SAFETY DATA SHEET

1. Identification

Identification

Product name: **LUBRIZOL® 9990A**

Additional identification

Chemical name: Mixture

Recommended use and restriction on use

Recommended use: Additive for Off-Highway.
Restrictions on use: None identified.

Details of the supplier of the safety data sheet

Supplier

Company Name: THE LUBRIZOL CORPORATION
Address: 29400 LAKELAND BOULEVARD
WICKLIFFE, OH 44092-2298
US
Telephone: (440)943-1200

Emergency telephone number:
FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1)703 527 3887, OR WITHIN USA 800 424 9300

2. Hazard(s) identification

Hazard Classification

Health Hazards

Skin sensitizer Category 1

Unknown toxicity

Acute toxicity, oral	0.0 %
Acute toxicity, dermal	0.0 %
Acute toxicity, inhalation, vapor	33.7 %
Acute toxicity, inhalation, dust or mist	33.8 %

Label Elements:

Hazard Symbol:

Signal Word: Warning

Hazard Statement: May cause an allergic skin reaction.

Precautionary Statements:

Prevention:	Avoid breathing dust/fume/gas/mist/vapors/spray. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response:	IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Specific treatment (see on this label). Wash contaminated clothing before reuse.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None identified.

3. Composition/information on ingredients

Chemical name	CAS number	Percent by Weight
Mineral oil	Not determined.	30 - 40%
Zinc alkyldithiophosphate	Confidential	20 - 30%
Borate ester	Not determined.	5 - 10%
Aryl phosphite	101-02-0	1 - 5%
++ Aryl thiophosphate	597-82-0	0.1 - 0.5%

The mineral oil contained in this material may be described by one or more of the following CAS Nos.: 64742-54-7, 64742-65-0, 64742-55-8, and 64742-56-9.

++ *The listed components are subcomponents of the hazardous ingredients listed above.*

Trade secret information: A specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

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

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

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

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

Most important symptoms/effects, acute and delayed

Symptoms: See section 11.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) 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.

Specific hazards arising from the chemical: See section 10 for additional information.

Special protective equipment and precautions 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.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: 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.

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.

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

7. Handling and storage

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

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.

Maximum Handling Temperature: 70 °C 158 °F

Conditions for safe storage, including any incompatibilities: Store away from incompatible materials. See section 10 for incompatible materials. 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.

Maximum Storage Temperature: 45 °C 113 °F

8. Exposure controls/personal protection

Control Parameters:

Occupational Exposure Limits

Chemical name	Type	Exposure Limit Values	Source
Mineral oil - Inhalable fraction.	TWA	5 mg/m3	US. ACGIH Threshold Limit Values (02 2012)
Mineral oil - Mist.	REL	5 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Mineral oil - Mist.	STEL	10 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
Mineral oil - Mist.	PEL	5 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)

Appropriate engineering controls: 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. No special requirements under ordinary conditions of use and with adequate ventilation.

Individual protection measures, such as personal protective equipment

General information: Use personal protective equipment as required.

Eye/face protection: If contact is likely, safety glasses with side shields are recommended.

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. Chemical resistant gloves Chemical resistant gloves Gloves should always be inspected before each use and discarded if they show tears, pinholes, or signs of wear.

Other:	Chemical resistant boots. Gloves, coveralls, apron, boots as necessary to minimize contact. Do not wear rings, watches or similar apparel that could entrap the material. Long sleeve shirt is recommended.
Respiratory Protection:	Use disposable dust/mist mask if the recommended exposure limit is exceeded. Use respirator with an organic vapor cartridge if exposure limit is exceeded. 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.
Hygiene measures:	Observe good industrial hygiene practices. Avoid contact with skin. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	
Physical state:	liquid
Form:	liquid
Color:	Dark
Odor:	Pungent
Odor threshold:	No data available.
pH:	No data available.
Freezing point:	No data available.
Boiling Point:	No data available.
Flash Point:	239 °F (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.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	0.0004 PSI (20 °C 68 °F)
Vapor density:	No data available.
Relative density:	1.035 - 1.075 60.1 °F (15.6 °C)
Solubility(ies)	
Solubility in water:	Insoluble in water
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	250 mm2/s (104 °F (40 °C)) 20 mm2/s (100 °C (212 °F))

Other information

Bulk density:	8.79 lb/gal 77 °F (25 °C)
Pour Point Temperature:	-22 °F (-30 °C)

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Will not occur.
Conditions to avoid:	Do not expose to excessive heat, ignition sources, or oxidizing materials. Excessive heat.
Incompatible Materials:	Oxidizing agents. Contact with acids. Strong oxidizing agents. Strong oxidizing agents.
Hazardous Decomposition Products:	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.

