Product Safety Assessment

UCON™ Food Grade Products

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Names

- UCON™ food grade products
- UCON Food Grade Lubricant 220
- UCON Lubricant SL-17000
- UCON Hydraulic Fluid FDC-300
- UCON Hydraulic Fluid FDC-400
- UCON Hydrolube FG 46

Product Overview

- UCON™ food grade products are fully formulated, extreme-pressure synthetic lubricants derived from polyalkylene glycols. These products are colorless to yellow liquids with a mild odor and are formulated with FDA-sanctioned ingredients. They have excellent lubricating properties and are completely water soluble.\(^{1,2}\) For further details, see Product Description.
- UCON food grade products are designed for use in industrial machinery in which incidental food contact from lubricants may occur. Applications include machinery for producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food. Some specific examples are fryers, ovens, cookers, and bottling machines. These products are also used in the pharmaceutical and cosmetics industries.\(^{3}\) For further details, see Product Uses.
- This product safety assessment provides general health information for a family of similar products. For specific health information, consult the product Safety Data Sheet. Eye contact with UCON food grade products may cause slight, temporary irritation. Corneal injury is unlikely. Prolonged skin contact may result in irritation with local redness. Vapor from heated material or mist may irritate the eyes, nose, and throat. These products have very low toxicity if swallowed.\(^{2,4}\) For further details, see Health Information.
- UCON food grade products are for commercial use only. Worker exposure is possible at a facility that formulates these lubricants or during transport or use. Engineering controls and personal protective equipment reduce exposure risk. Consumers could ingest trace amounts of these products by consuming foods or beverages processed with them. UCON food grade lubricant formulations are safe for incidental food contact (FDA Regulation 21 CFR 178.3570 and/or 21 CFR 178.3910).\(^{2,4,6}\) For further details, see Exposure Potential.
- Polyalkylene glycols, the main components of UCON™ food grade products, are biodegradable and unlikely to accumulate in the food chain (low bioconcentration potential).

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The components range from being slightly toxic to practically nontoxic to fish and other aquatic organisms.\(^2,4\) For further details, see Environmental Information.  
- UCON™ food grade products are thermally stable at recommended storage and use conditions. Elevated temperatures can cause some components of these formulations to decompose. Avoid contact with strong acids, strong bases, and strong oxidizers.\(^2,4\) For further details, see Physical Hazard Information.

Manufacture of Product\(^6\)
- Locations – Dow manufactures polyalkylene glycols base fluids (the major component of UCON™ food grade products) and the formulated materials at facilities in South Charleston, West Virginia (USA) or at contract blending manufacturers.
- Process – UCON food grade products are formulated in batch operations using proprietary Dow materials and technology.

Product Description\(^7,8\)
UCON™ food grade products are synthetic formulations derived from polyalkylene glycols. This product family consists of both lubricants and hydraulic fluids. UCON food grade products are formulated with FDA-sanctioned ingredients contact (FDA Regulation 21 CFR 178.3570 and/or 21 CFR 178.3910). These fluids have excellent lubricating properties compared to conventional food grade white oils. They are resistant to microbial growth (bacteria, mold) and compatible with rubber and other common sealing materials. UCON food grade products are completely soluble in water.

Product Uses\(^7\)
UCON™ food grade products are designed for use in industrial machinery in which incidental food contact from lubricants may occur. They protect industrial processing machinery from wear, friction, corrosion, and oxidation. They are used in the food, pharmaceutical, cosmetic, and tobacco industries. Their FDA-sanctioned ingredients meet regulations 21 CFR 178.3570 and/or 21 CFR 178.3910. These products are used on machinery for producing, manufacturing, packing, packaging, processing, preparing, treating, transporting or holding food. Applications include:
- **UCON Food Grade Lubricant 220** – universal lubricant for mill hydraulics gear-drive systems such as aluminum foil manufacture
- **UCON Hydraulic Fluid FDC-300 and FDC-400** – used in the food and drug industries in equipment subjected to extreme temperatures to reduce operating temperatures and energy consumption
- **UCON Lubricant SL-3000** – heavy load mill journal bearings, sugar mills, vegetable and other edible oil mills, grain grinding, other heavy load applications
- **UCON Hydrolube FG 46** – fire-resistant fluid for fryers, ovens, cookers, and other heat applications

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Exposure Potential

UCON™ food grade products are used in machinery. Based on the uses for these products the public could be exposed through:

- **Workplace exposure** – Exposure can occur either in a facility that manufactures or formulates UCON food grade products, during transport, or in the various industrial facilities that use these lubricants. They are produced, distributed, and stored in closed systems. Those working with these products in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. See Health Information.

