

MATERIAL SAFETY DATA SHEET**METHYL ETHYL KETONE**

PRODUCT CODE NUMBER(S): 7400-1, 7400-4, 7400-30, 7401-2

PRODUCT IDENTIFICATION**Chemical Name and Synonyms:** *Methyl ethyl ketone; 2-Butanone; Ethyl methyl ketone; MEK***Chemical Family:** *Saturated aliphatic ketone***Chemical Formula:** $CH_3COCH_2CH_3$ **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>Methyl ethyl ketone</i>	<i>>98</i>	<i>200 ppm</i>	<i>78-93-3</i>

PHYSICAL DATA**Physical State:** *Liquid***Odour and Appearance:** *Colourless liquid with a sweet, acetone-like odour***Odour Threshold (ppm):** *2 -85 ppm (detection); 5.4-55 ppm (recognition). Not reliable warning properties because of wide range.***Vapour Pressure (mm Hg):** *77.5 at 20°C***Vapour Density (Air = 1):** *2.41***Evaporation Rate (ether=1):** *2.7***Boiling Point (°C):** *79.6°C***Freezing Point (°C):** *-86.3°C***pH:** *Not available***Specific Gravity:** *0.805 @ 20°C***Coefficient of Water/Oil distribution:** *LogP=0.26***SHIPPING DESCRIPTION****UN:** *1193***T.D.G. Class:** *3***Pkg. Group:** *II***REACTIVITY DATA****Chemical Stability:** *Stable.***Incompatibility with other substances:** *Increased risk of fire and explosion with strong oxidizers, haloforms, propanol, amines, ammonia, caustics, strong acids, strong bases and isocyanates. May explode with mixtures of hydrogen peroxide and nitric acid. Mixtures of liquid or vapour with potassium t-butoxide will ignite. Attacks copper in the presence of acetylene.***Reactivity:** *Avoid sparks, open flames, all heat and ignition sources, all incompatible materials, and generation of mist,***Hazardous Decomposition Products:** CO_x **FIRE AND EXPLOSION DATA****Flammability:** *Extremely flammable liquid and vapour. Vapours form flammable/explosive mixtures with air at or above -9°C. Vapour is heavier than air and may travel considerable distance to source of ignition and flash back. Can accumulate in confined spaces and cause flammability or toxicity hazard. Closed containers may rupture violently when heated.***Extinguishing Media:** *Alcohol or polymer foam, carbon dioxide, or dry chemical. Water spray or fog may be used to cool containers, disperse vapours, 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):** *-9.0°C (CC)***Autoignition Temperature:** *404°C***Upper Flammable Limit (% by volume):** *10***Lower Flammable Limit (% by volume):** *1.8***Hazardous Combustion Products:** *CO and CO₂***Sensitivity to Impact:** *None identified***Sensitivity to Static discharge:** *Mixtures of vapour and air at concentrations in the flammable range may be ignited by static discharge. Liquid has high electrical conductivity and will probably not accumulate static charge.***TOXICOLOGICAL PROPERTIES AND HEALTH DATA****Toxicological Data:****LD₅₀:** *(rat, oral) 2,740 mg/kg; (dermal, rabbit) >5 g/kg***LC₅₀:** *(male rat) 11,300 ppm /4h***Effects of Acute Exposure to Product:****Inhaled:** *100 to 350 ppm: causes irritation of eyes, nose, throat and respiratory tract. Higher exposures cause central nervous system depression, with headache, numbness in fingers and arms, weakness in legs, nausea, vomiting, inco-ordination. Very high concentrations cause unconsciousness, and possibly death.***In contact with skin:** *Mildly irritating in animal studies. No irritation in human studies with 20% MEK in petrolatum/48 hrs. Not expected to cause irritation. Prolonged or repeated contact may lead to dermatitis.***In contact with eyes:** *Vapour or liquid may cause moderate to severe irritation, even corneal burns and conjunctivitis, possible corneal damage, in case of direct eye contact with liquid.***Ingested:** *May cause irritation and burning of the mouth and throat, abdominal pain and central nervous system depression with symptoms as in "Inhaled". Aspiration, which can easily occur during ingestion or vomiting, can result in severe, life-threatening lung damage, chemical pneumonitis, or pulmonary edema.*

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Effects of Chronic Exposure to Product:

Carcinogenicity: Not listed as carcinogen by NTP, ACGIH, IARC, OSHA

Teratogenicity: No human information available. Some animal studies show fetotoxicity (skeletal anomalies)

Reproductive Effects: No human or animal information available.

