1. Identification

Identification
Product name: LUBRIZOL® 9047CMS

Additional identification
Chemical name: Mixture

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: THE LUBRIZOL CORPORATION
Address: 29400 LAKE LAND BOULEVARD
WICK LIFFE, OH 44092-2298
US
Telephone: (440)943-1200

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

2. Hazard(s) identification

Hazard Classification

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 98.7 %
Acute toxicity, inhalation, dust or mist 9.2 %

Label Elements:
Hazard Symbol:

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. 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. Call a POISON CENTER/doctor if you feel unwell. Specific measures (see this label). Wash contaminated clothing before reuse. In case of fire: Use CO2, dry chemical or foam for extinction. Water can be used to cool and protect exposed material. Collect spillage.

Storage: Store in 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: Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>Percent by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexyl nitrate</td>
<td>27247-96-7</td>
<td>80 - 90%</td>
</tr>
<tr>
<td>2-Ethylhexanol</td>
<td>104-76-7</td>
<td>1 - 5%</td>
</tr>
</tbody>
</table>

4. 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/.../if you feel unwell.

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/.../if you feel unwell.

Skin Contact: Take off contaminated clothing and wash before re-use. Wash skin thoroughly with soap and water. Call a POISON CENTER/doctor/.../if you feel unwell. Launder contaminated clothing before reuse.

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.

Most important symptoms/effects, acute and delayed

Symptoms: See section 11.
Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General Fire Hazards: 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: Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards 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 section 10 for additional information.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: No data available.

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

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: 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 Personal Protective Equipment.

Methods and material for containment and cleaning up: 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.

Environmental Precautions: Avoid release to the environment. Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling: DO NOT HEAT. 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/fume/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.

Maximum Handling Temperature: 60 °C  140 °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.

Maximum Storage Temperature: 45 °C  113 °F

8. Exposure controls/personal protection

Control Parameters:

Occupational Exposure Limits
None of the components have assigned exposure limits.

Other exposure limits

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>type</th>
<th>Exposure Limit Values</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexyl nitrate</td>
<td>TWA</td>
<td>1 ppm</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls: Mechanical ventilation or local exhaust ventilation is required. Adequate ventilation should be provided so that exposure limits are not exceeded.

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, or respiratory and eye protection may be needed in special circumstances, such as poorly ventilated spaces, heating, evaporation of liquids from large surfaces, spraying of mists, mechanical generation of dusts, drying of solids, etc.

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

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. Gloves, coveralls, apron, boots as necessary to minimize 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. Under normal use conditions, respirator is not usually required. Use appropriate respiratory protection if exposure to dust particles, mist or vapors is likely. Use self-contained breathing apparatus for entry into confined space, for other poorly ventilated areas and for large spill clean-up sites.

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

9. Physical and chemical properties

Appearance

- Physical state: liquid
- Form: liquid
- Color: Amber
- Odor: Mild
- Odor threshold: No data available.
- pH: No data available.
- Freezing point: No data available.
- Boiling Point: No data available.
- Flash Point: 172 °F (78 °C) (Pensky-Martens Closed Cup)
- Evaporation rate: No data available.
- Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

- Flammability limit - upper (%): No data available.
- Flammability limit - lower (%): No data available.
- Explosive limit - upper (%): No data available.
- Explosive limit - lower (%): No data available.
- Vapor pressure: No data available.
- Vapor density: No data available.
- Relative density: 0.942 - 0.982 60.1 °F (15.6 °C)

Solubility(ies)

- Solubility in water: Insoluble in water
- Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.
- Auto-ignition temperature: No data available.

Viscosity: 3 mm2/s ( 104 °F (40 °C) ) 4 mm2/s (25 °C (77 °F) ) 6 mm2/s (0 °C (32 °F) )

Other information

- Bulk density: 8.01 lb/gal 77 °F (25 °C)
- Pour Point Temperature: -71 °F (-57 °C)
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:** Heat, sparks, flames. Heat may cause the containers to explode.

