

Oceanic SW40

Subsea Production Control Fluid

General Description

Oceanic and SW fluids are water based hydraulic media specifically formulated for use in modern subsea production control systems. Their low viscosity's promote optimum system response, while a sophisticated additive package provides a high degree of protection against wear, corrosion and microbiological degradation. The Oceanic SW40 has been developed to offer high temperature stability combined with environmental acceptability for the future.

Low Viscosity

Oceanic SW40, being water based, offers extremely low viscosities when compared with mineral oil or synthetic hydrocarbon types. This allows system to be designed with optimum response, particularly where control is required over long distances, and through small-bore control lines.



High Lubricating Ability

The lubricating components in Oceanic SW40 work in a different regime than other fluids on the market offering exceptional lubrication under high pressure often experienced in higher temperature environments. Particular care has been taken to give the Oceanic SW40 good anti-wear properties, especially in the case of metal to metal sliding contact situations such as are encountered in modern shear seal type control valves. The Oceanic SW40 also provides low coefficients of friction between elastomeric seals and packaging and metal surfaces.

Corrosion protection

Oceanic fluids offer liquid corrosion protection of the metals commonly used in offshore hydraulic systems that the fluid comes into contact with.

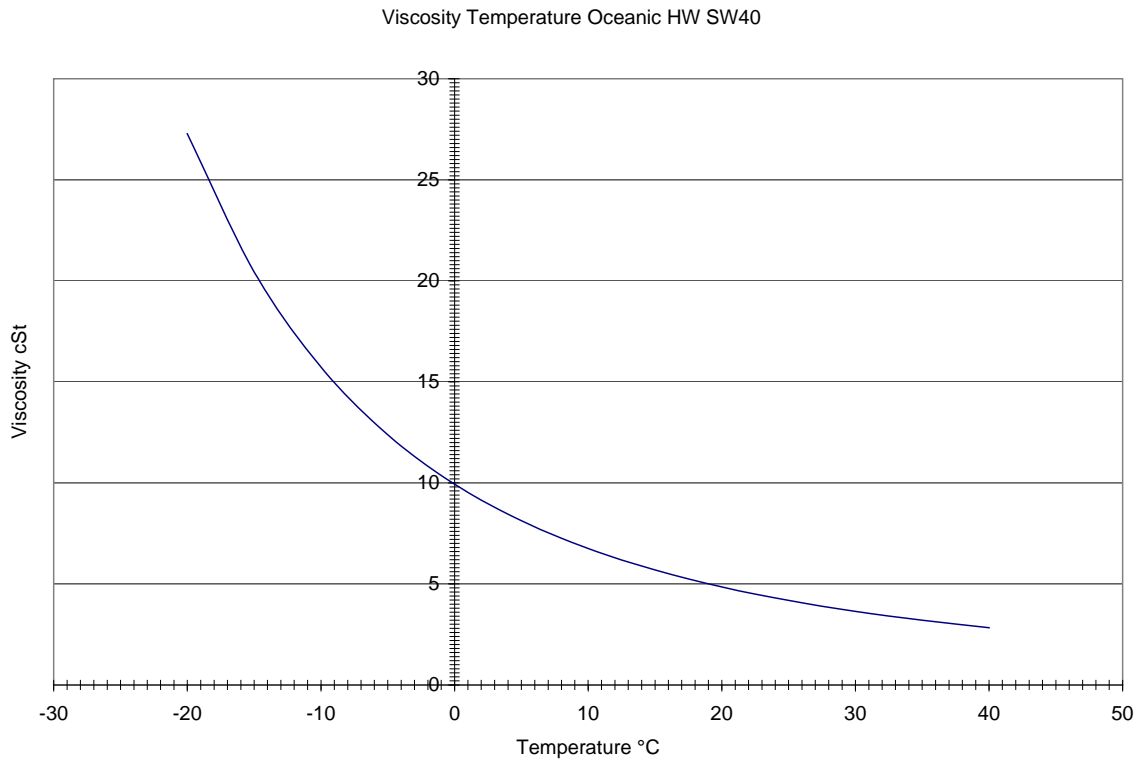
Stability

Oceanic SW40 is resistant to the effects of contamination by seawater and micro-organisms such as bacteria and fungi, although every effort should be made to avoid these conditions from occurring. The stability of the additive pack reduces the possibility of flocculation and precipitation taking place, Oceanic SW40 can withstand 10% seawater and produce no harmful solids. If a monitoring programme is operated, advanced warning of impending problems will allow corrective action to be taken well before the system safety reliability can be seriously impaired.

