

SAFETY DATA SHEET (SDS)

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: Pure Cetane

Additional identification

Chemical name: Mixture

CAS-NO.: Not applicable.

Recommended use and restriction on use

Recommended use: Not Determined.

Restrictions on use: Not Determined.

Details of the supplier of the safety data sheet

Supplier

Company name: Opti-Lube
Address: 1195 S 1680 W
Orem, UT 84058
USA

Telephone: 801-491-3717

Emergency telephone number:

FOR TRANSPORT EMERGENCY CALL CHEMTREC (+1) 703 527 3887, OR WITHIN THE USA 801 491 3717

2. Hazard(s) identification

Hazard Classification of the substance or mixture

Physical Hazards

Flammable liquids Category 4

Health Hazards

Acute toxicity (Oral) Category 4

Acute toxicity (Dermal) Category 4

Acute toxicity (Inhalation—dust and mist) Category 4

Unknown toxicity

Acute toxicity, Oral 0.0 %

Acute toxicity, Dermal 0.0 %

Acute toxicity, Inhalation, vapor 99.9%

Acute toxicity, Inhalation, dust or mist 0.00 %

Label Elements:



Signal Word:	Warning
Hazard Statement:	Combustible liquid. Harmful if swallowed, in contact with skin or if inhaled.
Precautionary Statement:	
Prevention:	Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid release to the environment.
Response:	IF INHALED: remove person to fresh air and keep comfortable for breathing. IF ON SKIN: Wash with plenty of water. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. Specific measures (see this label). Take off contaminated clothing and wash before reuse. In case of fire: Use CO ₂ , 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.
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

General Information

Chemical Name:	CAS-NO.	Percent by Weight
2-Ethylhexyl nitrate	27247-96-7	90 - 100%

4. First-aid measures

Description of first aid measures

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. Call a POISON CENTER/doctor/physician if you feel unwell.
Inhalation:	Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell.
Eye Contact:	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.
Skin Contact:	Wash skin thoroughly with soap and water. Call POISON CENTER/doctor/physician if you feel unwell. Launder contaminated clothing before reuse.

Most important symptoms and effects, both 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: Move containers from fire area if you can do so without risk.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: CO₂, Dry chemical or foam. Water can be used to cool and protect exposed material.

Unsuitable extinguishing media: Not determined.

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. See section 10 for additional information.

Special protective equipment and precautions for firefighters

Special fire fighting Procedures: Material may explode under confinement and high temperature. The alkyl nitrate contained in this product may undergo a self-accelerating exothermic reaction if heated above 212°F (100°C).

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

6. Accidental release measures

Personal 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 Section 8 of the SDS for Person Protective 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. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.

Environment Precautions: Avoid release to the environment. Do not contaminate water sources or

7. Handling and Storage

Precautions for safe handling: Product can accumulate static charge when handled. Equipment should be grounded. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid breathing dust/fumes/gas/mist/vapors/spray. Observe good industrial hygiene practices. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Launder contaminated clothing before reuse. Avoid environmental contamination. DO NOT HEAT.

Maximum Handling Temperature:	45°C/113°F
Conditions for safe storage, including any incompatibilities:	Keep cool. Store in a well-ventilated place. Do not store near potential sources of ignition. Keep at temperature not exceeding 40°C. Keep away from combustible materials.
Maximum Storage Temperature:	40°C/104°F

8. Exposure Controls/personal Protection

Control Parameters:

Occupational Exposure Limits

None of the components have assigned exposure limits

Other Exposure Limits

Chemical Name:	Type	Exposure Limit Values	Source
2-Ethylhexyl nitrate	TWA	1 ppm	

Appropriate engineering Controls: Mechanical ventilation or local exhaust ventilation is required.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation, closed systems, respiratory and eye protection may be needed in special circumstances, such as poorly ventilated spaces, heating, evaporating of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, ect. Use personal protective equipment as required.

Eye/face protection: Safety glasses. If potential for splash or mist exists, wear chemical goggles or face shield.

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.

Other: Wear apron or protective clothing in case of contact.

