



## UCON Fluids and Lubricants

### UCON Hydraulic Fluid WS-34

**Product Description** UCON™ Hydraulic Fluid WS-34 is water-soluble, but is intended for neat use without water dilution. It is based on polyalkylene glycol and features the high viscosity index, low pour point, and other properties characteristic of polyalkylene glycols. This fluid is designed for applications where water solubility, easy clean-up, and compatibility with processes are important.

- Product Features**
- High viscosity index
  - Low pour point
  - Anti-wear hydraulic fluid performance
  - Corrosion protection
  - Compatibility with plant processes
  - Easy clean-up
  - Ash-free residue

### Typical Physical Properties†

ISO Viscosity Grade	32
Viscosity, 0°C (cSt)	257
40°C (cSt)	34
100°C (cSt)	7.7
Viscosity Index	204
Pour Point, °C(°F)	<-59 (<-75)
Flash Point	
Pensky-Martens Closed Cup, ASTM D 93, °C(°F)	193(380)
Cleveland Open Cup, ASTM D 92, °C(°F)	246(475)
Specific Gravity, 20/20°C (68/68°F)	1.031
Average Weight per Gallon at 20°C, lb.	8.577
Water Content, weight %	< 0.25
Coefficient of Expansion	
at 20°C	0.00078 per °C
at 55°C	0.00080 per °C
Vapor Pressure at 20°C (68°F), mm/Hg	< 0.01
Corrosion Protection, ASTM D 665A	Pass

† Typical properties, not to be construed as specifications

### Anti-Wear Hydraulic Performance

UCON Hydraulic Fluid WS-34 is rated as an anti-wear fluid, based upon multiple 100-hour ASTM D 2882 pump tests that result in less than 25 mg weight loss (combined ring and vanes). This fact becomes more significant because UCON Hydraulic Fluid WS-34 does not contain any zinc dialkyldithiophosphate, the anti-wear additive common to most petroleum-based anti-wear hydraulic fluids. The inhibitor package used in UCON Hydraulic Fluid WS-34 provides effective fluid stabilization, corrosion protection, and low-wear performance in hydraulic systems.

## Petroleum Oils Compatibility

UCON Hydraulic Fluid WS-34 is fully water-soluble and, therefore, largely incompatible with petroleum oil hydraulic fluids. In the conversion of existing hydraulic systems, drain as much of the used oil and residues as possible. Clean with compatible solvents that are acceptable from the standpoints of safety, environment, and personal contact. Residual petroleum oil may detract from the performance of UCON Hydraulic Fluid WS-34. Limited testing suggests, however, that as much as five percent residual petroleum oil may be acceptable.

## Elastomer Compatibility

UCON Hydraulic Fluid WS-34 is based on a polyalkylene glycol and has different solvency properties than petroleum oil formulations. Nevertheless, direct substitution for a petroleum product may be possible without a change in seals, except to replace worn or damaged parts. A change from Buna N would be advisable, however, where elevated fluid temperatures are anticipated or could develop.

Specimens of elastomeric products were examined for compatibility with UCON Hydraulic Fluid WS-34 by immersion for 112 days at either 25°C (77°F) or 100°C (212°F). Each of the elastomers was examined for changes in hardness (Shore Durometer A), for changes in volume, and for changes in flexibility and elasticity. Based upon these tests, the ratings that appear in the following table were assigned to several elastomers.

Elastomer	Compatibility Rating*	
	at 25°C	at 100°C
Black Rubber 3773 (natural rubber)	Resistant	Fair
Buna N (butadiene-acrylonitrile copolymer)	Resistant	Not Recommended
Buna S (butadiene-styrene copolymer)	Resistant	Fair
Butyl Rubber K-53	Resistant	Resistant
EPR (ethylene-propylene-diene polymer)	Fair	Fair
"Hypalon" Chlorosulfonated Polyethylene	Resistant	Fair
Neoprene (chloroprene)	Resistant	Resistant
Silicone 65 (silicone rubber)	Resistant	Resistant
"Viton A" Fluoroelastomer	Resistant	Resistant

\*UCON Hydraulic Fluid WS-34 immersed for 112 days at indicated temperature

## Paint Compatibility

Tests for paint compatibility have not been made specifically with UCON Hydraulic Fluid WS-34. PAG-based fluids show some solvency for common oil-based paints but minimal solvency for many epoxy-based paints. If interior surfaces of hydraulic system components are painted, it may still be possible to convert to a PAG fluid. Extra care should be taken to ensure that lifted paint trapped by the filter does not cause the pump to be starved of lubricant. Following the conversion, the painted surfaces should be carefully monitored for trends toward paint softening, lifting, and peeling. If paint removal does occur, frequent cleaning or replacement of filters may be required until the paint is completely removed.

## Plastics Compatibility

Occasionally, hydraulic fluids are exposed to plastic components where compatibility is of concern. Based upon 112-hour immersion tests at 25°C (77°F) and 100°C (212°F), certain guidelines have been established for UCON Hydraulic Fluid WS-34. The following table defines the acceptability under the test conditions:

Elastomer	Compatibility Rating*	
	at 25°C	at 100°C
"Atlac" 382 Polyester	Resistant	Resistant
"Derakane 470" Vinyl Ester	Resistant	Resistant
"Homalite" Polycarbonate	Not Recommended	Not Recommended
"Lucite"/"Plexiglas" Polymethylmethacrylate	Not Recommended	Not Recommended
Polyethylene, Low Density	Resistant	Not Recommended
Polypropylene	Resistant	Resistant
Polyvinyl Chloride	Resistant	Resistant
Polyurethane	Not Recommended	Not Recommended

\* UCON Hydraulic Fluid WS-34 immersed for 112 days at indicated temperature.

## Product Stewardship

Dow encourages its customers and potential users to review their applications from the standpoint of human health and environmental aspects. To help ensure that Dow products are not used in ways for which they are not intended or tested, Dow personnel will assist customers in dealing with environmental and product safety considerations. Dow literature, including Material Safety Data Sheets, should be consulted prior to the use.

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