APPENDIX B

2015 PERMITS AND LICENCES

KIVALLIQ INUIT ASSOCIATION (KIA)

Land Use License KVL115B02

ABORIGINAL AFFAIRS AND NORTHERN DEVELOPMENT CANADA (AANDC)

Land Use Permit #N2015C0019

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Kivalliq Inuit Association
ᑎᑎᕋᖅᐅᓯᐊᖏᓐᓄᑦ/P.O. Box 340, ᖃᒥᕋᓂᓕᕆᓂRankin Inlet, Nunavut X0C 0G0
ᐅᕋᖅᓴᑕ/Tel: (867) 645- 5725 ᓯᖅᔪᑯᑦ/Fax: (867) 645-2348 Toll free: 1-800-220-6581

KVL115B02 /5-May-15

May 05, 2015

Bob Singh, P. Geo
Dunnedin Ventures Inc
Suite 302-750 West Pender Street
Vancouver, British Columbia
V6C 2T7

Dear.Mr. Singh:

Re: Land Use License No. KVL115B02

Enclosed is a copy of Land Use License No. KVL115B02 authorizing your project as described in your application dated April 13, 2015.

Please sign **both** copies of this license, retain page 1 for your records and send page 2 back to the Kivalliq Inuit Association Lands Department. This license will not become effective until we have received a signed copy. Please ensure that you adhere to the operating conditions annexed to your license.

We are issuing this license for the portions of land that are on Inuit Owned Land. To gain access to crown lands, approval must be obtained from Aboriginal Affairs & Northern Development, Land Manager, P.O. Box 2200, Iqaluit, Nunavut, XOA OHO, (867) 975-4280 or fax (856) 979-6445.

Should you have any questions or concerns, you can contact our office at (867) 645-5734 or fax at 645-3855 or email: vconnelly@kivalliqinuit.ca

Yours truly,

Luis Manzo
Director of Lands

Enclosure

INUIT LAND USE LICENCE

KIVALLIQ INUIT ASSOCIATION

LICENCE NUMBER: KVL115B02

Subject to the terms and conditions in this license and to the terms and conditions and general minimum standards set out in the application for an Inuit Land Use License, authority is hereby granted to:

Dunnedin Ventures Inc.

To proceed with the land use operation described in the attached application dated:

April 13, 2015

Purpose: STAKING & PROSPECTING

Location: CI-15 055003, 055002

Dated at: Rankin Inlet Director of Lands: Luis Manzo

This 5th Day of May 20 15

Commencement Date May 31, 2015 Expiry Date May 31, 2016

This copy is to be signed and retained by the applicant.

Signature of Applicant	Print Name	Position	Date

INUIT LAND USE LICENCE

KIVALLIQ INUIT ASSOCIATION

LICENCE NUMBER: KVL115B02

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Dunnedin Ventures Inc.

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Location: CI-15 055003, 055002

Dated at: Rankin Inlet Director of Lands: Luis Manzo

This 5th Day of May 20 15

Commencement Date May 31, 2015 Expiry Date May 31, 2016

This copy is to be signed and returned to the Kivalliq Inuit Association. The License will not become effective until a signed copy is received by the Kivalliq Inuit Association.

Signature of Applicant	Print Name	Position	Date

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Kivalliq Inuit Association
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ᐅᖄᓚᑖ/Tel: (867) 645- 5725 ᓱᑲᔪᒃᑯᑦ/Fax: (867) 645-2348 Toll free: 1-800-220-6581

LICENSE – TERMS AND CONDITIONS

Compliance

1. The Licensee shall comply with all applicable regulations, laws and orders of the federal, territorial or other governing body, and with the terms of this License, including Schedule "A". The Licensee shall deliver to KIA a copy of any written notice of non-compliance received by the Licensee. The Licensee shall use the licensed lands only for the purposes authorized by KIA.

2. The Licensee shall obtain and maintain such licenses, permits or approvals from the federal, territorial or other governing bodies as may be necessary to enable to Licensee to undertake the permitted activities on the lands.

3. The Licensee shall permit KIA reasonable access to the lands for the purpose of inspecting from time to time the condition of the lands and compliance with this License.

Fees

4. The Licensee shall pay all fees and other amounts required under this license on the first of each month, in advance and without abatement or deduction. Without prejudice to any other rights or remedies, KIA shall have the right to charge interest on overdue amounts at a rate equal to prime rate established from time to time, plus 24% per annum, calculated and compounded monthly.

5. If the Licensee continues it's operations after the end of the term of this License without execution and delivery of a new license, the Licensee will be considered to be conducting its operations on a month to month basis at a monthly fee equal to 1/6th of the pro-rated annual fee and shall be subject to the covenants and conditions hereof.

6. If the Licensee continues in occupation of the lands for the purpose of undertaking environmental remediation reclamation or otherwise complying with this License but without otherwise continuing its operations, it shall nonetheless be required to pay the license fees stipulated herein.

7. The Licensee shall pay any reasonable costs of all inspection that KIA deems necessary to monitor compliance with this License.

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Insurance

8. The Licensee shall at all times during its occupation of the lands obtain and maintain insurance in such amounts and form acceptable to KIA. The insurance shall be enforceable by any party named as insured or additional insured there under and shall be primary to any other insurance available to KIA. The insurance shall not be subject to cancellation, reduction, amendment or non-renewal without at least thirty days advance written notice to KIA. Proof all of insurance shall be provided prior to commencement of this license.

Damages & Indemnity

9. All persons and property of this Licensee or those for whom the Licensee is responsible at law shall be entirely at the risk of the Licensee and KIA shall have no liability for any loss or damage to such property, unless caused by the negligence of KIA or those for whom KIA is responsible in law. Any damage or injury to the lands or property caused by the Licensee or those for whom the Licensee is responsible at law shall immediately upon notice given either verbally or in writing by KIA, be repaired, rebuilt, replaced and restored by the Licensee to the entire satisfaction of KIA.

10. The Licensee shall at all times indemnify and save harmless KIA, its agents, contractors, employees, directors and members, from and against all claims and demands, loss, costs, damages, actions, suits or other proceedings by whomsoever made, based upon or attributable to this License or any actions taken or things done by the Licensee or those for whom the Licensee is responsible in law.

Plans

11. The Licensee shall submit to the KIA for its approval, no later than September 30th in each year of the term, a Work Plan detailing the proposed operations on the licensed lands for the upcoming calendar year, together with an Environmental Action Plan detailing the Licensee's plans for reclamation of the licensed lands. Such Plans shall be subject to the approval of KIA and will be deemed to be incorporated into and form part of this License.

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ᑎᑎᖅᑲᐅᓯᐊᖓᒐ/P.O. Box 340, ᑲᑎᖅᓀᓂᖅRankin Inlet, Nunavut X0C 0G0
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Assignment

12. The Licensee shall not assign or transfer this License without the prior written consent of KIA.

13. Upon the Licensee being in default of any of its obligations hereunder and failure to remedy such default within 30 days of receipt of written notice identifying the default, KIA may, without prejudice to any other rights or remedies, cause to be performed any such obligations and all expenses incurred and expenditures in so doing, plus a sum equal to 15% thereof representing KIA's overhead, shall be treated as fees hereunder, payable immediately.

14. In the event that the Licensee fails to remedy any default within 30 days of receipt of written notice identifying the default, this License may be terminated by KIA. All obligations of the Licensee for the payment of fees and other amounts hereunder and the Licensee's obligations with respect to the environment, shall survive the termination of the License.

Security Deposit

15. If the Licensee breaches any of the terms and conditions of this License and fails to remedy such breach within the time permitted, KIA may, without prejudice to any other rights, apply the security deposit to any loss, damage or costs caused by such breach. Should KIA draw on the security deposit, the Licensee shall within five business days of receipt of notice replenish the security deposit to its original amount.

Voluntary Termination

16. This License may be cancelled by either party upon 90 days notice in writing to the other party.

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SCHEDULE "A"

General Standards.

1. The Licensee shall not conduct its operations on any lands not covered by this license.

2. The Licensee shall contact KIA at least 48 hours prior to the commencement of licensed activities.

3. The Licensee keep all combustible garbage and debris in a covered metal container until disposed of and shall burn all combustible garbage and debris in a suitable container. All non-combustible garbage and debris shall be removed to disposal location(s) approved by KIA.

4. All sewage shall be deposited into a sump or removed from the lands.

5. The Licensee shall not bury any metal wastes without the consent of KIA.

6. The Licensee shall locate all camps on gravel, sand or other durable land. No permanent structures shall be erected without the prior written consent of KIA.

7. The Licensee shall keep the lands clean of garbage and debris at all times.

8. The Licensee shall have available for viewing a summary of this license (in form and content acceptable to KIA) in a conspicuous place on the lands.

9. The Licenses shall give to KIA a final plan within 60 days to the expiry of this license, showing all areas within the lands actually used in its operation.

10. At the completion of its operations or expiry or termination of this license, the Licensee shall remove all buildings, equipment and materials placed or erected on the lands by or on behalf of the Licensee, unless otherwise authorized by KIA.

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ᑎᑎᕋᖅᐅᓯᐊᖅᓯᒪ/P.O. Box 340, ᑲᑎᕋᓂᓕᕆRankin Inlet, Nunavut X0C 0G0
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11. All archaeological site and burial grounds must be avoided and left undisturbed. Should a site be encountered, the Licensee shall have it flagged and reported immediately to KIA and CLEY.

Ground Disturbance

12. All operations shall be carried out so as to minimize surface disturbances.

13. All disturbed areas must be restored in a manner acceptable to KIA.

14. The Licensee shall not use surface vehicles to move drill rigs or other equipment or supplies without the prior authorization of KIA. The use of any vehicles off approved routes is prohibited.

