# Shell Water Soluble Hydraulic Fluid

High-performance, no-sheen, water-soluble hydraulic fluid for marine environments

**SHELL LUBRICANT SOLUTIONS**

## DESCRIPTION

**Shell Water Soluble Hydraulic Fluid,** formerly UCON Trident AW, is an environmentally friendly, high-performance, no-sheen, water-soluble hydraulic fluid for systems operating in marine and coastal environments.

Shell Water Soluble Hydraulic Fluid is a high-performance, polyalkylene glycol (PAG) based hydraulic fluid that does not break down to form sludge or hydrolyze in the presence of water, unlike mineral oils. This helps to protect equipment against the formation of the harmful acids that can lead to premature failure.

The fluid has an exceptional load-carrying capacity and is specially formulated to provide effective corrosion protection and excellent antiwear performance over a wide range of temperatures. With its high viscosity index and low pour point, it can be used year round, thereby eliminating seasonal changeovers.

Shell Water Soluble Hydraulic Fluid also has high thermal oxidation stability and does not easily degrade to form sludge or varnish for long-term system cleanliness and extended maintenance intervals and overall service life. It is a long-lasting product that is unaffected by small amounts of water contamination. When the fluid does eventually begin to degrade, the degradation components are soluble and do not fall out of solution. Although the fluid dissolves in water, water ingress can be reduced to acceptable levels by vacuum dehydration.

Shell Water Soluble Hydraulic Fluid ISO 46 and 68 are classified as a "less-flammable industrial fluid" by FM Global.

Note that Shell Water Soluble Hydraulic Fluid is not compatible with other hydraulic fluids and changing to it must follow recognized industry procedures for system cleanup and flushing. The fluid is compatible with the seals, hoses and metals commonly found in hydraulic systems.

## SPECIFICATIONS, APPROVALS AND RECOMMENDATIONS

Shell Water Soluble Hydraulic Fluids ISO 32 and ISO 46 are readily biodegradable, minimally-toxic, and not bioaccumulative.*

For a full listing of equipment approvals and recommendations, please consult your local Shell Lubricant Solutions technical help desk.

* per the United States Environmental Protection Agency's (EPA) 2013 Vessel General Permit (VGP)

# Shell Water Soluble Hydraulic Fluid

## PERFORMANCE

| Performance | Method | Shell Water Soluble Hydraulic Fluid 32 |
|---|---|---|
| Four-ball wear test (1,200 rpm, 75°C, 1 h, 40 kg), wear scar, mm | ASTM D4172 | 0.67 |
| Four-ball extreme-pressure test<br>Load wear index<br>Last non-seizure (80 kg) wear scar, mm<br>Last seizure (126 kg) wear scar, mm<br>Weld load, kg | ASTM D2783 | <br>33<br>0.40<br>2.67<br>160 |
| FZG visual gear test, stages passed | ASTM D5182 | 12 |
| V104 vane pump test, total wear, mg | ASTM D2882 | 17 |
| Eaton Corporation (formerly Vickers) 35 VQ vane pump test<br>Individual cartridge wear, mg<br>Average wear, mg | M-2950-S | Pass<br>8, 8, 8<br>8 |
| Seal compatibility (1,000 h at 100°C) for Buna-N, Viton and PTFE | | Pass |

## TYPICAL PHYSICAL CHARACTERISTICS

| PROPERTIES | | | | |
|---|---|---|---|---|
| | Method | Shell Water Soluble Hydraulic Fluid 32 | Shell Water Soluble Hydraulic Fluid 46 | Shell Water Soluble Hydraulic Fluid 68 |
| Kinematic viscosity at 40°C, cSt | ISO 3104/ASTM D445 | 36.9 | 49.7 | 74.0 |
| Kinematic viscosity at 100°C, cSt | ISO 3104/ASTM D445 | 7.9 | 10.3 | 14.5 |
| Viscosity index | ASTM D2270 | 194 | 202 | 206 |
| Flash point (Cleveland open cup) | ISO 2592/ASTM D92 | 280 | 300 | 305 |
| Pour point, °C | ISO 3016/ASTM D97 | −57 | −51 | −51 |
| Specific gravity at 20°C, g/cm$^3$ | ASTM D1298 | 1.028 | 1.031 | 1.037 |

These characteristics are typical of current production. Although future production will conform to Shell's specifications, variations in these characteristics may occur.

## CONTACT US

For more information, please contact your Shell Lubricant Solutions representative or visit **shell.us/ecosafe.**