

MATERIAL SAFETY DATA SHEET

eni i-Sigma Top 4AM

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION:

LABEL IDENTITY: eni i-Sigma Top 4AM
DESCRIPTION: A multi-viscosity heavy duty full synthetic engine oil for use in diesel and gasoline engines.

PRODUCT CAS NO.: Not applicable for mixtures.
GENERIC/CHEMICAL NAME: Petroleum hydrocarbon Mixture containing polymer(s), antioxidant(s), detergent(s), and other additives.

**MANUFACTURER/
 SUPPLIER:** **Eni USA R&M Co. Inc.**
 539 Marwood Road
 Cabot, PA 16023
 Ph: (724) 352-4451
 Fax: (724) 352-9543

EMERGENCY TELEPHONE #:
Manufacturer: 8am - 5pm EST (M-F)
 1-800-922-9243
Chemtrec: 24hrs EVERYDAY
 1-800-424-9300

SECTION 2. COMPOSITION / INFORMATION OF INGREDIENTS:

| CHEMICAL INGREDIENT | COMPOSITION %(w/w) | CAS No. |
|---|--|---------------------------------------|
| A. Severely Hydrotreated Paraffinic Hydrocarbons (Oil) | 76.5 - 81.3 | 72623-87-1 |
| B. Solvent Refined Paraffinic Hydrocarbons (Oil) | 0 | 64742-58-1 |
| C. Residual Oils (Petroleum), Solvent-Dewaxed | 0 | 64742-62-7 |
| D. 1-Decene, Homopolymer, Hydrogenated and Polymer of Octene, Decene, and Dodecene, Hydrogenated | 10 | 68037-01-4 & 163149-28-8 |
| E. Zinc Alkyldithiophosphate (as ZnDDP) (as Zn) | 0.2 - 1.0 0.13 | 68649-42-3 (7440-66-6) |
| F. Other Misc. Additives Components: includes VI Polymers (Viscosity Improving Polymer), Ca-Detergent, Mg-Detergent, Ethylenediamine*, Diphenylamine**, and Mineral Oil. | 8.5 - 12.5 (0.118 as Mg) (0.087 as Ca) | Mixture-3 * 107-15-3 & ** 122-39-4 |

| cont. CAS No. | OSHA | | ACGIH - TLV | | OTHER / COMMENT |
|---|---------------------|---------|---------------------|----------------------|------------------------------|
| | PEL-TWA # | CEILING | TWA # | STEL | |
| A. 72623-87-1 (as Oil Mist) | 5mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 2500 mg/M ³ |
| B. 64742-58-1 (as Oil Mist) | 5mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 2500 mg/M ³ |
| C. 64742-62-7 (as Oil Mist) | 5mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 2500 mg/M ³ |
| D. 68037-01-4 & 163149-28-8 (as Oil Mist) | 5mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 2500 mg/M ³ |
| E. 68649-42-3 | N/A | N/A | N/A | N/A | N/A |
| F. 107-15-3 * | 25mg/m ³ | N/A | 10 ppm | N/A | Skin |
| & 122-39-4 ** | N/A | N/A | N/A | N/A | N/A |

= 8 hr. day & 40 hr. week TWA.

NOTES: *PEL = Permissible Exposure Limit (OSHA).*
TLV = Threshold Limit Value (ACGIH).
TWA = Time-Weighted Average over a work day (usually 8-12 hr. day)
Ceiling = *maximum allowable human exposure limit for an airborne substance; never to be exceeded even momentarily, (even if the 8-hr. TWA is not exceeded).*
STEL = *Short-Term Exposure Limit = 15 minute Time-Weighted Average maximum allowable human exposure limit for an airborne substance; never to be exceeded even momentarily during a workday (even if the 8-hr. TWA is not exceeded).*
IDLH = *Immediately Dangerous to Life and Health (NIOSH) = Airborne Concentration which may cause irreversible health effects or death.*

SECTION 3. HAZARD IDENTIFICATION:

EMERGENCY OVERVIEW

APPEARANCE / STATE: Amber Color; Viscous liquid.

CAUTION !!

HEALTH HAZARDS:

May be harmful if swallowed.
May irritate eyes, skin, digestive/intestinal system.
Vapor/Mist(s) can irritate lungs/respiratory system.

ROUTES OF ENTRY: Skin contact, eye contact, inhalation, and ingestion.

TARGET ORGAN EFFECTS: (refer to Sec. 11 Toxicological Information).

Oil (as Mist): Hazardous effects: Accumulation in Lungs (Pneumonitis). NFPA=0-1-0.

Diphenylamine: Hazardous effects: Cumulative liver, kidney, bladder damage; suspect teratogen.
NFPA=3-1-0.

Ethylenediamine: Hazardous effects: Moderate irritation - eyes, nose, throat, skin; contact dermatitis; asthma. NFPA=3-2-0.

(see Potential Health Effects-Inhalation, below for more detail).

WARNING: AVOID SKIN CONTACT WITH USED ENGINE OILS !!