Fuel and Chemical Storage

15. The Licensee shall not place any petroleum storage containers within 30 meters of the normal high water mark of any water body.

16. The Licensee shall not allow any petroleum or chemical products to spread to surrounding Lands or into water bodies

17. All petroleum brought onto the Property by or on behalf of the Licensee shall be kept in approved containers marked with the Licensee's name, or within a bermed area.

18. The Licensee shall report all spills immediately as required by the license and by governmental authorities.

19. The Licensee shall dispose of all combustible waste combustible waste products by incineration or removal.

Drilling

20. All drill fluids must be disposed of into a properly constructed sump or a naturally occurring, contained depression and drill fluids should be recycled wherever possible.

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21. Drill sumps shall not be located within 30 metres of any water body unless otherwise authorized by KIA.

22. All drill sumps must be restored to the natural surrounding contours of the land prior to expiry of this license.

23. Disturbance of vegetation from deposit of drill fluids/cuttings shall be restricted to the area of the sump and the ground prepared for re-vegetation upon abandonment.

Fisheries

24. The Licensee shall not deposit any deleterious substance into any water body.

25. The Licensee shall not cause any obstruction of any stream.

26. Winter stream crossings shall be removed prior to the expiry of this license or annual break-up, whichever occurs sooner.

Wildlife

27. The Licensee shall abide by the attached Caribou Protection Measures for the Kaminuriak and Beverly Herds.

28. The Licensee shall ensure that there is no damage to wildlife habitat in conducting this land use operation.

29. The Licensee shall cease activities that may interfere with migration or calving, such as construction of road, movement of equipment or haulage of ore, until the migrating caribou have passed or left the area.

30. The Licensee shall institute a wildlife sighting and incident program and will:

    a) submit written reports of wildlife sightings and interactions to KIA on a quarterly basis;

    b) submit a written report to KIA (and others as required by law) detailing any incident that results in the killing of any wildlife as result of the Licensee's operations, immediately upon occurrence of the incident, together with compensation as follows:

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Kivalliq Inuit Association
ᑎᑎᕆᑲᐅᓯᐊᖅᑐᒃ/P.O. Box 340, ᑲᑎᕆᓂᖅRankin Inlet, Nunavut X0C 0G0
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Polar Bear	$20,000
Grizzly Bear	$10, 000
Caribou	$2,500
Musk oxen	$2,500
Wolf	$2,500
Wolverine	$2,500
Fox	$1,000

c) subject to law, deliver any valuable parts of wildlife killed as result of the Licensee's operations to the local Department of Environment, Wildlife Office in a timely manner so as to preserve the quality of the wildlife parts.

Environmental

31. The Licensee shall not move any equipment or vehicles without prior testing the thickness of the ice to ensure the lake is in a state capable of fully supporting the equipment or vehicles.

32. The Licensee shall suspend overland travel of equipment or vehicles if rutting occurs.

33. The Licensee shall construct and maintain winter roads with a minimum of ten (10) centimeters of packed snow at all times during this land use operation.

34. The Licensee shall not use any equipment except of the type, size and number that is listed in the accepted application.

ALCOHOL

35. Alcohol and non-prescription narcotics are strictly prohibited from being used transported, trafficked, exchanged, given, stored on or being in any way present on the licensed lands.

Aboriginal Affairs and Northern Development Canada
Affaires autochtones et Développement du Nord Canada

Land Administration
P.O. Box 100
IQALUIT, NU X0A 0H0
Phone: 867-975-4283
FAX: 867-975-4286

July 17th, 2015

Dunnedin Ventures Inc.
Suite 302-750, West Pender Street
Vancouver, BC
V6C 2T7

Dear Rick Kemp,

Re: Land Use Permit #N2015C0019
Type of Operation: Mining (Exploration)
Location: Chesterfield Inlet Area, Kivalliq, NU, NTS 55O

Enclosed is your copy of Land Use permit number N2015C0019 authorizing your project as described in your application dated April 13th, 2015. Your application has received a wide distribution to other Federal departments, Government of the Nunavut departments, communities in the area of your operation and concerned Inuit groups.

In distributing your application the Nunavut Impact Review Board (NIRB) sought comments from these various agencies based on their area of expertise that will help ensure minimum negative impact on the environment. The issuance of this permit indicates that as a result of the NIRB environmental screening process it was decided that the potentially adverse environmental effects that may be caused by your proposal are mitigable with known technology and are not significant. The terms and conditions in the permit will, in our opinion, provide the necessary protection to the environment.

Please ensure that you adhere to the operating conditions, along with the Archaeological Palaeontological terms and conditions, annexed to your permit. Should you have any questions regarding any conditions of this permit, please contact Angad Hundal at (867)975-4788 or email landsmining@aandc.gc.ca.

Sincerely,

Angad Hundal
Land Administrator Specialist

cc: Manager, Field Operations
RMO - Kivalliq
NIRB
NPC

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

LAND USE PERMIT
NORTHERN AFFAIRS PROGRAM

PERMIS D'UTILISATION DES TERRES
PROGRAMME DES AFFAIRES DU NORD

Permit Class - Permis Categorie	Permit No - NE de permis
A	N2015C0019

Subject to the Territorial Land Use Regulations and the terms and conditions in this permit, authority is hereby granted to:

Sous réserve du Règlement sur l'utilisation des terres territoriales et des conditions de ce permis:

Dunnedin Ventures Inc.
Permittee - Détenteur de permis

To proceed with the land use operation described in the application of:

Est autorisé à entreprendre les travaux d'exploitation des terres décrits dans la demande de permis du:

Signature	Date
Rick Kemp	**April 13th, 2015**

Type of Land Use Operation - Genre de travaux d'exploitation des terres

Mining (Exploration)

Location - Emplacement

Chesterfield Inlet, Area, Kivalliq, NU, NTS 55O

The conditions attached to this permit are incorporated into and form an integral part of the permit.

Les conditions attachées à ce permis en font partie intégrante.

This permit may be assigned, extended, discontinued, suspended or cancelled pursuant to the Territorial Land Use Regulations.

Ce permis peut faire l'objet d'une cession, d'une prolongation d'une cessation d'une suspension ou d'une annulation, en vertu du Règlement sur l'utilisation des terres territoriales.

Dated at
Date a **Iqaluit**

Engineer
Ingénieur

This
Ce **17th**

Day of
jour de **July**, **2015**.

Commencement Date
Date du déut des travaux **July 17th, 2015**

Expiry Date
Date d'achèvement **June 16th, 2016**

NOTE

IT IS A CONDITION OF THIS PERMIT THAT THE PERMITTEE COMPLY WITH ANY OTHER APPLICABLE ACT, REGULATION, ORDINANCE BY - LAW OR ORDER DEFAULT HEREOF MAY RESULT IN SUSPENSION OR CANCELLATION OF THIS PERMIT.

REMARQUE

LE DÉTENTEUR DU PRÉSENT PERMIS DOIT SE CONFORMER À TOUT AUTRE RÈGLEMENT, LOI, DÉCRET RÈGLEMENT MUNICIPAL OU ARRETÉ APPLICABLE. LE MANQUEMENT À CETTE OBLIGATION POURRAIT DONNER LIEU À LA SUSPENSION OU À L'ANNULATION DU PERMIS.

Canada

Aboriginal Affairs and Northern Development Canada | Affaires autochtones et Développement du Nord Canada

LAND USE PERMIT
NORTHERN AFFAIRS PROGRAM

PERMIS D'UTILISATION DES TERRES
PROGRAMME DES AFFAIRES DU NORD

Permit Class - Permis Categorie	Permit No - NE de permis
A	N2015C0019

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Sous réserve du Règlement sur l'utilisation des terres territoriales et des conditions de ce permis:

Dunnedin Ventures Inc.
Permittee - Détenteur de permis

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Signature	Date
Rick Kemp	**April 13th, 2015**

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Dated at
Date a **Iqaluit**

Engineer
Ingénieur

This
Ce **17th**

Day of
jour de **July**, **2015**.

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Canada

CONDITIONS ANNEXED TO AND FORMING PART OF LAND USE PERMIT NUMBER N2015C0019

Failure to comply with any term and condition issued as part of this permit is an offence under the Territorial Lands Act. Every person who commits an offence is liable, on summary conviction, for a first offence, to a fine not exceeding $100 000, and for a second or subsequent offence, to a fine not exceeding $200 000. Please note that an offence that is committed on more than one day constitutes a separate offence for each day on which it is committed or continued.

