SAFETY DATA SHEET

Version: 1.3
Revision Date: 8/10/20

This material is to be used for research purposes only under the supervision of a technically qualified individual. The toxicological properties may have not been completely characterized. Please determine your responsibilities under your local regulations.

1. Identification of the substance or mixture and of the supplier

Identification

Product Name:	**Preserve** Bulk Fuel Improver
Additional identification	
Chemical name:	Not applicable for mixtures.

Recommended use and restriction on use

Recommended use:	Not Determined
Restrictions on use:	Not Determined

Details of the supplier of the safety data sheet

Company Name:	Opti-Lube Inc
Address:	1646 W Business Park Drive, Suite B Orem, UT 84058 USA
Telephone:	801-491-3717

Emergency telephone number:

FOR TRANSPORT EMERGENCY CALL (+1) 801-850-8553, OR WITHIN THE USA 801-491-3717

2. Hazard(s) identification

Hazard Classification

Physical Hazards	
Flammable liquids	Category 3
Health Hazards	
Acute toxicity (Oral)	Category 4
Acute toxicity (Dermal)	Category 4
Acute toxicity (Inhalation - dust and mist)	Category 4
Skin Corrosion/Irritation	Category 2
Serious eye damage/Eye irritation	Category 2A
Skin Sensitization	Category 1
Carcinogenicity	Category 2
Specific Target Organ Toxicity - Single Exposure	Category 3
Specific Target Organ Toxicity - Repeat Exposure	Category 2 (Liver)
Reproductivity toxicity	Category 1B

Aspiration Hazard	Category 1

Unknown toxicity

Acute toxicity, Oral	0.0 %
Acute toxicity, Dermal	0.00 %
Acute toxicity, Inhalaon, vapor	62.6 %
Acute toxicity, Inhalaon, dust or mist	16.4 %

Label Elements

Hazard Symbol:

Signal Word: Danger

Hazard Statement:

Flammable liquid and vapor, **combustable liquid**.
Causes severe skin burns and eye damage.
Causes skin irritation.
Causes serious eye irritation.
Suspected of causing cancer.
May cause respiratory irritation.
May cause drowsiness or dizziness.
Harmful if swallowed, in contact with skin or if inhaled.
May cause an allergic skin reaction.
May cause damage to organs through prolonged or repeated exposure.
May damage fertility or the unborn child.

Precautionary Statement:

Prevention: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion proof electrical/venlang/lighng/equipment. Use onlynon-sparking tools. Take precauonary measures against static discharge. Wear protecve gloves/protecve clothing/eye protection/face protection. Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray. Wash skin thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid release to the environment.

Response: IF INHALED: remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/ attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with plenty of water/shower. If skin irritation occurs: Get medical advice/attention.

Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.. IF SWALLOWED: IMMEDIATELY call a POISON CENTER/doctor. Rinse mouth. DO NOT INDUCE VOMITING. Call a POISON CENTER/doctor if you feel unwell. Specific treatment (see this lable) Take off contaminated clothing and wash before reuse. In case of fire: Use CO2, dry chemical or foam extinction. Water can be used to cool and protect exposed material. Collect spillage.

Storage: Store in a well-ventilated place. Keep cool. Store locked up. Keep container tightly closed.

Disposal: Dispose of contents/container to an appropriate treatment disposal facility in accordance with applicable laws and regulaons, and product characteriscs 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
Petroleum naptha	64742-95-6	30-40%
Butylphenol	128-39-2	25-35%
1,4 Bensenediamine	101-96-2	15-25%
1,2 Propandediamine	94-91-7	0.5-2.5%
2 - Ethylhexanol	104-76-7	20-30%
2 - Ethylhexyl nitrate	27247-96-7	10-20%
1,2,4 - trimethylbenzene	95-63-6	10-20%
1,3,5 - trimethylbenzene	108-67-8	1-5%
Petroleum naphtha	64742-94-5	1-5%
Propylene glycol ether	107-98-2	1-5%
Xylene	1330-20-7	1-5%
Cumene	98-82-8	0.5-1%
Naphthalene	91-20-3	0.1-0.5%
**Trimethylbenzene	526-73-8	10-20%
**1,2,3 - Trimethylbenzene	526-73-8	1-5%
**Diethylbenzenes	25340-17-4	0.5-1%

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

* Note that the chemical identity of some or all of the above components is considered confidential business information and is being withheld as permitted by 29 CFR 1910.1200 and various State Right-To-Know Laws.
*A subset of the components listed above has been tested as a mixture.

4. First-aid Measures

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

Ingestion: Do NOT induce vomiting. Aspiration of material due to vomiting can cause chemical pneumonitis which can be fatal. If vomiting occurs naturally, the casualty should lean

forward to reduce the risk of aspiration. Rinse mouth. IMMEDIATELY call a POISON CENTER/doctor.