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.

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**:** 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.
Remarks: Causes mild skin irritation.

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 alkyldithiophosphate	Classification: Not a skin sensitizer. (Measured)
Borate ester	Classification: Skin sensitizer (Measured) Category 1B
Aryl phosphite	Classification: May cause sensitization by skin contact. (Literature) Category 1
++ Aryl thiophosphate	Classification: Not a skin sensitizer. (Read across)

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.

Chronic Effects

Carcinogenicity:

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

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity:

Aryl phosphite	The Ames Salmonella test for mutagenicity was negative for this product.
++ Aryl thiophosphate	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.

Reproductive toxicity:

++ Aryl thiophosphate	Suspected of damaging fertility. Repeated oral gavage dosing of laboratory animals with aryl thiophosphate in a reproductive/developmental toxicity screening study resulted in litter loss and decreases in number of implantation sites at high doses.

Specific Target Organ Toxicity - Repeated Exposure:

Aryl phosphite	Triphenyl phosphite produced neurotoxic effects (weakness, tremors, and paralysis) in experimental animals.
++ Aryl thiophosphate	Repeated overexposure may result in liver and kidney damage.

12. Ecological information

Ecotoxicity

Fish

Mineral oil	LC 50 (Fathead Minnow, 4 d): > 100 mg/l
Zinc alkyldithiophosphate	LC 50 (Rainbow Trout, 4 d): 4.4 mg/l NOEC (Rainbow Trout, 4 d): 3.2 mg/l
Borate ester	LC 50 (Rainbow Trout, 4 d): > 100 mg/l
++ Aryl thiophosphate	LC 50 (Zebra Fish, 4 d): > 100 mg/l No toxicity at solubility limit.

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 alkyldithiophosphate	EC 50 (Water flea (Daphnia magna), 2 d): 75 mg/l NOEC (Water flea (Daphnia magna), 2 d): 32 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
Borate ester	EC 50 (Water flea (Daphnia magna), 2 d): > 100 mg/l NOEC (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
Aryl phosphite	EC 50 (Water flea (Daphnia magna), 2 d): 0.94 mg/l
++ Aryl thiophosphate	EC 50 (Water Flea (Daphnia Magna), 2 d): > 100 mg/l No toxicity at solubility limit. NOEC (Water Flea (Daphnia Magna), 21 d): > 5.5 mg/l No toxicity at solubility limit.

Toxicity to Aquatic Plants

Mineral oil	EC 50 (Green algae (Scenedesmus quadricauda), 3 Days): > 100 mg/l
Zinc alkyldithiophosphate	EC 50 (Green algae (Scenedesmus quadricauda), 3 d): 410 mg/l

	NOEC (Green algae (Scenedesmus quadricauda), 3 d): 220 mg/l
Borate ester	EC 50 (Green algae (selenastrum capricomutum), 3 d): > 100 mg/l
++ Aryl thiophosphate	EC 50 (Green algae (Scenedesmus quadricauda), 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 alkyldithiophosphate	EC 50 (Pseudomonas putida, 0.1 d): 380 mg/l
Borate ester	EC 50 (Sludge, 0.1 d): > 10,000 mg/l
++ Aryl thiophosphate	EC 50 (Sludge, 3 h): > 100 mg/l

Persistence and Degradability

Biodegradation

Mineral oil	OECD TG 301 B, 31 %, 28 d, Not readily degradable.
Zinc alkyldithiophosphate	OECD TG 301 D, < 5 %, 28 d, Not readily degradable.
Borate ester	Miscellaneous, 17.3 %, 28 d, Not readily degradable. Miscellaneous, 26.7 %, 28 d, Not readily degradable.
Aryl phosphite	OECD TG 301 D, 0.14 %, 28 d, Not readily degradable.
++ Aryl thiophosphate	OECD TG 301 B, 17.8 - 19.3 %, 28 d, Not readily degradable. OECD TG 302 C, 59.9 - 66.8 %, 28 d

Bioaccumulative Potential

Bioconcentration Factor (BCF)

++ Aryl thiophosphate	Fish, Bioconcentration Factor (BCF): 2,551 (Flow Through)

Partition Coefficient n-octanol / water (log Kow)

Zinc alkyldithiophosphate	Log Kow: 3.6 (Measured)
Borate ester	Log Kow: 9.4 (calculated)
Aryl phosphite	Log Kow: 6.62 25 °C 77 °F(calculated)

Mobility:

No data available

Other Adverse Effects: Toxic to aquatic life with long lasting effects.