31 (1) (a) - Location and Area

1.	The Permittee shall not conduct this land use operation on any lands not designated in the accepted application, unless otherwise authorized in writing by the Engineer.	PLANS
2.	The Permittee shall remove from Territorial Lands, all scrap metal, discarded machinery and parts, barrels and kegs, buildings and building material.	REMOVE WASTE MATERIAL
3.	The Permittee shall not conduct any part of the land use operation within 300 metres of any privately owned land or structure unless otherwise authorized in writing by the Engineer	PRIVATE PROPERTY
4.	The Permittee shall not construct parallel lines or roads unless authorized by the Engineer.	PARALLEL ROADS

31 (1) (b) - Time

5.	The Permittee's Field Supervisor shall contact or meet with a Land Use Inspector at the Rankin Inlet office of the Aboriginal Affairs and Northern Development Canada, phone number (867)645-2840, at least 48 hours prior to the commencement of this land use operation.	CONTACT INSPECTOR
6.	The Permittee shall advise a Land Use Inspector at least 10 days prior to the completion of the land use operation of ; (a) his plan for removal or storage of equipment and materials, and (b) when final clean-up and restoration of the lands used will be completed.	REPORTS BEFORE REMOVAL
7.	The Permittee shall submit a progress report to the Engineer every year during this land use operation.	PROGRESS
8.	The Engineer for the purpose of this operation designates April, as spring break-up.	SPRING BREAK-UP
9.	The Permittee's Field Supervisor shall provide notification of commencement of the land use operation to the Engineer at the Iqaluit office of the Department of Aboriginal Affairs and Northern Development Canada either by emailing landsmining@aandc.gc.ca or by telephone at (867)975-4283.	NOTICE TO ENGINEER

10.	The Permittee shall submit an annual report to the Engineer by March 30th of each year of permitted activities. The annual report must contain, but not limited to, the following information: (a) A summary of activities undertaken for the year including (b) A map showing the following items with exact coordinates (degrees/min/sec, in NAD 83): i. All drilling locations ii. All fuel caches iii. Any other location where activities were conducted (c) A work plan for the following year, including any progressive reclamation work undertaken.	ANNUAL REPORT
11.	The Permittee shall complete all clean-up and restoration of the lands used prior to the expiry date of this permit.	CLEAN-UP
12.	The Engineer reserves the right to impose closure to any area to the Permittee in periods when dangers to natural resources are severe.	CLOSURE

31 (1) (c) - Equipment

13.	The Permittee shall not use any equipment except of the type, size and number that is listed in the accepted application, unless otherwise authorized in writing by the Land Use Inspector.	ONLY APPROVED EQUIPMENT
14.	The Permittee shall keep all garbage and debris in a covered metal container until disposed of. All wastes shall be kept inaccessible to wildlife at all times.	GARBAGE CONTAINERS
15.	The Permittee shall not conduct any overland movement of vehicles.	TRAVEL RESTRICTIONS

31 (1) (d) - Methods and Techniques

16.	The Permittee shall replace all excavated material from the test pits prior to the expiry of this permit.	TEST PITS
17.	The Permittee shall dispose of all over-burden as instructed in writing by the Land Use Inspector.	DISPOSAL OF OVERBURDEN
18.	The Permittee shall remove all wire from the land as the land use operation progresses.	REMOVE WIRE
19.	The Permittee shall not erect camps or store material on the surface ice of streams.	STORAGE ON ICE

20.	The Permittee shall not: (a) make any excavations which will result in a visible scar; (b) use explosives; (c) use any power tools except hand-held portable tools used for sampling.	HAND TOOLS ONLY

31 (1) (e) - Type, Location, Capacity and Operation of Facilities

21.	The Permittee shall ensure that the land use area is kept clean and tidy at all times.	CLEAN WORK AREA

31 (1) (f) - Control or Prevention of Flooding, Erosion and Subsidence of Land

22.	The Permittee shall remove any obstruction to natural drainage caused by any part of this land use operation.	NATURAL DRAINAGE
23.	The Permittee shall not cut any stream bank unless authorized in writing by a Land Use Inspector.	STREAM BANKS
24.	The Permittee shall install erosion control structures as the land use operation progresses unless otherwise authorized by a Land Use Inspector.	EROSION CONTROL WHEN
25.	The Permittee shall prepare the site in such a manner as to prevent rutting of the ground surface.	PREVENTION OF RUTTING
26.	The Permittee shall detour around all sand hills, unless otherwise authorized in writing by a Land Use Inspector.	AVOID SAND HILLS

31 (1) (g) - Use, Storage, Handling and Disposal of Chemical or Toxic Material

27.	The Permittee shall not use chemicals in connection with the land use operation without the prior approval of the Engineer.	APPROVAL OF CHEMICALS
28.	The Permittee shall not use the following materials during the drilling operation without the prior written approval of the Engineer. Chlorinated phenols (Dowicide B, etc.) Compounds composed primarily of heavy metals Asbestos	PROHIBITED CHEMICALS
29.	The Permittee shall remove all non-combustible garbage and debris from the land use area to a disposal site approved in writing by a Land Use Inspector.	REMOVE GARBAGE
30.	The Permittee shall dispose of all combustible waste petroleum products by removal.	WASTE PETROLEUM DISPOSAL

31.	The Permittee shall dispose of all toxic or persistent substances in a manner as approved in writing by the Engineer.	WASTE CHEMICAL DISPOSAL
32.	The Permittee shall report all spills immediately in accordance with instructions contained in "Spill Report" form NWT 1752(05/93). Twenty four (24) hour spill report line (867)920-8130.	REPORT CHEMICAL AND PETROLEUM SPILLS

31 (1) (h) - Wildlife and Fisheries Habitat

33.	The Permittee shall not unnecessarily damage wildlife habitat in conducting this land use operation.	HABITAT DAMAGE
34.	The Permittee shall not disturb or destroy the nests or eggs of any birds. If nests are encountered and/or identified, the Permittee shall take precaution to avoid further interaction and/or disturbance.	NO DISTURBING NESTS
35.	Your operation is in an area where bears may be encountered. Proper food handling and garbage disposal procedures will lessen the likelihood of bears being attracted to your operation.	BEAR/MAN CONFLICT
36.	The Permittee shall not harass wildlife. This includes persistently worrying or chasing, or disturbing large groups of animals.	NO HARASSING WILDLIFE
37.	The Permittee shall not feed wildlife.	NO FEEDING WILDLIFE

31 (1) (i) - Objects and Places of Recreational, Scenic and Ecological Value

38.	The Permittee shall not establish any camps or store equipment or supplies in the in approved land use area.	NO CAMPS STORAGE
39.	The Permittee shall not operate any equipment within the Land use area.	NO EQUIPMENT

31 (1) (k) - Petroleum Fuel Storage

40.	The Permittee shall report in writing to a Land Use Inspector the location and quantity of all petroleum fuel caches within ten (10) days after the establishment.	REPORT FUEL LOCATION
41.	The Permittee shall not place any petroleum fuel storage containers within thirty-one (31) metres of the normal high water mark of any stream.	FUEL BY STREAM
42.	The Permittee shall not allow petroleum products to spread to surrounding lands or into water bodies.	FUEL CONTAINMENT
43.	The Permittee shall not use bladders for storing petroleum products.	BLADDERS PROHIBITED

44.	The Permittee shall not use bladders for transporting petroleum products.	BLADDERS PROHIBITED
45.	The Permittee shall mark all stationary petroleum products storage facilities with flags, posts or similar devices so that they are at all times plainly visible to local vehicle travel.	MARK FUEL LOCATION
46.	The Permittee shall: (a) examine all fuel storage containers for leaks a minimum of once every day; (b) repair all leaks immediately; and (c) examine all fuel storage containers for leaks immediately upon delivery.	CHECK FOR LEAKS
47.	The Permittee shall seal all container outlets except the outlet currently in use.	SEAL OUTLET
48.	The Permittee shall mark all fuel containers with the Permittee's name.	MARK CONTAINERS

31 (1) (m) - Matters Not Inconsistent with the Regulations

49.	The Permittee shall not remove any material from below the ordinary high water mark of any stream without first obtaining written permission from a Land Use Inspector.	APPROVAL NEEDED
50.	The Permittee shall display a copy of this permit in a conspicuous place in each campsite established to carry out this land use operation.	DISPLAY PERMIT
51.	The Permittee shall keep on hand, at all times during this land use operation, a copy of the Land Use Permit.	COPY OF PERMIT
52.	The Permittee shall provide in writing to the Engineer, at least forty-eight (48) hours prior to commencement of this land use operation, the following information: (a) person, or persons, in charge of the field operation to whom notices, orders, and reports may be served; (b) alternates; (c) all the indirect methods for contacting the above person(s).	IDENTIFY AGENT
53.	The Permittee shall, while conducting the operation, make every effort to avoid covering or destroying traps or snares that may be found along these routes.	TRAPS PROTECTION
54.	The Permittee shall conspicuously display the land use permit number on all vehicles and equipment.	DISPLAY PERMIT NUMBER

	CARIBOU PROTECTION MEASURES	
55.	(a) The Permittee shall not, without approval, conduct any activity between May 15 and July 15 within the Caribou Protection Areas depicted on the map certified by the Engineer as the "Caribou Protection Map" and annexed to this Land Use Permit. (b) A Permittee may, upon approval by the Land Use Inspector, operate within the said Caribou Protection Areas beyond the May 15 deadline set out in 1 (a), provided that, when monitoring information indicates that caribou cows are approaching the area of operation, the Permittee will implement 1 (c). (c) On cessation of activities pursuant to 1 (a) or 1 (b), the Permittee will remove from the zone all personnel who are not required for the maintenance and protection of the camp facilities and equipment, unless otherwise directed by the Land Use Inspector. (d) The Permittee may commence or resume activities prior to July 15 within those parts of the Caribou Protection Areas released by the Land Use Inspector for the reason that caribou cows are not expected to use those parts for calving or post-calving.	RESTRICTION OF ACTIVITY
56.	(a) In the event that caribou cows calve outside of the Caribou Protection Areas, the Permittee shall suspend operations within the area(s) occupied by cows and/or calves between May 15 and July 15. (b) In the event that caribou cows and calves are present, the Permittee shall suspend: (i) blasting; (ii) overflights by aircraft at any altitude of less than 300 meters above ground level, and; (iii) the use of snowmobiles and ATVs (all-terrain vehicles) outside the immediate vicinity of the camp.	SUSPENSION OF OPERATIONS
57.	(a) During migration of caribou, the Permittee shall not locate any operation so as to block or cause substantial diversion to migration. (b) The Permittee shall cease activities that may interfere with migration, such as airborne geophysics surveys or movement of equipment, until the migrating caribou has passed.	CARIBOU PROTECTION MIGRATION
58.	(a) The Permittee shall not, between May 15 and September 1, construct any camp, cache any fuel, or conduct any blasting within 10 kilometres of any "Designated Crossing" as outlined on the map certified by the Engineer as the "Caribou Protection Map" and annexed to this Land Use Permit.	DESIGNATED CARIBOU CROSSINGS

