

**MATERIAL SAFETY DATA SHEET****CARBON DISULPHIDE**

PRODUCT CODE NUMBER(S): 2800-1, 2804-1

**PRODUCT IDENTIFICATION****Chemical Name and Synonyms:** Carbon disulphide; Carbon bisulphide**Chemical Family:** Inorganic compound of carbon and sulfur**Chemical Formula:** CS<sub>2</sub>**Product Use:** Laboratory solvent**Manufacturer's Name and Address:**

Caledon Laboratories Ltd.

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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.
Carbon disulphide	99	10 ppm (includes skin expo-sure) (proposed reduction to 1 ppm)	75-15-0

**PHYSICAL DATA****Physical State:** Liquid**Odour and Appearance:** Clear, colourless or faintly yellow liquid; odourless when pure, strong, garlic-like, disagreeable odour if contaminated.**Odour Threshold (ppm):** 0.16 to 0.42 ppm, reports vary widely. Poor warning properties; olfactory fatigue may occur.**Vapour Pressure (mm Hg):** 297.5 mm Hg @ 20°C**Vapour Density (Air = 1):** 2.67**Evaporation Rate:** 10.9 (n-butyl acetate = 1)**Boiling Point (°C):** 46.3°C**Freezing Point (°C):** -111°C**pH:** Not applicable**Specific Gravity:** 1.263 at 20°C**Coefficient of Water/Oil distribution:** LogP (oct) 1.94**SHIPPING DESCRIPTION****UN:** 1131**T.D.G. Class:** 3, (6.1)**Pkg. Group:** I**REACTIVITY DATA****Chemical Stability:** Normally stable. May ignite and explode on exposure to sunlight. Turns yellow when exposed to light.

Develops a disagreeable odour on aging or when contaminated.

**Incompatibility with other substances:** May ignite and explode on exposure to many materials, air, rust, organic or combustible materials, oxidizers, reducing agents, metal oxides, metal amines, amines, azide solutions, chlorine, zinc dust. Ignites on contact with halogens; violent or explosive reactions with chemically active metals, Al, K, Mg, Na, Ti, Zn, Zr, or their alloys. Not corrosive to metals. Attacks many types of plastics, rubbers, and coatings.**Reactivity:** Avoid heat, sparks, open flames, friction and hot surfaces. Avoid generation of mist or vapours. Avoid all incompatible materials.**Hazardous Decomposition Products:** CO<sub>x</sub>, SO<sub>x</sub>**FIRE AND EXPLOSION DATA****Flammability:** Extremely flammable liquid and vapour. Readily ignites at room temperature or on contact with hot surfaces. Can release vapours that form explosive mixtures with air over a wide concentration range. Vapour is heavier than air and may travel considerable distance to source of ignition and flash back. Liquid can accumulate static charge by flow or agitation. Containers can rupture violently.**Extinguishing Media:** Carbon dioxide, inert gas, or dry chemical. Foam may be ineffective, but fluoroprotein and protein foams may work. Water is ineffective for fighting fire, but as spray or fog can be used to cool containers and disperse vapours or flush spills away from ignition sources. Fight fire from upwind, from a protected location at a safe distance. Firefighters must wear NIOSH/OSHA approved positive-pressure, full face-piece self-contained breathing apparatus, and full-body, encapsulating chemical splash suit (Bunker gear will not be adequate). Containers may explode in heat of fire; withdraw immediately in case of rising sound from vent or discoloration of tank.**Flash Point (Method Used):** -30°C (TCC)**Autoignition Temperature:** 90°C**Upper Flammable Limit (% by volume):** 50**Lower Flammable Limit (% by volume):** 1**Hazardous Combustion Products:** CO<sub>x</sub>, SO<sub>x</sub>**Sensitivity to Impact:** Mixtures with Na, K explode if shocked**Sensitivity to Static discharge:** Vapour can be ignited by static discharge. Liquid can accumulate static charge by flow, splashing, or agitation.**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD<sub>50</sub>:** (oral, rat) 1,200 mg/kg**LC<sub>50</sub>:** (mouse) 10 gm/m<sup>3</sup>/2h**Effects of Acute Exposure to Product:****Inhaled:** Very toxic by inhalation; may be fatal. Low concentrations can cause irritation of the eyes, nose and respiratory tract, central and peripheral nervous system damage with headache, nausea, weak pulse, fatigue, excitement or depression, muscle weakness, unsteady gait, tremors, coma, and death. non-fatal exposures can cause emotional instability, nightmares, uncontrolled anger, extreme irritability, liver damage, and may worsen existing coronary disease.**In contact with skin:** Toxic by skin absorption. Readily absorbed though intact skin, causing systemic effects as in "Inhaled". May cause severe irritation, dermatitis, blisters and possibly burns if skin contact is prolonged.**In contact with eyes:** Severe irritant. High concentrations may cause burns, and permanent corneal damage.**Ingested:** Toxic. Deaths have been reported following ingestion of 15 mL. Symptoms include numbness in lips, nausea, vomiting, tremors, exhaustion, shortness of breath, peripheral vascular collapse, reduced body temperature, dilation of the pupils, delirium, convulsions, coma and death. Aspiration of even a small amount, which can occur during ingestion or vomiting, can cause severe, life-threatening pulmonary edema.**Effects of Chronic Exposure to Product:**

Causes damage to central and peripheral nervous systems, including muscle weakness, numbness and tingling in the extrem-

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ities, headache, dizziness, insomnia, mental disturbance and paralysis. May cause severe mood and personality disturbances, including excitability, irritability, uncontrollable anger, bizarre dreams. May cause damage to kidneys and liver, disorders of central nervous, cardiovascular, gastrointestinal and endocrine systems. Effects may be irreversible. May accelerate the development of, or worsen, coronary heart disease. Removal from exposure of workers and coronary risk factors & reduction of levels to 10 ppm caused a dramatic decrease in cardio vascular mortality and return to background levels.