Inhalation: Inhalation of vapours or mists of the product may be irritatiing to the respiratory system. Remove to fresh air and keep at rest in a position comfortable for breathing. If unconscious, place in recovry position and seek medical advice. Call a POISON CENTER/doctor/physician if you feel unwell. Show SDS to doctor. Do not leae the vicitim unattended.

Eye Contact: Rinse immediately and cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritaon persists: Get medical advice/attention.

Skin Contact: Take off immediately all contaminated clothing and wash before re-use. Wash skin thoroughly with soap and water. Launder contaminated clothing before reuse. Call POISON CENTER/doctor/ physician. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

Most important symptoms and effects, both acute and delayed:

Symptoms: Symptoms may be delayed.

Indication of immediate medical attention and special treatment needed:

Treatment: Treat symptomatically.

Notes to physician: The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

5. Fire-fighting measures

General Fire Hazards: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from protected location. Move containers from fire area if you can do so without risk.

Suitable (and unsuitable) extinguishing media

Suitable Extinguishing Media: CO2, water fog, Dry chemical, foam, carbon dioxide. Water can be used to cool and protect exposed material.

Unsuitable extinguishing media: Do not use high volume water jet as an extinguisher, as this will spread the fire.

Specific hazard arising from the chemical: Vapors may cause a flash fire or ignite explosively. Prevent buildup of vapors or gases to explosive concentrations. Vapors may travel considerable distance to a source of ignition and flash back. Water may cause splattering. Container may rupture on heating. A solid stream of water will spread the burning material. Material creates a special hazard because it floats on water. See secon 10 for addiotinal information.

Hazardous combustion products: Carbon oxides.

Advice for firefighters, Special protective equipment and precautions for firefighters:

Fire Fighting Instructions: No data available.

Protective Equipment:	Firefighters must use standard protective equipment, including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Do not allow run-off from fire fighting to enter drains or water courses.

6. Accidental release measures

Protective Precautions, Protective Equipment and Emergency Procedures:	Ventilate closed spaces before entering them. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep upwind. Keep unauthorized personnel away. See Secon 8 of the SDS for Person Protecve Equipment.
Methods and material for containment and cleanup:	Eliminate all ignition sources if safe to do so. 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 (e.g. sand, silica gel, acid binder, universal binder, sawdust). Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.
Environment Precactions:	Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. If the product contamintaes rivers and lakes or drains inform respective authorities.

7. Handling and Storage

Precautions To Be Taken In Handling:	Vapors are heavier than air and will tend to accumulate in low areas. Avoid use in confined areas without adequate ventilation. Areas of inadequate ventulation could contain concentrations high enough to causeeye irritation, headaches, respiratory discomfort or nausea. Carefully evaluate processes using this product at elecated temperatures to ensure safe operang condions. Electrostatic buildup may occur when pouring or transferring this product from its container. The spark produced may be sufficient to ignite vapors of flammable solvent. Static ignition hazard can resul from handling and use. Electrcally bond and ground all containers and equipment before transfer or use of material. Do not breath thermal decomposion products, vapors/dust. Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Take precautionary measures against static discharges. Ground/bond container receiving equipment as appropriate while recognizing that bonding and grounding alone may be insufficient to eliminate the potential hazard from static accumulating flammable liquids. For additional recomendations, consult an appliciable guideline such as National Fire Protective Association (NFPA) 77, "Recommended Practives on Static Electricity" and API RP "Recommended Practice 2003, Protection Against Ignistions Arising out of Static, Lighting, and Stray Currents" (2008). Use only non-sparking tools. Do not breath dust/fumes/gas/mist/vapors or spray. Avoid contact with skin and eyes. Observe good hygiene practices. Use only in well-ventilated areas. Use personal protective equipment as required. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Launder contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Avoid environmental contaminaon. Avoid formation of aerosol. For personal protection see section 8. Provide sufficient air exchange and/or exhaust in work rooms. To avoid spills during handling keep bottle ona metal tray. Dispose of rinse water in accordance with local and national regulations. Persons susecptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in a ny process in which this mixture is being used.
Precautions To Be Taken In Storing:	Store in containers made of same material as original container. Keep at temperature not exceeding 40°C. Keep container tightly closed in a dry and well-ventilated place.

Keep cool. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installtions/working materials must comply with the technological safety standards. Store in a well-ventilated place. Store away from incompatible materials. See section 10 for incompatible materials. Do not store near potential sources of ignition.