(refer to Sec. 11 Toxicological Information - Other Considerations, for more detail)

(refer also to Sec. 16 for HMIS & NFPA Ratings).

POTENTIAL HEALTH EFFECTS:

(Signs & Symptoms of Exposure)

INHALATION (Breathing): This product has a low vapor pressure and is not expected to present an inhalation exposure at ambient conditions. However, upon heating to high temperatures, or mechanical actions which may produce aerosols, vapors, mists, or fumes, inhalation of product may cause irritation of the respiratory tract (lungs, breathing passages, nose, and throat). Prolonged or repeated inhalation of Oil Mist may cause oil / chemical pneumonia, lung tissue inflammation, and/or fibrous tissue formation.

(refer also to Sec. 8 & 11 for more information).

EYE CONTACT: Non-irritating to mildly irritating, but no permanent damage. Prolonged or repeated eye contact may cause inflammation of the membrane linings of the eyelids and covering of the eyeball (conjunctivitis).

SKIN CONTACT: Non-irritating to slightly irritating, but no permanent damage. Not likely to be absorbed through the skin in harmful amounts. Prolonged or repeated skin contact may cause drying, cracking, redness, itching, and/or swelling (dermatitis).

INGESTION (Swallowing): Relatively non-toxic to minimal toxicity. May cause throat irritation, nausea, vomiting, and diarrhea. Breathing product into the lungs during ingestion or vomiting may cause lung injury, chemical pneumonia, and possible death.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Eye Conditions/Diseases

Skin Conditions/Diseases

Respiratory System Conditions/Diseases, if mist/vapor(s) are generated.

Lung (Asthma-like) Conditions/Diseases, if mist/vapor(s) are generated.

(refer also to Sec. 11 for Toxicological Information)

SECTION 4. FIRST AID MEASURES:

INHALATION (Breathing): Evacuate the victim to a safe area with fresh air as soon as possible. If the victim is not breathing, perform artificial respiration. If breathing is difficult, give oxygen. Oxygen should only be administered by qualified personnel. Someone should stay with the victim. Allow the victim to rest in a well ventilated area. Seek medical attention.

EYE CONTACT: Upon contact, remove contact lenses, if worn. Immediately flush eyes with water and continue washing for at least fifteen minutes, keeping eyelids open. If irritation or redness from exposure to vapor develops, move away from exposure into fresh air. Obtain medical attention.

SKIN CONTACT: Remove contaminated clothing and shoes - launder before reuse. Wash gently and thoroughly the contaminated skin with non-abrasive soap and running water. If irritation persists or if contact has been prolonged, obtain medical attention. If product is injected under pressure into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, a physician should immediately evaluate the individual as a medical/surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of the injury.

INGESTION (Swallowing): DO NOT induce vomiting because of danger of aspirating liquid into lungs which can result in chemical pneumonia other lung damage, mild to severe pulmonary injury, and possibly death. If spontaneous vomiting occurs, keep head below hips to avoid breathing the product into the lungs. Never give anything by mouth to an unconscious person. Seek medical attention.

(refer to Sec. 3 for other Hazards).

PHYSICIAN NOTE: Treat symptomatically and supportively. Treatment may vary with condition of victim and specifics of the incident.

Call the Poison Control Center, if necessary.

SECTION 5. FIRE FIGHTING MEASURES:

NAERG '96, GUIDE: 171 - Substances (low to moderate hazard).
FLAMMABILITY: Low fire hazard - liquid can burn if heated to temperatures above the flashpoint.
FLAMMABLE LIMITS: Not Available. **LEL:** Not Available.
UEL: Not Available.

FLASHPOINT (method): > 177 °C / 350 °F (Cleveland Open Cup).
AUTOIGNITION TEMPERATURE: N/A

FIRE HAZARDS: Low fire hazard. Must be heated before ignition will occur. Avoid contact with strong oxidizing agents, including peroxides, chlorine, and strong acids.

(refer also to Sec. 16 for NFPA & HMIS Ratings)

EXPLOSION HAZARDS: "Empty" containers retain product residue (liquid/vapors) and can be dangerous. **DO NOT** cut, weld, braze, solder, grind, drill, pressurize, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition: **THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.** Empty drum should be completely drained, properly bunged, and promptly returned to a drum reconditioner or properly disposed of. Products are not sensitive to mechanical impact.

FIRE FIGHTING MEDIA & INSTRUCTIONS: NAERG '96, GUIDE: 171 - Substances (low to moderate hazard).

If tank, rail car, or tank truck; stay away from the ends of tanks, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire (remove containers) if it is possible to do so without hazard. If this is not possible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition, or explosion. Use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak. Water spray may be used to flush spills away from exposures. Minimize breathing of gases, vapors, fumes, or decomposition products. Use supplied-air breathing equipment for enclosed or confined spaces or as otherwise needed.

SMALL FIRE: use DRY chemicals, foam, water spray, or CO₂.

LARGE FIRE: use water spray, fog, or foam. For small outdoor fires, portable fire extinguishers may be used. A positive-pressure, self contained breathing apparatus (SCBA - MSHA/NIOSH approved or equivalent) and full-body protective equipment is required for fire emergencies (all indoor fires and any significant outdoor fires).

