IMPERIAL OIL

DILBIT **MATERIAL SAFETY DATA SHEET**

Date Prepared: September 27,2002
Supersedes: September 20,1999
M.S.D.S Number: 11174
Reference: ERC

1. PRODUCT INFORMATION

NAME: DILBIT

SYNONYMS: 01.COLD LAKE BLEND
02.DILUTED BITUMEN
03.DILBIT COLD LAKE BLEND

DESCRIPTION AND APPLICATION:
A naturally occurring bitumen (high molecular weight hydrocarbon) blended with a diluent (Natural Gas Condensate or Diluent).
Mixture is "sour" with approximately 3.5% sulphur by weight.

CAS# Not applicable

REGULATORY CLASSIFICATION:

WHMIS: Class B, Division 2: Flammable Liquids
Class D, Division 2, Subdivision A: Very Toxic Material

Canadian Environmental Protection Act (CEPA):
All components of this material are either on the Domestic Substances List (DSL) or exempt

TDG Information (Land Only)
TDG SHIPPING NAME: Petroluem Crude Oil

Primary TDG: 3 P.I.N.: UN1267
Secondary TDG: Packing Group: II
Tertiary TDG:
Marine Pollutant:

EMERGENCY TELEPHONE NUMBERS:

Name of MFG/SUPPLIER:
IMPERIAL OIL
CRUDE OIL SUPPLY MKTG.

ADDRESS PHONE NUMBER:
Products Chemicals Div
Box 2480 Station M
Calgary, Alberta
T2P 3M9
(403) 237 − 3883

HEALTH: (519) 339 − 2145
TRANSPORTATION: (519) 339 − 2145

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2. REGULATED COMPONENTS

The following components are defined in accordance with subparagraph 13 (a). (I) to (IV) or paragraph 14(a) of the hazardous product act.

COMPONENT	%	CAS#
BITUMEN	40−70	8052−42−4
LIGHT NAPHTHA	15−40 v/v	64741−46−4
NATURAL GAS CONDENSATE	15−40 v/v	64741−47−5

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3. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid
SPECIFIC GRAVITY: 0.9 to 1.2
ODOUR/APPEARANCE:
"Tarry" odour and associated smell of "rotten eggs" due to hydrogen sulphide presence; black liquid
ODOUR THRESHOLD: Not Available
VAPOR PRESSURE: 12 to 21 kPa @ 24 deg C
VAPOUR DENSITY: Not Available
EVAPORATION RATE: Not Available
BOILING POINT: 34 deg C
FREEZING/MELTING POINT: −35 deg C
VISCOSITY: 52 to 96 centistokes @ 38 deg C
PH: Not Applicable
SOLUBILITY: insoluble
CO−EFFICIENT OF
WATER/OIL DISTRIBUTION: Not Available

PERCENT VOLATILE: 10 − 30%
MOLECULAR FORMULA: Not Applicable
MOLECULAR WEIGHT: Not Applicable

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4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects, including death.
Hydrogen sulphide gas may be released. Hydrogen sulphide may cause irritation, breathing failure, coma and death, without necessarily any warning odour being sensed.
Avoid breathing vapours or mists.

EYE CONTACT:
Irritating, but will not injure eye tissue.
Hot splashes will cause eye burns and permanent eye damage.

SKIN CONTACT:
Low toxicity. Will enter the body through the skin and produce one or more toxic effects on the body.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Exposure to hot material may cause thermal burns.
Benzene may be absorbed through damaged skin and may cause blood or blood producing system disorder and/or damage.

INGESTION:
Low toxicity.

CHRONIC:
Contains polynuclear aromatic hydrocarbons (PNAs). Prolonged and/or repeated skin contact with certain PNAs has been shown to cause skin cancer. Prolonged and/or repeated exposures by inhalation of certain PNAs may also cause cancer of the lung and of other parts of the body.
Contains benzene. Human health studies (epidemiological) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system (particularly the bone marrow) and serious blood disorders including leukemia. Animal tests indicate that benzene does not cause malformations but may be toxic to the embryo/fetus. The relationship of the results to humans has not been established. Studies indicate that benzene is a known human carcinogen.
Contains n−hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.).

