SAFETY DATA SHEET

Compiled in accordance with REACH Regulation (EC) No 1907/2006, as retained and amended in UK law.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Product name: **LUBRIZOL® 9990A**

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses: Additive for Off-Highway.
Uses advised against: None identified.

1.3 Details of the supplier of the safety data sheet
Supplier
Company Name: LUBRIZOL LIMITED
Address: THE KNOWLE, NETHER LANE
HAZELWOOD, DERBYSHIRE, DE56 4AN
GB
Telephone: (44) 01332-842211
E-mail contact: EUSDS@lubrizol.com {Lubrizol Safety Data Sheets can be obtained at www.mylubrizol.com}

1.4 Emergency telephone number:
FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1) 703 527 3887

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
The product has been classified according to the legislation in force.

Classified in accordance with CLP Regulation (EC) No 1272/2008, as retained and amended in UK law.

Skin sensitizer	Category 1	H317: May cause an allergic skin reaction.
Chronic hazards to the aquatic environment	Category 2	H411: Toxic to aquatic life with long lasting effects.

The full text for all H-phrases is displayed in section 16.

2.2 Label elements in accordance with CLP Regulation (EC) No 1272/2008, as retained and amended in UK law.

Signal Words: Warning

Hazard Statement(s): H317: May cause an allergic skin reaction.
H411: Toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention: P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P302+P352: IF ON SKIN: Wash with plenty of water.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P362+P364: Take off contaminated clothing and wash it before reuse.
P391: Collect spillage.

Disposal: P501: Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Supplemental label information

Not applicable

Components for Label Disclosure:

Chemical name	EC No.
2-tetradecyloxirane, reaction products with boric acid	701-392-2
Triphenyl phosphite	202-908-4

2.3 Other hazards:

Endocrine Disruption- Toxicity
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine Disruption- Ecotoxicity
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Compiled in accordance with CLP Regulation (EC) No 1272/2008, as retained and amended in UK law.

Chemical name	Concentration	EC No.	REACH Registration No.	M-Factor:	Notes
Mineral oil	20 - 50%	Mixture			
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	10 - 25%	224-235-5	UK-01-0036152048-9		
2-tetradecyloxirane, reaction products with boric acid	5 - 10%	701-392-2	UK-01-5105808797-7		

Triphenyl phosphite	1 - 2.5%	202-908-4			

600, 700 and 900 ECHA List Numbers do not have any legal significance; rather they are purely technical identifiers and are displayed for informational purposes only.

The mineral oil contained may be described by one or more of the following: EC No. 265-157-1, Registration No. UK-01-1759217276-5,Distillates (petroleum), hydrotreated heavy paraffinic; EC No. 265-169-7,Registration No. UK-01-0119695008-1,Distillates (petroleum), solvent-dewaxed heavy paraffinic; EC No. 265-158-7,Registration No. UK-01-6871927170-9,Distillates (petroleum), hydrotreated light paraffinic; EC No. 265-159-2,Registration No. UK-01-6953758963-7,Distillates (petroleum), solvent-dewaxed light paraffinic.

Compiled in accordance with CLP Regulation (EC) No 1272/2008, as retained and amended in UK law.

Chemical name	Classification	Notes
Mineral oil	Asp. Tox. 1; H304	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Eye Dam. 1; H318 Aquatic Chronic 2; H411 Specific concentration limit: Serious Eye Damage/Eye Irritation Category 1, > 50 - 100 %;	
2-tetradecyloxirane, reaction products with boric acid	Skin Sens. 1B; H317	
Triphenyl phosphite	Eye Irrit. 2; H319 Skin Irrit. 2; H315 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Skin Sens. 1; H317 Acute Tox. 4; H302 STOT RE 2; H373 Specific concentration limit: Skin irritation Category 2, >= 5 %; Serious eye irritation Category 2, >= 5 %;	

The full text for all H-phrases is displayed in section 16.

See Section 15 for Regulation (EC) No. 1907/2006 REACH Article 59(1). Candidate List (Substances of Very High Concern (SVHC))

SECTION 4: First aid measures

General: Get medical advice/attention if you feel unwell.

4.1 Description of first aid measures

Inhalation: Remove exposed person to fresh air if adverse effects are observed.