Respiratory and eye protection are required for fire-fighting personnel.

Water or foam may cause frothing. Do not scatter spilled material with high pressure water streams. Dike fire-control water for later disposal. Prevent runoff to drinking water supply, streams, and sewers. Continue cooling containers with flooding quantities of water until well after the fire is out.

HAZARDOUS COMBUSTION PRODUCTS:

Decomposition and combustion materials may be toxic. During fire or when heated to decomposition, the following materials may be produced:
Smoke, irritating vapors, unidentified organic compounds, aldehydes, hydrogen sulfide (H₂S), alkyl mercaptans, sulfides, low molecular weight amines; and oxides of Carbon, Nitrogen, Phosphorus, Zinc, Calcium, Magnesium, and Sulfur.

The information chart below is not for determining the hazardousness of this product, as manufactured; it is provided here as reference information should the product be incinerated:

| POSSIBLE COMBUSTION PRODUCTS Chemical [CAS No.] | EXPOSURE LIMITS | | | | OTHER / COMMENTS |
|--|------------------------|---------|------------------------|-------------------------|-----------------------------|
| | OSHA | | ACGIH - TLV | | |
| | PEL-TWA # | CEILING | TWA # | STEL | |
| Calcium Oxide (solid) [1305-78-8] HAZARDOUS EFFECTS: Marked irritation-eye, nose, throat, skin. (NFPA=1-0-1). | 5mg/m ³ | N/A | 2mg/m ³ | N/A | IDLH= 25 mg/M ³ |
| Magnesium Oxide (fume) [1309-48-4] HAZARDOUS EFFECTS: Fume fever. (NFPA= N/A) | 15mg/m ³ | N/A | 10 mg/m ³ | N/A | IDLH= 750 mg/M ³ |
| Zinc Oxide (fume) [1314-13-2] HAZARDOUS EFFECTS: Acute systemic toxicity (metal fume fever); mutagen. (NFPA= N/A) | 5mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 500 mg/M ³ |
| Carbon Monoxide [630-08-0] HAZARDOUS EFFECTS: Chemical Anoxia & Asphyxiation. (NFPA=2-4-0). | 55mg/m ³ | N/A | 55 mg/m ³ | 440 mg/m ³ | IDLH= 1200 ppm |
| | 50 ppm | N/A | 25 ppm | N/A | |
| Carbon Dioxide [124-38-9] HAZARDOUS EFFECTS: Asphyxiation. (NFPA= N/A) | 9000 mg/m ³ | N/A | 9000 mg/m ³ | 54000 mg/m ³ | IDLH= 40000 ppm |
| | 5000 ppm | N/A | 5000 ppm | 30000 ppm | |
| Sulfur Dioxide [7446-09-5] HAZARDOUS EFFECTS: Marked irritation-eye, nose, throat, lungs; broncho-constriction; mutagen, suspect reproductive effects. (NFPA=3-0-0). | 13mg/m ³ | N/A | 5 mg/m ³ | 10 mg/m ³ | IDLH= 100 ppm |
| | 5 ppm | N/A | 2 ppm | 5 ppm | |
| Hydrogen Sulfide (H ₂ S) [7783-06-4] HAZARDOUS EFFECTS: Moderate irritation-eye (conjunctivitis), lungs; acute systemic toxicity; CNS effects. (NFPA=3-4-0) | 10 ppm | 20 ppm | 14 mg/m ³ | 21 mg/m ³ | IDLH= N/A |

= 8 hr. day & 40 hr. week TWA.

SECTION 6. ACCIDENTAL RELEASE MEASURES:

MATERIAL RELEASE OR SPILL:

NAERG '96, GUIDE: 171 - Substance (low to moderate hazard).

LAND: ELIMINATE ALL IGNITION SOURCES. Avoid contact - Do not touch or walk through the spilled product. STOP LEAK if without risk. CONTAIN SPILL. Isolate hazard area - keep unnecessary and unprotected personnel from entering: 30 to 80 feet (10-25 meters) in all directions. Prevent contact with Soil. Stay upwind. Ventilate area and avoid breathing vapor or mist. Wear protective equipment and provide engineering controls as specified in **Section 8: Exposure Control/Personal Protection.**

Contain spill away from surface waters, intermittent dry creeks, and sewers. Contain spill as a liquid for possible recovery or absorb with inert absorbents, dry clay, or diatomaceous earth. DO NOT use combustible materials such as sawdust. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in sealable metal containers for later disposal or burn absorbent in a suitable combustion chamber. Runoff from fire control may cause pollution.

LARGE SPILLS: Dike far ahead of liquid spill for collection and later disposal.

DO NOT FLUSH TO SEWERS, STREAMS, OR OTHER BODIES OF WATER.

Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Keep public away and notify the appropriate authorities immediately, if required. If this product is subject to CERCLA reporting (**see section 15**), notify the National Response Center.