**Incompatible Materials:** Nitriles. Strong oxidizing agents.

**Hazardous Decomposition Products:** Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, nitrogen oxides, 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 in contact with skin. Causes mild skin irritation.

**Eye contact:** No data available.

**Information on toxicological 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. Symptoms include headache, dizziness, nausea, fatigue, heart palpitations, confusion and possible loss of consciousness. Swallowing material may cause irritation of the gastrointestinal lining, nausea, vomiting, diarrhea, and abdominal pain. Ingestion can cause central nervous system effects such as headache, dizziness, drowsiness, and generalized weakness.

**Dermal**

Product: ATEmix 1000 - 2000 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.

**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, nausea, fatigue, heart palpitations, confusion and possible loss of consciousness. High concentrations may cause headaches, dizziness, nausea, behavioral changes, weakness, drowsiness and stupor.
Skin Corrosion/Irritation:
Product: Causes mild skin irritation.
Remarks: Prolonged or repeated skin contact as from clothing wet with material may cause dermatitis. Symptoms may include redness, edema, drying, and cracking of the skin. Alcohol may enhance the toxic effects.

Serious Eye Damage/Eye Irritation:
2-Ethylhexyl nitrate Classification: May cause irritation. (Supplier information); Rabbit.
2-Ethylhexanol Classification: Strongly irritating. (Literature); Rabbit.

Respiratory sensitization:
No data available

Skin sensitization:
2-Ethylhexyl nitrate Classification: Not a skin sensitizer. (Supplier information)
2-Ethylhexanol Classification: Not a skin sensitizer. (Literature) Not a skin sensitizer.

Specific Target Organ Toxicity - Single Exposure:
Product: If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.
2-Ethylhexyl nitrate If material is misted or if vapors are generated from heating, exposure may cause irritation of mucous membranes and the upper respiratory tract.
2-Ethylhexanol Respiratory tract irritation.

Aspiration Hazard:
No data available

Other effects:
2-Ethylhexyl nitrate Alcohol may enhance the toxic effects.

Chronic Effects
Carcinogenicity:
No data available

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

No carcinogenic components identified

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

Reproductive toxicity:
2-Ethylhexanol
No evidence of adverse effects were found in a developmental toxicity study of 2-ethylhexanol 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.

Specific Target Organ Toxicity - Repeated Exposure:
2-Ethylhexyl nitrate
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.

2-Ethylhexanol
Repeated overexposure may result in liver and kidney 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

12. Ecological information

Ecotoxicity
Fish
2-Ethylhexyl nitrate
LC 50 (Zebra Fish, 4 d): 2 mg/l
NOEC (Zebra Fish, 4 d): 1.52 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 (Golden Orfe, 4 d): 14 mg/l

Aquatic Invertebrates
2-Ethylhexyl nitrate
EC 50 (Water flea (Daphnia magna), 2 d): > 12.6 mg/l

2-Ethylhexanol
EC 50 (Water flea (Daphnia magna), 2 d): 39 mg/l

Toxicity to Aquatic Plants
2-Ethylhexyl nitrate
EC 50 (Alga, 3 d): 3.22 mg/l

2-Ethylhexanol
EC 50 (Green algae (Scenedesmus quadricauda), 3 d): 16.6 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**

- **2-Ethylhexyl nitrate**
  - EC 50 (Sludge, 0.3 d): > 1,000 mg/l

- **2-Ethylhexanol**
  - EC 50 (Pseudomonas putida, 0.1 d): 540 mg/l
  - EC 50 (Sludge, 0.5 d): > 100 mg/l

**Persistence and Degradability**

**Biodegradation**

- **2-Ethylhexyl nitrate**
  - Miscellaneous, 0 %, 28 d, Not readily degradable.