Eye contact: Flush thoroughly with water. If irritation occurs, get medical assistance. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin Contact: Take off contaminated clothing and wash before re-use. Wash skin thoroughly with soap and water. Wash with soap and water. If skin irritation or rash occurs: Get medical attention. If skin irritation occurs, get medical attention. Get medical attention if symptoms occur. Launder contaminated clothing before reuse.

Ingestion: Rinse mouth. Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed: See section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: No data available.

Treatment: Treat symptomatically.

SECTION 5: Firefighting measures

General Fire Hazards: Move containers from fire area if you can do so without risk. Use water to cool containers exposed to fire.

5.1 Extinguishing media

Suitable extinguishing media: CO_2, Dry chemical or Foam. Water can be used to cool and protect exposed material.

Unsuitable extinguishing media: Not determined.

5.2 Special hazards arising from the substance or mixture: Elevated temperatures may liberate toxic gases. See section 10 for additional information.

5.3 Advice for firefighters

Special fire-fighting procedures: No data available.

Special protective equipment for fire-fighters: Wear full protective firegear including self-containing breathing apparatus operated in the positive pressure mode with full facepiece, coat, pants, gloves and boots.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures: Ensure adequate ventilation and take proper precautions if decomposition is suspected. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep unauthorized personnel away. See Section 8 of the SDS for Personal Protective Equipment. 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.

6.2 Environmental Precautions: Avoid release to the environment. Prevent further leakage or spillage if safe to do so.

6.3 Methods and material for containment and cleaning up: Dike far ahead of larger spill for later recovery and disposal. Pick up free liquid for recycle and/or disposal. Residual liquid can be absorbed on inert material.

6.4 Reference to other sections: See sections 8 and 13 for additional information.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:

This product contains Zinc Dialkyl Dithio Phosphate (ZDDP). Do not reheat or store over maximum handling and storage temperatures. Heating above the maximum handling temperature can generate hazardous decomposition products (see Section 10). If product heating is required, ensure temperatures are constantly monitored and stay below the maximum handling temperature. Never use pressurized steam heat. Pressurized steam heat increases the risk of decomposition. When heating to normal handling temperatures, avoid local overheating. If product is overheated or decomposition is suspected, activate your Emergency Response Plan. Additional handling information may be found in the American Chemistry Council document “Safe Handling Guidelines for ZDDP Components and Blends” (www.americanchemistry.com).

Do not breathe dust/fume/gas/mist/vapors/spray. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Observe good industrial hygiene practices. Provide adequate ventilation. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Launder contaminated clothing before reuse. Avoid environmental contamination.

In case of spills, beware of slippery floors and surfaces. Use grounding and bonding connection when transferring material. Material can accumulate static charges which may cause an electrical spark (ignition source). Use proper bonding and/or grounding procedures. Keep container closed when not in use and use with adequate ventilation. Avoid inhalation of vapors upon opening container.

Maximum Handling Temperature: 70 °C

7.2 Conditions for safe storage, including any incompatibilities:

Avoid excessive heat. Do not store near flammable agents. Keep container closed. Store away from incompatible materials. See section 10 for incompatible materials. Odorous and toxic fumes may form from the decomposition of this product. Do not store product at temperature in excess of 45°C (113°F) for extended periods of time, 1 week or more; or, using a heat source, such as steam, at a temperature in excess of 100°C (212°F).

