

MATERIAL SAFETY DATA SHEET**MERCURIC NITRATE**

PRODUCT CODE NUMBER(S): 5180-1

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Mercuric nitrate, Mercury II nitrate monohydrate***Chemical Family:** *Mercury salt***Chemical Formula:** *Hg(NO₃)₂.H₂O***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**

<i>Ingredients</i>	<i>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>Mercury nitrate monohydrate</i>	<i>>99</i>	<i>0.025 mg/m³ (as Hg)</i>	<i>7783-34-8</i>

PHYSICAL DATA**Physical State:** *Solid***Odour and Appearance:** *White or slightly yellow deliquescent powder, slight nitric acid odour***Odour Threshold (ppm):** *Not available***Vapour Pressure (mm Hg):** *Not available***Vapour Density (Air = 1):** *11.0***Evaporation Rate:** *Not available***Boiling Point (degrees C):** *Decomposes***Melting Point (degrees C):** *79°C***pH:** *Not available***Specific Gravity:** *4.390***Coefficient of Water/Oil distribution:** *Not available***SHIPPING DESCRIPTION****UN:** *1625***T.D.G. Class:** *5.1 (6.1)***Pkg. Group:** *II***REACTIVITY DATA****Chemical Stability:** *Stable, hygroscopic.***Incompatibility with other substances:** *Dangerous fire risk in contact with organic materials or powdered metals; risk of violent reactions with petroleum hydrocarbons, hypophosphoric acid, unsaturates, aromatics. Forms sensitive explosive product with acetylene, ethanol, PH₃, S.***Reactivity:** *Avoid heat, flames, hot surfaces, all ignition sources, incompatible or combustible materials, light, generation of dust. Can react violently with shock, heat, or friction.***Hazardous Decomposition Products:** *Hg vapours, NO_x***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 flooding amounts of water to blanket fire, cool exposed containers, minimize dust, and flush solid or vapours away from fire. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment (positive pressure full facepiece self-contained breathing apparatus) and clothing (chemical splash suit) sufficient to prevent inhalation of vapours and contact with skin and eyes.***Flash Point (Method Used):** *Not available***Autoignition Temperature:** *Not available***Upper Flammable Limit (% by volume):** *Not available***Lower Flammable Limit (% by volume):** *Not available***Hazardous Combustion Products:** *Hg vapours, NO_x***Sensitivity to Impact:** *May be sensitive to shock.***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, rat) 26 mg/kg; (dermal, rat) 75 mg/kg***LC₅₀:** *Not available***Effects of Acute Exposure to Product:****Danger of cumulative effects.****Inhaled:** *Dust and vapour are very irritating and very toxic. Can cause burns and severe respiratory tract damage with sore throat, coughing, pain, tightness in chest, breathing difficulties, shortness of breath, bronchitis and pneumonitis. Readily absorbed, causing systemic mercury poisoning, with headache, muscle weakness, anorexia, gastrointestinal disturbance, rapid and weak pulse, shallow breathing, paleness, ringing in the ears, liver changes, fever, kidney damage, exhaustion and collapse. Delayed death may occur due to renal failure. 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:** *Toxic. Skin contact may cause irritation, with itching, redness, scaling. Readily absorbed through skin, causing systemic poisoning, as in "Inhaled". May cause allergic skin reaction.*

CODE: 5180-1

In contact with eyes: Dust or solutions can cause irritation and even ulceration of the conjunctiva and cornea with permanent eye damage.

Ingested: Very toxic. Average lethal dose for inorganic mercury salts ~1g. Ingestion may cause burning of the mouth and pharynx, abdominal pain, vomiting, bloody diarrhea, and systemic poisoning, with symptoms as in "Inhaled".

Effects of Chronic Exposure to Product:

Effects are cumulative. Chronic exposure through any route will damage central nervous system, brain, liver, kidneys, and cause symptoms such as headache, tremors, personality and behaviour changes, loosening of teeth, loss of appetite, ulceration of skin, impaired memory. Can cause skin sensitization. Repeated skin contact can cause skin to turn grey in colour. Persons with pre-existing nervous, kidney, or respiratory disorders may be more susceptible to the effects of this substance. 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: No evidence of carcinogenicity

Teratogenicity: No information available; related mercury compounds cause teratogenic effects.

Reproductive Effects: Related compounds have caused effects to reproductive system in animal testing.

Mutagenicity: Mercury compounds are mutagenic in bacterial and mammalian assays.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation required.

Respiratory Protection: Dust/mist mask. NIOSH/MSHA approved full facepiece respirator with dust/mist filter for up to 50x TLV or the maximum use specified by the respirator supplier, whichever is lowest. For high or unknown concentrations, as in fire or spill conditions, positive-pressure, full face-piece self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and face shield if any risk of splashing or dusting is present. Do not wear contact lenses when working with chemicals.

Skin Protection: Impervious protective gloves and other clothing, apron, sleeves, coveralls, sufficient to prevent all 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: VERY TOXIC, CUMULATIVE, 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 des-

igned 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: Immediately flush eyes thoroughly 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.

Skin: Remove contaminated clothing, including watches, rings, belts, and shoes. Rescuer should wear impervious gloves to avoid contact with this chemical. Wash skin with plenty of running water for at least fifteen (15) minutes. Get medical attention. Decontaminate clothing and leather goods (shoes, belts) before reuse, or discard; clothing contaminated with oxidizing material can be dangerously and/or spontaneously flammable.

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 the person is alert and not convulsing, give 2 to 4 glasses of water to drink and induce vomiting (under medical supervision) by touching the back of throat with finger. Get medical attention immediately.

REFERENCES USED

CCINFO disc: MSDS's February 2007

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

Royal Society of Chemistry: Chemical Safety Data Sheets, Vol. 4b, 1991

Sax: Dangerous Properties of Industrial Materials, 5th ed., 1979
Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: June 24, 1991

Revision: February 2010

MSDS: 5180-1

Proposed WHMIS Designation: C; D1A; D2A; D2B

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