Respiratory Protection: Use respirator with a combination organic vapor and high efficiency filter cartridge if recommended 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. 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 cleanup sites.

Hygiene measures: Observe good industrial hygiene practices. Do not eat, drink or smoke when using this product. Avoid contact with skin. Wash hands after handling.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	Clear
Oder:	Pungent
Oder threshold:	No data available
pH:	3.74 – 4.14
Freezing point:	> -50 °C
Boiling point:	> 212 °F (100 °C)
Flash point:	> 149°F (65 °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 (%):	7 V%
Flammability limit – lower (%):	0.3 V%
Explosive limit – upper (%):	No data available
Explosive limit – lower (%):	No data available
Vapor pressure (air=1):	0.2 torr (20 °C 68 °F)
Vapor density:	No data available
Relative density:	0.95 - 0.98 60.1°F (15.6°C)
Solubility(ies)	
Solubility in water:	Partly Soluble.
Solubility (other):	No data available
Partition coefficient (n-octanol/water):	5.24 (measured)
Auto-ignition temperature:	266 °F (130 °C)
Decomposition temperature:	> 212 °F (100 °C)
Viscosity:	1.8 MM2/S (68°F) (20°C) 1.2 MM2/S (40°C) (104°F)
Other infomration	
Pour Point Temperature:	< -40 °F (-40 °C)
Percent volatile:	100% (percent by weight)

10. Stability and reactivity

Reactivity:	No data available
Chemical stability:	Material is stable under normal conditions.
Possibility of Hazardous Reactions:	May undergo self-accelerating, exothermic reaction if heated above 212 °F.
Conditions to Avoid:	Do not expose to excessive heat, ignition sources or oxidizing materials. Heat may cause the containers to explode.
Incompatible Materials:	Copper and cooper alloys. Strong acids. Strong bases. Nitriles. Strong oxidizing agents.
Hazardous Decomposition Products:	Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide and other products of incomplete combustion.

11. Toxicological Information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled.
Ingestion:	Harmful if swallowed.
Skin contact:	Harmful if contact with skin.
Eye contact:	No data available

Information on toxicology effects, Acute toxicity

Oral

Product:	ATEmix 300-2000 mg/kg. Ingestion of 2-ethylhexyl nitrate may cause vasodilation resulting in reduced blood pressure and other cardiovascular effects. May cause irritation of the gastrointestinal lining. Symptoms include: headache, dizziness, drowsiness, nausea, fatigue, heart palpitations, confusion,
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Dermal

Product:	ATEmix 1,000-2,000 mg/kg. Absorption 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.
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Inhalation

Product:	ATEmix (, 4 h): 1 -2 mg/L. Dusts, mists and fumes. Inhalation of 2-ethylhexyl nitrate may cause vasodilation resulting in reduced blood pressure and other cardiovascular effects. Symptoms include: headache, dizziness, drowsiness, nausea, fatigue, stupor, behavioral changes, weakness, heart palpitations, confusion and possible loss of consciousness.
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Skin Corrosion/Irritation

Product:	Not classified as a primary skin irritant. Remarks: Prolonged or repeat skin contact as from clothing wet with material may cause dermatitis. Symptoms may include: redness, edema, drying, and cracking of the skin. Alcohol may enhance the toxic effects.
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Serious Eye Damage/Eye Irritation

Product:	Remarks; Not classified as a primary eye irritant.
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Respiratory sensitization:

No data available.

Skin sensitization:

Product:	Classification: Not a skin sensitizer (Literature)
2-Ethylhexanol	Classification: Not a skin sensitizer (Supplier Information)

Specific Target Organ Toxicity – Single Exposure

2-Ethylhexyl nitrate	If materials is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.
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Aspiration Hazard

Product:	No data available
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Chronic effects

Carcinogenicity:	No data available
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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:

Product:	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.
2-Ethylhexyl nitrate	This material has not exhibited mutagenic or genotoxic potential in laboratory tests.