Maximum Storage / Handling Temperature: 35°C / 95°F

8. Exposure Controls / Personal Protection

Control Parameters: Occupational Exposure Limits

**Trimethylbenzene	TWA value 25 ppm
1,2,4-Trimethylbenzene	TWA value 25 ppm
1,2,4-Trimethylbenzene	REL value 25 ppm; 125 mg/m3
1,3,5-Trimethylbenzene	TWA value 25 ppm
1,3,5-Trimethylbenzene	REL value 25 ppm; 125 mg/m3
1,2,3-Trimethylbenzene	ACGIH TWA: 25 ppm, OSHA PEL: 25 ppm
Propylene glycol ether	TWA value 50 ppm
Propylene glycol ether	STEL value 100 ppm
Propylene glycol ether	REL value 100 ppm; 360 mg/m3
Propylene glycol ether	STEL value 150 ppm; 540 mg/m3
Xylene	TWA value 100 ppm
Xylene	STEL value 150 ppm
Xylene	PEL value 100 ppm; 435 mg/m3
Cumene	TWA value 50 ppm
Cumene	REL value 50 ppm; 245mg/m3
Cumene	PEL value 50 ppm; 245mg/m3
Naphthalene	TWA value 10 ppm
Naphthalene	STEL value 15 ppm; 75 mg/m3
Naphthalene	REL value 10 ppm; 50 mg/m3
Naphthalene	PEL value 10 ppm; 50 mg/m3
Petroleum naphtha - Non-aerosol. - as total hydrobarbon vapor	TWA value 200 mg/m3
Petroleum naphtha	REL value 100 mg/m3
Mineral oil - Inhalable	TWA value 5 mg/m3
Mineral oil - Mist.	REL value 5 mg/m3
Mineral oil - Mist.	STEL value 10 mg/m3
Mineral oil - Mist.	PEL value 5 mg/m3

Other exposure limits

Chemical name	Type	Exposure limit values	Source
2 - Ethylhexyl nitrate	TWA	1 ppm	

Biological Limit Values

Chemical name	Exposure limit values	Source
Xylene (Methylhippuric acids: Sampling Time: End of shift.)	1.5 g/g (Creanine in urine)	ACGIH BEI (03 2013)

Appropriate Engineering Controls: Mechanical ventilation or local exhaust ventilation is required (typically 10 air changes per hour). Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventitlation, or other engineering controls to maintain airborne levels below recommended exposure litmis. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventitation, especially in confined areas. 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. Use explosion-proof ventilation equipment to stay below exposure limits.

Individual protection measures, such as personal protective equipment

General information: Use explosion-proof ventilation equipment. Provide easy access to water supply and eye wash facilities. Good general ventilation (typically 10 air changes per hour) should be used. Venlaon rates should be matched to condions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/face protection: Wear tight-fiting goggles or face shield. Eye wash bottle with pure water. Wear face-shield and protective suit for abnormal processing problems.

Skin Protection:

Hand: Butyl rubber. Use nitrile or neoprene gloves. Use good industrial hygiene pracces. In case of skin contact, wash hands and arms with soap and water.

Other: Wear apron or protective and impervious clothing in case of contact. Do not wear rings, watches or similar apparel that could entrap the material. Choose body protection according to the amoint and concentration of the dangerous substace at the work place.

Respiratory Protection: Use respirator with a combination organic vapor and dust/mist cartridge. Use a prepirator with an organic vapor cartridge if exposure limit is exceeded. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites. A respiratory protection program compliant with all applicable regulations must be followed whenever workplace conditions require the use of a respirator. Under normal use condions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust parcles, mist or vapors is likely.

Hygiene Measures: Observe good industrial hygiene pracces. Do not eat, drink or smoke when using this product. Avoid contact with eyes and skin. Wash contaminated clothing before reuse. When using do not smoke. Wash hands before breaks and immediately after handling the product.

9. Physical and chemical properties

Appearance

Physical state: Liquid

Form: Liquid

Appearance (Color):	Red Brown
Odor:	Characterisc, aromatic
Odor Threshold:	Not determined
pH:	Not determined
Boiling Point:	360 °F (182 °C)
Flash Point:	126 °F (52 °C) (Pensky-Martens Closed Cup)
Evaporation Rate:	<Ether
Upper / Lower Flammability or Explosive Limits:	Not determined
Flammability limit – upper (%):	Not determined
Flammability limit – lower (%):	Not determined
Explosive limit – upper (%):	Not determined
Explosive limit – lower (%):	Not determined
Vapor Pressure (Air=1):	Not determined
Vapor Density	Heavier than air.
Relative Density:	0.86
Solubility(ies)	Insoluble
Solubility in water:	Insoluble in water.
Solubility (other):	Not determined
Partition Coefficient (n-octanol/water):	Not determined
Auto-ignition temperature:	Not determined
Decomposition Temperature:	Not determined
Viscosity:	6 mm2/s (104 °F (40 °C))
Other information:	Risk of explosion if heated under confinement.
Pour Point Temperature:	-49 °F (-45 °C)

10. Stability and reactivity

Reactivity:	No decomposition if stored and applied as directed.
Chemical stability:	No decomposition if stored and applied as directed.
Possibility of Hazardous Reactions:	May undergo self-accelerating, exothermic reacon if heated above 212 °F.
Conditions to Avoid:	Excessive heat. Contact with acids. Stronge oxidizing agents. Strong caustic agents. Heat may cause the containers to explode. Heat, sparks, flames. Exposure to air or moisture over prolonged periods.
Incompatible Materials:	Strong acids and bases. Aluminum. Halogenated and halogenated compunds. Strong oxidizing agents. Lead and lead alloys. Oxidizing agents, reactive metals, sodium or calcium hypochlorite. Avoid heat or dehydrang agents. Reaction with peroxides may result in violent decomposition of peroxide possible creating an explosion. Materials reactive with hyroxyl compounds. Nitriles.
Hazardous Decomposition Or Byproducts:	Thermal decomposion or combuson may generate smoke, carbon monoxide, carbon dioxide, hydrocarbons and other products of incomeplete combustion.

