

**MATERIAL SAFETY DATA SHEET****PETROLEUM ETHER**

PRODUCT CODE NUMBER(S): 8100-1, 8100-2, 8100-4

**PRODUCT IDENTIFICATION**

**Chemical Name and Synonyms:** *Petroleum ether; Ligroine; Petroleum benzine; Petroleum spirits; Refined solvent naphtha*

**Chemical Family:** *Paraffin hydrocarbon*

**Chemical Formula:** *Mixture of C<sub>5</sub> to C<sub>9</sub> hydrocarbons, mostly pentane, exact composition will vary*

**Product Use:** *Laboratory solvent*

**Manufacturer's Name and Address:**

*Caledon Laboratories Ltd.  
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**HAZARDOUS INGREDIENTS OF MATERIALS**

<b>Ingredients</b>	<b>%</b>	<b>TLV Units</b>	<b>CAS No.</b>
<i>n-Pentane</i>	<i>&gt;90</i>	<i>600 ppm</i>	<i>109-66-0</i>
<i>2-Methylpentane</i>	<i>&lt;2</i>	<i>500 ppm</i>	<i>107-83-5</i>
<i>3-Methylpentane</i>	<i>&lt;5</i>	<i>N/A</i>	<i>96-14-0</i>
<i>Cyclopentane</i>	<i>&lt;2</i>	<i>600 ppm</i>	<i>287-92-3</i>
<i>2,2-Dimethylbutane</i>	<i>&lt;3</i>	<i>500 ppm</i>	<i>75-83-2</i>
<i>2,3-Dimethylbutane</i>	<i>&lt;3</i>	<i>500 ppm</i>	<i>79-29-8</i>
<i>Isopentane</i>	<i>&lt;1</i>	<i>N/A</i>	<i>78-78-4</i>
<b>Overall TLV-TWA</b>		<i>300 ppm</i>	<i>8032-32-4</i>

**PHYSICAL DATA**

**Physical State:** *Liquid*

**Odour and Appearance:** *Clear, colourless to yellowish liquid, mild gasoline-like odour*

**Odour Threshold (ppm):** *Reports vary widely and are not reliable. Poor warning properties, threshold about the same as TLV*

**Vapour Pressure (mm Hg):** *~40 mm Hg @ 20°C*

**Vapour Density (Air = 1):** *2.5*

**Evaporation Rate (n-butane=1):** *~10*

**Boiling Point (°C):** *36 to 60°C (varies with composition)*

**Freezing Point (°C):** *~-130°C*

**pH:** *Not applicable*

**Specific Gravity:** *0.626 to 0.87 @ 20°C*

**Coefficient of Water/Oil distribution:** *No data*

**SHIPPING DESCRIPTION**

**UN:** *1268*

**T.D.G. Class:** *3*

**Pkg. Group:** *I*

**REACTIVITY DATA**

**Chemical Stability:** *Normally stable. Flow and agitation can cause buildup of electrostatic charge.*

**Incompatibility with other substances:** *Contact with strong oxidizing agents (eg. peroxides, nitrates and perchlorates) may cause fire or explosion. Avoid acids, bases, amines.*

**Reactivity:** *In use, readily forms flammable/explosive vapour-air mixture. Avoid exposure to heat, hot surfaces, flame, and all ignition sources, generation of mist, all incompatible materials.*

**Hazardous Decomposition Products:** *CO<sub>x</sub>, hydrocarbons*

**FIRE AND EXPLOSION DATA**

**Flammability:** *Extremely flammable liquid and vapour. Ignites readily at room temperature. Can accumulate static charge by flow or agitation. Vapour readily forms explosive mixtures with air. Vapours are heavier than air and may travel to distant ignition source and flash back. Liquid will float on water and may spread fire if not contained. Closed containers may rupture violently when exposed to fire.*

**Extinguishing Media:** *CO<sub>2</sub>; alcohol or polymer foam; dry chemical. Water spray or fog may be used to cool containers, disperse vapours, flush spill away from ignition source, or dilute spill to non-flammable mixture, but is ineffective for extinguishing fire because it will not cool liquid below flash point. Fight fire from upwind, from a safe distance. Firefighters must wear NIOSH/MSHA approved positive-pressure, full face-piece self-contained breathing apparatus, and full protective clothing (Bunker Gear). Containers may explode in heat of fire; withdraw immediately in case of rising sound from vent or discoloration of tank.*

