

GREEN POWER
Feeds Your Engine



2nd VegOil

Demonstration of 2nd Generation Vegetable Oil Fuels in Advanced Engines

**Workpackage WP4
Engine Lubricant Development**

**Deliverable N° 4.3:
Engine Lubricant Provision
For Tier 3+DPF Trial**

Version: 2.0

Hazelwood, 9th November 2009

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Project website : www.2ndVegOil.eu



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1 Summary of Engine Lubricants Supplied for Tier 3+DPF Trial

Appropriate amounts of engine lubricant were sent to the various test facilities allow the start of the Tier 3+DPF field trial. The table below summarises the quantity of engine lubricant supplied. The engine lubricant supplied was an ACEA E9 lubricant, which is low Ash lubricant especially designed for engines which are fitted with Diesel Particulate Filters (DPF's).

TEST LOCATIONS:	Type of Testing	Tractor/Engine Types - Timing	Lubricant Supply
Germany	Field Trial	4 Tractors/ Stage 3 (1 for TFZ, other 3 converted to Stage 3B for France Austria and Poland) 2 tractors/Stage 3B - Summer '10. 2 Tractors/Stage 4 - Feb '11)	120l E9 sent to JDWM (March '09)
Austria	Field Trial	4 tractors/Stage 3A - March 2009 1 tractor/Stage 3A (JDWM) - add retrofit DPF March 2010	2 x 60l E9 (Sent Feb '09)

The following photograph shows, as an example, a representative lubricant drum (with attached despatch note) just before delivery.





Below is a copy of the representative despatch note for engine lubricant sent to John Deere Mannheim.

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CLAIM RELIEF: You warrant that each article in the shipment is properly described on this Air Waybill and is acceptable for transport by air, and that the shipment is properly marked, addressed (including postal codes) and packaged in accordance with applicable international air handling regulations.

INCIDENTAL DAMAGES LIMITATIONS OF LIABILITY: An "Incidental Damage" is the carriage of your shipment by air, or an event or ultimate destination or stop in a country other than the country of departure, the Warsaw Convention, an international treaty relating to international carriage by air, may be applicable, which treaty would then govern and in most cases limit our liability for loss or delay of or damage to your shipment. In the U.S. the Warsaw Convention limits our liability to U.S. \$50 per pound (U.S. \$25.35 per kilogram), unless you declare a higher value for carriage as described below. The interpretation of the Warsaw Convention liability limits may vary in other countries. There are no stopping places which are agreed at the time of issue of the shipment and we reserve the right to make adjustments in any case which appears appropriate.

Special Handling: Items are transported partly or totally by road to be if by explicit agreement to do so and only to from a country which is party to the Convention on the International Carriage of Goods by Road (the "CMR") or a country to the terms and conditions of the CMR, notwithstanding any other provisions of this Agreement. In the country in which the shipment is transported solely by road, if a conflict arises between the provisions of the CMR and the provisions of the terms of this Air Waybill, the provisions of the CMR shall prevail.

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NO WARRANTIES: We make no warranties, express or implied.

CLAIM FOR LOSS, DAMAGE OR DELAY: ALL CLAIMS MUST BE NOTIFIED TO US WITHIN 90 DAYS AFTER DELIVERY OF THE SHIPMENT. FAILURE TO NOTIFY US WITHIN THIS TIME FRAME FOR DAMAGES MAY BE ERODED. All claims for loss, damage or delay must be received by us within 90 days after the shipment is accepted by us. The right to inspect, if any, shall be extinguished within six months of delivery within two years from the date of delivery of the shipment or the date the claim should have been received. Within 30 days after notification to us, the claimant must be accompanied by a carrier's bill of lading or other relevant information about the shipment. If no claim is filed on any claim, all international charges have been paid, the claim amount may not be deducted from these charges. If the recipient accepts the shipment without noting any damage on the delivery receipt, we will assume the shipment was shipped in perfect condition. To us, it is your responsibility to provide proper customs documentation and containers, where required.

PROVISION OF LABEL: The original Federal Express label as forwarded, upon request, for you to export control and customs purposes. Our liability is void that all statements and information contained in this Air Waybill relating to exportation are true and correct. Furthermore, you understand that civil and criminal penalties, including forfeiture and fine, may be imposed for making false or fraudulent statements or for the violation of any United States laws on exportation, including but not limited to 18 USC Sec. 1005, 22 USC Sec. 401, 19 USC Sec. 1001, 50 USC App. 2410.

