at an increased risk from exposure.

**Inhaled:** May cause irritation of the respiratory tract with sore throat, coughing and laboured breathing. If sufficient amounts are absorbed, systemic effects as described above may result.

**In contact with skin:** May cause irritation and dermatitis. Not likely to be absorbed through intact skin, but can be absorbed through cuts and abrasions. If sufficient amounts are absorbed, systemic effects may occur, as described above.

**In contact with eyes:** May cause severe irritation.

**Ingested:** Toxic. The barium ion is a muscle poison causing stimulation and then paralysis. Initial symptoms are gastrointestinal, including nausea, vomiting, colic, and severe diarrhea, with watery and bloody stools, followed by myocardial and general muscular stimulation with tingling in the extremities, salivation, tingling or numbness of the mouth or face. Barium chloride affects the muscles (especially the smooth muscles of the cardiovascular and respiratory systems). Poisoning may progress to cause tremors, faintness, confusion, paralysis of arms and legs, slow or irregular heartbeat, collapse, and paralysis of respiratory muscles which may cause respiratory failure and death.

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0.8 g may be fatal. Death may occur within hours or be delayed for several days.

**Effects of Chronic Exposure to Product:**

Chronic skin exposure may lead to dermatitis. Prolonged ingestion may cause symptoms as in "Ingested", weight loss, leukocytopenia, lowered hemoglobin levels, liver and kidney damage in rats. Prolonged inhalation may cause baritosis, a benign pneumoconiosis.

**Carcinogenicity:** Studies inconclusive at this time. Not listed as carcinogenic by NTP, IARC.

**Teratogenicity:** No information available

**Reproductive Effects:** Gonadotoxic in animal testing.

**Mutagenicity:** Negative in bacterial testing.

**Synergistic Products:** None known

**PREVENTIVE MEASURES**

**Engineering Controls:** Local exhaust ventilation required

**Respiratory Protection:** Dust mask. Up to 5mg/m<sup>3</sup>: NIOSH approved dust and mist respirator or supplied-air respirator. Up to 12.5mg/m<sup>3</sup>: supplied-air respirator operated in continuous-flow mode, or powered air-purifying respirator with dust and mist filter(s). Up to 25mg/m<sup>3</sup>: full face-piece respirator with high-efficiency particulate filter(s), or supplied-air respirator with tight-fitting face-piece operated in continuous-flow mode, or powered air-purifying respirator with tight-fitting face-piece and high-efficiency particulate filter(s). Up to 50mg/m<sup>3</sup>: full face-piece, positive-pressure supplied-air respirator. For higher or unknown concentrations, as in fire or spill conditions, full face-piece, positive-pressure self-contained breathing apparatus, or full face-piece, positive-pressure supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus.

**Eye Protection:** Chemical safety goggles/face shield.

**Skin Protection:** Butyl rubber gloves. Other -protective clothing, apron, sleeves, labcoat, coveralls, boots sufficient to prevent contact.

**Other Personal Protective Equipment:** Ensure that emergency shower and eye wash facilities are in working order and within easy access.

**Leak and Spill Procedure:** Ventilate area. Cleanup personnel must be thoroughly trained in the handling of hazardous materials and must wear protective equipment and clothing sufficient to prevent inhalation of dusts or fumes, and contact with skin and eyes. Do not touch spilled material. Avoid raising dust. Mix with inert or moist absorbent and gather up in a manner that does not raise dust. Prevent from entering sewers or waterways. Transfer carefully into container and arrange removal by disposal company. Wash site of spillage thoroughly with water and detergent.

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

**Handling Procedures and Equipment:** TOXIC. IRRITANT. Workers using this chemical must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Prevent release of dust into workplace air. Avoid contact with skin, eyes and clothing. Keep away from all incompatible materials. Use the smallest possible amount for the purpose, in designated areas with adequate ventilation. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution.

**Storage Requirements:** Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Keep containers tightly closed when not in use and when empty. Protect from damage and inspect frequently for signs of damage or leaking.

**FIRST AID MEASURES**

**In all cases of exposure, victim should get medical attention as soon as is possible.**

**Specific Measures:**

**Eyes:** Flush eyes thoroughly with gently running water, holding eyelids open while flushing, for at least ten to fifteen (10-15) minutes, or until no evidence of chemical remains. Take care not to flush contaminated water into unaffected eye. Get medical attention.

**Skin:** Remove contaminated clothing (including watches, rings, belts and shoes). Flush skin with soap and plenty of running water until no evidence of chemical remains (at least fifteen minutes). Get medical attention.

**Inhalation:** Remove to fresh air. Give oxygen and get medical attention for any breathing difficulty. If breathing has stopped, begin artificial respiration immediately. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

**Ingestion:** If victim is alert and not convulsing, rinse mouth thoroughly with water and give a glass of water with 1 tablespoon of epsom salts in it, or 2 to 4 glasses of water to drink to dilute. Induce vomiting immediately, under medical supervision, by sticking a finger down the throat. Get medical attention immediately. When vomiting occurs, rinse mouth thoroughly and give more water to drink.

**Note to physician:** Precipitate ingested soluble barium compounds as benign insoluble barium sulphate using Epsom or Glauber's salt solution. Dilute with large amounts of water or milk. Evacuate via nasogastric aspiration or induction of emesis. Monitor electrolytes, especially potassium, electrocardiogram and rhythm, and acid/base status. Induce brisk diuresis. Calcium gluconate may be helpful for muscle spasms.

**REFERENCES USED**

CCINFO disc

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

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

Suppliers' Material Safety Data Sheets

**ADDITIONAL INFORMATION**

**Date Issued:** March 10, 1989

**Revision:** November 2010

**MSDS:** 2020-1

**Proposed WHMIS Designation:** D1B; D2B

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