Maximum Storage Temperature: 45 °C

7.3 Specific end use(s): End uses are listed in an attached exposure scenario when one is required.

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

DNEL-Values

Critical component	Type	Route of Exposure	Health Warnings	Remarks
Mineral oil	Workers	Eyes	Local effect;	No hazard identified
Mineral oil	Workers	Inhalation	Local, long-term; 5.58 mg/m3	Repeated dose toxicity
Mineral oil	Workers	Inhalation	Systemic, long-term; 2.73 mg/m3	Repeated dose toxicity
Mineral oil	General population	Oral	Systemic, long-term; 0.74 mg/kg	Repeated dose toxicity
Mineral oil	Workers	Dermal	Systemic, long-term; 0.97 mg/kg	Repeated dose toxicity
Mineral oil	General population	Eyes	Local effect;	No hazard identified
Mineral oil	General population	Inhalation	Local, long-term; 1.19 mg/m3	Repeated dose toxicity
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Workers	Inhalation	Systemic, long-term; 6.6 mg/m3	Repeated dose toxicity
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Workers	Dermal	Systemic, long-term; 9.6 mg/kg	Repeated dose toxicity
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	General population	Inhalation	Systemic, long-term; 1.67 mg/m3	Repeated dose toxicity
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	General population	Oral	Systemic, long-term; 0.19 mg/kg	Repeated dose toxicity
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	General population	Eyes	Local effect;	Medium hazard (no threshold derived)
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Workers	Eyes	Local effect;	Medium hazard (no threshold derived)
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	General population	Dermal	Systemic, long-term; 4.8 mg/kg	Repeated dose toxicity
Triphenyl phosphite	Workers	Inhalation	Systemic, long-term; 1.06 mg/m3	Repeated dose toxicity
Triphenyl phosphite	Workers	Dermal	Systemic, long-term; 0.3 mg/kg	Repeated dose toxicity
Triphenyl phosphite	General population	Dermal	Systemic, long-term; 0.15 mg/kg	Repeated dose toxicity
Triphenyl phosphite	General population	Dermal	Local, short-term; 11.7 µg/cm2	Skin Sensitisation
Triphenyl phosphite	General population	Inhalation	Systemic, long-term; 0.53 mg/m3	Repeated dose toxicity
Triphenyl phosphite	General population	Oral	Systemic, long-term; 0.075 mg/kg	Repeated dose toxicity
Triphenyl phosphite	General population	Dermal	Local, long-term; 11.7 µg/cm2	Skin Sensitisation
Triphenyl phosphite	Workers	Dermal	Systemic, long-term; 0.15 mg/kg	Repeated dose toxicity
Triphenyl phosphite	Workers	Dermal	Local, short-term; 11.7 µg/cm2	Skin Sensitisation
Triphenyl phosphite	Workers	Inhalation	Systemic, long-term; 0.53 mg/m3	Repeated dose toxicity
Triphenyl phosphite	Workers	Dermal	Local, long-term; 11.7 µg/cm2	Skin Sensitisation
Triphenyl phosphite	General population	Eyes	Local effect;	No hazard identified
Triphenyl phosphite	Workers	Eyes	Local effect;	Medium hazard (no threshold derived)

PNEC-Values

Critical component	Environmental compartment	PNEC-Values	Remarks
Mineral oil	Predator	9.33 mg/kg	Oral
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Aquatic (marine water)	4.6 µg/l	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Aquatic (freshwater)	4 µg/l	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Sediment (marine water)	0.032 mg/kg	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Predator	8.33 mg/kg	Oral
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Soil	0.062 mg/kg	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Sediment (freshwater)	0.322 mg/kg	
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Sewage treatment plant	3.8 mg/l	

8.2 Exposure controls

Appropriate engineering controls: Ensure proper monitoring, enclosure and ventilation of any bulk container unloading, storage and all storage tank activities, as overheating could lead to hydrogen sulfide (H2S) in headspace. Observe all occupational exposure limits. Material should be handled in enclosed vessels and equipment, in which case general (mechanical) room ventilation should be sufficient. Local exhaust ventilation should be used at points where dust, mist, vapors or gases can escape into the room air.

Individual protection measures, such as personal protective equipment

General information: Please follow the recommended personal protective equipment (PPE) guidelines below and refer to the appropriate EN standard where applicable. Use personal protective equipment as required.

Eye/face protection: If contact is likely, safety glasses with side shields are recommended. Eye protection should meet the standards set out in EN 166.

Skin protection

Hand Protection: Use nitrile or neoprene gloves. Use good industrial hygiene practices. In case of skin contact, wash hands and arms with soap and water. When material is heated, wear gloves to protect against thermal burns. Gloves should always be inspected before each use and discarded if they show tears, pinholes, or signs of wear. Chemical resistant gloves

General: Because specific work environments and material handling practices vary, safety procedures should be specific for each intended application. The correct choice of protective gloves depends upon the chemicals being handled, and the conditions of work and use. Most gloves provide protection for only a limited time before they must be discarded and replaced (even the best chemically resistant gloves will break down after repeated chemical exposures). Gloves should be chosen in consultation with the supplier / manufacturer and taking account of a full assessment of the working conditions. For typical use and handling of chemical substances, gloves should meet the standards set out in EN 374. For applications involving mechanical risks with potential for abrasion or puncture, the standards set out in EN 388 should be considered. For tasks involving thermal hazards, the standards set out in EN 407 should be considered.