WATER: Remove from surface by skimming or with suitable absorbents. If permitted by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters. Check with applicable jurisdiction for specific disposal requirements of recovered material and empty containers.

U.S. Coast Guard regulations require immediate reporting of spills that could reach any waterway, including intermittent dry creeks. Report spill(s) to the U.S. Coast Guard at 1-800-424-8802.

(refer also to Sec. 13 & 15 for Regulatory Information)

SECTION 7. HANDLING AND STORAGE:

STORAGE TEMPERATURE:

Ambient

STORAGE PRESSURE:

Atmospheric

LOADING/UNLOADING

TEMPERATURE: Not Available.

LOADING/UNLOADING

PRESSURE: Not Available.

HANDLING: Keep away from sources of ignition. Use explosion-proof equipment. When transferring large volumes of product; metal containers, including trucks and tank cars, should be grounded and bonded. This product has a low vapor pressure and is not expected to present an inhalation hazard under normal ambient conditions. However, when aerosolizing, misting, or heating these products, do not breathe vapor or mist. Use in well ventilated area. Avoid contact with eyes, skin, clothing, and shoes. DO NOT reuse empty containers without cleaning or reconditioning. All other containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. "Empty" drum liners also retain residue (solid, liquid, vapor). Do not reuse liners for any purpose. Liners should be emptied of contents to the maximum extent possible, then segregated from liners containing other products. Dispose of empty liners in an environmentally safe manner and in accordance with governmental regulations. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.

STORAGE: NFPA class IIIB storage. Flash point is greater than 200°F. Store in tightly closed sealable containers in a cool, dry, isolated, well-ventilated area, and away from strong oxidizing agents. DO NOT pressurize, cut, weld, braze. Solder, drill, or grind containers. Keep containers away from extreme heat, flame, sparks, static electricity, or other sources of ignition; as empty product containers may retain product residues and can be dangerous. DO NOT Store in unlabeled containers.

OTHER PRECAUTIONS: For work on tanks refer to OSHA regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

(refer also to Sec. 13 & 15 for Regulatory Information)

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION:

EXPOSURE LIMITS:

Oil Mist, if generated: PEL (OSHA) 5mg/m³ - 8hr. TWA
TLV (ACGIH) 5 mg/m³ - 8hr. TWA
STEL (ACGIH) 10 mg/m³

(refer also to Sec. 2 & 5 for Other Exposure Limits)

ENGINEERING CONTROLS:

VENTILATION: For normal application, special ventilation is not necessary. If user's operations generate vapors or mists, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Where adequate general ventilation is unavailable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below the applicable exposure limits.

Keep containers closed when not in use. Do not store near heat, sparks, flame, or strong oxidants.

OTHER: Ensure that eyewash station and safety shower are close to work station.

PERSONAL PROTECTION: **The selection of personal protective equipment varies, depending upon conditions of use.**

EYES: DO NOT wear contact lenses. Eye protection (ie. Safety glasses, safety goggles, and/or face shield) should be determined based on conditions of use. If product is used in an appropriate application where splashing may occur, the use of chemically-resistant safety goggles and/or a face shield should be considered.

SKIN: Avoid prolonged or repeated contact with skin. Wear appropriate clothing to prevent skin contact, such as apron, coveralls, long-sleeve shirts, etc. As a minimum, long sleeves and trousers should be worn. Wear appropriate chemically protective gloves (neoprene, nitrile, PolyVinyl Chloride, PolyVinyl Alcohol, Viton, or equivalent); use of natural rubber or equivalent is NOT recommended. When handling hot product, ensure gloves, boots, and clothing are heat resistant and insulated. Wear appropriate footwear to prevent product from coming in contact with feet and skin.

WARNING: AVOID SKIN CONTACT WITH USED ENGINE OILS !!

RESPIRATORY: Minimize breathing vapor, mist, or fumes. Respiratory protection is not usually needed unless product is heated or misted. Concentration in air determines the level of respiratory protection needed. Where concentrations in air may exceed the occupational exposure limits given above and in Sections 2 & 5 (and those applicable to your area) and where engineering, work practices, or other means of exposure reduction are not adequate; NIOSH approved respirators may be necessary to prevent overexposure by inhalation. Use only NIOSH-certified, air purifying respirators with combination P- or R- vapor cartridges when concentration of vapor series particulate filters and organic or mist exceeds applicable exposure limits. DO NOT use N-Rated respirators. Selection and use of respiratory protective equipment should be in accordance in the USA with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Protection by air purifying respirators is limited.

OTHER PROTECTIVE CLOTHING / EQUIPMENT: Where spills and splashed are likely, facilities storing or using this product should be equipped with an emergency eyewash and shower, both equipped with clean water, in the immediate work area. Chemically resistant protective clothing and boot materials may include: PolyVinyl Chloride (PVC), Neoprene, Nitrile, Viton, Polyurethane.

WORK HYGIENIC PRACTICES: Use good personal hygiene. Wash hands thoroughly with soap and water after handling product and before eating, drinking, or using tobacco products. Clean affected clothing, shoes, and protective equipment before reuse. Discard leather articles, such as shoes, saturated with this product. Do Not wear rings, watches, or similar apparel that could entrap the material and cause a skin reaction.

