

MATERIAL SAFETY DATA SHEET**METHYLENE BLUE**

PRODUCT CODE NUMBER(S): 5140-1

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Methylene blue; Methylthionine chloride*
Chemical Family: *Azine dyes*
Chemical Formula: $C_{16}H_{18}ClN_3S \cdot 3H_2O$
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>Methylene blue</i>	<i>>98</i>	<i>Not established</i>	<i>7220-79-3</i>

PHYSICAL DATA

Physical State: *Solid*
Odour and Appearance: *Dark green crystals or powder with bronze luster, odourless*
Odour Threshold (ppm): *Not available*
Vapour Pressure (mm Hg): *Negligible*
Vapour Density (Air = 1): *13*
Evaporation Rate: *Not available*
Boiling Point (degrees C): *Decomposes*
Melting Point (degrees C): *190°C (decomposes)*
pH: *3.45 (1%, aqueous)*
Specific Gravity: *1.230*
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 under normal conditions of use and storage.*
Incompatibility with other substances: *May react vigorously or violently with strong oxidizers, reducing agents, bases, dichromates, alkali iodides, caustic alkalis.*
Reactivity: *Avoid generation of dust, heat and ignition sources.*
Hazardous Decomposition Products: NO_x , CO_x , SO_x , *HCl gas*

FIRE AND EXPLOSION DATA

Flammability: *Combustible dust; like most organic powders, is capable of creating a dust explosion under certain conditions.*
Extinguishing Media: *Water fog or spray, alcohol foam, dry chemical, carbon dioxide. Water spray can also be used to cool containers, prevent dust formation, flush chemical away from fire. Fight fire from upwind, from a safe distance. Firefighters must wear protective equipment and clothing sufficient to prevent inhalation of dust or fumes, 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: CO_x , NO_x , SO_x , *HCl gas*
Sensitivity to Impact: *None identified*
Sensitivity to Static discharge: *Under certain conditions, dust/air mixtures can probably explode if in contact with an electrostatic spark or other ignition source.*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

To the best of our knowledge, the physical, chemical and toxicological properties of this substance have not yet been thoroughly investigated.

Toxicological Data:

LD₅₀: *(oral, rat) 1180 mg/kg.*
LC₅₀: *Not available*

Effects of Acute Exposure to Product:

Inhaled: *Dust or mist may be irritating to mucous membranes, causing coughing, wheezing, shortness of breath. Can cause methemoglobinemia, with dizziness, drowsiness, headache, shortness of breath, cyanosis, irregular heart-beat, headache, nausea and vomiting. If exposure is severe, methemoglobinemia can progress to cause blood and central nervous system effects, kidney damage, anemia, reticulocytosis, hematuria, weakness, depression, respiratory distress, irregular heart rate, eventual coma and death. Symptoms may be delayed for two to four (2-4) hours or longer.*

In contact with skin: *May colour the skin a bluish colour. Dust may cause mechanical irritation. May cause photosensitization. If absorbed in large amounts, could cause methemoglobinemia with symptoms as in "Inhaled".*

In contact with eyes: *Dust may cause moderate irritation, with itching, burning, redness, tearing, blurred vision. Severe overexposure may cause damage to eye tissue.*

Ingested: *May cause burning sensation in mouth and throat, nausea, vomiting, diarrhea. Large doses may cause abdominal pain, chest pain, headache, confusion, profuse*

CODE: 5140-1

sweating, painful micturation, hemolytic anemia and methemoglobinemia, with symptoms as in "Inhaled".

Effects of Chronic Exposure to Product:

Carcinogenicity: No human or animal information available.

Teratogenicity: No human or animal information available.

Reproductive Effects: Some testing has caused adverse effects

Mutagenicity: Some testing has shown positive results

Synergistic Products: None known

PREVENTIVE MEASURES

Engineering Controls: Local exhaust ventilation recommended.

Respiratory Protection: Dust/mist mask. For conditions where dust or mist is present, to the maximum use specified by the respirator supplier, NIOSH/MSHA approved half-face high-efficiency dust/mist filter respirator, or NIOSH/MSHA approved full-face-piece high-efficiency 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

Skin Protection: Wear rubber or plastic gloves and other protective clothing sufficient to limit contact.

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

Leak and Spill Procedure: Evacuate area and ventilate. Eliminate all sources of ignition. Cleanup personnel must be thoroughly trained in the handling of hazardous materials, and must wear protective equipment and clothing sufficient to prevent all contact and inhalation of fumes. Contain spill and soak up with non-combustible, non-reactive absorbent. Prevent from entering sewers and waterways. Transfer carefully into container and arrange removal by disposal company. Contaminated absorbent may pose the same hazards as the material; treat with caution. Wash site of spillage thoroughly with strong soap solution to which has been added 10% calcium or sodium hypochlorite.

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

Handling Procedures and Equipment: COMBUSTIBLE as DUST. 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 heat, hot surfaces, sparks, flame, and all ignition sources. Avoid release of mist or vapours into the air. Use the smallest amount possible for the purpose, in a designated area with adequate ventilation. Avoid inhalation. Avoid contact with skin, eyes, and clothing. Keep work area clean and free of extraneous materials. Keep containers closed when not in use and when empty. Wash thoroughly after handling. 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. Keep containers tightly closed. Store away from incompatible materials, and heat and ignition sources. Protect from damage and inspect frequently for signs of leaking.

FIRST AID MEASURES**Specific Measures:**

Eyes: Immediately flush eyes with running water for five to ten (5-10) minutes, holding eyelids open during flushing. Get medical attention.

Skin: Remove contaminated clothing. Wash affected areas with soap and water. If irritation persists, obtain medical advice. Decontaminate clothing before reuse.

Inhalation: Move victim to fresh air. Give oxygen and get medical attention for any breathing difficulty.

Ingestion: If victim is alert and not convulsing, give 1 to 2 glasses of water to drink to dilute material. If spontaneous vomiting occurs, rinse mouth and give more water to drink. Obtain medical attention.

REFERENCES USED

- CCINFO disc: Cheminfo, MSDS's, March 2005
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: March 2001

Revision: March 2005

MSDS: 5140-1

Proposed Whmis Designation: D2A, D2B

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