Break-through time: Breakthrough time data are generated by glove manufacturers under laboratory test conditions and represent how long a glove can be expected to provide effective permeation resistance. It is important when following breakthrough time recommendations that actual workplace conditions are taken into account. Always consult with your glove supplier for up-to-date technical information on breakthrough times for the recommended glove type.
For continuous contact, we suggest gloves with a minimum breakthrough time of 240 minutes, or > 480 minutes if suitable gloves can be obtained. If suitable gloves are not available to offer that level of protection, gloves with shorter breakthrough times may be acceptable as long as appropriate glove maintenance and replacement regimes are determined and adhered to.
For short-term, transient exposures and splash protection, gloves with shorter breakthrough times may commonly be used. Therefore, appropriate maintenance and replacement regimes must be determined and rigorously followed.

Glove thickness: For general applications, we recommend gloves with a thickness typically greater than 0.35 mm.
It is important to note that glove thickness is not the only predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.
Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers' technical data should always be taken into account to ensure selection of the most appropriate glove for the task.
Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example: Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, before being disposed of. Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential.

Other:	Thermally protective apron and long sleeves are recommended when volume of hot material is significant. Gloves, coveralls, apron, boots as necessary to minimize contact. Do not wear rings, watches or similar apparel that could entrap the material.
Respiratory Protection:	A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Under normal use conditions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist or vapors is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites. Use respirator with an organic vapor cartridge if exposure limit is exceeded. Respiratory Protective Equipment (RPE) is not normally required where there is adequate natural or local exhaust ventilation to control exposure. In case of insufficient ventilation, wear suitable respiratory equipment. The correct choice of respiratory protection depends upon the chemicals being handled, the conditions of work and use, and the condition of the respiratory equipment. Safety procedures should be developed for each intended application. Respiratory protection equipment should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions. Please refer to the relevant EN standards for the RPE selected.
Hygiene measures:	Observe good industrial hygiene practices. Avoid contact with skin. Contaminated work clothing should not be allowed out of the workplace.
Environmental Controls:	No data available. See section 6 for details.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	
Physical state:	liquid
Form:	liquid
Color:	Dark
Odor:	Pungent
Odor Threshold:	No data available.
pH:	Not applicable
Freezing point:	No data available.
Boiling Point:	No data available.
Flash Point:	115 °C (Pensky-Martens Closed Cup)
Evaporation Rate:	No data available.
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability Limit - Upper (%):	No data available.
Flammability Limit - Lower (%):	No data available.

Vapor pressure:	0.0004 PSI (20 °C)
Relative vapor density:	No data available.
Relative density:	1.035 - 1.075 (15.6 °C)
Solubility(ies)	
Solubility in Water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Autoignition Temperature:	No data available.
Decomposition Temperature:	No data available.
Viscosity:	250 mm2/s (40 °C); 20 mm2/s (100 °C) 552.7 cP (20 °C); 50 cP (68.9 °C)
Explosive properties:	No data available.
Oxidizing properties:	No data available.
VOC Content:	No data available.

Particle characteristics

Particle Size:	Not applicable
Particle Size Distribution:	Not applicable
Specific surface area:	Not applicable
Surface charge/Zeta potential:	Not applicable
Assessment:	Not applicable
Shape:	Not applicable
Crystallinity:	Not applicable
Surface treatment:	Not applicable

Other information

Bulk density:	8.79 lb/gal (25 °C)
Pour Point Temperature:	-30 °C

SECTION 10: Stability and reactivity

10.1 Reactivity:	No data available.
10.2 Chemical Stability:	Material is stable under normal conditions.
10.3 Possibility of hazardous reactions:	Can decompose at elevated temperatures. At elevated temperature may liberate toxic gas.
10.4 Conditions to avoid:	Keep away from heat, sparks and open flame. Temperatures in excess of max handling and storage temperature guidance provided in "Handling and Storage" section. Steam. If heating is required take care to prevent the presence of localized hotspots which could lead to high skin temperatures and result in decomposition. Do not allow water to enter shipping container or transfer lines. Do not expose to excessive heat, ignition sources, or oxidizing materials. Excessive heat.

10.5 Incompatible Materials: The presence of water may lead to acidic species that can catalyze a decomposition. Contact with acids. Strong oxidizing agents.