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11. Toxicological Information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled.
Ingestion:	Harmful if swallowed.
Skin contact:	May be harmful in contact with skin. Causes skin irritation. Causes sever skin burns.
Eye contact:	Causes serious eye irritaon damage.

Information on toxicology effects, Acute toxicity

Oral

Product: Material can be aspirated in to the lungs during the act of swallowing or vomiting. This could result in severe injury to the lungs and death. Ingestion can cause central nervous system effects such as headache, dizziness,drowsiness, and generalized weakness. Ingestion of 2-ethylhexyl nitrate may cause vasodilation resulying in reduced blood pressure and other cardiovascular effects. Symptoms include: headache, dizziness, nausea, fatigue, heart palpitations, confusion and possible loss of consciousness. ATEmix 5000 - 10,000 mg/kg ATEmix300-2000mg/kg Sallowing this material causes sever irritation and may cause burns of the mouth, esophagus and stomach, abdominal pain nausea, vomiting and diarrhea. Swallowing material may casuse irritation gastrointestinal lining, nausea, vomiting, diarrhea and abdominal pain.

1,4 Benzenediamine: Acute toxicity estimate:625 mg/kg
Method: Calculation method
LD50 (Rat): 271 mg/kg

Dermal

Product: Absorpon of 2-ethylhexyl nitrate through the skin may cause vasodilation resulting in reduced blood pressure and other cardiovascular effects. Symptoms include: headache, dizziness, nausea, fatigue, heart palpitations, confusion and possible loss of consciousness. Prolonged or widespread contact with this material could result in the absoption of potentially harmful amounts. Skin absorption components of this material will cause systemic effects; note toxicity in other sections. Components of this material may be absorbed through the skin. ATEmix > 5,000 mg/kg., 2000 mg/kg

1,4 Benzenediamine: Acute toxicity estimate: 1,724 mg/kg
Method: Calculation method
756 mg/kg

Inhalation:

Product: High concentration may cause headaches, dizziness, nausea, behavioralchanges, weakness, drowsiness and stupor. Inhalaon of 2-ethylhexyl nitrate may cause vasodilation resulng in reduced blood pressure andother cardiovascular effects. Symptoms include: headache, dizziness,nausea, fatigue, leading to visual impariment, respiratory failure, heart palpitations, confusion and possible loss of consciousness. Repeated overexposure to petroleum naphtha can cause nervous system damage. Other nervous system effects leading to visual impairment, respiratory failure, unconsciousness and death. ATEmix (, 4 h): 2 - 5 mg/l. Vapour Dusts, mists and fumes.

1,4 Benzenediamine: Acute toxicity estimate: 1.36 mg/l
Test atmosphere: Dust/mist
Method: Calculation method
LC50 (Rat): 0.6 mg/l
Exposure time: 6 H
Test atmospher: Dust/mist.

Skin Corrosion/Irritation

Product: Prolonged or repeated contact may cause skin irritation, allergies and/or severe skin burns. Remarks: Prolonged or repeat skin contact as from clothing wet with material may cause dermtitas. Symptoms may include: redness, edema, drying, and cracking of the skin. Alcohol may enhance the toxic effects.

Serious Eye Damage/Eye Irritation

Product: Remarks: Causes serious eye irritation., damage.

Respiratory sensitization:	No data available.
Petroleum naphtha	Classification: Not a skin sensizer. (Literature)
2-Ethylhexanol	Classification: Not a skin sensizer. (Literature)
2 - Ethulhexyl nitrate	Classification: Not a skin sensizer. (Supplier information)
Xylene	Classification: Not a skin sensizer. (Literature)
Cumene	Classification: Not a skin sensizer. (Literature)

Specific Target Organ Toxicity – Single Exposure

2 - Ethylhexanol	Respiratory tract irritation.
2 - Eythylhexyl nitrate	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.
**Trimethylbenzene	Nose, throat and lung irritant.
1,2,4 - trimethylbenzene	Nose, throat and lung irritant.
1,2,3-trimethylbenzene	May cause irritaton to the mucous membranes and upper repiratory tract.
**1,2,3-trimethylbenzene	Nose, throat and lung irritant.
Petroleum naphtha	If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.
Xylene	Respiratory tract irritation.
Cumene	Respiratory tract irritation.

Aspiration Hazard

Product: May be fatal if swallowed and enters airways.