**Carcinogenicity:** Insufficient human or animal information available

**Teratogenicity:** Insufficient human information available. Animal studies inconclusive

**Reproductive Effects:** May cause irregularities of menstrual cycle and decreased sperm production, but studies are not conclusive at this time.

**Mutagenicity:** No human information available. Not mutagenic in bacteria or live animals; both positive and negative effects in cultured mammalian cells.

**Synergistic Products:** Hydrogen sulphide may increase the toxic effects of carbon disulphide.

## PREVENTIVE MEASURES

**Engineering Controls:** Non-sparking, explosion-proof, grounded exhaust ventilation, separate from other ventilation systems.

**Respiratory Protection:** Fumehood. To 10 ppm: NIOSH/ OSHA approved supplied-air respirator, or chemical cartridge respirator with organic vapour cartridges. To 25 ppm: continuous-flow supplied-air respirator or powered air-purifying respirator with organic vapour cartridges. To 50 ppm: full face-piece chemical cartridge respirator with organic vapour cartridges, or powered air-purifying respirator with tightfitting face-piece and organic vapour cartridges, or full face-piece supplied-air respirator self-contained breathing apparatus. To 500 ppm: positive-pressure full face-piece supplied-air respirator. Higher or unknown concentrations, as in fire or spill conditions: full face-piece, positive-pressure self-contained breathing apparatus or positive-pressure, full face-piece supplied-air respirator with auxiliary positive-pressure self-contained breathing apparatus.

**Eye Protection:** Chemical goggles/faceshield

**Skin Protection:** Polyvinyl alcohol (PVA), Viton™, Viton™/butyl rubber, Barrier (PE/PA/PE), Silver Shield/4H™ (polyethylene/ethylene vinyl alcohol), Responder™ Trelchem™HPS, Tychem™BR/LV, Tychem™TK gloves, apron, boots, coveralls or other protective clothing sufficient to prevent contact.

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

**Leak and Spill Procedure:** Evacuate and ventilate area. Stop and contain leak or spill. Eliminate ignition sources, hot surfaces in area, evacuate upwind. Cleanup personnel must be thoroughly trained in the handling of this hazardous product and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Do not touch spilled material. Ground and bond all equipment to prevent ignition. Use water spray to reduce vapours. Dike with sand or other inert material, and absorb with inert absorbent, or remove with air-tight, spark and explosion-proof pumps or vacuum equipment to suitable, labelled, covered containers. Contaminated absorbent may pose the same hazards as the chemical; treat with extreme caution. Flush area of spill thoroughly with copious amounts of water.

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

**Handling Procedures and Equipment:** EXTREMELY FLAMMABLE, VERY TOXIC. Never work alone with this product. Personnel working with this chemical must be thoroughly trained regarding its hazards & its safe use, and must wear appropriate protective clothing and equipment. Keep containers tightly closed & away from fire, combustible or incompatible materials, sparks, heated surfaces or sunlight. Post "No Smoking" signs. Ground & bond all equipment, containers, contact surfaces. Use spark-resistant tools & avoid splash filling of containers. Use the smallest possible amount for the

purpose, in a designated area with adequate ventilation. Avoid all contact and inhalation. Open containers with care - may develop pressure. Treat empty containers with extreme caution; they may contain hazardous residues.

**Storage Requirements:** Store in suitable, labelled containers, in a cool, dry, well-ventilated area, out of direct sunlight, away from all sources of ignition, hot surfaces, incompatible materials. Limit amount in storage. Use drums on a first in, first out basis. Post "No Smoking" signs. Keep tightly closed when not in use. Protect from damage. Inspect regularly for signs of leaking or damage. Storage facilities should be made of fire-resistant materials, and have raised sills and be trenched to safe location. Keep storage area clear of combustible materials. Ground & bond equipment & containers to prevent a static charge buildup.

## FIRST AID MEASURES

### Specific Measures:

**Eyes:** Immediately flush eyes with gently running water for twenty (20) minutes, or until no trace of chemical remains, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Wear protective gloves and other clothing to avoid contact. Get medical attention immediately.

**Skin:** Remove contaminated clothing (including rings, watches, belts, & shoes). Immediately flush exposed area with large amounts of warm running water for at least twenty (20) minutes, or until no trace of chemical remains. Wear protective gloves and other clothing to avoid contact. Get medical attention immediately. Decontaminate clothing before reuse. Discard contaminated shoes & leather goods.

**Inhalation:** Immediately remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Eliminate ignition sources in area. Give oxygen for breathing difficulty. If breathing has stopped give artificial respiration. If breathing and pulse are absent give CPR. IMMEDIATELY OBTAIN MEDICAL ATTENTION. Stay with casualty until medical assistance is reached.

**Ingestion:** If the casualty is alert and NOT convulsing give 2 to 4 glasses of water to drink to dilute the material. DO NOT INDUCE VOMITING. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water. Obtain medical attention immediately. If breathing has stopped give artificial respiration. If breathing and pulse are absent begin CPR immediately.

## REFERENCES USED

CCINFO disc: Cheminfo

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

Royal Society of Chemistry: Chemical Safety Data Sheets, Vol. 1, 1989

Sax, Lewis: Hawley's Condensed Chemical Dictionary, 11th ed., 1987  
Suppliers' Material Safety Data Sheets

## ADDITIONAL INFORMATION

**Date Issued:** November 1, 1988

**Revision:** October 2011

**MSDS:** 2800-1, 2804-1

**Proposed WHMIS Designation:** B2; D1B; D2A; D2B

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