	(b) The Permittee shall not, between May 15 and September 1, conduct any diamond drilling operation within 5 kilometres of any "Designated Crossing" as outlined on the map certified by the Engineer as the "Caribou Protection Map" and annexed to this Land Use Permit.	
	ARCHAELOGICAL & PALEONTOLOGICAL TERMS & CONDITIONS	
59.	"archaeological site" means a place where an archaeological artifact is found. "archaeological artifact" means any tangible evidence of human activity that is more than 50 years old and in respect of which an unbroken chain of possession or regular pattern of usage cannot be demonstrated, and includes a Denesuline archaeological specimen referred to in section 40.4.9 of the Nunavut Land Claims Agreement. "paleontological site" means a site where a fossil is found. "fossil" includes: (a) natural casts (b) preserved tracks, coprolites and plant remains; and (c) the preserved shells and exoskeletons of invertebrates and the eggs, teeth and bones of vertebrates.	DEFINITIONS
60.	The Permittee shall avoid any known or suspected archaeological and/or paleontological sites.	AVOIDANCE OF ARCHAEOLOGICAL AND/OR PALEONTOLOGICAL SITES
61.	The Permittee shall not remove, disturb, or displace any archaeological artifact or site, or any paleontological site or fossil.	DISTURBANCE OF ARCHAELOGICAL AND/OR PALEONTOLOGICAL SITES
62.	The Permittee shall ensure that all persons working under the authority of the permit are aware of these conditions pertaining to archaeological sites and artifacts as well as paleontological sites and fossils.	KNOWLEDGE OF ARCHAELOGICAL AND PALEONTOLOGICAL TERMS AND CONDITIONS
63.	The Permittee shall immediately cease any activity should a suspected archaeological, paleontological, or burial site be discovered during the course of a land use operation. The Permittee is required to immediately contact the Land Administration division at Aboriginal Affairs and Northern Development Canada at (867)975-4283 or (867)975-4285 or (867)975-4280 as well as the Department of Culture and Heritage at (867)934-2046 or (867)975-5500 or 1(866)934-2035.	CEASE OPERATION OF LAND USE ACTIVITY

	Permission to resume land use operations must be obtained from the Engineer. At such time the Engineer may, at his/her discretion, require that you have an archaeologist or palaeontologist perform the following functions: (a) Survey, (b) Inventory and documentation of the archaeological or paleontological resources of the land use area, (c) Assessment of potential for damage to archaeological or paleontological sites, (d) Mitigation, (e) Marking boundaries of archaeological or paleontological sites, (f) Site restoration.	

Species At Risk in Nunavut

This list includes species listed on one of the Schedules of SARA (*Species at Risk Act*) and under consideration for listing on Schedule 1 of SARA. These species have been designated as at risk by COSEWIC (Committee on the Status of Endangered Wildlife in Canada). This list may not include all species identified as at risk by the Territorial Government.

a) Schedule 1 is the official legal list of Species at Risk for SARA. SARA applies to all species on Schedule 1. The term "listed" species refers to species on Schedule 1.

(b) Schedule 2 and 3 of SARA identify species that were designated at risk by the COSEWIC prior to October 1999 and must be reassessed using revised criteria before they can be considered for addition to Schedule 1.

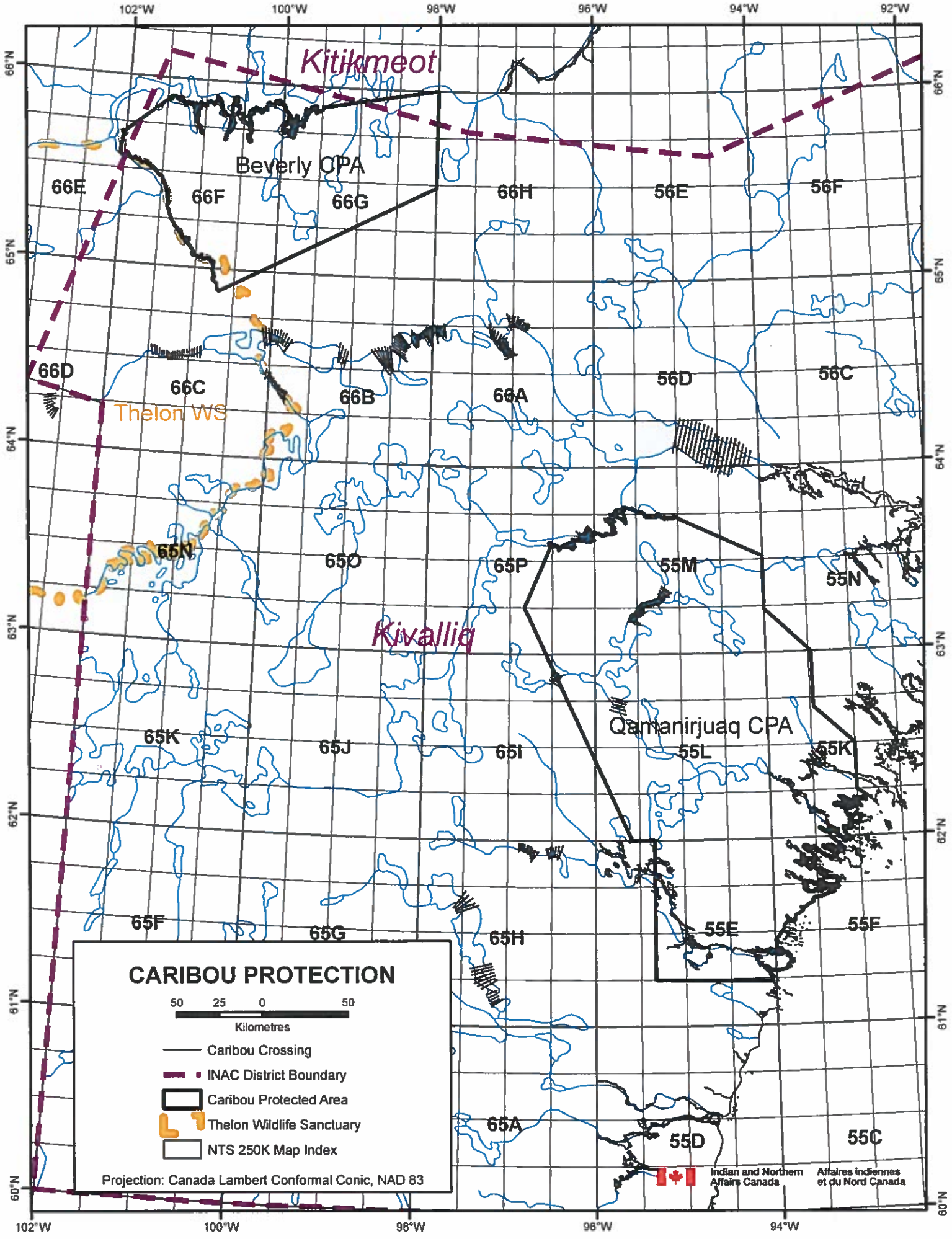
(c) Some species identified at risk by COSEWIC are "pending" addition to Schedule 1 of SARA. These species are under consideration for addition to Schedule 1, subject to further consultation or assessment.

Schedules of SARA are amended on a regular basis so it is important to periodically check the SARA registry (www.sararegistry.gc.ca) to get the current status of a species.

Terrestrial Species at Risk	COSEWIC Designation	Schedule of SARA	Government Organization with Lead Management Responsibility
Eskimo Curlew	Endangered	Schedule 1	EC
Ivory Gull	Endangered	Schedule 1	EC
Ross's Gull	Threatened	Schedule 1	EC
Harlequin Duck (Eastern population)	Special Concern	Schedule 1	EC
Rusty Blackbird	Special Concern	Schedule 1	Government of Nunavut
Felt-leaf Willow	Special Concern	Schedule 1	Government of Nunavut
Peregrine Falcon	Special Concern (*anatum-tundrius* complex)	Schedule 1 (*anatum*) Schedule 3 (*tundrius*)	Government of Nunavut
Short-eared Owl	Special Concern	Schedule 3	Government of Nunavut
Peary Caribou	Endangered	Schedule 1	Government of Nunavut
Barren-ground Caribou (Dolphin and Union population)	Special Concern	Schedule 1	Government of Nunavut
Polar Bear	Special Concern	Schedule 1	Government of Nunavut
Red Knot (*rufa* subspecies)	Endangered	Pending	EC
Red Knot (*islandica* subspecies)	Special Concern	Pending	EC
Porsild's Bryum	Threatned	Pending	GN
Horned Grebe (Western Population)	Special Concern	Pending	EC
Grizzly Bear	Special Concern	Pending	Government of Nunavut
Wolverine (Western Population)	Special Concern	Pending	Government of Nunavut
Atlantic Cod, Arctic Lakes	Special Concern	No Schedule	DFO
Atlantic Walrus	Special Concern	Pending	DFO
Beluga Whale (Cumberland Sound population)	Threatened	Pending	DFO
Beluga Whale (Eastern Hudson Bay population)	Endangered	Pending	DFO

Beluga Whale (Western Hudson Bay population)	Special Concern	Pending	DFO
Beluga Whale (Eastern High Arctic – Baffin Bay population)	Special Concern	Pending	DFO
Bowhead Whale (Eastern Canada – West Greenland population)	Special Concern	Pending	DFO
Killer Whale (Northwest Atlantic / Eastern Arctic populations)	Special Concern	Pending	DFO
Narwhal	Special Concern	Pending	DFO