(refer also to Sec. 2 & 5 for Other Exposure Limits)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES:**APPEARANCE / STATE:** Viscous liquid.**COLOR:** Light Amber to Amber.**ODOR:** Hydrocarbon; Petroleum.**ODOR THRESHOLD:** Not Available.**BOILING POINT:** Not Available.**DENSITY:** 0.84 - 0.89 - kg/l @ 15°C (59°F).**OCTANOL / H₂O DIST. COEFF.:** Not Available.**VAPOR DENSITY:** Not Available.**VAPOR PRESSURE:** Not Available.**VOLATILITY:** Not Available.**pH:** Not Available.**VISCOSITY:** 9.3-16.3 cSt @ 100°C (212°F).**MELT/POUR POINT:** -32 to -29°C (-25 to -20°F).**SOFTENING POINT:** Not Available.**DROPPING POINT:** Not Available.**PENETRATION:** Not Available.**OIL / H₂O DIST. COEFF.:** Not Available.**MOLECULAR WT.:** Not Available.**IONICITY (in H₂O):** Not Available.**DISPERSION PROPERTIES:** Not Available.**SOLUBILITY (in H₂O):** Negligible.**EVAPORATION RATE:** Not Available.**SECTION 10. STABILITY AND REACTIVITY:****STABILITY:** Stable under normal handling and storage conditions. Not Reactive with water.**CONDITIONS TO AVOID:** Extreme Heat, Sparks, and Flames.**CORROSIVITY:** Copper corrosion, 3h, 100 °C (ASTM D 0130): N/A (typical).**MATERIALS TO AVOID:** Reactive with strong oxidizing agents, reducing agents, and/or acids.**HAZARDOUS POLYMERIZATION:** Will not occur under normal working conditions.**CONDITIONS TO AVOID:** None.**HAZARDOUS DECOMPOSITION:**

Decomposition and combustion materials may be toxic. During fire or when heated to decomposition, the following materials may be produced: Smoke, irritating vapors, unidentified organic compounds, aldehydes, hydrogen sulfide (H₂S), alkyl mercaptans, sulfides, low molecular weight amines; and oxides of Carbon, Nitrogen, Phosphorus, Zinc, Calcium, Magnesium, and Sulfur.

SECTION 11. TOXICOLOGICAL INFORMATION:

NOTE: The information related in Section 11. Toxicological Information, for this product is not based upon actual tests of this product, but is based upon information and studies for similar products / product types. The information cited with an (*) is from tests conducted for this product.

ROUTES OF ENTRY: Skin contact, eye contact, inhalation, and ingestion.**ACUTE EFFECTS:** Based on toxicity of similar product(s)/component(s): Base Oils.**Acute Oral Toxicity (LD₅₀):** > 2000 mg/kg (rat).**Acute Dermal Toxicity (LD₅₀):** > 2000 mg/kg (rabbit).**Acute Inhalation Toxicity:** > 2500 mg/kg/4h (rat).**Acute Eye Irritation:** Practically Non-Irritating (Draize Score = 6-15)(rabbit).**Acute Skin Irritation:** Practically Non-Irritating (Primary Irritation Index = 0.5-3)(rabbit).**CHRONIC EFFECTS:****Dermal Route:** Prolonged or repeated contact tends to remove skin oils which may cause skin irritation; characterized by dermatitis or oil acne.**Inhalation Route:** Due to low volatility, inhalation is not likely. However, prolonged or repeated inhalation of excessive amount of mists or fumes may cause irritation of the respiratory tract. Oil mists can cause oil droplet deposition in the lung which may result in oil granuloma formation, fibrosis, inflammation, reduced pulmonary function, and increased incidence of infection.**Oral Route:** Relatively non-toxic or minimally toxic via ingestion.**Ocular (Eye) Route:** May be irritating to eyes.

OTHER TOXICITY STUDIES:**SENSITIZATION:**

- (*Skin*): Based on toxicity of severely hydrotreated base oil, it is not a skin sensitizer in guinea pig.
- (*Respiratory Tract*): Not expected to be a respiratory tract sensitizer.

CARCINOGENICITY: (reportable quantities: $\geq 1.0\%$ Wt. (0.1%Wt. for carcinogens))

- (*OSHA*): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
- (*IARC*): This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A, or 2B carcinogens by IARC.
- (*NTP*): This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
- (*ACGIH*): This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.
- (*IRIS*): Not Available.

IMMUNOTOXICITY: Not Available.

TOXICOLOGICALLY SYNERGISTIC PRODUCTS: Not Available.

- MUTAGENICITY:** Based on actual test results of base oils and results of similar products, severely hydrotreated base oils give negative results when tested for :
- Salmonella Typhimurium TA98 using the Modified Ames Assay for Petroleum Product.
 - Salmonella-Escherichia Coli / Mammalian -Microsome Reverse Mutation Assay (Ames test) with a Confirmatory Assay.
 - Structural Chromosomal Aberrations in Chinese Hamster Ovary (CHO) Cells.