TOXICITY DATA:

Not available for product

OCCUPATIONAL EXPOSURE LIMITS

MANUFACTURER RECOMMENDS:
Although no specific hygiene standard exists, the workplace exposures to total particulates should be controlled well below a TWA value of 0.2 mg/m3 polynuclear aromatic hydrocarbon particulates measured as benzene solubles.
ACGIH RECOMMENDS:
For Hydrogen Sulphide, 10 ppm (14 mg/m3).
For Benzene, the ACGIH recommends a TLV of 0.5 ppm (1.6 mg/m3), and describes it as a confirmed human carcinogen.
For n−Hexane (skin), 50 ppm (176 mg/m3).

Local regulated limits may vary

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5. FIRST AID MEASURES

INHALATION:
In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure.
Administer artificial respiration if breathing has stopped.
Keep at rest. Call for prompt medical attention.

EYE CONTACT:
Immediately flush eyes with large amounts of water for at least l5 minutes. Get prompt medical attention.

SKIN CONTACT:
Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun.
Get prompt medical attention.
For hot material, immediately immerse in or flush affected area with large amounts of cold water to dissipate heat. Cover with

clean cotton sheeting or gauze and get prompt medical attention.
For hot material, no attempt should be made to remove material from skin or to remove contaminated clothing as the damaged flesh may easily be torn. Transport individual to a medical facility for treatment.

INGESTION:
If swallowed, DO NOT induce vomiting. Keep at rest. Get prompt medical attention.

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6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:
The selection of personal protective equipment varies, depending upon conditions of use.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves, chemical resistant gloves, chemical safety goggles, plus a face shield.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear chemical resistant gloves, rubber boots, a chemical jacket, chemical safety goggles, and a face shield.
Where skin and eye contact with hot material is unlikely, but may occur as a result of short and/or periodic exposures, wear thermal resistant gloves, arm protection and a face shield.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROL:
The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.
Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:
Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper grounding and bonding procedures.

SPILL CONTROL AND DISPOSAL:
Consult an expert on disposal of recovered material. Ensure disposal is in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill.

LAND SPILLS:
Eliminate sources of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.
Prevent spills from entering sewers, watercourses or low areas.
Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump) or by using a suitable absorbent.

WATER SPILLS:
Keep public and other shipping traffic away. Prevent additional discharge of material, if possible to do so without hazard.
Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Remove from surface by skimming or with suitable absorbents.
If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
Product will submerge after a few days of weathering.

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7. FIRE EXPLOSION HAZARD

Flashpoint and Method: < -18 deg C (CC)
Autoignition: Not Available
Flammable Limits (% volume): LEL: unknown UEL: unknown

GENERAL HAZARDS:
Extremely flammable; material will readily ignite at normal temperatures.
Flammable Liquid; may release vapours that form flammable

mixtures at or above the flash point.
Decomposes; flammable/toxic gases will form at elevated temperatures (thermal decomposition).
Toxic gases will form upon combustion.

FIREFIGHTING:
Use water spray to cool fire exposed surfaces and to protect personnel. Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.
Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.
Respiratory and eye protection required for fire fighting personnel.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Oxides of carbon; hydrogen sulphide; oxides of sulphur

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8. REACTIVITY DATA

This material is stable.
Hazardous Polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:
Heat; ignition sources; oxidizing agents

HAZARDOUS DECOMPOSITION:
Oxides of carbon; hydrogen sulphide

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9. NOTES

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Equipment handling hydrogen sulphide rich materials can accumulate black deposits of iron sulphide which, if dry, burn on exposure to air.
Hazardous concentrations of Hydrogen Sulphide (H_2S) gas may build-up in the vapour space of storage tanks or vessels.
Appropriate precautions must be taken when opening or entering vessels or other containers to avoid inhalation of H_2S.

SECTION(S) 1, 4, 9, HAVE BEEN CHANGED SINCE THE LAST REVISION TO MSDS

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10. PREPARATION

Prepared by: Imperial Oil Limited
Industrial Hygiene and Product Safety
(416) - 968 - 4940

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Supersedes Date: September 20,1999

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