

MATERIAL SAFETY DATA SHEET**SILVER NITRATE**

PRODUCT CODE NUMBER(S): 7020-1

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** Silver nitrate; Lunar caustic**Chemical Family:** Inorganic salt, silver compound**Chemical Formula:** AgNO₃**Product Use:** Laboratory chemical**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.
Silver nitrate	99	0.01 mg/m ³ (as Ag)	7761-88-8

PHYSICAL DATA**Physical State:** Solid**Odour and Appearance:** Colourless, transparent large crystals, or white small crystals; odourless; turns black on exposure to air.**Odour Threshold (ppm):** Not applicable**Vapour Pressure (mm Hg):** Very low**Vapour Density (Air = 1):** 4.4**Evaporation Rate:** Not available**Boiling Point (°C):** 444°C (decomposes)**Melting Point (°C):** 212°C**pH:** ~6 (neutral)**Specific Gravity:** 4.35 @ 20°C**Coefficient of Water/Oil distribution:** Not available**SHIPPING DESCRIPTION****UN:** 1493**T.D.G. Class:** 5.1, 9.2**Pkg. Group:** II**REACTIVITY DATA****Chemical Stability:** Stable. Darkens to grey or greyish-black on exposure to light in the presence of organic materials.**Incompatibility with other substances:** May react violently or explosively with organic materials, strong reducing agents, strong bases, magnesium. Reacts with ammonia to form shock-sensitive compounds. Avoid exposure to alkalis, antimony salts, arsenites, bromides, carbonates, chlorides, oils, creosote, etc. Avoid exposure to heat and light. Attacks many types of coatings, plastics, rubber.**Reactivity:** Avoid excessive heat, generation of dust, incompatible and combustible materials.**Hazardous Decomposition Products:** 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 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:** Metallic silver, NO_x**Sensitivity to Impact:** None identified**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) 1173 mg/kg; (oral, mouse) 50 mg/kg; (guinea pig) 473 mg/kg**LC₅₀:** Not available**Effects of Acute Exposure to Product:****Inhaled:** Toxic, corrosive. Causes severe irritation to mouth, throat, nasal septum and upper respiratory tract. Causes sore throat, coughing, shortness of breath. Dust deposits in the lungs may resemble pneumoconiosis. 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:** Corrosive. May cause severe irritation with redness and pain, or even burns to skin. Severity of effects depends on degree and duration of exposure. May cause blackening of skin.**In contact with eyes:** Corrosive. May cause moderate to severe irritation, with redness, tearing, pain, possible dam-

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age to conjunctiva or cornea. Severity of effects depends on degree and duration of exposure.

Ingested: Toxic, corrosive. Symptoms include pain and burning in the mouth, throat, oesophagus, and stomach, nausea and vomiting of black material, excess salivation. Can cause eventual shock, leading to coma and death. Causes blackening of the skin and mucous membranes.

Effects of Chronic Exposure to Product:

Cumulative. Prolonged exposure by any route can cause grey-ish-blue discoloration of the skin. Substance is an equivocal tumorigenic agent. Prolonged inhalation can produce chronic bronchitis. 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 considered carcinogenic by NTP, IARC, OSHA.

Teratogenicity: No information available

Reproductive Effects: Spermatogenesis, effects on male reproductive organs and fertility.

Mutagenicity: Possible mutagen.

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Mechanical ventilation is required.

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

Eye Protection: Chemical safety goggles and/or face shield. Do not wear contact lenses when working with chemicals.

Skin Protection: Neoprene or rubber gloves. Impervious protective clothing, lab coat, apron, boots, or coveralls, sufficient to prevent skin contact.

Other Personal Protective Equipment: Safety shower or eye wash 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, TOXIC, CORROSIVE. 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, materi-

als. 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 thoroughly with running water for at least fifteen (15) 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 immediately.

Skin: Remove contaminated clothing (including shoes, belts, watches, rings). Wipe off excess from skin. Drench skin with running water for at least fifteen (15) minutes, taking care to clean folds, creases, and groin. Unless exposure is very minor, get medical attention. Decontaminate clothing before reuse, or discard. Clothing contaminated with this chemical can burn spontaneously.

Inhalation: Remove to fresh air. 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 thoroughly with water and give victim 2 to 4 glasses of water to drink to dilute. DO NOT INDUCE VOMITING. Get medical attention immediately.

REFERENCES USED

CCINFO disc: Cheminfo, MSDS's, February 2007

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

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

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

ADDITIONAL INFORMATION

Date Issued: December 1, 1988

Revision: February 2010

MSDS: 7020-1

Proposed WHMIS Designation: C; D1A; E

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