Other Effects:

Petroleum naphtha	Narcotic effect
2 - Eythylhexyl nitrate	Alcohol may enhance toxic effects.
**Trimethylbenzene	Central nervous system blood

Petroleum naphtha	Narcoc effect.
Propylene glycol ether	May cause drowsiness or dizziness.
Cumene	Central nervous system
Naphthalene	Blood

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 then 3% extractables by the IP 346 test.
Cumene	IARC 2B: Possible carcinogenic to humans.
Naphthalene	A two-year National Toxicology Program (NTP) study found an increased incidence of nasal tumors in rats exposed to naphthalene by inhalation. In mice similarly exposed, increased incidences of alveolar/bronchiolar adenomas were observed.

IARC Monographs on the Evaluation or Carcinogenic Risks to Humans:

Cumene	Overall evaluaon: 2B. Possibly carcinogenic to humans.
Naphthalene	Overall evaluaon: 2B. Possibly carcinogenic to humans.

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

Naphthalene	Reasonably ancipated to be a human carinogen.

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

No carcinogenic components idenfied.

Germ Cell Mutagenicity:

2-Ethylhexanol	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
2 - Eythylhexyl nitrate	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
Propylene glycol ether	The Ames Salmonella test for mutagenicity was negative for this product.
Xylene	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
Cumene	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
**Diethylbenzenes	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
Petroleum naphtha	In vitro and in vivo genec toxicity studies were negative.
Naphthalene	Naphthalene has caused mutagenic effects in in vitro studies with metabolic acvation, however, in vivo studies do not show evidence of germ cell mutagenicity.

Reproductive toxicity:

2-Ethylhexanol	No evidence of adverse effects were found in a developmental toxicity study of 2-ethylhexonal in rats. Doses up to 3 ml/kg applied to the skin during the most critical

	part of the gestation period produced evidence of toxicity to mothers, but no evidence of injury in the developing offspring. In a previous study, birth defects were observed by oral administration, an unlikely route of exposure in the workplace.
Xylene	Xylene is fetotoxic in rats and rabbits in the absence of maternal toxicity.
1,4 Benzenediamine	May damage fertility or the unborn child.

Specific Target Organ Toxicity – Repeated Exposure:

Product:	Prolonged or repeated exposure may cause kidney damage.
Petroleum naphtha	Prolonged or repeated exposure may cause kidney damage.
2-Ethylhexanol	Repeated exposure may result in kidney and liver damage. A 14-day dermal toxicity study of 2 ethylhexanol in rats showed blood effects, decreased spleen weight and decreased triglycerides. Unknown: Target Organ(s): Blood, Liver, Spleen, Kidney.
2 - Eythylhexyl nitrate	Prolonged exposure to 2 - Eythylhexyl nitrate may cause casolilation resulting in reduced blood pressure and other cardiovascular effects. Symptoms include headache, dizziness, nausea, fatigue, heart palpitations, confusion and possible loss of consciousness.
Petroleum naphtha	Repeated overexosure to petroleum naphtha can cause nervous system damage.
Propylene glycol ether	Dermal: Target Organ(s): Kidney, lung, liver Inhalaon: Target Organ(s): Kidney, lung, liver
Xylene	Xylene has been found to cause cardiac, liver and kidney effects, anemia and eye damage in laboratory animals. Prolonged and repeated inhalation of hydrocarbon solvents such as xylene can cause chronic neurological disturbances. Chronic ecposure to xylene has been shown to cause hearing loss in experimental animals. Unknown: Target Organ(s): Central nervous system, hearing.
Diethylbenzenes	Prolonged or repeated exposure may result in adverse effects on the liver, kidney and/or nervous system. Unknown: Target Organ(s): Kidney, liver, central nervous system.
Naphthalene	Repeated overexposure to naphthalene may cause cataracts. Repeated overexposure to naphthalene may cause destrucon of red blood cells with anemia, fever, jaundice and kidney and liver damage.
1,4 Benzenediamine	May cause damage to organs (Liver) through prolonged or repeated

12. Ecological Information

Ecotoxicity:

Fish

Petroleum naphtha	LC 50 (Rainbow Trout, 4d): 9.2 mg/l LC 50 (Rainbow Trout, 4d):> 1,000 mg/l
2-Ethylhexanol	LC 50 (Fathead Minnow, 4 d): 28.2 mg/l LC 50 (Golden Orfe, 4 d): 17.1 mg/l NOEC (Zebra Fish, 4 d): 14 mg/l