REPRODUCTIVE TOXICITY: Based on the available animal data, severely hydrotreated base oils do not pose a reproductive risk.

TERATOGENICITY /

EMBRYOTOXICITY: Based on the available animal data, severely hydrotreated base oils do not pose an embryotoxic / teratogenic risk.

OTHER CONSIDERATIONS: An API study has indicated that prolonged or repeated skin exposure to used engine oils can cause skin cancer.

Minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death. In accordance with the current OSHA Hazard Communication Standard criteria, this product does not require a cancer hazard warning. This is because the product is formulated from base stocks which are severely hydrotreated, severely solvent extracted, and or processed by mild hydrotreatment and extraction. Alternatively, it may consist of components not otherwise affected by IARC criteria, such as atmospheric distillates or synthetically derived materials, and as such is not characterized by current IARC classification criteria.

(refer also to Sec. 2 & 5 for Exposure Limits)

SECTION 12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE: The base oil has the potential for degradation by hydroxyl radicals in the troposphere under the influence of sunlight, and by bacteria in soil and water.

PERSISTENCE/BIOACCUMULATION POTENTIAL: Not Available.

OCTANOL / WATER PART. COEFF.: Not Available.

VOLATILE ORGANIC COMPOUNDS (VOC): Not Available.

BOD₅ and COD: Not Available.

PRODUCTS OF BIODEGRADATION: Not Available.

ECOTOXICITY: Base Oils: None to Low acute toxicity to aquatic organisms.

Freshwater Fish: LC₅₀ (Rainbow Trout)- > 400,000 ppm in 96h = 0% mortality.

Freshwater Invertebrates: Not Available.

Algae: Not Available.

Saltwater Fish: Not Available.

Saltwater Invertebrates: Not Available.

Bacteria: EPS 1/RM/24 Microtox Test (Luminescent Bacteria) - PASS.

Miscellaneous: LC₅₀ (Mysidopsis Bahai)- > 500,000 ppm in 96h.

ADDITIONAL REMARKS: 57-88% of base oils are biodegradable in 28 days.

(refer also to Sec. 6, 13, & 15)

SECTION 13. DISPOSAL CONSIDERATIONS:

Do Not Discharge this product into public waters or waterways unless authorized by a National Pollution Discharge Elimination System (NPDES) permit issued by the Environmental Protection Agency (EPA).

In Agape's opinion, Unused / Uncontaminated product is not specifically listed by the EPA as a CERCLA / RCRA regulated hazardous waste or material. Therefore, it may be disposed of as an industrial waste in a manner acceptable to good waste management practice and in compliance with applicable local, state, and federal regulations. DO NOT flush material into drains or storm sewers.

Options for disposal of this product may depend on the conditions under which it was used. Spent / Used / Waste oil may meet the requirements of a hazardous waste. RCRA criteria (ignitability, reactivity, corrosivity, and toxicity-TCLP) must be determined if the material has been used. Refer to 40 CFR 261 (RCRA); as well as federal EPA, state, and local regulations.

Consult your local or regional authorities. Preferred waste management priorities are:

1. Recycle or reprocess.
2. Approved incineration with energy recovery.
3. Disposal at licensed waste disposal facility.

If recycled in the USA, this product must be managed in accordance with 40 CFR Part 279. Processing, use, or contamination by the user may change the waste code(s) applicable to the disposal of this product.

Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your federal, local, state, & regional authorities.

Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste.

(refer also to Sec. 5, 6, 12, & 15)

SECTION 14. TRANSPORTATION INFORMATION:

DOT:

DESCRIPTION / PROPER SHIPPING NAME: Not Regulated.
HAZARD CLASS: Not Applicable. **ID NUMBER:** Not Applicable.
SPECIAL INFORMATION: None. **PACKING GROUP:** Not Applicable.

IMO:

PROPER SHIPPING NAME: Not Regulated. **PACKING GROUP:** Not Evaluated.
HAZARD CLASS: Not Evaluated. **SHIPPING CONTAINERS:** Not Evaluated.
IMO LABEL: Not Evaluated.
SPECIAL INFORMATION: Not Evaluated.

OTHER:

IMDG CODE PROPER SHIPPING NAME: Not Evaluated.
ICAO PROPER SHIPPING NAME: Not Evaluated.
IATA PROPER SHIPPING NAME: Not Regulated.
ADR/RID (Europe): Not Regulated.
 (Pictograms)

PICTOGRAMS:

Under TDG (Canada) & DOT (USA):



TRANSPORTATION INCIDENT INFORMATION:

For further information relative to spills resulting from transportation incidents, refer to latest Department of Transportation's North American Emergency Response Guidebook (NAERG) for Hazardous Materials Incidents.

| <u>Relevant Listing(s):</u> | <u>Guide(s)</u> |
|--|---|
| Oil, n.o.s., Flash Point > 200°F. | 171 - Substances (Low to Moderate Hazard) |
| Environmentally Hazardous Substances, Liquid, n.o.s. | 171 - Substances (Low to Moderate Hazard) |

SECTION 15. REGULATORY INFORMATION:

TOXIC SUBSTANCES CONTROL ACT (TSCA): This Product is in compliance with TSCA (USC, Title 15, Chp. 53-I, Sec. 2601-2629). This product, as manufactured by Eni USA R&M, does not contain polychlorinated biphenyls (PCB's). All components of this product are listed on the U.S. TSCA inventory.