LIABILITY'S LAW: In the event any provision contained or referred to in this Air Waybill may be contrary to any applicable international treaty, law, government regulations, orders or requirements, such provision shall remain in effect as a part of our agreement to the extent that it is not overridden. The liability or unacceptability of any provision shall not affect any other part of this Air Waybill. Unless otherwise indicated the Sender's address indicated on the face of this Air Waybill, the place of execution and the place of departure, and Recipient's address listed on the face of this Air Waybill is the place of destination. Selects otherwise indicated Federal Express Corporation, P.O. Box 727, Memphis, Tennessee, USA is the place of origin of this shipment.

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From Origin ID: ZLXA 01332 845476 SHAWN COOPER LUBRIZOL LTD THE KNOWLE FIFTH FIANF, HAZELWOOD DERBY, DE564AN UNITED KINGDOM	  CL6029072923	Ship Date: 19MAR09 ActWgt: 60 KG System#: 9325455/EWST0715 Account#: S 188805248 Dimmed 45 X 30 X 30 CM
SHIP TO: 49 0 6218295531 STEFANIE DIERINGER JOHN DEERE WERKE MANNHEIM JOHN-DEERE STRASSE 90 MANNHEIM, 68163 DE	BILL SENDER	REF: SUC0640 DESC: 1 LUBRICANTS - NON HAZARDOUS DESC: 2 DESC: 3 DESC: 4 COUNTRY MFG: GB CARRIAGE VALUE: 16K CUSTOMS VALUE: 15 UKL T/C: S 188805248 D/T: R SIGN: S Cooper EIN/VAT:
	TRK# 9840 3330 6175 INTL PRIORITY ## MASTER ##	1/3 A3 FRA -DE 68163 

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CONSIGNEE COPY - PLEASE PLACE IN POUCH



Lubrizol		DESPATCH ADVICE AVIS D'EXPEDITION	
		Page 1 / 1	
Shipper/Expéditeur: LUBRIZOL THE KNOWLE, NETHER LANE HAZELWOOD Derbyshire DE56 4AN UNITED KINGDOM		Ship Date/Date d'Expédition: March 19, 2009 Delivery Date/Date de livraison: March 18, 2009 Delivery No/No.de livraison: 81175651 LZ Sales Order No./No.de Commande: 927947 Cust. PO No./Réf. du Client: CRJN	
Ship to/Destinataire: 1000000080 JOHN DEERE WERKE MANNHEIM ATTN. STEFANIE DIERINGER (5852) JOHN-DEERE STRASSE 90 68163 MANNHEIM GERMANY		Invoice to/Facturer A: 1000000080 HAZELWOOD SEGMENT MANAGEMENT DERBY UNITED KINGDOM	
Loading Point/Lieu de Chargement: Hazelwood Package Truck/Air		Vessel/Navire:	
Delivery Point/Lieu de Livraison: MANNHEIM		Port of Loading/Port de Chargement:	
Seal No/Identification des Plombs:		Port of Discharge/Port de déchargement:	
Transportation ID No/Identification de Véhicule:		Mean of Transport/Moyen de Transport:	
Transport Details/Détails de Transport: Carrier/Transporteur: FEDERAL EXPRESS EUROPE INC Forwarder/Transitaire: Incoterms: CPT Actual Carrier/Transporteur Réel: Attn. Stefanie Dieringer (5852) - sample from Craig Jones			
Qty Nbre	Materials, Special Marks & Instructions Produit, Marques et Instructions Spéciales	Gross Weight Poids Brut Kg	Net Weight Poids Net Kg
60.0	OS241963H 3X25L PLASTIC CANS	53.1	53.1
60.0	Total	53.1	53.1

2 Engine Lubricants Selection for 2nd VegOil Project

The engine lubricants chosen to be researched as part of the 2nd VegOil project are:

- OS240946 = a lubricant which is capable of meeting the ACEA E9-2008 specification
- OS241936 = a lubricant which is capable of meeting the ACEA E7-2008 specification

The ACEA E9 (OS240946) engine lubricant is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV and Euro V emission requirements and running under severe conditions, e.g. extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines with or without particulate filters, and for most EGR engines and for most engines fitted with SCR NOx reduction systems. E9 is strongly recommended for engines fitted with particulate filters and is designed for use in combination with low sulphur diesel fuel

The ACEA E7 (OS241936) engine lubricant is recommended for highly rated diesel engines meeting Euro I, Euro II, Euro III, Euro IV and Euro V emission requirements and running under severe conditions, e.g. extended oil drain intervals according to the manufacturer's recommendations. It is suitable for engines without diesel particulate filters, and for most EGR engines and most engines fitted with SCR NOx reduction systems.