2-Ethylhexyl nitrate	LC 50 (Zebra Fish, 4d): 2 mg/l NOEC (Zebra Fish, 4 d): 1.52 mg/l
1,2,3-trimethylbenzene	LC 50 (Fathead Minnow, 4 d): 7.72 mg/l
Petroleum naphtha	LC 50 (Rainbow Trout, 4 d): 2 mg/l
Propylene glycol ether	LC 50 (Fathead Minnow, 4 d): > 20,000 mg/l LC 50 (Golden Orfe, 4 d): > 4,000 mg/l
Xylene	LC 50 (Fathead Minnow, 4 d): 13.4 mg/l LC 50 (Rainbow Trout, 4 d): 2.6 mg/l LC 50 (Rainbow Trout, 56 d): > 1.3 mg/l NOEC (Rainbow Trout, 56 d): > 1.3 mg/l
Cumene	LC 50 (Rainbow Trout, 4 d): 4.8 mg/l
**Diethylbenzenes	LC 50 (Rainbow Trout, 4 h): 0.673 mg/l
Butylphenol	LC50 (Pimephales promelas (fathead minnow)): 1.4 mg/l exposure time: 96 h Test Type: flow-through test
1,4 Benzenediamine	LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.18 mg/l Eposure time: 96 h LC50 (Oncorhynchus mykiss (rainbow trout)): 0.13 mg/l Eposure time: 96 h LC50 (Pimephales promelas (fathead minnow)): 0.13 mg/l Eposure time: 96 h

Aquatic Invertebrates

Petroleum naphtha	EC50 (Water flea (Daphnia magna), 2d): 3.2 mg/l
2-Ethylhexanol	EC50 (Water flea (Daphnia magna), 2d): 39 mg/l
2-Ethylhexyl nitrate	EC50 (Water flea (Daphnia magna), 2d): > 12.6 mg/l
1,2,4 - trimethylbenzene	EC50 (Water flea (Daphnia magna), 2d): 3.6 mg/l
1,3,5 - trimethylbenzene	EC50 (Water flea (Daphnia magna), 2d): 6 mg/l
Petroleum naphtha	EC50 (Water flea (Daphnia magna), 2d): 3 mg/l
Propylene glycol ether	EC50 (Water flea (Daphnia magna), 4 d): > 10,000 mg/l
Xylene	EC50 (Water flea (Ceriodaphnia dubia), 7 d): > 1.7 mg/l EC50 (Water flea (Daphnia magna), 2d): 3.82 mg/l NOEC (Water flea (Daphnia magna), 7 d): > 0.96 mg/l NOEC (Water flea (Ceriodaphnia dubia), 7 d): > 1.17 mg/l EC50 (Water flea (Daphnia magna), 7 d): > 0.96 mg/l EC50 (Water flea (Daphnia magna), 21 d): > 1.57 mg/l NOEC (Water flea (Daphnia magna), 21 d): 1.57 mg/l LC 50 (Alga, 3 Days): 4.36 mg/l

Cumene	EC50 (Water flea (Daphnia magna), 2 d): 4 mg/l EC 50(Shrimp (Mysidopsis Bahia), 4 d): 1.3 mg/l EC50 (Water flea (Daphnia magna), 21 d): > 0.35 mg/l NOEC (Water flea (Daphnia magna), 21 d): 0.35 mg/l
**Diethylbenzenes	EC50 (Water flea (Daphnia magna), 2 d): 2.01 mg/l
Butylphenol	EC50 (Daphnia magna (water flea)): 0.45 mg/l Exposure time: 48 h
1,4 Benzenediamine	EC50 (Daphnia magna (Water flea)): 0.54 mg/l Exposure time: 48 h
Toxicity to Aquatic Plants	
Petroleum naphtha	EC 50 (Green algea (Selenastrum capricornutum), 3 d):> 1,000mg/l LC 50 (Green algea (Selenasturm capricoruntum), 3 d): > 1,000 Mg/l
2-Ethylhexanol	EC50 (Green Algea (Selenastrum quadricauda), 3 d): 16.6 mg/l
2-Ethylhexyl nitrate	EC50 (Alga, 3 d): 3.22 mg/l
1,3,5 - trimethylbenzene	EC50 (Green Algea (Selenastrum quadricauda), 2 d): 25 mg/l
Petroleum naphtha	EC50 (Green Algea (Selenastrum Capricornutum), 4 d): 1.1 mg/l
Propylene glycol ether	EC50 (Alga, 4 d): > 1,000 mg/l
Xylene	LC50 (Alga, 3 d): 4.36 mg/l
Cumene	EC50 (Green Algea (Selenastrum Capricornutum), 3 d): 2.6 mg/l
**Diethylbenzenes	LC50 (Green Algea (Selenastrum Capricornutum), 3 h): 1.21 mg/l
Butylphenol	EC50 (Pseudokirchneriella subcapitata (green algae)): 1.2 mg/l Eposure time: 96 h Test type: static test
1,4 Benzenediamine	EC50 (Pseudokirchneriella subcapitata (algae)): 0.939 mg/l Exposure time: 72 h
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	
Petroleum naphtha	EC50 (Sludge, 0.1 d): > 99 mg/l
2-Ethylhexanol	EC 50 (Pseudomonas puda, 0.1 d): 540 mg/l EC 50 (Sludge, 0.5 d): > 100mg/l

2-Ethylhexyl nitrate	EC50 (Sludge, 0.3 d): > 1,000 mg/l
Xylene	LD 50 (Bacteria, 0.1 d): > 100 mg/l
Cumene	EC 50 (Pseudomonas puda, 1 d): > 211 mg/l