- **2-Ethylhexanol**
  - OECD TG 302 B, 95 %, 5 d, Readily biodegradable
  - OECD TG 301 C, 100 %, 14 d, Readily biodegradable

**Bioaccumulative Potential**

**Bioconcentration Factor (BCF)**

- **2-Ethylhexanol**
  - Bioconcentration Factor (BCF): 25.35 (calculated)

**Partition Coefficient n-octanol / water (log Kow)**

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

- **2-Ethylhexanol**
  - Log Kow: 2.9 (Measured)

**Mobility:**

- **2-Ethylhexyl nitrate**
  - soil - 3.75

- **2-Ethylhexanol**
  - soil - 1.42

**Other Adverse Effects:**

No data available.

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**13. Disposal considerations**

**Disposal instructions:**

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

**Contaminated Packaging:**

Container packaging may exhibit hazards.

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**14. Transport information**

**DOT**

- **UN Number:** NA 1993
- **UN Proper Shipping Name:** Combustible liquid, n.o.s.(2-Ethylhexyl nitrate, 2-Ethylhexanol)
- **Transport Hazard Class(es):** CBL
- **Label(s):** –
- **Packing Group:** III
- **Marine Pollutant:** Yes
- **Special precautions for user:** None established
IMDG
UN Number: UN 3082
UN Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (2-Ethylhexyl nitrate)
Transport Hazard Class(es):
  Class: 9
  Label(s): 9
  EmS No.: F-A, S-F
Packing Group: III
Marine Pollutant: Yes
Limited quantity 5.00L
Excepted quantity E1
Special precautions for user: None established

IATA
UN Number: UN 3082
Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (2-Ethylhexyl nitrate)
Transport Hazard Class(es):
  Class: 9
  Label(s): 9MI
Marine Pollutant: Yes
Packing Group: III
Limited quantity 30.00KG
Excepted quantity E1
Environmental Hazards Marine Pollutant
Special precautions for user: None established
Other information
  Passenger and cargo aircraft: Allowed.
  Cargo aircraft only: Allowed.

Transport in bulk according to Annex II of 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 transportation 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.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
Hazard categories
  Fire Hazard Immediate
  Reactive (Acute) Health Hazards
SARA 302 Extremely Hazardous Substance
SARA 304 Emergency Release Notification
SARA 311/312 Hazardous Chemical
SARA 313 (TRI Reporting)
This product may contain chemical(s) regulated under the Superfund Amendments and Reauthorization Act (SARA). For additional information please contact Lubrizol Customer Assistance: America(s): AmerLZAMCustomerAssistance@Lubrizol.com; Europe: EMEAIcustomerAssistance@Lubrizol.com; Asia: APCustomerAssistance@Lubrizol.com

US State Regulations
US. California Proposition 65
This product contains chemical(s) known to the State of California to cause cancer and/or to cause birth defects or other reproductive harm.
- Naphthalene 54.00PPM
- Cumene 54.00PPM
- Propylene oxide 13.00PPM
- Ethylene oxide 1.00PPB
- Methanol 161.00PPT

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 Substances List.
China (IECSC)
This product may be imported to China only by Lubrizol China.
European Union (REACH)
To obtain information on the REACH compliance status of this product, please visit Lubrizol.com/REACH, or e-mail us at REACH_MSDS_INQUIRIES@Lubrizol.com
Japan (ENCS)
This product requires notification in Japan.
Korea (ECL)
All components are in compliance in Korea.
New Zealand (NZIoC)
All components are in compliance with chemical notification requirements in New Zealand.
Philippines (PICCS)
All components are in compliance with the Philippines Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (R.A. 6969).
Switzerland (SWISS)
All components are in compliance with the Environmentally Hazardous Substances Ordinance in Switzerland.
Taiwan (TCSCA)
All components of this product are listed on the Taiwan inventory.
United States (TSCA)
All 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

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
<td>*</td>
</tr>
<tr>
<td>Flammability</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Physical Hazards</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

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: 05/08/2015
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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