CLEAN WATER ACT (CWA) / OIL POLLUTION ACT (OPA): This product is classified as an OIL under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Act of 1990. Discharges or spills into or leading to surface waters which produce a visible sheen on either surface water, or in waterways / sewers / intermittent dry creeks which lead to surface water, must be reported to the U.S. Coast Guard National Response Center at 1-800-424-8802. For additional detail, refer to SARA III, Sec. 304.

CLEAN AIR ACT (CAA): The components of this product listed on the Regulated Chemicals for Accidental Release Prevention list in Section 112(r) of the Clean Air Act of 1990 (40 CFR 68) are as follows:

| <u>Component (CAS#)</u> | <u>TQ (lbs)</u> |
|----------------------------|-----------------|
| Ethylenediamine (107-15-3) | 20,000 lbs. |

For additional detail, refer to SARA III, Sec. 304.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA):
(40 CFR Part 302, Table 302.4)

This product (as manufactured), if accidentally spilled, is not subject to special reporting under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act. However, it is recommended that you consult local and state authorities to determine if there may be other reporting requirements. For specific details, refer below to SARA Title III, Sec. 304.

RESOURCE CONSERVATION and RECOVERY ACT (RCRA) Hazardous Waste: (40 CFR 261.33)

| CAS NO. | COMPONENT | RCRA Hazardous Waste Code |
|--|--|---------------------------|
| 72623-87-1; 64742-62-7; (8002-05-9; 8020-83-5) | Severely Hydrotreated Paraffinic Hydrocarbons (Oil); Solvent Refined Paraffinic Hydrocarbons (Oil); Solvent Dewaxed Residual Oils (Petroleum Distillates; Petroleum; Hydrocarbon Oils) | Not Listed |
| 68037-01-4, 163149-28-8; 163149-29-9; (8002-05-9, 8020-83-5) | 1-Decene, Homopolymer, Hydrogenated; Polymer of Octene, Decene, and Dodecene, Hydrogenated; C8, C12 Olefin Polymer, Hydrogenated (Petroleum, Hydrocarbon Oils) | Not Listed |
| N/A | Mineral Oil Mist | Not Listed |
| 107-15-3 | Ethylenediamine (1, 2-Ethanediamine) | Not Listed |
| 122-39-4 | Diphenylamine (Benzenamine, N-Phenyl-) | Not Listed |
| 7440-66-6 | Zinc & Zinc Compounds | Not Listed |

SUPERFUND AMENDMENTS REAUTHORIZATION ACT OF 1986 (SARA TITLE III):

SARA requires disclosure of hazardous substances present at concentrations $\geq 1.0\%$ Wt. ($>=0.1\%$ Wt. For Carcinogens).

Sec. 302 Extremely Hazardous Substances (EHS): (40 CFR Part 355, Appendix A, B)

| | |
|---|------------------------------|
| Component (CAS#): Zinc Alkyldithiophosphate | %(w/w): 0.13% (as Zn) |
| Status: Zn Compound Class is Not Listed as an Extremely Hazardous Substance. | 1.0% (as ZnDDP) |
| TPQ (lbs): None Established. | |
| Component (CAS#): Ethylenediamine (107-15-3) | %(w/w): UNDISCLOSED |
| Status: Listed | |
| TPQ (lbs): 10,000 lbs. | |

Sec. 304 CERCLA Hazardous Substances: (40 CFR Part 355, Appendix A, B)

| | |
|---|------------------------------|
| Component (CAS#): Zinc Alkyldithiophosphate | %(w/w): 0.13% (as Zn) |
| Status: Zn Compound class - although no RQ is assigned to this generic/broad class, the class is a CERCLA Hazardous Substance. However, since an RQ has not been assigned, reporting is not required under CERCLA. | 1.0% (as ZnDDP) |
| EHS RQ (lbs): None Established. | |
| CERCLA RQ (lbs): 1 lbs. Statutory RQ under CWA, Sec. 307(a); No Final RQ Established. | |
| Component (CAS#): Ethylenediamine (107-15-3) | %(w/w): UNDISCLOSED |
| Status: Listed | |
| EHS RQ (lbs): None Established. | |
| CERCLA RQ (lbs): 5,000 lbs. | |

Sec. 311 / 312 EPA Hazardous Chemical Reporting: (40 CFR Part 370)

EPA HAZARD REPORTING CATEGORIES:

| Health : | | Physical : | |
|-------------------|-----|----------------------------|----|
| Immediate (Acute) | YES | Fire | NO |
| Delayed (Chronic) | YES | Sudden Release of Pressure | NO |
| | | Reactive | NO |
| | | Nuisance Mist / Dust Only | NO |

