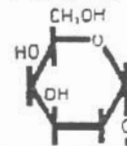


Drilling Additives and Associated Material Safety Data Sheets

974134 NWT Ltd.

July 2003

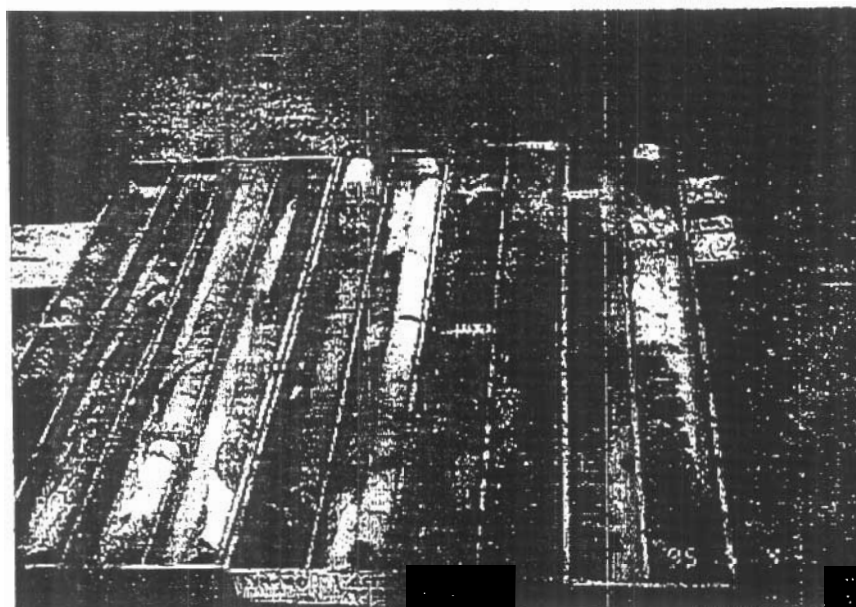
Atten: Johanna Luck

Poly-Drill Drilling
Systems

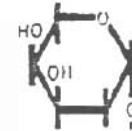
POLY-DRILL CLAY TREAT II

Poly-Drill Clay Treat II is a specialized product designed specifically for use as a replacement for bagged potassium chloride(KcL). Clay Treat II does not contain potassium, but is composed of a sophisticated mildly cationic complex that functions much like KcL to control shale and clay activity. A 2% KcL solution contains 9,700 ppm of chloride ions, while the equivalent of Clay Treat II contains only 165 ppm of chloride ions. This significantly reduces chloride concentration and greatly lessens the environmental risks associated with the use of KcL fluids.

- * Provides excellent shale and clay control without the mixing problems associated with large volumes of bagged KcL.
- * Compatible with all polymer systems and cross-linked gels such as Poly-Drill 1330, 133X, O.B.X., and maybe used in water, brine or acid systems.
- * Will not affect pH and being a non-surface active it does not adversely affect formation.
- * Can be easily utilized in "on the fly systems" to eliminate pre-mixing and leftover brine disposal problems.
- * Highly effective in preventing wellbore shale erosion.
- * Typically applied at a concentration of 0.5 to 10 gallons per 1,000 gallons of fluid(GPT) depending on the percent of KcL being replaced, where 2 % potassium chloride functional equivalent is desired, Clay Treat II is added to fresh water at a concentration of 2 gallons per 1,000 gallons of water.



Clay Treat II has been very successful in continuous coring of kimberlite diamond samples, uranium deposits and fault seams