- **Consumer exposure to UCON food grade products** – UCON food grade products are commercial products for industrial use. Consumers could be exposed to trace amounts of these products by consuming certain processed foods or beverages. UCON food grade products are formulated with FDA-sanctioned components. 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. Most UCON food grade products are completely water soluble and have low volatility (do not easily evaporate). Because of their physical properties, once introduced to water these products will tend to remain in water. UCON food grade products are biodegradable, which suggests they will be completely removed from water and soil environments, including biological wastewater-treatment facilities. These fluids are slightly toxic to 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 personnel and ventilate the area. Contain spilled material if possible. Collect recovered material in suitable and properly labeled containers. Spills of these 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. Fight the fire from a protected area or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam to fight the fire. A direct water stream may spread the fire. Firefighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective firefighting clothing. Contain fire-water run-off to minimize the potential for environmental damage. 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.

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Health Information

Health information for UCON™ food grade products is provided on the relevant Safety Data Sheet. Health risks associated with individual products may vary based on formulation. Because of the potential for food contact, these materials are manufactured with FDA-sanctioned ingredients.

**Eye contact** – Contact with liquid, heated vapor, or mist may cause slight irritation. Corneal injury is unlikely.

**Skin contact** – Prolonged contact may cause slight irritation with local redness. Prolonged contact is unlikely to result in absorption of harmful amounts. Results may be more severe on burned or abraded (cut or scratched) skin.

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**Inhalation** – At room temperature, exposure to vapor is minimal due to low volatility. Excessive inhalation of heated vapor or mist may cause irritation to the upper respiratory tract (nose and throat).

**Ingestion** – These products have very low toxicity if swallowed; harmful effects are not anticipated from swallowing small amounts.

**Chronic (repeated) exposure** – In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

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

**Environmental Information**

UCON™ food grade products are nonvolatile (do not evaporate) and most are completely soluble in water. These products are unlikely to persist in the environment. UCON food grade products are biodegradable, which suggests they will be completely removed from water and soil environments, including biological wastewater-treatment facilities.

Polyalkylene glycols, the major component of UCON food grade products, are not expected to accumulate in the food chain (low potential for bioconcentration). The components range from being slightly toxic to practically nontoxic to fish and other aquatic organisms on an acute basis (exposure to a large amount).

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

**Physical Hazard Information**

UCON™ food grade products are thermally stable under recommended storage conditions and use. These products can decompose at elevated temperatures. Generation of gas during decomposition can cause pressure build-up in closed systems. Decomposition products may include aldehydes, alcohols, ethers, hydrocarbons, ketones, organic acids, 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.

**Regulatory Information**

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of UCON™ food grade products. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

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Additional Information

- Request the relevant Safety Data Sheet from the Dow Customer Information Group at (www.dow.com/assistance/dowcig.htm)
- Contact Us (www.dow.com/ucon/contact/index.htm)
- Dow website – UCON™ Fluids and Lubricants – Food Grade Lubricants (www.dow.com/ucon/formulated/lubricants/food.htm)
- FDA Status of UCON and SYNALOX™ Fluids and Lubricants, The Dow Chemical Company, Form No. 118-01616-207 AMS(http://www.dow.com/products/)
- UCON Hydraulic Fluids FDC-300 and FDC-400, Technical Data Sheet, The Dow Chemical Company, Form No. 118-01314-0504-rlr (http://www.dow.com/products/)

For more business information about UCON food grade lubricants visit Dow’s web site for UCON Fluids and Lubricants at www.dow.com/ucon/index.htm.

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References

1 UCON™ Hydraulic Fluids FDC-300 and FDC-400, Technical Data Sheet, The Dow Chemical Company
2 UCON Hydrolube FG 46 Material Safety Data Sheet, The Dow Chemical Company
3 UCON Hydrolube FG 46 – A Fire-Resistant, Food-Grade Hydraulic Fluid, Technical Data Sheet, The Dow Chemical Company
4 UCON Hydraulic Fluid FDC-400 Material Safety Data Sheet, The Dow Chemical Company
5 FDA Status of UCON and SYNALOX™ Fluids and Lubricants, The Dow Chemical Company, Form No. 118-01616-207 AMS
7 Dow website – UCON Fluids and Lubricants – Food-Grade Lubricants (www.dow.com/ucon/formulated/lubricants/food.htm)
8 UCON Fluids and Lubricants, Brochure, The Dow Chemical Company, Form No. 118-01346-1101 AMS

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NOTICES:

As Part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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