Persistence and Degradability

Biodegradation

Petroleum naphtha	OECD TG 301 F, 78%, 28d, Readily biodegradable OECD TG 301 F, 69% 28 d, Readily biodegradable
2-Ethylhexanol	OECD TG 302 B, 95%, 5 d, Readily biodegradable OECD TG 301 C, 100%, 14 d, Readily biodegradable.
2-Ethylhexyl nitrate	Miscellaneous, 0%, 28 d, Not readily degradable.
Petroleum naphtha	OECD TG 301 F, 58%, 28 d, Not readily degradable.
Propylene glycol ether	Miscellaneous, 82%, 28 d, Readily biodegradable.
Xylene	OECD TG 301 C, 100%, 28 d, Readily biodegradable.
Cumene	Miscellaneous, 86%, 28 d, Readily biodegradable.
**Diethylbenzenes	Miscellaneous, 4.7%, 28 d, Not readily degradable.

Bioaccumulative Potential

Bioconcentration Factor (BCF)

2-Ethylhexanol	Bioconcentraon Factor (BCF): 25.35 (Calculated)
Xylene	Bioconcentraon Factor (BCF): 23.99 (Measured)
Butylphenol	Log Pow: 4.92
1,4 Benzenediamine	Log Pow: 3.7 (25ºC.25ºC)

Partial Coefficient n-octanol / water (log Kow)

Petroleum naphtha	Log Kow: 4.5 (Measured)
2-Ethylhexyl nitrate	Log Kow: 5.24 (Measured)
2-Ethylhexanol	Log Kow: 2.9 (Measured)
1,2,4 - trimethylbenzene	Log Kow: 3.63 (Calculated)
Propylene glycol ether	Log Kow: -0.49 (Calculated)
Xylene	Log Kow: 3.15 (Measured)
Cumene	Log Kow: 3.55 (Measured)

Mobility

2-Ethylhexyl nitrate	soil - 3.75

2-Ethylhexanol	soil - 1.42
Other Adverse Effects:	
Ozone-Depletion Potential:	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances. Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A+B).
Additional Ecological Information:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

13. Disposal considerations

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. Do not cut, weld, braze, solder, drill, grind, or expose containers to heat, flame, spark or other sources of ignition. This product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste managment company.

Contaminated Packaging:

Container packaging may exhibit hazards. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. Transport Information

International Regulations

DOT

UN Number: NA 1993

UN Proper Shipping Name: Combustible liquid, n.o.s (Petroleum naphtha, 2-Ethylhexyl nitrate)

Transport Hazard Class(es)

Class: CBL

Labels: None

Packing Group: III

Marine Pollutant: Yes

Special precauons for user: None established

Reportable quanty Benzene 10 lbs
Naphthalene 100 lbs

Maritime Transport IMDG/GGVSea

UN Number: UN 1993

UN Proper Shipping Name:	FLAMMABLE liquid, n.o.s (Petroleum naphtha)
Transport Hazard Class(es):	
Class:	3
Labels:	3
EmS No.:	F-E, S-C
Packing Group:	III
Marine Pollutant:	Yes
Limited Quanty:	5.00L
Expected Quanty:	E1
Special precauons for user:	None established

IMDG-Code

UN Number:	UN 1760
UN Proper Shipping Name:	CORROSIVE LIQUIDS, N.O.S. (N,N'-di-sec-butyl-p-phenylenediamine, 2,6-di-tertiary-butylphenol)
Class:	8
Packing Group:	!!!
Labels:	8
EmS No.:	F-A, S-B
Marine Pollutant:	Yes

IATA-DGR and Air Transport ICAO-TI

UN Number:	UN 1993
UN Proper Shipping Name:	Flammable liquid, n.o.s. (Petroleum naphtha, @-Ethylhexyl nitrate)
Transport Hazard Class(es):	
Class:	3
Labels:	3
Marine Pollutant:	Yes
Packing Group:	III
Limited Quanty:	10.00 L
Expected Quanty:	E1
Environmental Hazards	Marine Pollutant
Special Precauons for user:	None established
Other information	
Passenger and cargo aircraft:	Allowed
Cargo aircraft only:	Allowed

49 CFR

UN/ID/NA Number:	UN 1760
UN Proper Shipping Name:	CORROSIVE LIQUIDS, N.O.S. (N,N'-di-sec-butyl-p-phenylenediamine, 2,6-di-tertiary-butylphenol)
Class:	8
Packing Group:	!!!

SAFETY DATA SHEET

Labels:	Class 8 - Corrosive
ERG Code	154
Marine Pollutant:	Yes
Special precautions for user	The transportation classification(s) provided herein are for informational purposes only, and solely based upos the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

None known.

* This material is not regulated for US DOT transportation in quantities less than 119 gallons per 49 CFR 173:120 (b)(1). Does not apply to transportation by vessel, aircraft or package shipping services.

** This material is a marine pollutant when shipped in quantities greater than 119 gallons.

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 transport of the material. Review classification requirements before shipping materials at elevated temperatures.