The ACEA 2008 nomenclature and specifications for E7 and E9 lubricants is detailed in Appendix A in Deliverable 4.1.

Appendix A

List of Acronyms

DPF – Diesel Particulate Filter

ACEA – European Automobile Manufacturers Association

E7 – An engine lubricant which meets to ACEA E7 engine lubricant specification

E9 – An engine lubricant which meets to ACEA E7 engine lubricant specification

Appendix B

MSDS for Engine Lubricants

OS240946



Safety Data Sheet
 OS240946

Prepared according to Annex II of EC Regulation 1907/2006.

1	Substance/Product Identification
---	----------------------------------

Product Trade Name OS240946

Company Lubrizol Ltd.
 PO Box 88
 Belper
 Derbyshire
 DE56 1QN
 United Kingdom
 Telephone: +44 (0) 1332 942211
 Fax: +44 (0) 1332 942308

E-mail contact EUSDS@lubrizol.com

This material is to be used for research purposes only under the supervision of a technically qualified individual. The toxicological properties may have not been completely characterized. To determine your responsibilities under the EC Seventh amendment Directive 92/32/EEC, please see the Regulatory Information Section. If this material has been supplied to you under the terms of a secrecy or non-analysis agreement, the information included in this MSDS is hereby identified as "Confidential Information."

CAS Number Not applicable for mixtures.

Synonyms None.

Preparation/Revision Date 09 October 2009

Generic Chemical Name Mixture.

Product Type Experimental.

Emergency Phone Number FOR TRANSPORT EMERGENCY call CHEMTREC: (+1) 708-527-3887 (outside the U.S.), 1-800-424-9300 (in the U.S.)

MSDS No. 29050569-1503910-4136910-102108

2	Hazards Identification
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Symbol(s) Not applicable.

Product Classification Not applicable.

3	Composition/Information on Ingredients
---	--

Hazardous Ingredients

Comp.	Percentage (by wt.)	Symbol(s)	Risk Phrase(s)	EU Number
Zinc alkyldithiophosphate	From 0 to 10.0 percent	N,Xi	R38 R41 R51/53	272-028-3

4	First Aid Measures
---	--------------------

Ingestion DO NOT INDUCE VOMITING. Get immediate medical attention.

Eyes Flush with water at least 30 minutes. Get medical attention if eye irritation develops or persists.

Skin Wash with soap and water. Get medical attention if irritation develops. Launder

OS240946

Inhalation	contaminated clothing before reuse.
Additional Information	Remove exposed person to fresh air if adverse effects are observed. Note to physician: Treat symptomatically.
5 Fire Fighting Measures	
Flash Point	101 °C, 213.8 °F PMCC (Typical)
Extinguishing Media	CO ₂ , dry chemical, or foam. Water can be used to cool and protect exposed material.
Firefighting Procedures	Recommend wearing self-contained breathing apparatus. Water may cause splattering.
Unusual Fire & Explosion Hazards	None known.
6 Accidental Release Measures	
Spill Procedures	Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations. Ventilate area if spilled in confined space or other poorly ventilated areas. Prevent entry into sewers and waterways. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.
7 Handling and Storage	
Pumping Temperature	Not determined.
Maximum Handling Temperature	Not determined.
Handling Procedures	Keep containers closed when not in use. Wash thoroughly after handling. Empty containers retain material residue. Do not cut, weld, braze, solder, drill, grind or expose containers to heat, flame, spark or other sources of ignition.
Maximum Storage Temperature	Not determined.
Storage Procedures	Odorous and toxic fumes may form from the decomposition of this product if stored at temperatures in excess of 113 deg F (45 deg C) for extended periods of time or if heat sources in excess of 250 deg F (121 deg C) are used.
Loading Temperature	Not determined.
8 Exposure Controls/Personal Protection	
Exposure Limits	<p>EU Not applicable.</p> <p>UK Not applicable.</p> <p>Ireland Not applicable.</p> <p>India Not applicable.</p> <p>Cyprus Not applicable.</p>

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Other Exposure Limits	Contains mineral oil. Under conditions which may generate mists, observe the OSHA PEL of 5 mg per cubic meter, ACGIH STEL of 10 mg per cubic meter.
Engineering Controls	Use with adequate ventilation.
Hand Protection	Nitrile.
Eye Protection	Safety Glasses.
Respiratory Protection	Use respirator with a combination organic vapor and high efficiency filter cartridge if recommended exposure limit is exceeded. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.
Clothing Recommendation	Long sleeve shirt is recommended. Launder contaminated clothing before reuse.

