Product Safety Assessment

*DOW™ Oil-soluble Polymer Lubricants*


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### Names

- **DOW™ oil-soluble polymer lubricants**
- **SYNALOX™ lubricant**
- **SYNALOX OA-15 Lubricant**
- **SYNALOX OA-25 Lubricant**
- **SYNALOX OA-40 Lubricant**
- **SYNALOX OA-60 Lubricant**
- **SYNALOX OA-80 Lubricant**
- **SYNALOX OA-90 Lubricant**
- **SYNALOX OA-185 Lubricant**
- **SYNALOX OD-680 Lubricant**
- **UCON™ OSP Lubricant**
- **UCON OSP-18 Lubricant**
- **UCON OSP-32 Lubricant**
- **UCON OSP-46 Lubricant**
- **UCON OSP-68 Lubricant**
- **UCON OSP-150 Lubricant**
- **UCON OSP-220 Lubricant**
- **UCON OSP-320 Lubricant**
- **UCON OSP-460 Lubricant**
- **UCON OSP-680 Lubricant**

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**Product Overview**

- **DOW™ oil-soluble polymer (OSP) lubricants** are synthetic lubricant base stocks. Dow markets these products under the trade names SYNALOX™ OA or OD lubricants and UCON™ OSP lubricants. SYNALOX OA/OD and UCON OSP lubes are polyalkylene glycol-based materials. These products are colorless-to-yellow liquids with a mild odor. A key feature of DOW oil-soluble polymer lubricants is their ability to blend with mineral oils. DOW OSP lubricants are formulated to cover a range of viscosities based on the intended application. For further details, see [Product Description](#).

- **UCON OSP lubricants** can be used as primary base oils, co-base oils, and additives in automobile and industrial lubricant formulations. SYNALOX OA lubricants are used in lubricant formulations for gear oils, metalworking fluids, compressors, mills and calendering machines, and hydraulic equipment, as well as for air-cooled, two-stroke engines and model engines. For further details, see [Product Uses](#).

- Worker exposure to these products is possible at facilities that manufactures these lubricants, or during transport or use. Engineering controls, ventilation, and personal protective equipment reduce exposure risk. Consumers may be exposed while refueling two-stroke engines.

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motorized devices containing lubricant that is formulated with these products.\textsuperscript{1,2} For further details, see Exposure Potential.

- Eye contact with DOW\textsuperscript{TM} oil-soluble polymer (OSP) lubricant liquid or mist may cause slight, temporary irritation, although corneal injury is unlikely. Prolonged skin contact may cause slight irritation with local redness. At room temperature, exposure to product vapor is minimal. Vapor from heated material or mist may cause respiratory irritation.\textsuperscript{1,2} For further details, see Health Information.

- DOW OSP lubricants are insoluble in water, and with exception of the readily biodegradable OSP-32 (lowest molecular weight), their biodegradation in the environment will occur very slowly. Due to the high molecular weight and insolubility of the OSP lubricants, they are not likely to accumulate in the food chain. They are practically nontoxic to fish and other aquatic organisms on an acute basis.\textsuperscript{1,2} For further details, see Environmental Information.

- DOW OSP lubricants are thermally stable at recommended storage and use temperatures. Exposure to elevated temperatures can cause these products to decompose. Avoid contact with strong acids, strong bases, and strong oxidizers.\textsuperscript{1,2} For further details, see Physical Hazard Information.

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Manufacture of Product
- **Locations** – Dow is a leading global manufacturer of polyalkylene glycols, the major components of DOW\textsuperscript{TM} oil-soluble polymer lubricants. These products are manufactured and formulated at facilities in Freeport, Texas; South Charleston, West Virginia (USA) and Terneuzen, the Netherlands (Europe).

- **Process** – UCON\textsuperscript{TM} and SYNALOX\textsuperscript{TM} fluids and lubricants are formulated in batch operations using proprietary Dow materials and technology.

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Product Description\textsuperscript{5,2,3,6,1}
The family of DOW\textsuperscript{TM} oil-soluble polymer lubricants consists of UCON\textsuperscript{TM} OSP lubricants and SYNALOX\textsuperscript{TM} OA and OD lubricants.

UCON OSP and SYNALOX OA/OD lubricants are polyalkylene glycol-based synthetic lubricant base fluids. These products have high viscosity index values (compared to petroleum-derived base stocks), low pour points, and excellent film-forming properties. UCON OSP and SYNALOX OA/OD lubricants are colorless-to-yellow liquids with a viscosity range of 32–680 centiStokes (cSt) at 40\degree C. These products are not volatile (do not easily evaporate) and are not soluble (do not mix) in water.

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Product Uses\textsuperscript{3,4}
DOW\textsuperscript{TM} oil-soluble polymer lubricants are compatible with mineral oils, synthetic hydrocarbon base oils, and other base oils, allowing for a broad range of formulation possibilities and applications.

- **UCON\textsuperscript{TM} OSP lubricants** are used as primary base oils, co-base oils, and additives in automotive and industrial lubricant formulations. UCON OSP lubricants are blended into industrial air-compressor fluids, industrial hydraulic fluids, fire-resistant hydraulic fluids, metalworking fluids, greases, turbine oils, gear lubricants. They can also be used as automotive friction modifiers, automotive deposit-control additives at low treat levels (<10%), and co-base oils for automotive engine oil and similar products at treat levels of 10-50%.

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• **SYNALOX™ OA and OD lubricants** are used in lubricant formulations for gear oils, metalworking fluids, compressors, mills and calendering machines, and hydraulic equipment, as well as use in air-cooled, two-stroke engines. They are the preferred lubricant base stock for model engines. Two-stroke lubricant is used in chainsaws and other outdoor power tools, snow blowers, lawn mowers, motor scooters, outboard motors, and many others.