15. Regulatory Information

US Federal Regulations

EPCRA - Emergency Planning and Community Right-to-Know

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 qyuantity	Calculated
Propylene glycol ether	107-98-2	100 lbs	4,124.73 lbs 1,870.94 kgs
Xylene	1330-20-7	100 lbs	8,109.64 lbs 3,678.45 kgs
Cumene	98-82-8	5000 lbs	> 50,000.00 lbs > 22,679.60 kgs
Naphthalene	91-20-3	100 lbs	30,138.64 lbs 13,670.59 kgs
Ethyl benzene	100-41-4	1000 lbs	> 50,000.00 lbs > 22,679.60 kgs
Toluene	108-88-3	1000 lbs	> 50,000.00 lbs > 22,679.60 kgs
Benzene	71-43-2	10 lbs	> 50,000.00 lbs > 22,679.60 kgs
Vinyl acetate	0108-05-04	5000 lbs	> 50,000.00 lbs > 22,679.60 kgs

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

SAFETY DATA SHEET

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Fire	Immediate	Delayed
Reactive	(Acute) Health Hazards	(Chronic) Health Hazard

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
Propylene glycol ether	107-98-2	2.4 %	100 lbs
Xylene	1330-20-7	1.2 %	100 lbs
Cumene	98-82-8	0.9 %	5000 lbs
Naphthalene	91-20-3	0.3 %	100 lbs
Ethyl benzene	100-41-4	749.0 PPM	1000 lbs
Toluene	108-88-3	351.0 PPM	1000 lbs
Benzene	71-43-2	290.0 PPM	10 lbs
Vinyl acetate	0108-05-04	180.0 PPM	5000 lbs

SARA 311/312 Hazardous Chemical

Reactive
Fire Hazard
Immediate (Acute) Health Hazards
Delayed (Chronic) Health Hazard

SARA 313 (TRI Reporting)

This product may contain chemical(s) regulated under the superfund Amendments and Reauthorization Act (SARA). For additional information please contact Opti-Lube Customer Assistance: America(s): sales@opti-lube.com ; Europe: sales@opti-lube.com; Asia: sales@opti-lube.com.

Chemical Identity	CAS number	Percent by Weight	Reportable Threshold for other uses	Reportable Threshold for manufacturing and processing
1,2,4-trimethylbenzene	95-63-6	12.1 %	10000 lbs	25000 lbs
Xylene	1330-20-7	1.2 %	10000 lbs	25000 lbs
Naphthalene	91-20-3	0.3 %	10000 lbs	25000 lbs

Clean Air Act

Clean Water Act

US State Regulations

Massachusets Right to Know N,N'-di-sec-butyl-1,4-benzenediamine

Maine Chemicals of High Concern Product does not contain any listed chemicals

Vermont Chemicals of High Concern Product does not contain any listed chemicals

Washington Chemicals of High Concern — Product does not contain any listed chemicals

US. California Proposistion 65 — WARNING: This product can expose you to chemical(s) including Ethyl benzene, Benzene, which is known to the State of California to cause cancer and Benzene, which is/are known to the state of California to cause birth defects of other reproductive harm. For more information go to www.p65Warnings.ca.gov.

Cumene	0.93%
Naphthalene	0.22%
Ethyl benzene	749.00PPM
Toluene	351.00PPM
Benzene	224.00PPB
**Benzene	290.00PPM
Propylene oxide	13.00PPm
Ethylene oxide	1.00PPB
Methanol	156.00PPT

Inventory Status

Australia (AICS)	All components are in compliance with chemical nofication requirements in Australia.
Canada (DSL/NDSL)	All components are in compliance with the Canadian Environmental Protection Act and are present on the Domesc Substance List.
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 email us atsales@opti-lube.com
Japan (ENCS)	This product requires nofication in Japan.
Korea (ECL)	This product requires nofication before sale in Korea.
New Zealand (NZIoC)	This product requires nofication before sale in New Zeland.
Philippines (PICCS)	All components are in compliance with the Philippines Toxic Substance and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).
Switzerland (SWISS)	All components are in compliance with the EnvironmentallyHazardous Substances Ordinance in Switzerland.
Taiwan (TCSCA)	All components of this product are listed on the Taiwan Inventory.
United States (TSCA)	All components of this material are on the US TSCA Inventory.

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

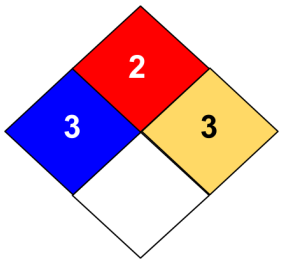
16. Other information, including date of preparation or last revision

HMIS Hazard ID

Health	3
Flammability	2
Physical Hazards	3

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

NFPA Hazard ID



Flammability
Health
Physical Hazards
Reactvity

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

Issue Date:	8/10/20
Version #:	1.3
Source of Information:	Internal Company data and other publically available resources.
Further Information:	Contact Supplier (see Section 1)
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