10.6 Hazardous Decomposition Products: If heated to decomposition, the following substances may be formed: Hydrogen sulfide Alkyl mercaptans and sulfides may also be released. Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide , sulfur oxides, mercaptans, sulfides, including hydrogen sulfide and other products of incomplete combustion. Thermal decompositon may generate phosphorus oxides and other phosphorus containing compounds. Thermal decompositon may generate zinc oxides and other zinc containing compounds.

SECTION 11: Toxicological information

Information on likely routes of exposure

Inhalation: No data available.

Ingestion: No data available.

Skin Contact: Causes mild skin irritation.

Eye contact: No data available.

11.1 Information on toxicological effects

Acute toxicity

Oral

Product: ATEmix > 10,000 mg/kg.

Dermal

Product: Not classified for acute toxicity based on available data.

Inhalation

Product: Not classified for acute toxicity based on available data.

Skin Corrosion/Irritation:

Product: Remarks: Causes mild skin irritation. 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.

Serious Eye Damage/Eye Irritation:

Product: Remarks: Not classified as a primary eye irritant.

Respiratory sensitization:

No data available

Skin sensitization:

Mineral oil Classification: Not a skin sensitizer. (Read across)

zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Classification: Not a skin sensitizer. (Measured)
2-tetradecyloxirane, reaction products with boric acid	Classification: Skin sensitizer (Measured) Category 1B
Triphenyl phosphite	Classification: May cause sensitization by skin contact. (Literature) Category 1

Specific Target Organ Toxicity - Single Exposure:

Mineral oil	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.

Aspiration Hazard:

Mineral oil	Material can be aspirated into the lungs during the act of swallowing or vomiting. This could result in severe injury to the lungs and death.

Other effects:

Chronic Effects

Carcinogenicity:

Product:	All of the oils in this product have been demonstrated to contain less than 3% extractables by the IP 346 test. This product contains mineral oils which are severely refined and not considered carcinogenic.

Germ Cell Mutagenicity:

Triphenyl phosphite	The Ames Salmonella test for mutagenicity was negative for this product.

Reproductive toxicity:

No data available

Specific Target Organ Toxicity - Repeated Exposure:

Triphenyl phosphite	Triphenyl phosphite produced neurotoxic effects (weakness, tremors, and paralysis) in experimental animals.

11.2 Information on health hazards

Other hazards

Product:	No data available.

Endocrine Disruption

Product:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.;

SECTION 12: Ecological information

12.1 Ecotoxicity

Fish

Mineral oil	LC 50 (Fathead Minnow, 4 d): > 100 mg/l
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	LC 50 (Rainbow Trout, 4 d): 4.4 mg/l
2-tetradecyloxirane, reaction products with boric acid	LC 50 (Rainbow Trout, 4 d): > 100 mg/l

Aquatic Invertebrates

Mineral oil	EC 50 (Water flea (Daphnia magna), 2 d): > 10,000 mg/l EC 50 (Water flea (Daphnia magna), 21 d): > 10 mg/l NOEC (Water flea (Daphnia magna), 21 d): > 10 mg/l
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	EC 50 (Water flea (Daphnia magna), 2 d): 75 mg/l EC 50 (Water flea (Daphnia magna), 21 d): > 0.8 mg/l NOEC (Water flea (Daphnia magna), 21 d): 0.4 mg/l
2-tetradecyloxirane, reaction products with boric acid	EC 50 (Water flea (Daphnia magna), 2 d): > 100 mg/l EC 50 (Water flea (Daphnia magna), 21 d): 20 mg/l NOEC (Water flea (Daphnia magna), 21 d): 10 mg/l
Triphenyl phosphite	EC 50 (Water flea (Daphnia magna), 2 d): 0.94 mg/l

Toxicity to Aquatic Plants

Mineral oil	EC 50 (Green algae (Scenedesmus quadricauda), 3 Days): > 100 mg/l
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	EC 50 (Green algae (Scenedesmus quadricauda), 3 d): 410 mg/l NOEC (Green algae (Scenedesmus quadricauda), 3 d): 220 mg/l
2-tetradecyloxirane, reaction products with boric acid	EC 50 (Green algae (selenastrum capricomutum), 3 d): > 100 mg/l