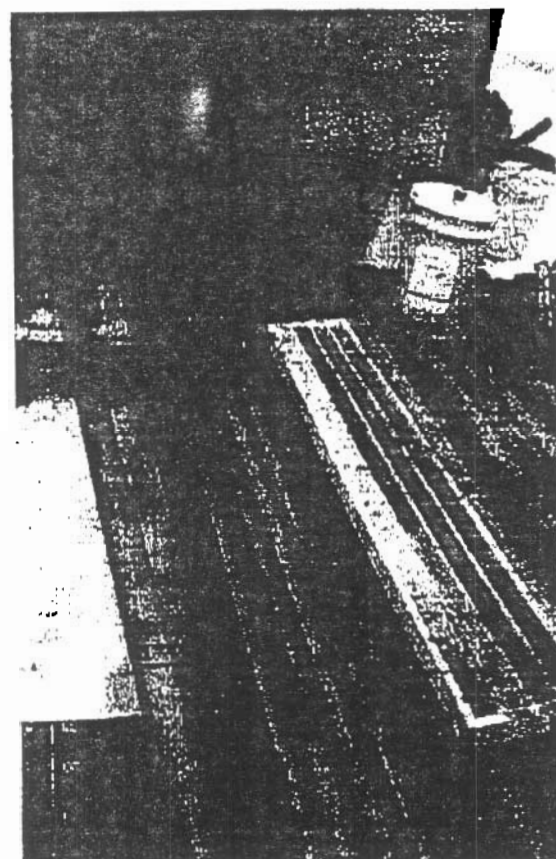
POLY-DRILL O.B.X. AND 133X

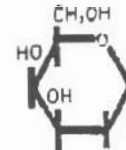
Overburden and Core Drilling Fluid System

Poly-Drill O.B.X. & 133X are a second generation polymer drilling system that overcomes the shearing problems of emulsion polymers such as Easy Mud, 120L and Matex 1200. They act as cross-linked liquid viscosifiers used for cutting removal in drilling applications.

- Non-shearing clay stabilizing and core recovery system that maintains viscosity under shear.
- Includes a lubricate that reduces rod vibration and improves tube filling in broken ground.
- Maintains hole stability and hole cleaning for overburden as well as sand seams.
- Films metal surfaces to provide excellent lubrication of down hole equipment, water swivels, pressure pumps and mixing equipment.
- Assists in bore hole stabilization.
- Helps alleviate solids accumulation within drilling fluids by aiding an Enviro-Pak filtration system.
- Safe for the environment.

- Mix 1 quart of O.B.X. per 150 gallons of water while mixing tank is filling for over burden and sand, when tank is near full, then add equal amount of 133X.
- Greater viscosity can be achieved by increasing each product.
- The O.B.X. must be added to the mixing tank first.
- This cross-linked system can achieve a funnel viscosity of 45 to 50 seconds.
- Packaged in 5 gallon plastic pails (20 Liters).

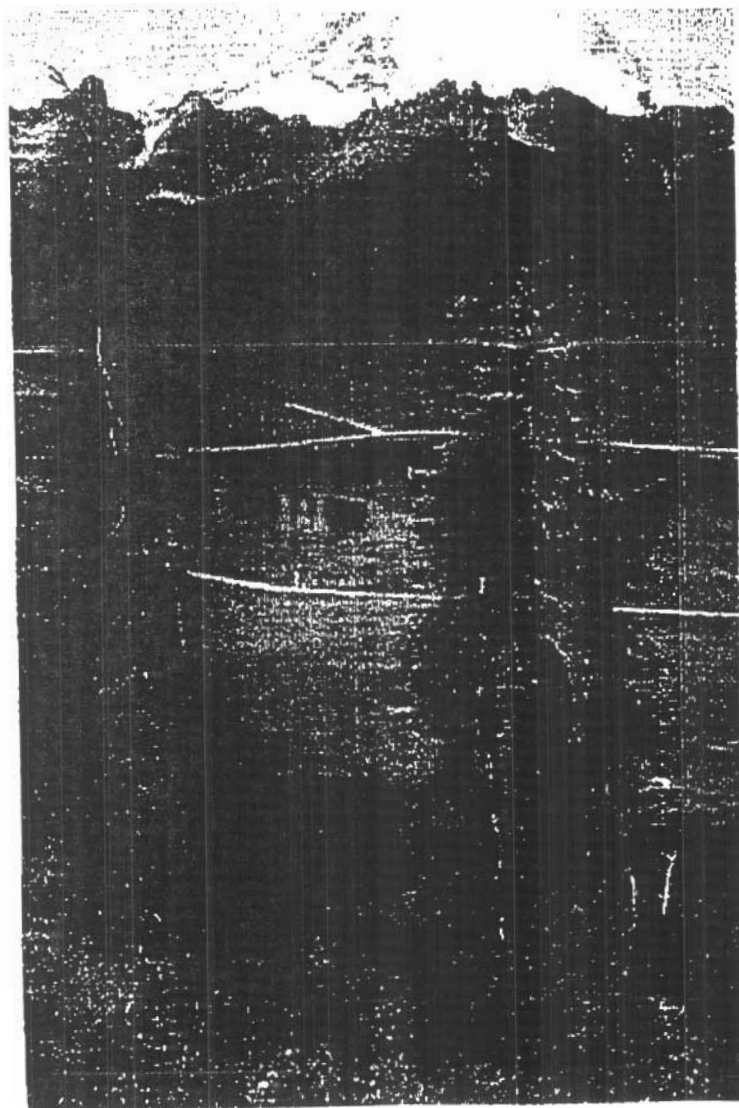




Poly-Drill Drilling Systems

A partial list of projects where Poly-Drill's drilling fluids and filtration equipment have been used in core drilling:

Kennecott Incorporated - Lac De Grace, Northwest Territories - diamond exploration
Kennsington Resources - Price Albert, Saskatchewan - diamond exploration
Inco Incorporated - Thompson, Manitoba - nickel exploration in preditions
Cominco - Grand Rapids, Manitoba - base metal exploration in fractured faulted limestone
Falconbridge - Thompson, Manitiba - base metal exploration in fault seams
Newmont Mining - Peru - gold exploration in fractured faulted mountain drilling
Santa-Fe Gold - Winnimucca, Nevada - gold exploration in faulted clay shale seams
Unranerz Exploration - Key Lake, Saskatchewan - uranium exploration in sand formations



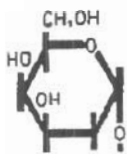
APPLICATION DATA

For specific application assignments contact Poly-Drill Drilling Systems for an engineering report on model type, chemical program and pump requirement.

Please contact Poly-Drill at:
Telephone: (403) 259-5112
Fax: (403)255-7185

Or write to Poly-Drill Drilling Systems Ltd.
1824-104 Avenue, S.W.
Calgary, Alberta T2W-OA8

Bob Whipple - President
Kim Whipple - Vice President
Kelly Whipple - Operations



• **Poly-Drill Drilling Systems**

• 1824 - 104 Avenue, S.W.
 • Calgary, Alberta, Canada
 • T2W-OA8
 • (403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill 133X/1330

PRODUCT DESCRIPTION: Latex
 polyelectrolyte

SECTION 2—COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

SECTION 3—PHYSICAL DATA

Boiling Point: Not available
 Solubility in Water: Solubility limited by solution viscosity.
 Density (g/ml): 1.08 at 25° C
 Appearance and Odor: Blue. Odor slight.

Specific Gravity (@ 25 Deg.C.): 1.09
 pH: 8.1 (1.0% solution)
 Physical State: Liquid

SECTION 4—FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) >100 C
 Conditions of flammability: Intense heat, open flame.
 Hazardous combustion products: Products of incomplete hydrocarbon combustion.
 Upper and Lower flammable limits: Not available
 Extinguishing media: Use water spray, foam, dry chemical, or carbon dioxide.

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
 Hazardous Polymerization: Will not occur
 Incompatible substances: Avoid strong oxidizing and reducing agents.
 Hazardous decomposition products: Carbon monoxide, carbon dioxide, and products of incomplete hydrocarbon combustion.

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
 Routes of Exposure and Effects:
 SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
 EYE: No effects of exposure expected with the exception of possible irritation.
 INHALATION: If misted, no effects of exposure are expected.
 Exposure limits: TLV-TWA: Mineral oil, mist 5 mg/m³
 Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH
 Sensitization of product: Not suspected to be a sensitizer.
 Teratogenicity: Not available.
 Mutagenicity: Not available.

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SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting. Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when not in use. Store in a cool dry location away from oxidizing and reducing agents.

Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.

Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.

Ventilation: If mist and/or vapors are present, use air purifying respirator or self-contained breathing apparatus, but this is rarely required.

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference.

SECTION 10—TOXICOLOGICAL PROPERTIES

Environmental Effects: Not known to be harmful to aquatic life at low concentrations.

Freshwater aquatic toxicity rating: 96 hour LC50 Rainbow Trout = 160 mg/L.

96 hour LC50 Salmon = 160 mg/L

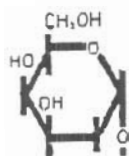
SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud

Hazard Class: Not hazardous

Hazardous Substances: None

Cautionary Labeling: None required



: Poly-Drill Drilling Systems

1824 - 104 Avenue, S.W.
Calgary, Alberta, Canada
T2W-OA8
(403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill O.B.X.
TDG Classification: Non dangerous goods

WHMIS CLASSIFICATION: Non-regulated

SECTION 2—COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

SECTION 3—PHYSICAL DATA

Boiling Point: Not available	Specific Gravity: 0.9 g/cm
Solubility in Water: disperses in water(forms viscous, slippery solution).	pH: 3.8 (1% concentration)
Density (g/ml): Not available	Physical State: Liquid
Appearance and Odor: Brown. Odor slight.	