9	Physical and Chemical Properties
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Flash Point	101 °C, 213.8 °F (PMCC (Typical))
Upper Flammable Limit	Not determined.
Lower Flammable Limit	Not determined.
Autoignition Point	Not determined.
Explosion Data	Material does not have explosive properties.
Vapour Pressure	Not determined.
pH	Not determined.
Specific Gravity	0.88 (15.6 °C)
Bulk Density	Not determined.
Water Solubility	Insoluble.
Percent Solid	Not determined.
Percent Volatile	Not determined.
Volatile Organic Compound	Not determined.
Vapour Density	Not determined.
Evaporation Rate	Not determined.
Odour	Mild
Appearance	Pale yellow liquid.
Viscosity	Not determined.
Odour Threshold	Not determined.
Boiling Point	Not determined.
Pour Point Temperature	Not determined.
Melting / Freezing Point	Not determined.

The above data are typical values and do not constitute a specification.

10	Stability and Reactivity
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Stability	Material is normally stable at room temperature and pressure. See the Handling and Storage Section for further details.
Decomposition Temperature	Not determined.
Incompatibility	Oxidizing agents.
Polymerization	Will not occur.
Thermal Decomposition	Smoke, carbon monoxide, carbon dioxide, aldehydes and other products of incomplete combustion. Hydrogen sulfide and alkyl mercaptans and sulfides may also be released.

11	Toxicological Information
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OS240946

-- ACUTE EXPOSURE --

Eye Irritation	Not expected to cause eye irritation Based on data from components or similar materials.
Skin Irritation	Not expected to be a primary skin irritant. Based on data from components or similar materials. Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin.
Respiratory Irritation	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. Based on data from components or similar materials.
Dermal Toxicity	The LD50 in rabbits is > 2000 mg/Kg. Based on data from components or similar materials.
Inhalation Toxicity	No data available to indicate product or components may be a toxic inhalation hazard.
Oral Toxicity	The LD50 in rats is > 5000 mg/Kg. Based on data from components or similar materials.
Dermal Sensitization	No data available to indicate product or components may be a skin sensitizer.
Inhalation Sensitization	No data available to indicate product or components may be respiratory sensitizers.

-- CHRONIC EXPOSURE --

Chronic Toxicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Carcinogenicity	This product contains mineral oils which are considered to be severely refined and not considered to be carcinogenic under IARC. All of the oils in this product have been demonstrated to contain less than 3% extractables by the IP 346 test.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive Toxicity	No data available to indicate either product or components present at greater than 0.1% that may cause reproductive toxicity.
Teratogenicity	No data available to indicate product or any components contained at greater than 0.1% may cause birth defects.
Other	No other health hazards known.

12	Ecological Information
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-- ENVIRONMENTAL TOXICITY --

Freshwater Fish Toxicity	Not determined.
Freshwater Invertebrates Toxicity	Not determined.
Algae Toxicity	Not determined.
Saltwater Fish Toxicity	Not determined.
Saltwater Invertebrates Toxicity	Not determined.
Bacteria Toxicity	Not determined.
Miscellaneous Toxicity	Not determined.

-- ENVIRONMENTAL FATE --

Biodegradation	At least 25% of the components in this product show moderate biodegradation based on OECD 302-type test data.
Bioaccumulation	Less than 1.0% of the components potentially bioconcentrate, based on octanol/water coefficients.
Soil Mobility	Not determined.
WGK	WGK = 2 according to the Water Hazardous Directive, VwVwS, dated May 17, 1999.

13	Disposal Considerations
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OS240946

Waste Disposal This material, if discarded, should not be considered a European hazardous waste.