Typical Physical Properties

Oceanic	SW40
Appearance	Pale Fluorescent Green Fluid
Viscosity (cS) @	
-20°C -4°F	27.3
0°C 32°F	9.9
20°C 68°F	4.8
40°C 104°F	2.8
Pour Point (°C) (°F)	-25 (-13)
Specific Gravity (15.6° C) (60°F)	1.066
pH Value	9.7
Cleanliness Level	NAS 1638 Class6 (as filled into container)
Thermal Conductivity $W.m^{-1} .K^{-1}$	0.470
Coefficient of Thermal Expansion (volumetric) per °C	0.00047
Specific Heat Capacity $J.kg^{-1} .K^{-1}$	3445
Bulk Modulus ($Nm^{-2} \times 10^{-9}$)	2.3





Discharge into Marine Environments

Oceanic SW40 has been tested in line with the OSPAR regulations and has been found acceptable for discharge in to waters surrounding the EU and Scandinavia. An edited version of the HOCNF is available to oil producers on request.

Material Compatibility

Metals Ocean SW40 is compatible with all ferrous and yellow metal alloys. Zinc and Cadmium plating may be slightly affected, and should be avoided. Passivated cadmium plating is acceptable chemically, but porosity may permit moisture absorption and “lifting” of the plate.

Aluminum rubbing contacts must be avoided. Non-rubbing aluminum surfaces are acceptable if hard anodized. Also some aluminum containing alloys such as aluminum bronze can be affected, it is best to check with MacDermid technical staff.

Elastomers and Plastics Common O-ring materials such as Nitrile, common Fluoroelastomers, Buna N, Buna A, Silicone and Neoprene are all acceptable. Common Fluoroelastomers, however, can be affected by alkaline solutions at higher temperatures, this temperature limit can depend on manufacturing procedures and usage, due to this, MacDermid has suggested an upper temperature limit for common Fluoroelastomers at 85°C (185°F).

Seal materials such as Teflon (P.T.F.E.) are also acceptable, but composites such as common Fluoroelastomers impregnated cotton should be avoided, as they may absorb moisture and swell over extended periods. Polyurethane and Porous gasket materials should be avoided. Thermoplastics as used as linings in umbilical hose bundles are generally acceptable.

Nylon 11 hose lining materials have proven to be acceptable for use with SW40 via lab testing.

The above conclusions have been reached following 1 month testing at 70°C (158°F).

Compatibility of Control Fluids Oceanic 500 and SW40 fluids are designed to be compatible with each other and all of our other water based control fluids, including the Oceanic 700 and 443 range.

Filter Elements Some impregnated paper types lose structural strength in contact with aqueous fluids. Recommended filter media are woven polypropylene or glass fiber.

MacDermid has long term experience with Pall Ultipor III Filter Medium, and recommend its use in conjunction with Oceanic subsea production control fluids.

Paints Most paints used in the offshore industry are compatible with Oceanic Fluids. The most satisfactory results may be obtained with Nylon, Phenolic or Epoxy based coatings.

Information given in this publication is based upon technical data gained in our own and other Laboratories and is believed to be true. However the material is used in conditions beyond our control thus we can assume no liability for results obtained or damages incurred through the application of the data presented herein.



MacDermid Offshore Solutions
223 N. Brockman St.
Pasadena, TX 77506
Order Desk: (800) 521-2589
Sales Office: (7013) 472-5081 fax 2440
Email: offshoreorders@macdermid.com

MacDermid Offshore Solutions
Cale Lane
New Springs, Wigan
WN2 1JR, UK
+44(1942) 501000 fax +44(1942) 501110
Email: wigansales@macdermid.com