Updated: January 2012


Kitikmeot
Beverly CPA
Thelon WS
Kivalliq
Qamanirjuaq CPA
66E
66F
66G
66H
56E
56F
66D
66C
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66A
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98°W
96°W
94°W
92°W
66°N
65°N
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60°N
CARIBOU PROTECTION
50 25 0 50
Kilometres
Caribou Crossing
INAC District Boundary
Caribou Protected Area
Thelon Wildlife Sanctuary
NTS 250K Map Index
Projection: Canada Lambert Conformal Conic, NAD 83
Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada

APPENDIX C

MSDS SHEETS

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: November 14, 2003
Supersedes: May 31, 2000
MSDS Number: 08509

1. PRODUCT INFORMATION

Product Identifier: MARVELUBE WR2 GREASE

Application and Use:
Lubricating grease

Product Description:

A grease, a mixture of lubricating oil, soap and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: >20.00 cSt at 40 deg C
Vapour Density: >5
Boiling Point: not available
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: 182 deg C DROP
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.91 g/cc at 15 deg C
Appearance/odour: Black paste, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.
High pressure greasing equipment is capable of injecting grease under the skin which may have severe health consequences.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 3160 mg/kg	(Rabbit)
Inhalation	:	LC50 > 5000 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In case of adverse exposure to vapours, mists and/or fumes formed at elevated temperature, or by mechanical action, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.
Consult a physician immediately if the material is injected under the skin from the misuse of high pressure greasing equipment.

INGESTION:

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

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye

contact is avoided.
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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Allow material to solidify and scrape up. Place material in suitable containers for recycle or disposal.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 204 deg C COC ASTM D92

Autoignition: 227 deg C Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
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:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISION SUMMARY:
Since 31 May 2000, this MSDS has been revised in Section(s):
3, 7

10. PREPARATION

Date Prepared: November 14, 2003
Prepared by: Lubricants & Specialties

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: May 13, 2003
Supersedes: April 12, 2000
MSDS Number: 08265

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 68

Application and Use:
Hydraulic fluid

Product Description:

A lubricating oil consisting of a mixture of saturated and unsaturated hydrocarbons derived from paraffinic distillate, and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State:	Liquid
Specific gravity:	not available
Viscosity:	68.00 cSt at 40 deg C
Vapour Density:	not available
Boiling Point:	not available
Evaporation rate:	<0.1 (1= n-butylacetate)
Solubility in water:	negligible
Freezing/Pour Point:	-36 deg C ASTM D97
Odour Threshold:	not available
Vapour Pressure:	<0.1 kPa at 20 deg C
Density:	0.88 g/cc at 15 deg C
Appearance/odour:	Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products,

the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 3160 mg/kg	(Rabbit)
Inhalation	:	LC50 > 5000 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.

INGESTION:

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

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.
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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or by using a suitable absorbant.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 190 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
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:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISION SUMMARY:
Since 12 April 2000, this MSDS has been revised in Section(s):
3, 7

10. PREPARATION

Date Prepared: May 13, 2003
Prepared by: Lubricants & Specialties
IMPERIAL OIL

Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-2, D-2A, D-2B		

Section 1. Chemical Product and Company Identification

Product Name	**FUEL SYSTEM TREATMENT**	**Code**	FST
Synonym	Not available	**Validated on**	5/12/2004.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	A fuel system treatment that cleans fuel systems to improve performance in gasoline engines.		

Section 2. Composition and Information on Ingredients

Name	CAS #	% (W/W)	Exposure Limits (ACGIH) TLV-TWA(8 h)	STEL	CEILING
1) Stoddard Solvent	8052-41-3	30-60%	100ppm	Not established	Not established
2) Isopropanol	67-63-0	30-60%	200ppm	400ppm	Not established
3) 1, 2, 4-Trimethylbenzene	95-63-6	0.01-0.1%	Not established	Not established	Not established
4) Xylene (mixed isomers)	1330-20-7	0.01-0.1%	100ppm	150ppm	Not established

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Flammable liquid. Exercise caution when handling this material. Contact with this product may cause skin irritation. Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death. May cause teratogenicity/embryotoxicity. For more information refer to Section 11 of this MSDS.

Section 4. First Aid Measures

Eye Contact	Quickly and gently blot or brush away chemical. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes or until the chemical is removed, while holding the eyelid(s) open. Obtain medical attention immediately.
Skin Contact	Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with warm water and non-abrasive soap for 5 minutes or until the chemical is removed. Remove contaminated clothing, shoes, and leather goods (e.g. watchbands, belts, etc.). If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Inhalation	If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Ingestion	NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 240 to 300 mL (8 to 10 oz.) of water to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. If breathing is stopped, trained personnel should begin artificial respiration (AR) or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately. Immediately transport victim to an emergency care facility.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Flammable.	**Flammable Limits**	LOWER: 0.9% UPPER: 12%
Flash Points	CLOSED CUP: 13°C (55.4°F) (TCC)	**Auto-Ignition Temperature**	Unknown

Fire Hazards In Presence of Various Substances	Flammable in presence of open flames, sparks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. May accumulate in confined spaces.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapours may form explosive mixtures with air. Sensitive to static discharge.
Products of Combustion	Carbon oxides (CO, CO2), acrid smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG2000, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40°C: Use of water spray when fighting fire may be inefficient. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. SMALL FIRES: Dry chemical, CO2, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.		

Section 6. Accidental Release Measures

Material Release or Spill	Evacuate non-essential personnel. Ventilate area. Ensure clean-up personnel wear appropriate personal protective equipment. If spilled in a confined space, ensure appropriate confined space entry protocols are followed. Extinguish all ignition sources. Stop leak if safe to do so. Avoid breathing vapours or mists of material. Avoid contact with spilled material. Use appropriate inert absorbent material to absorb spilled product. Do not use paper or other flammable materials to absorb product. Collect used absorbent for later disposal. Ground and bond all equipment used to clean up the spilled material, as it may be a static accumulator. Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Do not allow spilled material to enter sewer systems as vapours may accumulate and may cause an explosion/fire hazard. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.

Section 7. Handling and Storage

Handling	FLAMMABLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Ensure all equipment is grounded/bonded. Avoid contact with any incompatible or reactive materials. Wear proper personal protective equipment (See Section 8). Avoid confined spaces and areas with poor ventilation. Remove severely contaminated clothing. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated. Exercise caution when washing/drying clothing contaminated with flammable materials. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Do not ingest this product. Avoid generating mists. Ensure container is securely closed when not in use. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning.
Storage	Store as flammable material. Store away from heat and sources of ignition. Avoid direct sunlight. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded. Store in a dry, cool and well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Use explosion-proof ventilation equipment. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Chemical splash goggles should be worn when handling this material.
Body	If this material may come into contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information).
Respiratory	A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister with particulate filter (R and/or P series) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator or self contained breathing apparatus if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
Hands	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): Polyvinyl alcohol (PVA), or Fluoro-elastomer. Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Liquid.	**Viscosity**	Not available
Colour	Yellow.	**Pour Point**	Not applicable.
Odour	Alcohol like.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	83°C (181.4°F)	**Penetration**	Not applicable.
Density	0.79 @ 15°C	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	>1	**Ionicity (in water)**	Not available
Vapour Pressure	Not available Evaporation rate: <1 (Ether=1)	**Dispersion Properties**	Not available
Volatility	>95% (VOCs)	**Solubility**	Negligible.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, peroxides, nitric acid, strong alkalis, strong mineral acids, and oleum.	**Decomposition Products**	May release COx, acrid smoke, and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry

Skin contact, eye contact, inhalation and ingestion.

Acute Lethality

Acute toxicity information is not available for the product as a whole, therefore, data for the hazardous ingredient is provided below:

Stoddard Solvent (8052-41-3):
Acute Oral toxicity (LD50): >5000 mg/kg (rat)
Acute Dermal toxicity (LD50): >3000 mg/kg (rabbit)
Acute Inhalation toxicity (LC50): >1300 ppm/4h (rat)

Isopropanol (67-63-0):
Acute Oral toxicity (LD50): 5000 mg/kg (rat)
Acute Dermal toxicity (LD50): 12,800 mg/kg (rabbit)
Acute Inhalation toxicity (LC50): 17,000 ppm/4h (rat)

1, 2, 4-Trimethylbenzene (95-63-6):
Acute Oral toxicity (LD50): 5000 mg/kg (rat)
Acute Inhalation toxicity (LC50): 18,000 mg/m³/4h (rat)

Xylene (mixed isomers) (1330-20-7):
Acute Oral toxicity (LD50): 1590 mg/kg (rat)
Acute Dermal toxicity (LD50): >1,700 mg/kg (rabbit)
Acute Inhalation toxicity (LC50): 4785 ppm/4h (mouse)

Chronic or Other Toxic Effects

Dermal Route:

This product contains a component (at >= 1%) that can cause skin irritation. Therefore, this product is considered to be a skin irritant.

Inhalation Route:

Inhalation of this product may cause respiratory tract irritation. Inhalation of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death. Frequent or prolonged inhalation of this product may lead to absorption of this product in harmful amounts which may have adverse effects on the: kidneys.

Oral Route:

Ingestion of this product may cause gastro-intestinal irritation. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death. Ingestion of this product may lead to aspiration of the liquid, especially if vomiting occurs. This may result in chemical pneumonitis (inflammation of the lungs) and/or pulmonary edema (an accumulation of fluid in the lungs).

Eye Irritation/Inflammation:

This product contains a component (at >= 1%) that can cause eye irritation. Therefore, this product is considered to be an eye irritant.

