

BORIC ACID**PRODUCT IDENTIFICATION****Chemical Name and Synonyms:**

Boric acid; Orthoboric acid; Boracic acid; Boron trihydroxide

Chemical Family:

Oxo acid/oxy acid

Chemical Formula:

H₃BO₃

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.
<i>Boric acid</i>	<i>~99</i>	<i>2 mg/m³</i>	<i>10043-35-3</i>

PHYSICAL DATA**Physical State:**

Solid

Odour and Appearance:

White powder, odourless

Odour Threshold (ppm):

Not applicable

Vapour Pressure (mm Hg):

~0 at 20°C

Vapour Density (Air = 1):

Not applicable

Evaporation Rate:

Not applicable

Boiling Point (°C):

300°C

Melting Point (°C):

Indeterminate; decomposes above 100°C forming water and boric anhydride

pH:

5.1 (0.1M)

Specific Gravity:

1.435 @ 15°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:**

Stable to 100°C; above, decomposes, forming water and boric anhydride.

Incompatibility with other substances:

Reacts violently with acetic anhydride, potassium. Incompatible with alkali carbonates, hydroxides.

Reactivity:

Avoid generation of dust, all incompatible materials.

Hazardous Decomposition Products:

Boron oxides

FIRE AND EXPLOSION DATA**Flammability:**

Not combustible. Will not burn.

Extinguishing Media:

Use extinguisher appropriate to surrounding fire. Product is inherent fire retardant. Firefighters must wear protective equipment (positive-pressure, full face-piece 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:

Boric anhydride, toxic fumes

Sensitivity to Impact:

None

Sensitivity to Static discharge:

None

TOXICOLOGICAL PROPERTIES AND HEALTH DATA**Toxicological Data:****LD₅₀:**

(oral, rat) 2,500 mg/kg

LC₅₀:

(rat) 16 mg/L

Effects of Acute Exposure to Product:**Inhaled:**

Harmful, may irritate nasal and respiratory passages on contact. High concentrations of dust may cause coughing, nosebleeds, shortness of breath. If exposure is severe, or prolonged, can be absorbed causing systemic effects, with persistent vomiting and diarrhea, depressed circulation, skin rash and respiratory ill health, eventual shock and coma.

In contact with skin:

Does not irritate or penetrate intact skin. Absorption into blood stream through damaged skin may result in erythema, macular rash, central nervous system effects after 24 hours.

In contact with eyes:

May cause slight reversible conjunctivitis.

Ingested:

Irritating to gastrointestinal tract. May cause nausea, vomiting, diarrhea, abdominal cramps. Large doses may cause circulatory collapse, tachycardia, cyanosis, delirium, convulsions and coma. Death has been reported to occur in adults from doses of 5 to 20 grams.

Effects of Chronic Exposure to Product:

Animal testing indicates that boron does not appear to accumulate in the body. However, prolonged or repeated skin contact may cause dermatitis. Prolonged exposure can cause liver and kidney, central nervous system damage, blood effects, and damage to the spleen.

Carcinogenicity:

BORIC ACID

Not listed as a carcinogen by NTP, IARC or OSHA

Teratogenicity:

Tests with laboratory animals indicate that ingestion of large amounts over an extended period of time may cause fetal weight loss (RTECS No. ED4550000).

Reproductive Effects:

Tests with laboratory animals indicate that ingestion of large amounts over an extended period of time can cause decreased sperm production and testicle size, and impaired fertility. Doses were much larger than could be encountered under normal occupational exposure.

Mutagenicity:

Effects demonstrated in laboratory testing.

Synergistic Products:

None known

PREVENTIVE MEASURES

Engineering Controls:

Local exhaust ventilation.

Respiratory Protection:

Dust mask. Up to 50 mg/m³: NIOSH approved dust/mist respirator. Up to 100 mg/m³: dust/mist respirator except single-use or quarter-mask respirator. Up to 250 mg/m³: powered air-purifying 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, or full face-piece self-contained breathing apparatus, or full face-piece supplied-air respirator. Up to 500 mg/m³: full face-piece respirator with high-efficiency particulate filter(s), or powered air-purifying respirator with tight-fitting face-piece and high-efficiency particulate filter(s), or full face-piece supplied-air respirator. Up to 2,000 mg/m³: positive-pressure supplied-air respirator. Higher or unknown concentrations, as in fire or spill conditions: positive-pressure, full face-piece self-contained breathing apparatus, or positive-pressure, full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection:

Chemical safety goggles

Skin Protection:

Butyl or nitrile rubber, neoprene or Viton™ gloves. Other protective, body-covering clothing sufficient to prevent contact.

Other Personal Protective Equipment:

Safety shower and eye-wash fountain in work area.

Leak and Spill Procedure:

Ventilate area. Cleanup personnel must be trained in the hazards of this chemical and its safe handling, and must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes. Mix with sand. Gather up using a method that does not generate dust. 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:

Workers using this material should be thoroughly trained in its hazards and its safe use. Follow routine safe handling procedures. Use the smallest amount possible for the purpose. Use good housekeeping practices to prevent accumulations of dust. Avoid contact and inhalation. Keep away from all incompatible materials (see "Incompatibility with other substances").

Storage Requirements:

Store in cool, dry, well-ventilated area away from incompatible materials. Storage area must be dry. Keep tightly closed.

FIRST AID MEASURES

Specific Measures:

Eyes:

Immediately flush eyes with running water, holding eyelids open during flushing, for five to ten (5-10) minutes, or until no trace of chemical remains. Take care not to flush contaminated water into unaffected eye. If irritation develops, get medical attention.

Skin:

Remove contaminated clothing, including watches, rings, belts, and shoes. Brush or wipe off dry material. Flush skin with plenty of running water until no evidence of chemical remains. If there are any breaks in the affected skin, or if irritation develops, 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. GET MEDICAL ATTENTION.

Ingestion:

If victim is alert and not convulsing, give 1 to 2 glasses of water to drink to dilute. Induce vomiting immediately, under medical supervision. Rinse mouth and administer more water. Obtain medical attention immediately.

Note to physician:

Gastric lavage with 5% sodium bicarbonate, followed by saline catharsis, is suggested. Assure adequate hydration. After ingestion of 10 g or more, symptoms may occur after 24 to 72 hours.

REFERENCES USED

CCINFO disc: Cheminfo

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:

November 1, 1988

Revision:

May 2012

MSDS:

2260-1

Proposed WHMIS Designation:

D2A; D2B

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