

MATERIAL SAFETY DATA SHEET**BISMUTH NITRATE**

PRODUCT CODE NUMBER(S): 2230-1

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Bismuth nitrate, 5-hydrate; Nitric acid, bismuth (3+) salt, 5-hydrate*
Chemical Family: *Inorganic salt*
Chemical Formula: *Bi(NO₃)₃·5H₂O*
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

<i>Ingredients</i>	<i>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>Bismuth nitrate</i>	<i>>98</i>	<i>Not established</i>	<i>10035-06-0</i>

PHYSICAL DATA

Physical State: *Solid*
Odour and Appearance: *Colourless, lustrous crystals; nitric acid odour*
Odour Threshold (ppm): *Not available*
Vapour Pressure (mm Hg): *Not available*
Vapour Density (Air = 1): *Not available*
Evaporation Rate: *Not applicable*
Boiling Point (degrees C): *75-80°C (Loses water at 80°C)*
Melting Point (degrees C): *30°C (decomposes)*
pH: *Not available*
Specific Gravity: *2.83*
Coefficient of Water/Oil distribution: *Not available*

SHIPPING DESCRIPTION

UN: *1477*
T.D.G. Class: *5.1*
Pkg. Group: *II*

REACTIVITY DATA

Chemical Stability: *Stable under ordinary conditions of use and storage. Hygroscopic.*
Incompatibility with other substances: *May react violently or explosively with strong acids, strong reducing agents, finely powdered metals, organic or combustible materials. Reaction with organic or combustible materials, or oxidizers may cause fire. May explode when exposed to shock or friction.*
Reactivity: *Avoid excessive heat, ignition sources, moisture, generation of dust, incompatible and combustible materials. Do not shock.*

Hazardous Decomposition Products: *Highly toxic nitrogen oxides*

FIRE AND EXPLOSION DATA

Flammability: *Not combustible but strong oxidizer. Will increase the burning rate of combustible matter. Contact with easily oxidizable, organic, or other combustible materials may result in ignition, violent combustion or explosion. Containers may explode in heat of fire.*

Extinguishing Media: *Use any means suitable for extinguishing surrounding fire. Use flooding amounts of water to blanket fire, cool exposed containers, and to flush solid or vapours away from fire. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (full face-piece, positive-pressure self-contained breathing apparatus) and clothing 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: *Toxic fumes of NO_x*

Sensitivity to Impact: *May explode when shocked*

Sensitivity to Static discharge: *Mixtures of dust with air may be sensitive under certain conditions, particularly when contaminated with organic materials, when ignited by an electrostatic or other high-voltage spark, or other ignition source.*

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

LD₅₀: *(oral, mouse) 3,710 mg/kg*

LC₅₀: *Not available*

Effects of Acute Exposure to Product:

Inhaled: *Very irritating to the mucous membranes, symptoms may include coughing, sore throat, and shortness of breath. At high temperatures, exposure to toxic nitrogen oxides decomposition products can quickly cause acute respiratory problems. Absorption leads to systemic poisoning with headache, fall in blood pressure, the formation of methemoglobin which decreases the ability of the blood to carry oxygen, causing cyanosis, possible convulsions, coma, and death. Onset may be delayed 2 to 4 hours or longer. Severe overexposure can be fatal.*

In contact with skin: *Dust or solutions may cause mild irritation, with itching, redness, and pain, depending on concentration and duration of exposure. Risk of absorption is slight.*

In contact with eyes: *Dust or solutions may cause irritation, with tearing, redness, and pain, depending on concentration and duration of exposure.*

Ingested: *Irritates. Bismuth salts are poorly absorbed, so low oral toxicity. Should absorption occur, symptoms may*

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include gingivitis, loss of appetite, ulcerative stomatitis, diarrhea, headache, skin rashes, kidney damage, and rarely, mild jaundice. Large oral doses of nitrates may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. May cause methemoglobinemia and cyanosis (see "Inhaled").