Reproductive toxicity: No data available

Specific Target Organ Toxicity – Repeated Exposure:

2-Ethylhexanol	Prolonged exposure to 2-ethylhexyl nitrate 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.
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12. Ecological Information

Ecotoxicity

Fish

Product	LC 50 (Zebra Fish, 4d): 2mg/l NOEC (Zebra Fish, 4 d): 1.52 mg/l
2-Ethylhexyl nitrate	LC 50 (Zebra Fish, 4d): 2mg/l NOEC (Zebra Fish, 4 d): 1.52 mg/l

Aquatic Invertebrates

Product	EC50 (Water flea (Daphnia magna), 2d): > 12.6 mg/l
2-Ethylhexyl nitrate	EC50 (Water flea (Daphnia magna), 2d): > 12.6 mg/l

Toxicity to Aquatic Plants

Product	EC50 (Alga, 3 d): 3.222 mg/l
2-Ethylhexyl nitrate	EC50 (Alga, 3 d): 3.22 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

Product	EC50 (Sludge, 0.3 d): > 1,000 mg/l
2-Ethylhexyl nitrate	EC50 (Sludge, 0.3 d): > 1,000 mg/l

Persistence and Degradability

Biodegradation

Product	Miscellaneous, 0%, 28 d, Not really degradable.
2-Ethylhexyl nitrate	Miscellaneous, 0%, 28 d, Not really degradable.

Bioaccumulative Potential

Bioconcentration Factor (BCF) No data available

Partial Coefficient n-octanol / water (log Kow)

Product	Log Kow: 5.24 (Measured)
2-Ethylhexyl nitrate	Log Kow: 5.24 (Measured)

Mobility	
Product	soil - 3.75
2-Ethylhexyl nitrate	soil - 3.75
Other Adverse Effects:	No data available.

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 which may exhibit hazards of product.
Contaminated Packaging:	Container packaging may exhibit hazards.

14. Transport Information

DOT

UN Number:	NA 1993
UN Proper Shipping Name:	Combustible liquid, n.o.s. (2-Ethylhexanol)
Transport Hazard Class(es)	
Class:	CBL
Label(s):	NONE
Packing Group:	III
Marine Pollutant:	Yes
Special Precautions for user:	None established

IMDG

UN Number:	UN 3082
UN Proper Shipping Name:	ENVIROMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-Ethylhexyl nitrate)
Transport Hazard Class(es)	
Class:	9
Labels:	9
EmS No.:	F-A, S-F
Packing Group:	III
Marine Pollutant:	Yes
Limited Quantity	5.00L
Expected Quantity	E1
Special precautions for user:	None established

IATA

UN Number:	UN 3082
UN Proper Shipping Name:	ENVIROMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-Ethylhexyl nitrate)
Transport Hazard Class(es)	
Class:	9
Labels:	9MI
Marine Pollutant:	Yes
Packing Group:	III
Limited Quantity:	30.00KG

Expected 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 MARPOL73/78 and the IBC Code

None known.

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

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)

None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

None present or none present in regulated quantities.

SARA 311 Hazardous Chemical

Fire Hazard

Immediate (Acute) Health Hazards

SARA 313 (TRI Reporting)

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 Present.

Inventory Status

Australia (AICS)

All components are in compliance with chemical notification requirements in Australia.

Canada (DSL/NDSL)

All components are in compliance with the Canadian Environmental Protection Act and are present on the Domestic 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 at sales@opti-lube.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 (NZLoC)

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

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 Environmentally Hazardous 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.

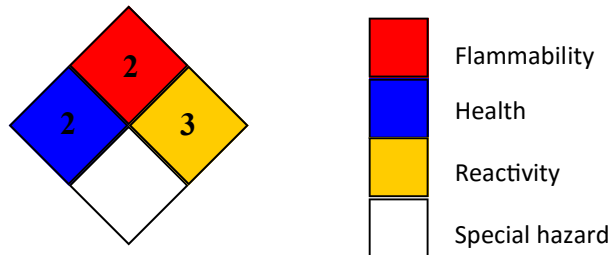
16. Other information, including date of preparation or last revision

HMIS Hazard ID

Health	*	2
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



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

Issue Date:	05/09/2016
Version #:	1.0
Source of Information:	Internal Company data and other publically available resources.
Further Information:	Contact Supplier (see Section 1)
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