14	Transport Information
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ICAO/IATA II	Not regulated
IMDG	Not regulated
IMDG EMS Fire	Not applicable
IMDG EMS Spill	Not applicable
IMDG MEAG	Not applicable
MARPOL Annex II	Not determined.
USCG Compatibility	Not determined.
ADR/RID	Not regulated
ADR/RID Hazard ID No.	Not applicable
South Africa	Not regulated

Review classification requirements before shipping materials at elevated temperatures

15	Regulatory Information
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Symbol(s)	Not applicable
Indication of Danger	Not applicable
Precautionary Labels	Not applicable
Other Label Information	None.

-- Global Chemical Inventories --

USA	All components of this material are on the US TSCA Inventory or are exempt.
EU	All components comply with the EU 7th Amendment and are approved for EU sales. Lubrizol must maintain records of all imports of this product into the EU. Third party importers are asked to report every import to The Lubrizol PSCD Manager (Europe), Hazelwood, Derby DE56 1QN, UK.
Japan	This product may be imported to Japan only by Lubrizol Japan.
Australia	All components are in compliance with chemical notification requirements in Australia.
New Zealand	All components are in compliance with chemical notification requirements in New Zealand.
Canada	All components are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List.
Switzerland	All components are in compliance with the Environmentally Hazardous Substance Ordinance in Switzerland. Lubrizol must maintain records of all imports of this product into Switzerland. Third party importers are asked to report every import to The Lubrizol PSCD Manager (Europe), Hazelwood, Derby DE56 1QN, UK.
Korea	All components are in compliance in Korea.
Philippines	All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).
China	All components of this product are listed on the Inventory of Existing Chemical Substances in China.

-- Product Registrations --

Finnish Registration Number	Not Registered
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Swedish Registration Number	Not Registered
Norwegian Registration Number	Not Registered
Danish Registration Number	Not Registered
Swiss Registration Number	Not Registered
Italian Registration Number	Not Registered
Korean Registration Number	Not Registered
U.S. Dept of Agriculture	This product has not been filed with the USDA to support H2 approvals.
NSF Nonfood Compounds Registration	This product has not been filed with the NSF to support H1 or H2 approvals.

– Other / International –

FDA Approval Not applicable.

16	Other Information
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HMIS Codes	Health	Fire	Reactivity
	0	1	0

Relevant R Phrases R38 -- Irritating to skin.
 R41 -- Risk of serious damage to eye.
 R51/53 -- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Revision Indicators	Section	Changed
	8 Respiratory protection.	19 June 2009
	9 Odor threshold.	15 February 2009
	9 Percent volatile.	15 February 2009
	9 Viscosity.	15 February 2009
	11 Dermal toxicity.	19 June 2009
	11 Eye irritation.	19 June 2009
	11 Inhalation toxicity.	19 June 2009
	11 Oral toxicity.	19 June 2009
	11 Respiratory irritation.	19 June 2009
	11 Skin irritation.	19 June 2009
	15 New Zealand	9 October 2009

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OS241936



Safety Data Sheet
 OS241936

Prepared according to Annex II of EC Regulation 1907/2006.

1	Substance/Product Identification
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Product Trade Name OS241936

Company Lubrizol Ltd.
 PO Box 88
 Belper
 Derbyshire
 DE56 1QN
 United Kingdom
 Telephone: +44 (0) 1332 842211
 Fax: +44 (0) 1332 842300

E-mail contact BUSDS@lubrizol.com

This material is to be used for research purposes only under the supervision of a technically qualified individual. The toxicological properties may have not been completely characterized. To determine your responsibilities under the EC Seventh amendment Directive 92/32/EEC, please see the Regulatory Information Section. If this material has been supplied to you under the terms of a secrecy or non-analysis agreement, the information included in this MSDS is hereby identified as "Confidential Information."

CAS Number Not applicable for mixtures.

Synonyms None.

Preparation/Revision Date 09 October 2009

Generic Chemical Name Mixture.

Product Type Experimental.

Emergency Phone Number FOR TRANSPORT EMERGENCY call CHEMTREC: (+1) 708-527-3887 (outside the U.S.), 1-800-424-9300 (in the U.S.)

MSDS No. 29030570-25(02920-4)17910-1(02103)

2	Hazards Identification
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Symbol(s) Not applicable.

Product Classification Not applicable.

3	Composition/Information on Ingredients
---	--

Hazardous Ingredients

Comp	Percentage (by wt.)	Symbol(s)	Risk Phrase(s)	EU Number
Zinc alkyl dithiophosphate	From 0 to 30.0 percent	N,Xi	R38 R41 R51/53	272-028-3

4	First Aid Measures
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Ingestion DO NOT INDUCE VOMITING. Get immediate medical attention.