Immunotoxicity:

Not available

Skin Sensitization:

Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.

Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product contains a component(s) at >= 0.1% that has been shown to cause teratogenicity and/or embryotoxicity in some laboratory tests at non-maternally toxic doses. Therefore, this product is considered to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as Group A1, A2, or A3 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as Group 1, 2A, or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.

Section 14. Transport Information

TDG Classification	FLAMMABLE LIQUIDS, N.O.S. (Isopropanol), Class 3, UN 1993, PGII (CL-TDG)	**Special Provisions for Transport**	This product may be shipped as a Limited Quantity if the volume is ≤1L and in accordance with the Limited Quantity Provisions, (CL-TDG).

Section 15. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.		
DSD/DPD (Europe)	Not evaluated.	**HCS (U.S.A.)**	CLASS: Combustible liquid. CLASS: Irritating substance. CLASS: Target organ effects.
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.	**DOT (U.S.A) (Pictograms)**	

HMIS (U.S.A.)

Health Hazard	2*
Fire Hazard	3
Reactivity	0
Personal Protection	h, p, u

NFPA (U.S.A.)

Rating
0 Insignificant
1 Slight
2 Moderate
3 High
4 Extreme

Section 16. Other Information

References Available upon request.

* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Internet: www.petro-canada.ca/msds

Western Canada, Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 5/12/2004.

Data entry by Product Safety - RS.

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: November 06, 2002
Supersedes: November 01, 2002
MSDS Number: 00826

1. PRODUCT INFORMATION

Product Identifier: MIDDLE DISTILLATE
ESSO MARINE GAS OIL (DYED OR CLEAR)
ESSO RAILROAD DIESEL (DYED OR CLEAR)
HEATING OIL (DYED OR CLEAR)
DIESEL (DYED OR CLEAR)
DIESEL QUALITY FURNACE FUEL (DYED OR CLEAR)
DIESEL QUALITY HEATING OIL (DYED OR CLEAR)
ESSO DIESEL (DYED OR CLEAR)
ESSO DIESEL QUALITY COMMERCIAL FUEL (DYED OR CLEAR)
ESSO DIESEL QUALITY FURNACE FUEL
ESSO DIESEL QUALITY HEATING OIL
ESSO FURNACE FUEL (DYED OR CLEAR)
ESSO HEATING OIL (DYED OR CLEAR)
ESSO MARINE DIESEL FUEL (DYED OR CLEAR)
ESSO RAILROAD DIESEL FUEL #3 (DYED OR CLEAR)
ESSO TOBACCO CURING OIL
FUEL OIL 75
FUEL OIL 76
DIESEL MARINE (DYED OR CLEAR)
DIESEL MARINE GAS OIL (DYED OR CLEAR)
FURNACE (DYED OR CLEAR)
DIESEL MARINE - POUR DEPRESSED (DYED OR CLEAR)
NO.2 FUEL OIL
NAVAL FUEL OIL 3-GP-11M (DYED)
ESSO DIESEL FUEL LS
DIESEL LOW SULFUR (DYED OR CLEAR)
NO.2 FUEL OIL FOR EXPORT
DIESEL FOR EXPORT (DYED OR CLEAR)
FURNACE TOBACCO CURING OIL
DIESEL NAVAL 3GP-11 (DYED OR CLEAR)
DIESEL NAVAL 3GP-15 (DYED OR CLEAR)
DIESEL LOW SULFUR RAIL (DYED OR CLEAR)
DIESEL LOW SULFUR DYED EP
DIESEL RAIL (DYED OR CLEAR)
DIESEL RAIL #3 (DYED OR CLEAR)
DIESEL RAIL #3 (HD) (DYED OR CLEAR)
DIESEL LOW SULFUR (032) (DYED OR CLEAR)

FURNACE URBAN (DYED OR CLEAR)
DIESEL (032) (DYED OR CLEAR)
DIESEL LOW SULFUR (EXP DYED)
FURNACE FUEL (032) DYED
DIESEL LOW SULFUR (EXPORT)
MARINE GAS OIL
MDO - MARINE DIESEL OIL 3 CST (CLEAR)

Application and Use:
Multi-purpose fuel

Product Description:

A complex mixture of aliphatic, olefinic, naphthenic and aromatic hydrocarbons.

REGULATORY CLASSIFICATION

WHMIS:
Class B, Division 3: Combustible Liquids.
Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):

Shipping Name:	FUEL OIL
Class:	3
Packing Group:	III
PIN Number:	UN1202
Marine Pollutant:	N

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

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2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #

Fuel Oil No.2	>99.9 V/V	68476-30-2

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: 0.820 to 0.900 at 15.5 deg C
Viscosity: 1.30 cSt at 40 deg C
to 11.00 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 150 to 370 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -4 deg C -39 (RANGE)
Odour Threshold: not available
Vapour Pressure: 4 kPa at 38 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
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.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Irritating.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

Lifetime skin painting tests indicate that materials of similar composition have produced skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 2000 mg/kg	(Rabbit)
Inhalation	:	LC50 > 2500 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer Recommends:
100 ppm based on composition.

Local regulated limits may vary.

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:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety goggles, long sleeves, and chemical-resistant gloves.

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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
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 relaxation and grounding procedures.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: >40 deg C PMCT ASTM D93

Autoignition: NA Flammable Limits: LEL: 0.7% UEL: 6.5%

GENERAL HAZARDS:

Combustible Liquid; may form combustible mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
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:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISED.

10. PREPARATION

Date Prepared: November 06, 2002
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: April 06, 2002
Supersedes: January 08, 1999
MSDS Number: 08259

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 32

Application and Use:
Hydraulic fluid

Product Description:

Mixture of paraffinic and naphthenic hydrocarbons (saturated and unsaturated), and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State:	Liquid
Specific gravity:	not available
Viscosity:	32.00 cSt at 40 deg C
Vapour Density:	not available
Boiling Point:	229 to 512 deg C
Evaporation rate:	<0.1 (1= n-butylacetate)
Solubility in water:	negligible
Freezing/Pour Point:	-42 deg C ASTM D97
Odour Threshold:	not available
Vapour Pressure:	<1 kPa at 38 deg C
Density:	0.87 g/cc at 15 deg C
Appearance/odour:	Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 3160 mg/kg	(Rabbit)
Inhalation	:	LC50 > 5000 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.

INGESTION:

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

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or by using a suitable absorbant.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 165 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.

Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
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:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

THREE YEAR WHMIS REVIEW.

10. PREPARATION

Date Prepared: April 06, 2002
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario

M5W 1K3
(800) 268-3183

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: April 06, 2002
Supersedes: January 08, 1999
MSDS Number: 08258

1. PRODUCT INFORMATION

Product Identifier: UNIVIS N 22

Application and Use:
Hydraulic fluid

Product Description:

Mixture of paraffinic and naphthenic hydrocarbons (saturated and unsaturated), and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #

Not applicable

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 22.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 229 to 512 deg C
Evaporation rate: <0.1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -48 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: <1 kPa at 38 deg C
Density: 0.87 g/cc at 15 deg C
Appearance/odour: Yellow oil, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.

INGESTION:

Low toxicity.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 3160 mg/kg	(Rabbit)
Inhalation	:	LC50 > 5000 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.

INGESTION:

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

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.

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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Recover by pumping or by using a suitable absorbant.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 150 deg C COC ASTM D92

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
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:

Smoke, carbon monoxide, carbon dioxide under thermal decomposition.

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

THREE YEAR WHMIS REVIEW.

10. PREPARATION

Date Prepared: April 06, 2002
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division

111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared: November 14, 2003
Supersedes: September 17, 1998
MSDS Number: 08366

1. PRODUCT INFORMATION

Product Identifier: UNIREX LOTEMP MOLY GREASE

Application and Use:
Lubricating grease

Product Description:

A grease, a mixture of lubricating oil, soap and additives.

REGULATORY CLASSIFICATION

WHMIS:
Not a controlled product

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL), exempt, or have been notified under CEPA.

TDG INFORMATION (RAIL/ROAD):
Not Regulated in Canada.

Please be aware that other regulations may apply.

TELEPHONE NUMBERS		MANUFACTURER/SUPPLIER:
Emergency 24 hr.	(519) 339-2145	IMPERIAL OIL
Technical Info.	(800) 268-3183	Products Division
		111 St Clair Avenue West
		Toronto, Ontario
		M5W 1K3
		(416) 968-4441

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #
Not applicable		

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: <20.00 cSt at 40 deg C
Vapour Density: not available
Boiling Point: not available
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: 245 deg C ASTM D97
Odour Threshold: not available
Vapour Pressure: 0.002 kPa at 20 deg C
Density: 0.92 g/cc at 15 deg C
Appearance/odour: Black paste, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin.
High pressure greasing equipment is capable of injecting grease under the skin which may have severe health consequences.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 3160 mg/kg	(Rabbit)
Inhalation	:	LC50 > 5000 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

ACGIH recommends:
For insoluble Molybdenum compounds, 10 mg/m3.
For oil mists, 5 mg/m3.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In case of adverse exposure to vapours, mists and/or fumes formed at elevated temperature, or by mechanical action, immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder before reuse.
If irritation persists, seek medical attention.
Consult a physician immediately if the material is injected under the skin from the misuse of high pressure greasing equipment.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon

conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.
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 CONTROLS:

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.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
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.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth.
Allow material to solidify and scrape up. Place material in suitable containers for recycle or disposal.
Consult an expert on disposal of recovered material. Ensure disposal 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.