**Exposure Potential**

DOW™ oil-soluble polymer (OSP) lubricants are used for a variety of applications. Based on the uses for these products the public could be exposed through:

• **Workplace exposure** – Exposure can occur during lubricant manufacture or formulation, product transport, or product use. Workers handling DOW OSP lubricants in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Industrial users of these lubricants could contact these products while adding or changing lubricant in machinery or engines. Each facility should have a thorough training program for employees and appropriate work processes, ventilation, and safety equipment in place to limit exposure. See Health Information.

• **Consumer exposure to DOW oil-soluble polymer lubricants** – SYNALOX™ OA lubricant is blended into two-stroke and model engine lubricants. Consumers could contact these products while adding or changing lubricant in a boat motor, motor bike, power yard tool, or other engines that require this type of lubricant. Always read and follow label directions carefully. See Health Information.

• **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. DOW OSP lubricants are nonvolatile and not soluble in water. If introduced to water these products would float on the surface. DOW™ oil-soluble polymer lubricants are insoluble in water, and with exception of the readily biodegradable OSP-32 (lowest molecular weight), their biodegradation in the environment will occur very slowly. Due to the high molecular weight and insolubility of the OSP lubricants, they are not likely to accumulate in the food chain. They are practically nontoxic to fish and other aquatic organisms on an acute basis. See Environmental, Health, and Physical Hazard Information.

• **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, evacuate the area. Contain spilled material if possible. Collect recovered material in suitable and properly labeled containers. Spills of these organic materials on hot fibrous insulations may reduce the autoignition temperature, increasing the potential for spontaneous combustion. Use appropriate safety equipment. See Environmental, Health, and Physical Hazard Information.

• **In case of fire** – Keep people away. Isolate the fire and deny unnecessary entry. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam to fight the fire. Type ATC alcohol-resistant foams are preferred. A direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

**Health Information**

Health information for DOW™ oil-soluble polymer lubricants is summarized on the relevant Safety Data Sheets. It is important to note that health risks associated with individual products may vary slightly based on their formulation or intended use. The Safety Data Sheet is the preferred source

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for specific health information. An overview of health information for these products is included below.

**Eye contact** – Contact may cause slight, temporary eye irritation. Corneal injury is unlikely.

**Skin contact** – Brief contact is essentially nonirritating. Prolonged contact might cause slight skin irritation with local redness. Prolonged contact is not likely to result in absorption of harmful amounts.

**Inhalation** – At room temperature, exposure to vapor is minimal due to low volatility. A single exposure to vapor is not likely to be hazardous. Vapor from heated material or mist may cause respiratory irritation (for example, irritate the nose and throat).

**Ingestion** – These products have low toxicity if swallowed. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. In animal tests, swallowing these lubricants has been reported to affect the kidneys.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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**Environmental Information**

DOW™ oil-soluble polymer lubricants are nonvolatile (do not evaporate). If spilled into water, these lubricants would float on the surface, where they can be removed by various oil-water separation techniques. Due to their insolvibility, biodegradation of these substances in the environment will occur very slowly. However, the low viscosity (low molecular weight) OSP-32 product is readily biodegradable, and would be rapidly and completely removed from water and soil environments, including biological wastewater treatment plants. Due to the high molecular weight and insolvibility of the OSP lubricants, they are not likely to accumulate in the food chain. They are practically nontoxic to fish and other aquatic organisms on an acute basis.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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**Physical Hazard Information**

DOW™ oil-soluble polymer lubricants are thermally stable under recommended storage conditions and use, but can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure build-up in closed systems. Decomposition products may include carbon dioxide, aldehydes, alcohols, ethers, hydrocarbons, ketones, polymer fragments, and other compounds.

Avoid contact with strong acids, strong bases, and strong oxidizers.

For more information, request the Safety Data Sheet from the Dow Customer Information Group.

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**Regulatory Information**

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of DOW™ oil-soluble lubricants. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data.
Additional Information

- Request the relevant Safety Data Sheet from the Dow Customer Information Group at (www.dow.com/assistance/dowcig.htm)
- Contact SYNALOX™ Fluids and Lubricants: (www.dow.com/polyglycols/synalox/contact/contact.htm)
- Contact UCON™ Fluids and Lubricants: (www.dow.com/ucon/contact/index.htm)
- Dow UCON Fluids and Lubricants – Oil Soluble web site (www.dow.com/ucon/base/oil soluble.htm)
- SYNALOX Lubricants: High-Performance Polyglycols for Demanding Applications, The Dow Chemical Company, Form No.118-01453-0702 AMS (http://www.dow.com/products/)
- UCON OSP Base Fluids: Oil-Soluble Polyalkylene Glycol Lubricant Technology, The Dow Chemical Company, Form No. 816-00039-0510 AMS (http://www.dow.com/products/)

For more business information about DOW™ oil-soluble polymer lubricants visit the UCON Fluids and Lubricants web site at www.dow.com/ucon/index.htm or SYNALOX Fluids and Lubricants web site at www.dow.com/polyglycols/synalox/index.htm.

References

1 SYNALOX™ OA-90 Lubricant Material Safety Data Sheet, The Dow Chemical Company
2 UCON™ OSP-150 Lubricant Material Safety Data Sheet, The Dow Chemical Company
3 UCON OSP Base Fluids: Oil-Soluble Polyalkylene Glycol Lubricant Technology, The Dow Chemical Company, Form No. 816-00039-0510 AMS

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