

MATERIAL SAFETY DATA SHEET**PENTANE**

PRODUCT CODE NUMBER(S): 7800-1, 7800-2, 7800-3, 7800-4, 7800-30, 7801-2, 7801-7, 7805-1, 7808-2, CAL 1345

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Pentane, n-Pentane; Normal pentane***Chemical Family:** *Saturated aliphatic hydrocarbon***Chemical Formula:** C_5H_{12} **Product Use:** *Laboratory solvent***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>%</i>	<i>TLV Units</i>	<i>CAS No.</i>
<i>n-Pentane</i>	<i>>98</i>	<i>600 ppm</i>	<i>109-66-0</i>

PHYSICAL DATA**Physical State:** *Liquid***Odour and Appearance:** *Colourless liquid; gasoline-like odour***Odour Threshold (ppm):** *100-1000 ppm; poor warning properties, values vary widely and are unreliable.***Vapour Pressure (mm Hg):** *488 mm Hg @ 20°C***Vapour Density (Air = 1):** *2.48***Evaporation Rate(bu ac = 1):** *12.4-13***Boiling Point (°C):** *36°C***Freezing Point (°C):** *-130°C***pH:** *Not applicable***Specific Gravity:** *0.626 @ 20°***Coefficient of Water/Oil distribution:** *LogP(oct)= 3.39***SHIPPING DESCRIPTION****UN:** *1265***T.D.G. Class:** *3***Pkg. Group:** *I***REACTIVITY DATA****Chemical Stability:** *Normally stable***Incompatibility with other substances:** *Strong oxidizing agents (chlorine, fluorine, peroxides, nitrates, perchlorates) can increase the risk of fire and explosion. Not corrosive to steel, cast iron, stainless steel, copper and its alloys, nickel and its alloys, aluminum. Attacks some forms of plastics, rubbers, coatings.***Reactivity:** *Avoid heat, sparks, open flame, hot surfaces, oxidizing materials, generation of mist or vapour, and all incompatible materials.***Hazardous Decomposition Products:** *Carbon oxides formed when burned.***FIRE AND EXPLOSION DATA****Flammability:** *Extremely flammable liquid and vapour. Material readily ignites at room temperature. Vapours form explosive mixtures with air. Vapour is heavier than air and may travel considerable distance to source of ignition and flash back. Liquid can float on water and spread fire. Containers may explode in a fire.***Extinguishing Media:** *CO₂, dry chemical powder, alcohol-resistant foam. Water spray or fog may be used to cool containers, disperse vapours, dilute material and flush material away from fire, but will be ineffective for fighting 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 (full Bunker gear) sufficient to prevent inhalation of fumes or vapours and contact with skin and eyes. Containers may explode in heat of fire; withdraw immediately in case of rising sound from vent or discoloration of tank.***Flash Point (Method Used):** *49°C (CC)***Autoignition Temperature:** *260°C***Upper Flammable Limit (% by volume):** *7.8%***Lower Flammable Limit (% by volume):** *1.5%***Hazardous Combustion Products:** *CO, CO₂, toxic, irritating gases***Sensitivity to Impact:** *None identified***Sensitivity to Static discharge:** *Mixtures of vapour and air at concentrations in the flammable range readily ignited by static discharge. Liquid has low electrical conductivity and will accumulate static charge by flow or agitation.***TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** *(oral, rat): >2,000 mg/kg***LC₅₀:** *(rat) 364 g/m³/4h***Effects of Acute Exposure to Product:****Inhaled:** *Readily forms high vapour concentrations at room temperature, so can easily present an inhalation hazard. No symptoms observed after 10 min of exposure to 5,000 ppm. Higher concentrations may cause dizziness, disorientation, headache, excitement, drowsiness, incoordination, hypersensitivity, tremors, hyperactivity, anesthesia, respiratory and cardiac effects. 130,000 ppm reported to be lethal. Can displace oxygen, especially in confined spaces, causing unconsciousness and death. If the victim survives, vital organs (central nervous system, brain) may be permanently damaged.***In contact with skin:** *Brief contact is not irritating. Contact with liquid for 1 to 5 hours may cause defatting, drying, itching, redness, swelling and burning, all of which are reversible after contact is terminated.***In contact with eyes:** *No human or animal information available. Liquid will probably cause temporary irritation, with redness and pain.***Ingested:** *Oral toxicity is low. However, ingestion may cause irritation and burning of the mouth and throat, abdominal pain and central nervous system depression. Aspiration*

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of the liquid into the lungs during ingestion or vomiting may cause severe lung irritation or damage, chemical pneumonitis, pulmonary edema and even death.