SECTION 4—FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) greater than 100 C.
Conditions of flammability: Very low risk.
Hazardous combustion products: None known.
Upper and Lower flammable limits: Not available.
Extinguishing media: Carbon dioxide, dry chemicals, foam, in preference to water spray

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur.
Incompatible substances: Avoid strong oxidants such as liquid chlorine, concentrated oxygen, sodium or calcium hypochloride.
Hazardous decomposition products: None known

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
Routes of Exposure and Effects:
SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
EYE: No effects of exposure expected with the exception of possible irritation.
INHALATION: Due to low volatility of mineral distillates a small inhalation hazard exists.
INGESTION: can cause nausea, vomiting, cramps, diarrhea
Chronic exposure limits: None
Sensitization of product: Not suspected to be a sensitizer.
Teratogenicity: Not available.
Mutagenicity: Not available.
Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH

SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting: Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when not in use. Store in a cool dry location away from oxidizing and reducing agents.

Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.

Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.

Ventilation: If mist and/or vapors are present, use air purifying respirator or self-contained breathing apparatus, but this is rarely required.

Eyc Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference.

SECTION 10—TOXICOLOGICAL PROPERTIES

Environmental Effects: Not known to be harmful to aquatic life at low concentrations.

Freshwater aquatic toxicity rating: 96 hour LC50 Rainbow Trout = 160 mg/L

96 hour LC50 Salmon = 160 mg/L

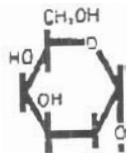
SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud

Hazard Class: Not hazardous

Hazardous Substances: None

Cautionary Labeling: None required



• **Poly-Drill Drilling Systems**

• 1824 - 104 Avenue, S.W.
 • Calgary, Alberta, Canada
 • T2W-OA8
 • (403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill CLAY TREAT II

SECTION 2—COMPOSITION

SECTION 3—PHYSICAL DATA

Boiling Point: 100 C	Specific Gravity (@ 25 Deg.C.): 1.09
Solubility in Water: Soluble	pH: 5.0 - 7.0 (1.0% solution)
Density (g/ml): 1.1	Physical State: Liquid
Appearance and Odor: Red. Characteristic slight odor.	

SECTION 4—FIRE AND EXPLOSION DATA

Flash Point: >93.3 C
 Conditions of flammability: Will burn after drying
 Hazardous combustion products: Oxides of carbon and nitrogen and products of incomplete combustion.
 Upper and Lower flammable limits: Not available
 Extinguishing media: Use water spray, foam, dry chemical, or carbon dioxide.

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
 Hazardous Polymerization: Will not occur.
 Incompatible substances: Avoid strong oxidizing and reducing agents.
 Hazardous decomposition products: Not available.

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
 Routes of Exposure and Effects:
 SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
 EYE: No effects of exposure expected with the exception of possible irritation.
 INHALATION: If misted, no effects of exposure are expected.
 Exposure limits: Contains trace acrylamide (SKIN). Exposure limit, TWAEV=0.03 mg/m(ONT. Reg. 654/86).
 Contains traces of isopropanol. Exposure limit, TWAEV=400ppm, STEV=500ppm(ONT. Reg. 654/86).
 Carcinogenicity: This product contains traces of acrylamide. Acrylamide is listed by IARC(Group 2B) and ACGII(Group A2)
 as a possible human carcinogen.
 Teratogenicity: Not available.
 Mutagenicity: Not available.

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SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting. Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when not in use. Store in a cool dry location away from oxidizing and reducing agents.

Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.

Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.

Ventilation: If mist and/or vapors are present, use air purifying respirator or self-contained breathing apparatus, but this is rarely required.

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference.

SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud

Hazard Class: Not hazardous

Hazardous Substances: None

Cautionary Labeling: None required

WESTCOAST DRILLING SUPPLIES LTD.
8069 River Way, Delta, British Columbia,
Canada V4G 1L3
Ph. (604) 940-6050 Fax (604) 940-6080

EMERGENCY 1-800-665-6645

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME:	BIG BEAR DIAMOND DRILL ROD GREASE
CHEMICAL FAMILY:	Hydrocarbon
WHMIS CLASSIFICATION:	Not regulated
WORK PLACE HAZARD:	Not applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not regulated
PACKAGE GROUP: Not applicable
PRODUCT IDENTIFICATION NUMBER (PIN): Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD50	LC50
Severely hydrotreated naphthenic oils	< 75.00%	64742-52-5	>3 g/kg (Dermal Rabbit) >5 g/kg (Oral Rat)	N/D
Barium soap	< 35.00%	68201-19-4	Not determined	

SECTION III: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:
[XXX] Skin, [] Eye Contact, [] Inhalation, [] Ingestion

SKIN CONTACT: Acute exposure is believed to be minimally irritating

EYE CONTACT: Acute exposure is believed to be minimally irritating.