WATER SPILL:

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.
Consult an expert on disposal of recovered material. Ensure disposal 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.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: >110 deg C COC ASTM D92 est.baseoil

Autoignition: NA Flammable Limits: LEL: NA UEL: NA

GENERAL HAZARDS:

Low Hazard; liquids may burn upon heating to temperatures at or above the flash point.
Decomposes; flammable/toxic gases will form at elevated temperatures (thermal decomposition).

Toxic gases will form upon combustion.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
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:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

Fumes, smoke, carbon monoxide and sulphur oxides in case of incomplete combustion

9. NOTES

All components of this product are listed on the U.S. TSCA inventory.

REVISION SUMMARY:

Since 17 September 1998, this MSDS has been revised in Section(s):
1, 7

10. PREPARATION

Date Prepared: November 14, 2003
Prepared by: Lubricants & Specialties
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

Superior Propane Inc. MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquified Petroleum Gas), LP-Gas
Chemical Formula: C_3H_8

WHMIS CLASSIFICATION
Class A - Compressed Gas
Class B, Division 1 - Flammable Gas

Supplier: Superior Propane Inc.
1111 - 49th Avenue N.E.
Calgary, AB T2E 8V2
Business: (403) 730-7500

Local Market Emergency Number: _____
(Non Medical)

Application and Use: Propane is commonly used as a fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

SECTION 2 – HAZARDOUS INGREDIENTS

COMPONENTS	CAS NO.	% Volume (v/v)	LD50
Propane	74 -98-6	90% - 99%	Not Applicable
Propylene	115 -07-1	0% - 5%	Not Applicable
Ethane	74 -84-0	0% - 5%	Not Applicable
Butane and heavier hydro carbons	106 -97-8	0% - 2.5%	Not Applicable

Occupational Exposure Limit:
Based upon animal test data, the acute toxicity of this product is expected to be inhalation: 4 hour LC50 = 280,000 ppm (Rat).
Note: Composition is typical for HD-5 Propane per The Canadian General Standard Board CGSB 3.14 National Standard of Canada. Exact composition will vary from shipment to shipment.

SECTION 3 – CHEMICAL AND PHYSICAL DATA

Form: Liquid and vapour while stored under pressure.
Boiling Point: -42°C @ 1 atm.
Freezing Point: -188°C
Evaporation Rate: Rapid (Gas at normal ambient conditions).
Vapour Pressure: 1435 kPa (maximum) @ 37.8°C
Vapour Density: 1.52 (Air = 1)
Coefficient of Water/Oil Distribution: Not available.
pH: Not available.

Solubility in water: Slight, 6.1% by volume @ 17.8°C
Specific Gravity: 0.51 (water = 1)
Appearance/Odour: Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.*
Odour Threshold: 4800 ppm

* With proper handling, transportation and storage, adding a chemical odourant such as eth-merc has proven to be a very effective warning device, but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation.

SECTION 4 – FIRE OR EXPLOSION HAZARD

Flash Point: -103.4°C
Method: Closed cup.
Flammable Limits: Lower 2.4%, Upper 9.5%
Auto Ignition Temperature: 432°C
Products Evolved Due To Heat Or Combustion: Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.
Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.
Sensitivity To Impact: No.
Sensitivity To Static Discharge: Yes.

Fire Extinguishing Precautions: Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fueling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If sufficient water is not available to protect the container shell from weakening, the area will be required to be evacuated. If gas has not ignited, liquid or vapour may be dispersed by water spray or flooding.
Special Fire Fighting Equipment: Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus.

SECTION 5 – REACTIVITY DATA

Stability: Stable.
Conditions To Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.
Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains and openings to building.

Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

ROUTES OF ENTRY:

Inhalation: Simple asphyxiant. No effect at concentrations of 10,000 ppm (peak exposures). Higher concentrations may cause central nervous system disorder and/or damage. Lack of oxygen may cause dizziness, loss of coordination, weakness, fatigue, euphoria, mental confusion, blurred vision, convulsions, breathing failure, coma and death. Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours may be encountered in confined spaces and/or under conditions of poor ventilation. Avoid breathing vapours or mist.
Skin and Eye Contact: Exposure to vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

Ingestion: Not considered to be a hazard.
Acute Exposure: The acute toxicity of this product is expected to be inhalation: 4 hour LC50=280,000ppm (Rat).
Chronic Exposure: There are no reported effects from long term low level exposure.
Sensitization to Product: Skin–unknown, Respiratory–unknown.
Occupational Exposure Limits: American Conference of Governmental Industrial Hygienists (ACGIH) lists as a simple asphyxiant. ACGIH TLV: 1000 ppm.
Carcinogenicity, Reproductive Toxicity, Teratogenicity, Mutagenicity: No effects reported.

SECTION 7 – PREVENTIVE MEASURES

Eyes: Safety glasses, are recommended when transferring product.
Skin: Insulated gloves required if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.

Inhalation: Where concentration in air would reduce the oxygen level below 18% air or exceed occupational exposure limits in section 6, self-contained breathing apparatus is required.
Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.
Skin: In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.
Ingestion: None considered necessary.
Inhalation: Remove person to fresh air. If breathing is difficult or has stopped, administer artificial respiration. Obtain immediate medical care.

SPILL OR LEAK:

Eliminate leak of possible.
Eliminate source of ignition.
Ensure cylinder is upright.
Disperse vapours with hose streams using fog nozzles. Monitor low areas as propane is heavier than air and can settle into low areas. Remain upwind of leak. Keep people away. Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

SECTION 9 – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space away from ignition sources (so the pressure relief valve is in contact with the vapour space of the cylinder or tank).
- Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
- Do not store with oxidizing agents, oxygen, or chlorine cylinders.
- Empty cylinders and tanks may contain product residue. Do not pressurize, cut, heat or weld empty containers.
- Transport, handle and store according to applicable federal and provincial codes and regulations.

Transportation of Dangerous Goods (TDG)
- TDG Classification: Flammable Gas 2.1
- TDG Shipping Name: Liquified Petroleum Gas (Propane)
- TDG Special Provisions: 56, 90, 102
- PIN Number: UN1075

SECTION 10 – PREPARATION

Superior Propane Inc., Regulations & Safety Department. (403) 730-7500 Date prepared: November 2001. Supersedes: September 1999.

MATERIAL SAFETY DATA SHEET

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Portland Cement, GU (General use hydraulic cement, formerly Normal Portland Cement), HE (High early-strength hydraulic cement) and HS (High sulphate-resistant hydraulic cement).

CAS #: 65997-15-1

Product Use: Preparation of concrete and mortar.

MSDS Information: This MSDS was produced in November, 2002, and replaces any previous versions. This MSDS covers all types of portland cement. Individual composition of constituents will vary within the range shown in Section 2.

Product Code: Not Applicable.

Chemical Family: Calcium compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of this product.

Chemical Name And Synonyms: Portland cement. Portland cement is also known as hydraulic cement and/or normal portland cement.

Formula: This product consists of finely ground portland cement clinker, gypsum and limestone (for some products).

Supplier/Manufacturer:
Lehigh Inland Cement Limited
P.O. Box 3961, Station D,
12640 - 156 Street
Edmonton, Alberta, Canada, T5L 4P5 Telephone (780) 420 2500

Emergency Contact Information:
Lehigh Inland Cement Limited
P.O. Box 3961, Station D,
12640 - 156 Street
Edmonton, Alberta, Canada, T5L 4P5 Telephone (780) 420 2541

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Portland Cement Exposure Limits:

ACGIH TLV-TWA	10 mg total dust/m^3
OSHA PEL-TWA	15 mg total dust/m^3
OSHA PEL-TWA	5 mg respirable dust/m^3

Portland Cement Ingredients & Their Exposure Limits:

Ingredient	CAS#	% By Weight	ACGIH TLV-TWA	OSHA PEL-TWA
Calcium Silicates	various	60-80%	10 mg total dust/m^3	15 mg total dust/m^3 5 mg respirable dust/m^3
Gypsum	7778-18-9	3-7%	10 mg total dust/m^3	15 mg total dust/m^3 5 mg respirable dust/m^3
Crystalline Silica	14808-60-7	less than 0.1%	0.10 mg respirable quartz/m^3 NIOSH REL (8-hour TWA) = 0.05 mg respirable quartz dust/m^3	(10 mg respirable dust/m^3)/(percent silica+2)
Calcium Carbonate	1317-65-3	0-5%	10 mg total dust/m^3	15 mg total dust/m^3 5 mg respirable dust/m^3
Magnesium Oxide	1309-48-4	1-4%	10 mg total dust/m^3	10 mg total dust/m^3
Calcium Oxide	1305-78-8	0.5-1.5%	2 mg total dust/m^3	5 mg total dust/m^3

Trace Elements:

Portland cement is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of chemicals, some of which may be potentially harmful, might be detected during chemical analysis. For example, in addition to the ingredients listed above, portland cement may contain potassium and sodium sulfate compounds, chromium compounds (including up to 0.003% hexavalent chromium) and nickel compounds.

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview:

Portland cement is a light gray powder that poses little immediate hazard. A single short term exposure to the dry powder is not likely to cause serious harm. However, exposure of sufficient duration to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry portland cement.

Potential Health Effects:

- **Relevant routes of exposure are:**

  Eye contact, skin contact, inhalation, and ingestion.

  Effects Resulting From EYE CONTACT:

  Exposure to airborne dust may cause immediate or delayed irritation or inflammation.

  Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see Section 4) and medical attention to prevent significant damage to the eye.

  Effects Resulting From SKIN CONTACT:

  Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred.

  Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry portland cement contacting wet skin or exposure to moist or wet portland cement may cause more severe skin effects including thickening, cracking, or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns.

  Some individuals may exhibit an allergic response upon exposure to portland cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this effect after years of contact with portland cement products.

