

MATERIAL SAFETY DATA SHEET**AMMONIUM MOLYBDATE**

PRODUCT CODE NUMBER(S): 1420-1

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Ammonium molybdate; Ammonium heptamolybdate; Ammonium paramolybdate***Chemical Family:** *Ammonium salt, molybdenum compounds***Chemical Formula:** $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24}\cdot 4\text{H}_2\text{O}$ **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>% TLV Units</i>	<i>CAS No.</i>
<i>Ammonium molybdate</i>	<i>~99</i>	<i>5 mg/m³ (as Mo) 12054-85-2</i>

PHYSICAL DATA**Physical State:** *Solid***Odour and Appearance:** *Colourless or slightly greenish to yellowish crystals, odourless.***Odour Threshold (ppm):** *Not applicable***Vapour Pressure (mm Hg):** *Not applicable***Vapour Density (Air = 1):** *Not available***Evaporation Rate:** *Not applicable***Boiling Point (°C):** *190°C (decomposes)***Melting Point (°C):** *90°C (loses water)***pH:** *5.0 - 5.5 (5% solution)***Specific Gravity:** *2.498 at 20°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 under normal temperatures and pressures.***Incompatibility with other substances:** *May react violently with acids and strong oxidizing agents, alkali metals.***Reactivity:** *Avoid excessive heat, incompatible materials, generation of dust.***Hazardous Decomposition Products:** *Ammonia and nitrogen oxides, metal fumes.***FIRE AND EXPLOSION DATA****Flammability:** *Not combustible.***Extinguishing Media:** *Use an extinguisher appropriate to the surrounding material which is burning. Use water as spray or fog to minimize dust, absorb heat, cool containers, and disperse vapours. Fight fire from upwind, from a safe distance. Firefighters should wear protective equipment, full face-piece positive-pressure 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:** *Ammonia, nitrogen oxides, metal fumes***Sensitivity to Impact:** *None identified***Sensitivity to Static discharge:** *None identified***TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** *(oral, rat) 333 mg/kg (median lethal dose administered daily for up to 232 days; not acute LD₅₀, administered once)***LC₅₀:** *Not available***Effects of Acute Exposure to Product:****Inhaled:** *Irritating to mucous membranes and upper respiratory tract, causing pungent taste in mouth and throat, coughing, laboured breathing. Readily absorbed through respiratory tract, causing systemic symptoms, such as anemia, gout, joint pain, headaches, weight loss, liver and kidney damage, changes to blood cells.***In contact with skin:** *Causes skin irritation, with redness, itching, pain. Extent of irritation depends on the concentration of the solution and the duration of contact.***In contact with eyes:** *Causes eye irritation, with redness, itching, tearing, pain. Extent of irritation depends on the concentration of the solution and the duration of contact.***Ingested:** *Toxic. May cause anemia, gout, joint pain, headaches, weight loss, liver and kidney damage, and blood effects. Molybdenum toxicity in animal causes symptoms of copper deficiency.***Effects of Chronic Exposure to Product:***Prolonged or repeated exposure may cause symptoms as in "Inhaled". Persons with pre-existing skin or eye disease, blood disorders, or impaired respiratory, kidney or liver function may be more susceptible to the effects of this substance.***Carcinogenicity:** *Not listed as carcinogenic by NTP, IARC, OSHA***Teratogenicity:** *No information available*

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Reproductive Effects: *No information available***Mutagenicity:** *Insufficient information available***Synergistic Products:** *None known*

PREVENTIVE MEASURES

Engineering Controls: *Local exhaust ventilation***Respiratory Protection:** *Dust mask. Up to 10x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH approved half-face dust/mist filter respirator. Up to 50x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH 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:** *Safety goggles and/or face shield.***Skin Protection:** *Protective gloves. Long sleeved shirt, apron, sleeves, other protective clothing sufficient to prevent contact.***Other Personal Protective Equipment:** *Safety shower or eyewash fountain in work area.***Leak and Spill Procedure:** *Ventilate area. Cleanup personnel must be thoroughly trained in the handling of hazardous materials and must wear protective equipment and clothing sufficient to prevent inhalation of dust, and contact with skin and eyes. Mix with inert or moist absorbent and gather up in a manner that does not raise 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.***Handling Procedures and Equipment:** *TOXIC. IRRITANT. Workers using this chemical must be thoroughly trained in its hazards and its safe use, and must wear appropriate protective equipment and clothing. Prevent release of dust into workplace air. Avoid contact with skin, eyes and clothing. Keep away from all incompatible materials. Use the smallest possible amount for the purpose, in designated areas with adequate ventilation. Keep containers closed when not in use and when empty. Empty containers may contain hazardous residues; treat with caution. Wash thoroughly after handling.***Storage Requirements:** *Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight and away from incompatible materials. Keep containers tightly closed when not in use and when empty. Protect from damage and inspect frequently for signs of damage or leaking.*

FIRST AID MEASURES

Specific Measures:

Eyes *Flush eyes thoroughly with gently running water, holding eyelids open while flushing, for at least ten to fifteen (10-15) minutes, or until no evidence of chemical remains. Take care not to flush contaminated water into unaffected eye. Get medical attention.***Skin:** *Remove contaminated clothing (including shoes, belts, watches and rings). Immediately flush the exposed area with large amounts of running water for at least fifteen (15) minutes, until no evidence of chemical remains. Wear protective gloves to avoid contact during first aid procedures. Get medical advice. Decontaminate clothing before reuse, or discard.***Inhalation:** *Remove to fresh air. Prompt action is essential. If breathing is difficult, give oxygen and get medical attention immediately. If breathing has stopped, begin artificial respiration immediately. Keep person warm and at rest. Treat symptomatically and supportively.***Ingestion:** *If victim is alert and not convulsing, rinse mouth thoroughly with water and give 2 to 4 glasses of water to drink to dilute. Induce vomiting immediately, under medical supervision, by sticking a finger down the throat or by administering syrup of ipecac. Get medical attention immediately. When vomiting occurs, rinse mouth thoroughly and give more water to drink.*

REFERENCES USED

CCINFO disc: MSDS's

Budavari: *The Merck Index*, 12th ed., 1997Sax: *Dangerous Properties of Industrial Materials*, 5th ed., 1979Sax, Lewis: *Hawley's Condensed Chemical Dictionary*, 11th ed., 1987

Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: *March 14, 1989***Revision:** *November 2010***MSDS:** *1420-1***Proposed WHMIS Designation:** *D2B; D2A*

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