Sec. 313 Toxic Chemical Release Reporting: (40 CFR Part 372)

| | |
|---|------------------------------|
| Component (CAS#): Zinc Alkyldithiophosphate | %(w/w): 0.13% (as Zn) |
| Status: Zn Compound class is listed as a Toxic Chemical. | 1.0% (as ZnDDP) |
| Component (CAS#): Ethylenediamine (107-15-3) | %(w/w): UNDISCLOSED |
| Status: Not Listed | |

CA PROPOSITION 65:

The following component(s) of this material is/are known to the state of California to cause cancer and/or birth defects (based upon maximum impurity levels of components): **TRACE METAL IMPURITIES**

Note: An evaluation of all components of this product for California Proposition 65 is not routinely performed.

PA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (PA Act 159-1984):

The following component(s) of this material is/are listed as Hazardous Substance(s) under the Act on the PA Hazardous Substance List:

| CAS NO. | RELEVANT COMPONENT / LISTING | PA HAZARD Note |
|--|--|----------------------|
| 72623-87-1; 64742-62-7; (8002-05-9; 8020-83-5) | Severely Hydrotreated Paraffinic Hydrocarbons (Oil); Solvent Refined Paraffinic Hydrocarbons (Oil); Solvent Dewaxed Residual Oils (Petroleum Distillates; Petroleum; Hydrocarbon Oils) | Listed |
| 68037-01-4, 163149-28-8; 163149-29-9; (8002-05-9, 8020-83-5) | 1-Decene, Homopolymer, Hydrogenated; Polymer of Octene, Decene, and Dodecene, Hydrogenated; C8, C12 Olefin Polymer, Hydrogenated (Petroleum, Hydrocarbon Oils) | (Listed) |
| N/A | Mineral Oil Mist | Listed |
| 107-15-3 | Ethylenediamine (1, 2-Ethanediamine) | Environmental Hazard |
| 122-39-4 | Diphenylamine (Benzenamine, N-Phenyl-) | Environmental Hazard |
| 7440-66-6 | Zinc & Zinc Compounds | Environmental Hazard |

C EPA: This product is acceptable for use under the provisions of Workplace Hazardous Material Information System (WHMIS) - Controlled Products Regulations (CPR). All components of this formulation are listed on the Domestic Substances List (DSL).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS is believed to contain all the information required by the CPR.

US EPA: All components of this formulation are listed on the TSCA Inventory of US Environmental Protection Agency.

DSD/DPD (EEC): This product has not been evaluated for the Dangerous Substances or Dangerous Preparations Directives (Europe).

WHMIS (Canada): This product is not controlled under the Workplace Hazardous Material Information System.

SECTION 16. OTHER INFORMATION:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS):

| Health | Flammability | Reactivity | Personal | BASIS |
|--------|--------------|------------|----------|----------------------------|
| 1 | 1 | 0 | B | Recommended by Eni USA R&M |

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 704) - HAZARD IDENTIFICATION:

| Health | Flammability | Reactivity | Specific | BASIS |
|--------|--------------|------------|----------|----------------------------|
| 1 | 1 | 0 | | Recommended by Eni USA R&M |

KEYS: 4=Severe; 3=Serious; 2=Moderate; 1=Slight; 0=Minimal

The Environmental Information included under Section 15, as well as the Hazardous Materials Identification System (HMIS) and National Fire Protection Association (NFPA) ratings in Section 16, have been included by Eni USA R&M in order to provide additional health and hazard classification information. The ratings recommended are based upon the criteria of the developers of these ratings systems, together with Agape's interpretation of the available data.

The health and safety information presented herein must be used in conjunction with the pertinent standards for training, work practices, and facilities design established by OSHA, NIOSH, NFPA, API, NEC NSC, UNDERWRITERS, BUREAU OF MINES, and similar organizations.

The information and recommendations contained herein are offered for the user's consideration and examination; and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use.

DISCLAIMER:

Although the information and recommendations set forth herein ("Information") are presented in good faith and believed to be correct as of the date hereof, Eni USA R&M Company, Inc., makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its safety and suitability for their purposes prior to use. NO REPRESENTATIONS OF WARRANTIES, EITHER EXPRESSED OR IMPLIED, OR MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH THE INFORMATION REFERS.

MSDS REVISION: 4/1/2013 NEW **SUPERSEDES:** 7/1/2008
FORMERLY: Syn-Guard Engine Oil, All SAE Grades (Multiviscosity)

DATA DATE: 7/1/2008 **SUPERSEDES:** 2/21/2001

MSDS Prepared by: Eni USA R&M Co. Inc.

NON-EMERGENCY INFORMATION:

Eni USA R&M Co. Inc.
539 Marwood Road
Cabot, PA 16023
1-800-922-9243

**THIS MATERIAL SAFETY DATA SHEET CONTAINS THE INFORMATION REQUIRED TO COMPLY
WITH THE FEDERAL OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 (g) (2).**