13. Disposal considerations

Disposal instructions: 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.

14. Transport information

DOT

UN Number:	UN 3082
UN Proper Shipping Name:	Environmentally hazardous substance, liquid, n.o.s.(Zinc alkyldithiophosphate, Aryl phosphite)
Transport Hazard Class(es)	
Class:	9
Label(s):	9
Packing Group:	III
Marine Pollutant:	Yes
Special precautions for user:	None established

IMDG

UN Number:	UN 3082
UN Proper Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Zinc alkyldithiophosphate, Aryl phosphite)
Transport Hazard Class(es)	
Class:	9
Label(s):	9
EmS No.:	F-A, S-F
Packing Group:	III
Marine Pollutant:	Yes
Limited quantity	5.00L
Excepted quantity	E1
Special precautions for user:	None established

IATA

UN Number:	UN 3082
Proper Shipping Name:	Environmentally hazardous substance, liquid, n.o.s.(Zinc alkyldithiophosphate, Aryl phosphite)
Transport Hazard Class(es):	
Class:	9
Label(s):	9MI
Marine Pollutant:	Yes
Packing Group:	III
Limited quantity	30.00KG
Excepted quantity	E1
Environmental Hazards	Marine Pollutant
Special precautions for user:	None established
Other information	
Passenger and cargo aircraft:	Allowed.
Cargo aircraft only:	Allowed.

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

MARPOL ANNEX II: Not determined

The DOT shipping information in this section is based on a bulk container. Please review the accompanying shipping papers for the correct shipping descriptions based the size of the package. 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. During 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.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4)

Chemical Identity	CAS number	Reportable quantity	Calculated[1]
Maleic anhydride	108-31-6	5000 lbs	> 50000 lbs > 22680 kgs

[1]This is the amount product/material required to be released before CERCLA reporting is required.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 311 Classifications

Respiratory or Skin Sensitization

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	CAS number	Percent by Weight	Reportable quantity
Zinc alkyldithiophosphate	Confidential	24.2 %	*See regulation for further details
Aryl phosphite	101-02-0	1.5 %	*See regulation for further details
Maleic anhydride	108-31-6	25.0 PPM	5000 lbs

*These specific chemicals are not listed please check the generic entries on the SARA 304 listings for applicability.

SARA 313 (TRI Reporting)

Chemical Identity	CAS number	Percent by Weight	Reporting threshold for other uses	Reporting threshold for manufacturing and processing
Zinc alkyldithiophosphate	Confidential	24.2 %	10000 lbs	25000 lbs

US State Regulations

US. California Proposition 65

WARNING: This product can expose you to chemicals including: Benzene (3.00PPB) , which is [are] known to the State of California to cause cancer and birth defects or other reproductive harm.

WARNING: This product can expose you to chemicals including: Naphthalene (28.00PPB) Ethyl benzene (28.00PPB) , which is [are] known to the State of California to cause cancer.

WARNING: This product can expose you to chemicals including: Toluene (3.00PPB) , which is [are] known to the State of California to cause birth defects or other reproductive harm.

Inventory Status

Australia (AICS)
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.

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.

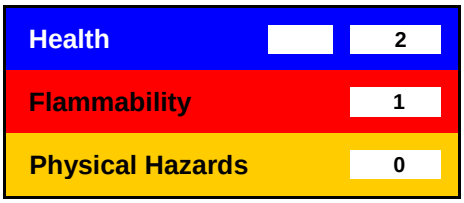
Taiwan (TCSCA)
All components of this product are listed on the Taiwan inventory.

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.

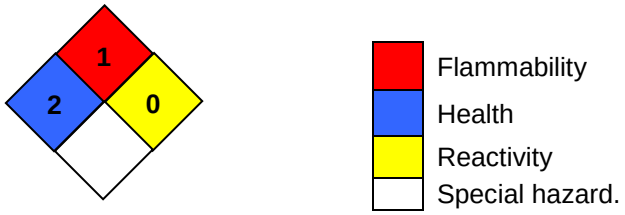
16.Other information, including date of preparation or last revision

HMIS Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date:	08/10/2018
Version #:	3.1
Source of information:	Internal company data and other publically available resources.
Further Information:	Contact supplier (see Section 1)

Disclaimer:

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this product. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state, and local regulations remains the responsibility of the user.