  Effects Resulting From INHALATION:

  Portland cement may contain trace amounts of crystalline silica. Prolonged exposure to respirable free crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (Also see "Carcinogenic Potential" below.)

  Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.

  Effects Resulting From INGESTION:

  Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland cement should not be eaten.

- **Carcinogenic Potential:**

  Portland cement is not listed as a carcinogen by NTP, OSHA, or IARC. It may, however, contain trace amounts of substances listed as carcinogens by these organizations.

  Crystalline silica, a potential trace level contaminant in portland cement, is now classified by IARC as a known human carcinogen (Group 1). NTP has characterized respirable silica as "reasonably anticipated to be [a] carcinogen".

- **Medical Conditions That May Be Aggravated By Inhalation Or Dermal Exposure:**

  Pre-existing upper respiratory and lung diseases.
  Unusual (hyper) sensitivity to hexavalent chromium (chromium^{+6}) salts.

SECTION 4 - FIRST-AID MEASURES

Eyes:

Immediately flush eyes thoroughly with water. Continue flushing for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin:

Wash skin with cool water and pH-neutral soap or a mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement.

Inhalation Of Airborne Dust:

Remove to fresh air. Seek medical help if coughing and other symptoms do not subside. ("Inhalation" of gross amounts of portland cement requires immediate medical attention.)

Ingestion:

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION 5 - FIRE-FIGHTING MEASURES

Flammability:	Not Flammable.
Flash Point:	Not Applicable.
Lower Explosive Limit:	Not Applicable.
Upper Explosive Limit:	Not Applicable.
Auto ignition Temperature:	Not Applicable.
Sensitivity To Static Discharge:	Not Applicable.
Sensitivity To Impact:	Not Applicable.
Extinguishing Media:	Not Applicable.
Special Fire-Fighting Procedures:	None.
Hazardous Combustion Products:	Not Applicable.
Unusual Fire And Explosion Hazards:	Not Applicable.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment as described in Section 8.

Scrape up wet material and place in an appropriate container. Allow the material to "dry" before disposal. Do not attempt to wash portland cement down drains.

Dispose of waste material according to local, provincial, state and federal regulations.

SECTION 7 - HANDLING AND STORAGE

Keep portland cement dry until used. Normal temperatures and pressures do not affect the material.

Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.

MATERIAL SAFETY DATA SHEET

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection:

When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

Skin Protection:

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened portland cement products might occur, wear impervious clothing and gloves to eliminate skin contact. Where required, wear boots that are impervious to water to eliminate foot and ankle exposure.

Do not rely on barrier creams; barrier creams should not be used in place of gloves.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH-neutral soap. Wash again at the end of work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean dry clothing.

Respiratory Protection:

Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84 after July 10, 1998) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation.

Ventilation:

Use local exhaust or general dilution ventilation to control exposure within applicable limits.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White to gray powder.
Odor:	No distinct odor.
Odor Threshold:	Not applicable.
Physical State:	Solid (powder).
pH (as a solid):	Not applicable.
pH (in water) (ASTM D 1293-95):	12 to 13
Solubility in Water:	Slightly soluble (0.1 to 1.0 %).
Vapor Pressure:	Not applicable.
Vapor Density:	Not applicable.
Boiling Point:	Not applicable (i.e.,>1000°C).
Freezing Point:	Not applicable.
Melting Point:	Not applicable.
Specific Gravity (H_20 = 1.0):	3.15
Evaporation Rate:	Not applicable.
Coeff. Water/Oil Dist.:	Not applicable.

SECTION 10 - STABILITY AND REACTIVITY

Stability:	Stable
Conditions to avoid:	Unintentional contact with water.
Incompatibility:	Portland cement reacts with water to produce a caustic solution, pH 12 to pH 13. Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Portland cement dissolves in hydrofluoric acid producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, chlorine, trifluoride and oxygen difluoride.

MATERIAL SAFETY DATA SHEET

SECTION 10 - STABILITY AND REACTIVITY (CONTINUED)

Hazardous Decomposition: Will not spontaneously occur. Adding water results in hydration and produces (caustic) calcium hydroxide.

Hazardous Polymerization: Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Effects Of Acute Exposure:

Portland cement and wet portland cement mixtures can dry the skin, cause alkali burns and irritate the eyes and upper respiratory tract. Ingestion can cause irritation of the throat.

Effects Of Chronic Exposure:

Portland cement dust can cause inflammation of the tissue lining the interior of the nose and the cornea (white) of the eye.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity: No recognized unusual toxicity to plants or animals.
Relevant Physical And Chemical Properties: See Sections 9 and 10.

SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of waste material according to local, provincial, state and federal regulations. (Since portland cement is stable, uncontaminated material may be saved for future use.)

Dispose of bags in an approved landfill or incinerator.

SECTION 14 - TRANSPORT INFORMATION

Hazardous materials description/proper shipping name: Portland cement is not hazardous under the TDG Act (Canada) or DOT regulations (USA).
Hazard Class: Not applicable.
Identification Number: Not applicable.
Required Label Text: Not applicable.
Hazardous substances/reportable quantities (RO): Not applicable.

SECTION 15 - REGULATORY INFORMATION

Status under USDOL-OSHA Hazard Communication Rule, 29 CFR 1910.1200:

Portland cement is considered a "hazardous chemical" under this regulation, and should be part of any hazard communication program.

Status under CERCLA/Superfund, 40 CFR 117 and 302:

Not listed.

Hazard Category under SARA (Title III), Sections 311 and 312:

Portland cement qualifies as a "hazardous substance" with delayed health effects.

Status under SARA (Title III), Section 313:

Not subject to reporting requirements under Section 313.

MATERIAL SAFETY DATA SHEET

SECTION 15 - REGULATORY INFORMATION (CONTINUED)

Status under TSCA (as of May 1997):

Some substances in portland cement are on the TCSA inventory list.

Status under the Federal Hazardous Substances Act:

Portland cement is a "hazardous substance" subject to statutes promulgated under the subject act.

Status under California Proposition 65:

This product contains chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the manufacturer to give the above warning in the absence of definitive testing to prove the defined risks do not exist.

Status under Canadian Environmental Protection Act:

Not listed.

Status under WHMIS:

Portland cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

SECTION 16 - OTHER INFORMATION

Prepared By:	Robin Cowdrey
Approved By:	Bob Rimes
Approval Date or Revision Date:	September 1, 2004
Date Of Previous MSDS:	November 1, 2002
MSDS Number:	Not Applicable

Other Important Information:

Portland cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that portland cement chemically reacts with water, and that some of the intermediate products of this reaction (that is, those present while a portland cement product is "setting") pose a far more severe hazard than does portland cement itself.

While the information provided in this material safety data sheet is believed to provide a useful summary of the hazards of portland cement as it is commonly used, the sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

In particular, the data furnished in this sheet does not address hazards that may be posed by other materials mixed with portland cement to produce portland cement products. Users should review other relevant material safety data sheets before working with this portland cement or working on portland cement products, for example, portland cement concrete.

No representations or warranties with respect to the accuracy or correctness of this information, or of any kind or nature whatsoever are given, made or intended by Lehigh Inland Cement Limited. No legal responsibility whatsoever is assumed for this information, or for any injuries or damages, however caused which may result from the use of this information. This information is offered solely for informational purposes and is subject to your own independent investigation and verification.

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification

Product Name	**TOOL JOINT COMPOUND**	**Code**	650-774, TOOL
Synonym	Not available.	**DSL**	See Section 15
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**TSCA**	See Section 15
Material Uses	Tool Joint Compound is used in drilling operations as a thread compound for rotary shouldered pipe connections to prevent galling and to provide a positive seal against drilling mud pressure.	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (W/W)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Proprietary ingredients. 2) Mica	Not available. 12001-26-2	≥90 ≤10	Not available. 3 mg/m³	Not available. Not established	Not available. Not established

Section 3. Hazards Identification.

Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. High pressure grease gun is capable of injecting grease through the skin. Grease gun injuries require immediate physician assessment. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	May be combustible at high temperature.	**Flammable Limits**	Lower: 0.9%; Upper: 7%
Flash Points	Mineral Oil Blend: OPEN CUP: 250°C (482°F) (Cleveland)	**Auto-Ignition Temperature**	>260°C (500°F)
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), hydrocarbons, metal oxides, smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.		

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Available in French

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 171, Substances (low to moderate hazard). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Keep away from sources of ignition. DO NOT reuse empty containers without commercial cleaning or reconditioning. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.
Exposure Limits	Consult local authorities for acceptable exposure limits. This product is not expected to form a mist based on its properties and expected use.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Smooth buttery paste.	**Viscosity**	Mineral Oil Blend: 103.3 cSt @ 40°C, 11.5 cSt @ 100°C, VI=98
Colour	Grey.	**Pour Point**	Mineral Oil Blend: -15°C
Odour	Mild petroleum odour.	**Softening Point**	Not available.
Odour Threshold	Not available.	**Dropping Point**	196°C
Boiling Point	<316°C (600°F)	**Penetration**	280 (60 strokes)
Specific Gravity	Mineral Oil Blend: 0.8741 kg/L @ 15°C (59°F).	**Oil / Water Dist. Coeff.**	Not available.
Vapor Density	Not available.	**Ionicity (in water)**	Not available.
Vapor Pressure	Negligible at ambient temperature and pressure.	**Dispersion Properties**	Not available.
Volatility	Non-volatile	**Solubility**	Insoluble in water.

Section 10. Stability and Reactivity

Corrosivity	Not available.		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	**Decomposition Products**	May release COx, NOx, SOx, hydrocarbons, metal oxides, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Not available.
Chronic or Other Toxic Effects	
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.
Oral Route:	Low toxicity; has laxative effect.

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