Effects of Chronic Exposure to Product:

Prolonged or repeated exposure may cause "bismuth line", black spots on gums, foul breath, excessive salivation. Chronic overexposure to nitrates can lead to methemoglobinemia (see "Inhaled"), and conversion of nitrate to nitrite in the stomach, causing nausea and vomiting, blood and central nervous system effects, weakness, depression, headache, irregular heart rate; severe overexposure can cause coma and death.

Carcinogenicity: Not listed as a carcinogen by NTP, IARC, or OSHA

Teratogenicity: No information available

Reproductive Effects: No information available

Mutagenicity: No information available

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation recommended

Respiratory Protection: Dust mask. If dust or mist is present, NIOSH/MSHA-approved half-face dust/mist respirator. High or unknown concentrations, as in fire or spill conditions: full facepiece, positive pressure supplied-air respirator.

Eye Protection: Chemical safety goggles. Do not wear contact lenses when working with chemicals.

Skin Protection: Rubber or plastic gloves. Plastic apron, sleeves or boots as required to prevent contact.

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

Leak and Spill Procedure: Restrict access to area of spill. Eliminate all sources of ignition and combustible materials. Cleanup personnel must be thoroughly trained in the hazards of this chemical and its safe use, and must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, and contact with skin and eyes. Wet if necessary to avoid generating dust. Prevent from entering sewers and waterways. Contain spill with inert material (earth, sand, inert absorbent). Use non-sparking tools to collect material, in suitable, labelled, covered containers for disposal. Contaminated absorbent may pose the same hazards as the chemical; treat with caution. Flush area of spill with large amounts of running water.

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

Handling Procedures and Equipment: OXIDIZER. Workers using this chemical must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Keep away from combustible or organic materials, and all sources of ignition. Use non-sparking tools. Avoid all contact and inhalation. Do not shock. Use the smallest amount possible for the purpose, in designated areas with adequate ventilation. Keep work area clean and free of extraneous, particularly combustible, materials. Do not use on porous surfaces (wood); use surfaces that can be easily and thoroughly cleaned. Clean up spills immediately and thoroughly. Keep containers closed when not in use and when empty. Empty containers may contain

hazardous residues; treat with caution. Wash hands thoroughly after use.

Storage Requirements: Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight, and away from incompatible, combustible or organic materials. Storage facilities (shelves, floors) should be constructed of non-combustible materials. Keep away from all ignition sources. Keep containers tightly closed when not in use and when empty. Protect from damage, and inspect frequently for signs of leaking; unattended spillage onto combustible materials (wood, paper, etc.) could result in fire.

FIRST AID MEASURES**Specific Measures:**

Eyes: Flush eyes immediately with large amounts of cool, gently running water or normal saline, holding eyelids open, for at least fifteen (15) minutes, or until no evidence of chemical remains. Take care not to flush contaminated water into unaffected eye. Get medical attention if irritation persists.

Skin: Remove contaminated clothing, including watches, rings, belts, and shoes. Wash skin with plenty of running water for five to ten (5-10) minutes, or until no trace of chemical remains. If irritation develops get medical attention. Decontaminate clothing before reuse, or discard; clothing may become dangerously flammable after contact with this chemical.

Inhalation: Remove to fresh air. Rescuer should take precaution to limit his own exposure. Eliminate all sources of ignition. Give oxygen and get medical attention for any breathing difficulty. Because exposure to nitrates can cause methemoglobinemia, the symptoms of which may be delayed, unless exposure is minor, the victim needs to be monitored for several hours for cyanosis, irregular heart rate, loss of consciousness.

Ingestion: If victim is alert and not convulsing, rinse mouth and give 2 to 4 glasses of water to drink to dilute product. Get medical attention.

REFERENCES USED

CCINFO disc: MSDS's February 2007

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: May 20, 1991

Revision: February 2010

MSDS: 2230-1

Proposed WHMIS Designation: C; D2B

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