Eyes Flush with water at least 30 minutes. Get medical attention if eye irritation develops or persists.

Skin Wash with soap and water. Get medical attention if irritation develops. Launder.



OS241936

Inhalation contaminated clothing before reuse.
 Remove exposed person to fresh air if adverse effects are observed.
Additional Information Note to physician: Treat symptomatically.

5	Fire Fighting Measures
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Flash Point > 165 °C, 329 °F PMSC (Minimum)
Extinguishing Media CO2, dry chemical, or foam. Water can be used to cool and protect exposed material.
Firefighting Procedures Recommend wearing self-contained breathing apparatus. Water may cause splattering.
Unusual Fire & Explosion Hazards None known.

6	Accidental Release Measures
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Spill Procedures Personal Protective Equipment must be worn, see Personal Protection Section for PPE recommendations. Ventilate area if spilled in confined space or other poorly ventilated areas. Prevent entry into sewers and waterways. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.

7	Handling and Storage
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Pumping Temperature Not determined.
Maximum Handling Temperature Not determined.
Handling Procedures Keep containers closed when not in use. Wash thoroughly after handling. Empty container contains product residue which may exhibit hazards of product.
Maximum Storage Temperature Not determined.
Storage Procedures Odorous and toxic fumes may form from the decomposition of this product if stored at temperatures in excess of 113 deg F (45 deg C) for extended periods of time or if heat sources in excess of 250 deg F (121 deg C) are used.
Loading Temperature Not determined.

8	Exposure Controls/Personal Protection
----------	--

Exposure Limits

EU
 Not applicable

UK
 Not applicable

Ireland
 Not applicable

India
 Not applicable

Cyprus
 Not applicable

Other Exposure Limits Contains mineral oil. Under conditions which may generate mists, observe the OSHA PEL of

OS241936

	5 mg per cubic meter, ACGIH STEL of 10 mg per cubic meter.
Engineering Controls	Use with adequate ventilation.
Hand Protection	Nitrile, Neoprene.
Eye Protection	Safety Glasses.
Respiratory Protection	Use respirator with a combination organic vapor and high efficiency filter cartridge if recommended exposure limit is exceeded. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.
Clothing Recommendation	Long sleeve shirt is recommended. Launder contaminated clothing before reuse.

9	Physical and Chemical Properties
---	---

Flash Point	> 165 °C, 329 °F PMCC (Minimum)
Upper Flammable Limit	Not determined.
Lower Flammable Limit	Not determined.
Autoignition Point	Not determined.
Explosion Data	Material does not have explosive properties.
Vapour Pressure	Not determined.
pH	Not determined.
Specific Gravity	0.89 (15.6 °C)
Bulk Density	Not determined.
Water Solubility	Insoluble.
Percent Solid	Not determined.
Percent Volatile	Not determined.
Volatile Organic Compound	Not determined.
Vapour Density	Not determined.
Evaporation Rate	Not determined.
Odour	Mild
Appearance	Light colored liquid.
Viscosity	Not determined.
Odour Threshold	Not determined.
Boiling Point	Not determined.
Pour Point Temperature	Not determined.
Melting / Freezing Point	Not determined.

The above data are typical values and do not constitute a specification.

10	Stability and Reactivity
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Stability	Material is normally stable at room temperature and pressure. See the Handling and Storage Section for further details.
Decomposition Temperature	Not determined.
Incompatibility	Oxidizing agents.
Polymerization	Will not occur.
Thermal Decomposition	Smoke, carbon monoxide, carbon dioxide, aldehydes and other products of incomplete combustion. Hydrogen sulfide and alkyl mercaptans and sulfides may also be released.

11	Toxicological Information
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– ACUTE EXPOSURE –

Eye Irritation	Not expected to cause eye irritation. Based on data from components or similar materials.
Skin Irritation	Not expected to be a primary skin irritant. Based on data from components or similar materials. Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin.
Respiratory Irritation	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract. Based on data from components or similar materials.
Dermal Toxicity	The LD50 in rabbits is > 2000 mg/Kg. Based on data from components or similar materials.
Inhalation Toxicity	No data available to indicate product or components may be a toxic inhalation hazard.
Oral Toxicity	The LD50 in rats is > 5000 mg/Kg. Based on data from components or similar materials.
Dermal Sensitization	No data available to indicate product or components may be a skin sensitizer.
Inhalation Sensitization	No data available to indicate product or components may be respiratory sensitizers.