Effects of Chronic Exposure to Product:

Prolonged or repeated skin contact can cause irritation and dermatitis. Not expected to be occupational sensitizer. Nervous system effects (peripheral neuropathy) observed in cases of exposure to mixtures of solvents are likely attributable to hexane, even though concentrations were lower than those of pentane.

Carcinogenicity: No human or animal information available

Teratogenicity: No human information available. Animal studies do not show effects.

Reproductive Effects: No human information available. Animal studies do not show effects.

Mutagenicity: Negative in Ames test. No human or animal information available

Synergistic Products: None known

PREVENTIVE MEASURES

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

Respiratory Protection: Up to 1200 ppm: NIOSH approved supplied-air respirator. Up to 1500 ppm: full face-piece supplied-air respirator, continuous-flow supplied-air respirator, or self-contained breathing apparatus. Higher or unknown concentrations, as in fire or spill conditions: positive-pressure, full face-piece self-contained breathing apparatus, or positive-pressure, full face-piece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus.

Eye Protection: Chemical safety goggles and/or face shield.

Skin Protection: Viton™, Silver Shield/4H™ (polyethylene/ethylene vinyl alcohol) gloves; nitrile rubber, polyvinyl alcohol gloves are suitable for 4-6 hour use. Other protective clothing, sleeves, apron, coveralls, boots, sufficient to prevent contact.

Other Personal Protective Equipment: Safety shower and eye wash readily available in work area.

Leak and Spill Procedure: Evacuate area, and provide maximum ventilation. Eliminate all sources of ignition. Cleanup personnel must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes, and must be thoroughly trained in the handling of hazardous materials. Do not touch spilled material. Contain spill with activated carbon adsorbent or other inert material. Prevent from entering sewers or waterways. Collect contaminated adsorbent in labelled containers and hold for disposal. Contaminated adsorbent may have the same hazards as the product; treat with caution. Wash site of spill thoroughly with detergent and water.

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

Handling Procedures and Equipment: EXTREMELY FLAMMABLE, TOXIC. Workers must be thoroughly trained in the handling of hazardous materials and in the hazards of this material and its safe use, and must wear protective equipment and clothing sufficient to prevent inhalation of mists or vapours and contact with skin and eyes. Eliminate all ignition sources. Post "No Smoking" signs. Ground and bond drums, transfer vessels, hoses and piping, during liquid transfer. Ground clips must contact bare metal. Use spark-resistant tools and avoid "splash filling" of containers. Keep storage and work areas free of combustible or incompatible materials. Avoid generating mists or vapours. Avoid all contact and inhalation. Use the smallest possible amount in a well ventilated area. Keep aisles and exits clear of obstruction. Treat empty containers with caution; may contain hazardous residues. Keep away from any incompatible

materials, particularly oxidizing agents. Do not return contaminated material to the original container.

Storage Requirements: Store in suitable, labelled containers, a cool, dry, well-ventilated area, out of direct sunlight. Keep tightly closed. Keep away from heat, sparks and flame. May develop pressure; refrigerate before opening (boiling point 36°C). Store away from any incompatible materials (e.g. oxidizing agents). Protect from damage and inspect frequently for signs of damage and/or leaking. Storage area must be constructed of fire-resistant materials and have raised sills or ramps to contain leaks and/or conduct them to a safe area.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes with warm running water for five to ten (5-10) minutes, or until no trace of chemical remains, holding eyelids open while flushing. If irritation persists, obtain medical advice.

Skin: Remove contaminated clothing (including rings, watches, belts, and shoes). Immediately flush exposed area with large amounts of running water for five to ten (5-10) minutes or until no trace of chemical remains. If irritation persists, obtain medical advice.

Inhalation: IMMEDIATELY remove to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Give oxygen and get medical attention for any 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: Do NOT induce vomiting. DANGER OF ASPIRATION WITH EMESIS. If casualty is alert and not convulsing, rinse out mouth with water and give 1-2 glasses of water to drink to dilute material. Get medical attention. If spontaneous vomiting occurs have casualty lean forward with head down to avoid breathing in of vomitus.

REFERENCES USED

CCINFO disc: Cheminfo

Royal Society of Chemistry: Chemical Safety Data Sheets, Vol. 5, 1992

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

ADDITIONAL INFORMATION

Date Issued: November 1, 1988

Revision: September 2009

MSDS: 7800-1, 7800-2, 7800-3, 7800-4, 7800-30, 7801-2, 7801-7, 7805-1, 7808-2, CAL 1345

Proposed WHMIS Designation: B2

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