Mutagenicity: No human information available. Negative in *in vivo* animal, *in vitro* mammalian and cell testing.

Synergistic Products: The presence of other solvents, particularly ethyl *n*-butyl ketone, *m* ethyl *n*-butyl ketone, *n*-hexane, carbon tetrachloride, 2,5-hexanedione, and chloroform may increase the toxicity of MEK, with principal targeted organs being liver, lung and nervous system.

PREVENTIVE MEASURES

Engineering Controls: Local, non-sparking, grounded exhaust ventilation system required.

Respiratory Protection: To 3,000 ppm: NIOSH/MSHA approved powered air-purifying respirator equipped with organic vapour cartridges or continuous-flow 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 and/or face shield.

Skin Protection: Butyl rubber, Trelcehm HPS , 4H , CPF3 , or Tychem 10000 gloves. Other impermeable protective clothing, apron, coveralls, boots, sufficient to prevent contact.

Other Personal Protective Equipment: Eye wash and safety shower in work area.

Leak and Spill Procedure: Evacuate area. Ventilate area before re-entering. Eliminate all sources of ignition. Cleanup personnel must be thoroughly trained in the hazards of this chemical and must wear protective equipment and clothing sufficient to prevent inhalation of mist of vapours and contact with skin, eyes and clothing. Do not touch spilled material. Prevent from entering sewers and waterways. Stop or reduce discharge if safe to do so. Contain spill with inert absorbent (sand, earth). Transfer to container for removal by disposal company. Use water spray to disperse vapours or to flush liquid spill away from fire exposure. Wash site of spill thoroughly with water.

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

Handling Procedures and Equipment: **FLAMMABLE AND VERY TOXIC MATERIAL** (possible teratogenic effects). Eliminate all sources of ignition and have all engineering controls operating before handling. Workers must be thoroughly trained in the hazards of this material and its safe use, and must wear appropriate protective equipment and clothing. Ground and bond equipment to prevent static charge accumulation. Post "No Smoking" signs. Sudden release of hot vapours may result in ignition. Published autoignition values may not be valid in some chemical processes. Actual process conditions must be analysed to establish safe operating temperatures. Use smallest amount possible for the purpose in an area with appropriate ventilation. Avoid generating vapour or mist. Keep containers closed when not in use. Avoid all contact with eyes, skin or clothing.

Storage Requirements: Store in a cool, well-ventilated area out of sun and away from all ignition sources and incompatible materials. Keep tightly closed when not in use.

Keep storage area free of combustible materials and incompatible materials such as strong oxidizers. Storage facilities should be made of fire-resistant materials, and have raised sills and be trenched to safe location. Use drums on a first in, first out basis. Protect from damage. Inspect frequently for signs of damage or leaking.

FIRST AID MEASURES

Specific Measures:

Eyes: Immediately flush eyes with gently running water for at least twenty (20) minutes, holding eyelids open during flushing. Take care not to flush contaminated water into unaffected eye. Get medical attention.

Skin: Immediately remove contaminated clothing (including rings, watches, belts and shoes). Flush exposed area with large amounts of warm running water and non-abrasive soap for at least five to ten (5 to 10) minutes. Get medical attention. Decontaminate clothing before reuse, or discard.

Inhalation: IMMEDIATELY remove casualty from contaminated area to fresh air (caution must be used by rescuers to avoid exposure to contaminating fumes). Remove any sources of ignition. 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. If the casualty is alert and not convulsing, give 2 to 3 glasses of water to drink to dilute the material. Transport to medical facility. If spontaneous vomiting occurs, have casualty lean forward to avoid breathing in of emesis. Rinse mouth and administer more water. Get medical attention immediately.

REFERENCES USED

- Budavari: *The Merck Index*, 12th ed., 1997
Royal Society of Chemistry, *Chemical Safety Data Sheets*, Vol. 1, 1992
Sax, Lewis: *Hawley's Condensed Chemical Dictionary*, 11th ed., 1987
Suppliers' Material Safety Data Sheets

ADDITIONAL INFORMATION

Date Issued: November 1, 1988

Revision: May 2010

MSDS: 7400-1, 7400-4, 7400-30, 7401-2

Proposed WHMIS Designation: B2; D2A; D2B

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