INHALATION: Believed to be minimally irritating if not in excess of permissible concentrations; see Section VIII.

INGESTION: Not available

CHRONIC OVEREXPOSURE: Not determined

IRRITATION INDEX: SKIN: Believed to be 1.0 - 2.0/8.0 (Rabbit); slightly irritating
EYES: Believed to be <15/110 (Rabbit), no appreciable effect

SYMPTOMS OF EXPOSURE: None expected other than possible minor irritation. Considered practically non-toxic.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: None considered necessary.

EYE CONTACT: As with most foreign materials, should eye contact occur, flush eyes with plenty of water.

INHALATION: None considered necessary.

INGESTION: None considered necessary. Do not induce vomiting.

OTHER INSTRUCTIONS: In some cases of ingestion and/or inhalation, medical attention should be obtained.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOR:	Brownish yellow, fibrous grease
DENSITY (SPECIFIC GRAVITY):	>1.0
BOILING POINT:	700° F
MELTING POINT:	400° F
WATER SOLUBILITY:	Negligible
% VOLATILE BY VOLUME:	Not determined

**WESTCOAST DRILLING SUPPLIES LTD.**

8069 River Way, Delta, British Columbia, Canada V4G 1L3

Phone: (604) 940-6080 Fax: (604) 940-6080

Toll Free: 1 800 666-6245

BIG BEAR DIAMOND DRILL ROD GREASE

Page 2 of 3

EVAPORATION RATE:	Not determined
VAPOR PRESSURE (mm Hg):	Not determined (low)
VAPOR DENSITY (Air =1):	>1.0
pH:	Not applicable
VISCOSITY:	NLGI No. 3-4 grease

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	>350° F (COC Method)
FLAMMABLE LIMIT:	Not determined
EXTINGUISHING MEDIA:	According to the National Fire Protection Association Guide, use water spray. Dry chemical, Foam, Carbon Dioxide CO ₂ . Water or foam may cause frothing.
SPECIAL FIRE FIGHTING PROCEDURES:	Use water to cool fire-exposed containers. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak. See Hazardous Decomposition Products, Section VII.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

SECTION VII: REACTIVITY DATA

STABLE [XXX] INSTABLE []	Info not available
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS:	This material decomposes at a high temperature to form carbon monoxide, carbon dioxide, aldehydes and ketones, combustion products of nitrogen and sulphur.
HAZARDOUS POLYMERIZATION:	Will not occur [XXX] May occur []

SECTION VIII: PREVENTATIVE MEASURES

RESPIRATORY PROTECTION:	None required if exposures are within the permissible concentrations. See below
VENTILATION:	Natural dilution
PROTECTIVE GLOVES:	Neoprene
EYE PROTECTION:	Chemical type goggle or face shield optional
OTHER PROTECTIVE EQUIPMENT:	Standard work clothing and work shoes.
PERMISSIBLE CONCENTRATIONS: AIR:	5mg/cubic metre of air for mineral oil mist averaged over an 8 hour daily exposure (ACGIH 1986 - 87)

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Exposed persons should exercise reasonable personal cleanliness; this includes cleansing exposed skin areas several times daily with soap and water and laundering or dry cleaning soiled work clothing at least weekly. Minimum feasible handling temperatures should be maintained. Periods of exposure to high temperatures should be minimized. Water contamination should be avoided.



WESTCOAST DRILLING SUPPLIES LTD.

8069 River Way, Delta, British Columbia, Canada V4G 1L3

Phone: (604) 940-6050 Fax: (604) 943-8080

Toll Free: 1-800-565-8645

BIG BEAR DIAMOND DRILL ROD GREASE

Page 3 of 3

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:

Contain spill if possible. Wipe up or absorb on suitable material and shovel up.

WASTE DISPOSAL METHOD:

Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures and processes may influence waste classification. Disposal should be in accordance with applicable federal, provincial and local regulations.

SECTION IX: PREPARATION

The information contained herein is given in good faith, but no warranty, expressed or implied is made.

DATE ISSUED: September 17, 1993

BY: Product Safety Committee

DATE REVISED: April 1, 2000