**Flash Point (Method Used):** *<-18 (30-60°C) (CC)*

**Autoignition Temperature:** *287, 288°C*

**Upper Flammable Limit (% by volume):** *5.9 (varies slightly with composition)*

**Lower Flammable Limit (% by volume):** *~1 (varies slightly with composition)*

**Hazardous Combustion Products:** *CO<sub>x</sub>, hydrocarbons*

**Sensitivity to Impact:** *None identified*

**Sensitivity to Static discharge:** *Vapour readily ignited by static discharge. Liquid can accumulate static charge by flow or agitation.*

**TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:**

**LD<sub>50</sub>:** *(ivn, mouse) 446 mg/kg (pentane)*

**LC<sub>50</sub>:** *(rat) 3,400 ppm/4h*

**Effects of Acute Exposure to Product:**

**Inhaled:** *Irritating to upper respiratory tract, causing sore throat, coughing, choking. Overexposure may cause central nervous system depression with dizziness, disorientation, headache, excitation, drowsiness, incoordination, anaesthesia, respiratory and cardiac effects. Severe overexposure may cause hemorrhage of vital organs and coma, or collapse, unconsciousness, coma, and death due to respiratory failure.*

**In contact with skin:** *Brief contact is not irritating. Extreme contact may cause itching, redness, pigmentation, swelling, burning and pain. May be absorbed through intact skin causing systemic toxic effects, as in "Inhaled".*

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**In contact with eyes:** May cause eye irritation including pain, inflammation of the iris and mucous membranes, redness and tearing.

**Ingested:** Irritating to gastrointestinal tract, causing, burning in throat and stomach, nausea, vomiting, hemorrhaging of mucous membranes, diarrhea. May cause central nervous system depression, dizziness and headache, confusion, narcosis, respiratory failure. Aspiration of the liquid into the lungs, which can occur during ingestion or vomiting, can cause chemical pneumonitis, pulmonary edema, with severe lung damage, even death.

#### **Effects of Chronic Exposure to Product:**

Prolonged or repeated skin contact may cause dermatitis. Persons with pre-existing skin or eye disorders, or impaired liver, kidney or respiratory function may be more susceptible to the effects of this substance.

**Carcinogenicity:** Confirmed animal carcinogen. Insufficient information available about human carcinogenicity; levels should be controlled to as low as reasonably achievable.

**Teratogenicity:** Some effects in tests with animals

**Reproductive Effects:** Insufficient data available

**Mutagenicity:** Negative in Ames Test

**Synergistic Products:** None known

#### **PREVENTIVE MEASURES**

**Engineering Controls:** Grounded, non-sparking exhaust ventilation, separate from other ventilation systems.

**Respiratory Protection:** Up to 1,200 ppm: NIOSH approved supplied-air respirator. Up to 1,500 ppm: continuous-flow supplied-air respirator, or 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 full face-piece positive-pressure supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus.

**Eye Protection:** Chemical safety goggles, face shield.

**Skin Protection:** Polyethylene/ethylene vinyl alcohol, 4H™, or Viton™ gloves. Other impervious protective equipment, 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 pos-

sible 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, in a cool, dry, well-ventilated area, out of direct sunlight and away from all sources of ignition and incompatible or combustible materials. Keep tightly closed. Protect from damage and inspect regularly for signs of leaking. Ground and bond equipment and containers to prevent a static charge buildup. Storage area should be constructed of non-combustible materials and have raised sills and trenching to contain leaks and to conduct them to a safe area.

#### **FIRST AID MEASURES**

##### **Specific Measures:**

**Eyes:** Immediately flush eyes with gently running water for at least fifteen (15) minutes, holding eyelids open while flushing. Take care not to flush contaminated water into unaffected eye. Get medical attention immediately.

**Skin:** Remove contaminated clothing (including shoes, watches, belts, and rings). Wash affected areas with soap and large amounts of running water for five to ten (5-10) minutes, or until no trace of chemical remains. If irritation persists, or if exposure was extensive, get medical attention. Decontaminate clothing before reuse, or discard.

**Inhalation:** IMMEDIATELY remove casualty to fresh air (rescuers must use caution to avoid exposure). Give oxygen for breathing difficulty. If breathing has stopped give artificial respiration (use a mouth guard or bag to avoid exposure). If breathing and pulse are absent, give CPR. IMMEDIATELY GET 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. Give 2 to 4 glasses of water to drink to dilute material. IMMEDIATELY GET MEDICAL ATTENTION. If spontaneous vomiting occurs have casualty lean forward with head down to avoid breathing in of vomitus. Rinse mouth, and give more water to drink.

#### **REFERENCES USED**

CCINFO disc: MSDS's April 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:** November 1, 1988

**Revision:** April 2010

**MSDS** 8100-1, 8100-2, 8100-4

**Proposed WHMIS Designation:** B2; D2B

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