CALEDON LABORATORY CHEMICALS

MATERIAL SAFETY DATA SHEET

CADMIUM METAL

PRODUCT CODE NUMBER(S): 2340-1

PRODUCT IDENTIFICATION

Chemical Name and Synonyms: *Cadmium metal*
Chemical Family: *Metal*
Chemical Formula: *Cd*
Product Use: *Laboratory reagent*
Manufacturer's Name and Addressand 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.*
Cadmium	*>99*	*0.01 mg/m^3 (total particulate)*	*7440-43-9*
		0.002 mg/m^3 (respirable par-ticulate)	

PHYSICAL DATA

Physical State: *Solid*
Odour and Appearance: *Silver-white, blue tinged, odourless, shavings and chunks*
Odour Threshold (ppm): *Not applicable*
Vapour Pressure (mm Hg): *~ Zero*
Vapour Density (Air = 1): *Not available*
Evaporation Rate: *Not available*
Boiling Point (degrees C): *765°C*
Melting Point (degrees C): *321°C*
pH: *Not available*
Specific Gravity: *8.642 @ 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: *Normally stable. As fine powder, can be pyrophoric.*
Incompatibility with other substances: *May react violently with oxidizing agents. Contact with acid liberates gas. Reacts violently with potassium. In powder form is incompatible with sulphur, zinc, selenium, tellurium, and ammomium nitrate. Contact with hydrazoic acid may cause explosion.*
Reactivity: *Avoid generation of dust or fume. Avoid all incompatible materials if in powder form, avoid sparks, flames, all ignition sources.*
Hazardous Decomposition Products: *May emit toxic metal oxide fumes when heated above metlting point.*

FIRE AND EXPLOSION DATA

Flammability: *Will not burn in bulk form. Powdered cadmium is flammable. A dust cloud can explode when ignited by a spark, flame or other ignition source.*
Extinguishing Media: *Carbon dioxide, special chemical powder for cadmium, dry sand. DO NOT use water or foam. 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: *Emits toxic fumes under fire conditions.*
Sensitivity to Impact: *None identified*
Sensitivity to Static discharge: *Mixtures of dust with air may be sensitive under certain conditions, when ignited by an electrostatic or other high-voltage spark, or other ignition source.*

TOXICOLOGICAL PROPERTIES AND HEALTH DATA

Toxicological Data:

LD_{50}: *(oral, mouse) 890 mg/kg*
LC_{50}: *(rat) 25 mg/m^3 /30 min*

Effects of Acute Exposure to Product:

Inhaled: *Harmful. Inhalation of dust or fumes may cause irritation of nose, throat, and long tissue, coughing, chest pain, shortness of breath. Can cause metal fume fever, with headache, sweating, chills, metallic taste in the mouth, cough, thirst, shortness of breath, fever, pains in the legs and chest. Symptoms last about 24 hours after exposure, and recovery is complete with no permanent effects. However, even brief exposure to high concentrations of dust may cause liver or kidney damage, or spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Absorption can also lead to methemoglobinemia, with headache, fall in blood pressure, decrease in the ability of the blood to carry oxygen, causing cyanosis, possible convulsions, coma, and death. Onset of any of these effects may be delayed 2 to 4 hours or longer. Severe overexposure can be fatal.*
In contact with skin: *Irritating, causing buning sensation, redness, itching, pain. Harmful if absorbed.*
In contact with eyes: *Dust may cause irritation, redness, tearing, blurring of vision.*
Ingested: *Toxic. Not an expected route of exposure. Would probably cause gastrointestinal irritation and metal fume fever, as in "Inhaled", if large amounts were ingested*

Effects of Chronic Exposure to Product:

Chronic exposure to cadmium, even at low concentrations, can cause liver, lung, kidney, male reproductive system and blood damage, with anemia, pulmonary fibrosis, emphysemsa, perforation of the nasal septum, loss of smell.

It can cause decrease in bone density, kidney stones and other evidence of disturbed calcium metabolism. Effects are cumulative and may be irreversible. Persons with pre-existing skin, eye, blood, or prostate disorders, or impaired respiratory, kidney, or liver function may be more susceptible to the effects of this substance.

Carcinogenicity: *Cadmium salts: known human carcinogens (Group 1, IARC, NTP). Suspected human carcinogen (ACGIH, A2)*

Teratogenicity: *No human information available. Cadmium salts have shown teratogenic effects in animal testing.*

Reproductive Effects: *No human information available. Cadmium salts have shown reproductive effects, spermatogenesis and testicular tumours, in animal testing.*

Mutagenicity: *Some cadmium salts have tested positive in mammalian cell culture tests.*

Synergistic Products: *None known*

PREVENTIVE MEASURES

Engineering Controls: *Local exhaust ventilation required.*

Respiratory Protection: *Dust mask, fume hood. When dust or fume is present, up to 10x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH/MSHA approved half-face, high-efficiency dust/mist respirator. Up to 50x TLV, or the maximum use specified by the respirator supplier, whichever is lowest, NIOSH/MSHA approved full face-piece high-efficiency dust/mist 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.*

Skin Protection: *Impervious gloves. Other impervious protective clothing, sleeves, apron, coverall, boots, sufficient 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. 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 and detergent.*

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

Handling Procedures and Equipment: *TOXIC, CUMULATIVE, POSSIBLE CARCINOGEN, TERATOGEN, MUTAGEN, AND REPRODUCTIVE EFFECTOR. Workers using this chemical must be thoroughly trained in its hazards and its safe use, and must wear appropriate protectiv 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. Store in a secure poison area. 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. Keep out of direct sunlight.. Protect from damage.*

FIRST AID MEASURES

Treat as Lead Poisoning

Specific Measures:

Eyes: *Flush eyes immediately with large amounts of gently running water, 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 affected areas with soap and running water for at least fifteen (15) minutes. Get medical attention if irritation develops or if exposure was extensive. Decontaminate clothing completely before reuse, or discard.*

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.*

Ingestion: *If victim is alert and NOT convulsing, rinse mouth thoroughly, and give 2 to 4 glasses of water to drink to dilute. Induce vomiting, under medical supervision, by giving syrup of ipecac, or by sticking a finger down the throat. When vomiting occurs, keep head low to avoid aspiration of emesis, rinse mouth and administer more water to drink. Call a physician immediately.*

REFERENCES USED

CCINFO disc: MSDS's, March 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: *July 15, 1991*

Revision: *March 2010*

MSDS: *2340-1*

Proposed WHMIS Designation: *D1B; D2A*

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