Toxicity to soil dwelling organisms

No data available

Sediment Toxicity

No data available

Toxicity to Terrestrial Plants

No data available

Toxicity to Above-Ground Organisms

No data available

Toxicity to microorganisms

zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	EC 50 (Pseudomonas putida, 0.1 d): 380 mg/l

2-tetradecyloxirane, reaction products with boric acid	EC 50 (Sludge, 0.1 d): > 10,000 mg/l

12.2 Persistence and Degradability

Biodegradation

Mineral oil	OECD TG 301 B, 31 %, 28 d, Not readily degradable.
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	OECD TG 301 D, < 5 %, 28 d, Not readily degradable.
2-tetradecyloxirane, reaction products with boric acid	Miscellaneous, 17.3 %, 28 d, Not readily degradable. Miscellaneous, 26.7 %, 28 d, Not readily degradable.
Triphenyl phosphite	OECD TG 301 D, 0.14 %, 28 d, Not readily degradable.

BOD/COD Ratio

No data available

12.3 Bioaccumulative potential

Bioconcentration Factor (BCF)

No data available

Partition Coefficient n-octanol / water (log Kow)

zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	Log Kow: 3.6 (Measured)
2-tetradecyloxirane, reaction products with boric acid	Log Kow: 9.4 (calculated)
Triphenyl phosphite	Log Kow: 6.62 25 °C (calculated)

12.4 Mobility:

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Endocrine Disruption:

Product: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product: Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Disposal methods: Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Dispose of packaging or containers in accordance with local, regional, national and international regulations. Empty container contains product residue which may exhibit hazards of product.

Contaminated Packaging: Container packaging may exhibit hazards.

SECTION 14: Transport information

ADR

14.1 UN number or ID number:	UN 3082
14.2 UN Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Zinc alkyldithiophosphate, Aryl phosphite)
14.3 Transport Hazard Class(es)	
Class:	9
Label(s):	9
14.4 Packing Group:	III
14.5 Environmental Hazards:	Zinc alkyldithiophosphate, Aryl phosphite
14.6 Special precautions for user:	None established

IMDG

14.1 UN number or ID number:	UN 3082
14.2 UN Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Zinc alkyldithiophosphate, Aryl phosphite)
14.3 Transport Hazard Class(es)	
Class:	9
Label(s):	9
14.4 Packing Group:	III
14.5 Environmental Hazards:	Zinc alkyldithiophosphate, Aryl phosphite
14.6 Special precautions for user:	None established

IATA

14.1 UN number or ID number:	UN 3082
14.2 Proper Shipping Name:	Environmentally hazardous substance, liquid, n.o.s.(Zinc alkyldithiophosphate, Aryl phosphite)
14.3 Transport Hazard Class(es):	
Class:	9
Label(s):	9MI
14.4 Packing Group:	III
14.5 Environmental Hazards:	Zinc alkyldithiophosphate, Aryl phosphite
14.6 Special precautions for user:	None established

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

MARPOL ANNEX II: Noxious liquid, NF, (5) n.o.s. (LUBRIZOL® 9990A contains Mineral oil), ST 2, Cat Y

USCG Compatibility: 34 ESTERS

Shipping descriptions may vary based on mode of transport, quantities, temperature of the material, package size, and/or origin and destination. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material. For transportation, steps must be taken to prevent load shifting or materials falling, and all relating legal statutes should be obeyed. Review classification requirements before shipping materials at elevated temperatures.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

EU Regulations

EU. Regulation 1005/2009/EC on substances that deplete the ozone layer, Annex I, Controlled Substances:

None present or none present in regulated quantities.

EU. Regulation 2019/1021/EU on persistent organic pollutants (POPs) (recast), as amended:

None present or none present in regulated quantities.

EU. Chemicals Subject to PIC Procedure: Regulation 649/2012/EU on export and import of dangerous chemicals, as amended:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006, REACH Article 59(1). Candidate List:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended:

None present or none present in regulated quantities.

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use:

Chemical name	EC No.	Concentration
Mineral oil	Mixture	30 - 40%
2-Diethylaminoethanol	202-845-2	<0.1%
Phenol	203-632-7	<0.1%

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work.:

None present or none present in regulated quantities.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.:

None present or none present in regulated quantities.