– CHRONIC EXPOSURE –

Chronic Toxicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Carcinogenicity	This experimental material contains mineral oils which are considered to be severely refined and not considered to be carcinogenic under IARC. All of the oils in this product have been demonstrated to contain less than 3% extractables by the IP346 test.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Reproductive Toxicity	No data available to indicate either product or components present at greater than 0.1% that may cause reproductive toxicity.
Teratogenicity	No data available to indicate product or any components contained at greater than 0.1% may cause birth defects.
Other	No other health hazards known.

12	Ecological Information
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– ENVIRONMENTAL TOXICITY –

Freshwater Fish Toxicity	The acute LC50 is 100 - 1000 mg/L based on component data.
Freshwater Invertebrates Toxicity	Not determined.
Algae Toxicity	Not determined.
Saltwater Fish Toxicity	Not determined.
Saltwater Invertebrates Toxicity	Not determined.
Bacteria Toxicity	The acute EC50 is 100 - 1000 ppm based on component data.
Miscellaneous Toxicity	Not determined.

– ENVIRONMENTAL FATE –

Biodegradation	At least 25% of the components in this product show moderate biodegradation based on OECD 301-type test data. At least 25% of the components in this product show moderate biodegradation based on OECD 302-type test data.
Bioaccumulation	Less than 1.0% of the components potentially bioconcentrate, based on octanol/water coefficients.
Soil Mobility	Not determined.
WGK	WGK = 2 according to the Water Hazardous Directive, VuVwB, dated May 17, 1999.

13	Disposal Considerations
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Waste Disposal This material, if discarded, should not be considered a European hazardous waste.

14	Transport Information
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ICAO/IATA II	Not regulated
IMDG	Not regulated
IMDG EMS Fire	Not applicable.
IMDG EMS Spill	Not applicable.
IMDG MFAG	Not applicable.
MARPOL Annex II	Not determined.
USCG Compatibility	Not determined.
ADR/RID	Not regulated
ADR/RID Hazard ID No.	Not applicable.
South Africa	Not regulated

Review classification requirements before shipping materials at elevated temperatures

15	Regulatory Information
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Symbol(s)	Not applicable.
Indication of Danger	Not applicable.
Precautionary Labels	Not applicable.
Other Label Information	None.

-- Global Chemical Inventories --

USA	May require notification in the U.S. Commercial shipments from Lubrizol's U.S. location must be exported to non U.S. customers only. Research and development quantities must bear special labels and shipping papers. Sample recipients must comply with the requirements for an R&D exemption under TSCA.
EU	May require notification under EC Seventh Amendment Directive 92/32/EEC.
Japan	May require notification in Japan.
Australia	May require notification before sale under Australian regulations.
New Zealand	All components are in compliance with chemical notification requirements in New Zealand.
Canada	May require notification before sale under Canadian regulations.
Switzerland	May require notification before sale in Switzerland.
Korea	May require notification before sale in Korea.
Philippines	May require notification before sale under Philippines Republic Act 6969.
China	This product may require notification in China.

-- Product Registrations --

Finnish Registration Number	Not Registered
Swedish Registration Number	Not Registered
Norwegian Registration Number	Not Registered
Danish Registration	

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Number Not Registered
 Swiss Registration Number Not Registered
 Italian Registration Number Not Registered
 Korean Registration Number Not Registered
 U.S. Dept of Agriculture This product has not been filed with the USDA to support H2 approvals.
 NSF Nonfood Compounds Registration This product has not been filed with the NSF to support H1 or H2 approvals.

– Other / International –

FDA Approval Not applicable.

16	Other Information
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HMIS Codes	Health	Fire	Reactivity
	0	1	0

Relevant R Phrases R38 – Irritating to skin.
 R41 – Risk of serious damage to eye.
 R51/53 -- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Revision Indicators	Section	Changed
	8 Respiratory protection.	3 April 2009
	11 Dermal toxicity.	3 April 2009
	11 Eye irritation.	3 April 2009
	11 Inhalation toxicity.	3 April 2009
	11 Oral toxicity.	3 April 2009
	11 Respiratory irritation.	3 April 2009
	11 Skin irritation.	3 April 2009

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