EU. Directive 2012/18/EU (SEVESO III) on major accident hazards involving dangerous substances, Annex I:

Classification	Lower-tier Requirements	Upper-tier Requirements
E2. Hazardous to the aquatic environment	200 t	500 t

EU. Regulation No. 166/2006 PRTR (Pollutant Release and Transfer Registry), Annex II: Pollutants:

Chemical name	EC No.	Concentration
zinc bis[O,O-bis(2-ethylhexyl)] bis(dithiophosphate)	224-235-5	20 - 30%

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work:

Chemical name	EC No.	Concentration
Hydrocarbons, C10-C13, n-alkanes, isoalkanes, cyclics, less than 2% aromatics	918-481-9	0.1 - 1.0%

Inventory Status

Australia (AIIC)
All components are in compliance with chemical notification requirements in Australia.

Canada (DSL/NDSL)
All substances contained in this product are in compliance with the Canadian Environmental Protection Act and are present on the Domestic Substances List (DSL) or are exempt.

China (IECSC)
All components of this product are listed on the Inventory of Existing Chemical Substances in China.

European Union (REACh)
To obtain information on the REACH compliance status of this product, please e-mail REACH@SDSInquiries.com.

Great Britain (UK REACH)
To obtain information on the UK REACH compliance status of this product, please e-mail REACH@SDSInquiries.com.

Japan (ENCS)
All components are in compliance with the Chemical Substances Control Law of Japan.

Korea (ECL)
All components are in compliance in Korea.

New Zealand (NZIoC)
All components are in compliance with chemical notification requirements in New Zealand.

Philippines (PICCS)
All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).

Switzerland (SWISS)
All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.

Taiwan (TCSCA)
All components of this product are listed on the Taiwan inventory.

Turkey (KKDIK)
To obtain information on the KKDIK compliance status of this product, please e-mail REACH@SDSInquiries.com.

United States (TSCA)
All substances contained in this product are listed on the TSCA inventory or are exempt.

The information that was used to confirm the compliance status of this product may deviate from the chemical information shown in Section 3.

15.2 Chemical safety assessment: No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Key literature references and sources for data: Internal company data and other publically available resources.

Wording of the H-statements in section 2 and 3:

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

Other information:

Abbreviations and acronyms:

ACGIH – American Conference of Governmental Industrial Hygienist
ADR - International Carriage of Dangerous Goods by Road
AICS - Australian Inventory of Chemical Substances
ATEmix - Acute Toxicity Estimate for the mixture
BCF - Bio concentration factor
DMSO - Dimethyl sulfoxide

DSL - Domestic Substance List
EC50 - Effective concentration that gives a response in 50% of the population
ECHA - European Chemical Agency
ECL - Existing Chemical List
ENCS - Existing and New Chemical Substances
EPA – Environmental Protection Agency
IARC - International Agency for Research on Cancer
IATA - International Air Transport Association
IECSC - Inventory of Existing Chemical Substances
IMDG - International Maritime Dangerous Goods
IP 346 – A gravimetric assay used to determine the percentage weight of polycyclic aromatics in oil, via a DMSO extraction technique
LC50 - Lethal concentration required to kill 50% of the population
MARPOL - International Conventions for the Prevention of Pollution from Ships
NDSL - Non Domestic Substance List
NOAEC - No observed adverse effect concentration
NOAEL - No observed adverse effect level
NOEC - No observed effective concentration
NTP - National Toxicology Program
NZIoc - New Zealand Inventory of chemicals
OECD TG - Organization for Economic Cooperation and Development Test Guidelines
OSHA – Occupational, Safety, and Health Administration
PBT – Persistent bioaccumulative toxic chemical
PEL – Permissible Exposure Level
PICCS - Philippine Inventory of Chemicals and Chemical Substances
PPE - Personal Protective Equipment
PRTR - Pollutant Release and Transfer Register
REACH - Registration, Evaluation, Authorization & restriction of Chemicals
SVHC - Substance of Very High Concern
SWISS - Switzerland chemical ordinance
TCSCA - Toxic Chemical Substance Control Act
TLV – Threshold Limit Value
TSCA - Toxic Substances Control Act
TWA – Time Weighted Average
vPvB – very Persistent very Bioaccumulative

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Reference to Regulation (EC) No. 1907/2006 (EU REACh), including but not limited to EU REACh registration numbers is provided for informational purposes only. UK REACH (EU Exit Regulation as amended) data and information will be provided as it becomes available.