

American Chemical Technologies, Inc.

# NEPTUNE® AW SERIES HYDRAULIC FLUIDS

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No Sheen, High Performance, Water Soluble Hydraulic Fluids



AMERICAN CHEMICAL TECHNOLOGIES, INC.

# Neptune® AW Series Fluids

Neptune® AW Series hydraulic fluids are polyalkylene glycol (PAG) based and comply with U.S. EPA VGP.

Neptune® AW Series hydraulic fluids are the only chemistry fully compliant with the 2013 Vessel General Permit (VGP), U.S. EPA Clean Water Act and USCG Surface Force Logistics Center Environmentally Acceptable Lubricants (EAL) Standards. Neptune® AW hydraulic fluids outperform fully saturated synthetic esters, vegetable oils and bio-based polyalphaolefins (PAO). In addition, they last longer in your submerged equipment.



## Performance Advantages:

**Excellent Anti-Wear Performance** – Neptune® AW Series hydraulic fluids have exceptional load carrying anti-wear performance over a wide range of temperatures. They are rated as “anti-wear” (AW) fluids according to ASTM D7043 and FZG testing.

**Non-Sheening** – Neptune® AW Series hydraulic fluids are the only commercially available, environmentally friendly hydraulic fluids that pass the U.S. EPA 40 CFR 435 Static Sheen Test.

**Water Solubility** – Neptune® AW Series hydraulic fluids are heavier than water, dissolve completely, and leave no surface sheen, eliminating cleanup requirements.

**Aquatic Toxicity** – According to the U.S. Fish and Wildlife Service, Neptune® AW Series hydraulic fluids meet requirements as “Relatively Harmless” or “Practically Non-Toxic” to fish and other aquatic wildlife.

**Biodegradable** – Neptune® AW Series hydraulic fluids are “readily biodegradable” according to OECD 301B

**Hydrolytic Stability** – Unlike vegetable oil and fully saturated synthetic ester based environmentally friendly hydraulic fluids, Neptune® AW Series hydraulic fluids will not hydrolyze in the presence of water. This protects hydraulic systems from decreased equipment life and potential system failure due to the presence of harmful acids (increased Total Acid Number values) generated by the hydrolysis of vegetable oil or fully saturated synthetic ester based hydraulic fluids.

**High Waste Treatability** – Neptune® AW Series hydraulic fluids are highly waste-treatable. In tests simulating the discharge of industrial waste streams to un-acclimated municipal treatment plants (POTWs), Neptune®AW-32 fluid demonstrated no adverse impact on the proper functioning performance of the waste treatment systems, even at high discharge levels.

**Non-Sludge or Varnish Forming** – Neptune® AW Series hydraulic fluids are oxidatively stable and will not form sludge or varnish upon degradation as occurs with mineral oil and oil miscible basestock type hydraulic fluids. Neptune® AW Series hydraulic fluids can extend maintenance change out intervals, increase system cleanliness, and improve overall service life.

**Thermal Stability** – Neptune® AW Series hydraulic fluids are long-lasting products that resist thermal breakdown and are unaffected by a small amount of water contamination. When the fluid does eventually begin to degrade, the degradation components are soluble in the fluid and do not create water insoluble deposits and sludge.

**All-Weather Service** – With high viscosity indices and low pour points, Neptune® AW Series hydraulic fluids may be used year round, eliminating season changeovers. One Neptune® AW Series hydraulic fluid may replace multiple viscosity grade oils.

**Material Compatibility** – Neptune® AW Series hydraulic fluids are typically not soluble with petroleum-based oils. This allows the petroleum oil to be easily removed from the system pending the results of a compatibility study. The fluids are compatible with seals, hoses, and metals commonly found in hydraulic systems. Contact ACT for more detailed compatibility information related to paints, plastics, and elastomers.

**Fluid Compatibility** – Neptune® AW Series hydraulic fluids are fully compatible with other Neptune® lubricants. Neptune® AW hydraulic fluids and gear oils that meet the 2013 VGP having an ISO VG 10 - 220.

**Seal Compatibility** - Neptune® AW hydraulic fluids are compatible with many common and high-performance elastomers. Contact your local Neptune® distributor for additional information.



Ecologically friendly, sheen-free hydraulic fluids for use in equipment on or near Marine environments



### Typical Wear Performance\*

Four Ball Wear, ASTM D4172, mm wear scar (1200 rpm, 1 hour, 75°C [167°F], 40kg)	0.40
Four Ball EP Test, ASTM D2783	
Load Wear Index	43
Last Non-seizure, kg	100
Weld Load, kg	200
V104 Vane Pump Test, ASTM D7043, mg wear (1200 rpm, 100 hours, 66°C [150°F], 2000 psi)	< 5
Eaton Corporation 35 VQ25 Vane Pump Test**	
Industrial (I-286-S), Mobile (M-2950-S)	Pass

\*Typical properties, not to be construed as specifications.

\*\*Southwest Research Institute (SWRI)

### Typical Environmental Properties\*

Neptune® AW Hydraulic Fluids	32	46	68
Ready Biodegradability Test Method OECD301B	78%	76%	62%
Bioaccumulation log K <sub>ow</sub> OECD117	1.15 (non-bioaccumulative)		
Algae LC <sub>50</sub>	7000 mg/l (relatively harmless)		
Daphnid LC <sub>50</sub>	600 mg/l (practically non-toxic)		
Brine Shrimp LC <sub>50</sub>	700 mg/l (practically non-toxic)		
Freshwater fish LC <sub>50</sub>	800 mg/l (practically non-toxic)		

\*Typical properties, not to be construed as specifications.

### No-Sheen Performance Comparison

Clear visual comparison of fluid sheening characteristics is made possible by adding an illuminating agent to the hydraulic fluids, then adding the hydraulic fluids to water under a black light. In a comparison conducted under identical conditions, other hydraulic fluids quickly formed a visible sheen on the surface when added to water. In contrast, when a Neptune® AW Series hydraulic fluid was introduced into water, the hydraulic fluid sank immediately, leaving no sheen on the surface. The samples were then subjected to significant agitation. The Neptune® AW Series hydraulic fluid dispersed completely into the water; when the agitation stopped, there was still no sheen. When agitation of the other fluids ceased, surface sheens quickly reformed.

### Typical Physical Properties\*

Neptune® AW Hydraulic Fluids	32	46	68
Viscosity, ASTM D445			
@ 40°C (100°F), cSt	32.9	47.0	68.0
@ 100°C (212°F), cSt	7.13	9.88	13.9
@ 0°C (32°F), cSt	246	362	558
Viscosity Index, ASTM D2270	188	203	214
Pour Point, °C, ASTM D5950	-46	-40	-35
Specific Gravity @ 20°C (68°F), ASTM D4052	1.025	1.029	1.038
Weight (lbs/gal) @ 20 °C (68 °F)	8.529	8.546	8.619
(kg/l)	1.022	1.024	1.036

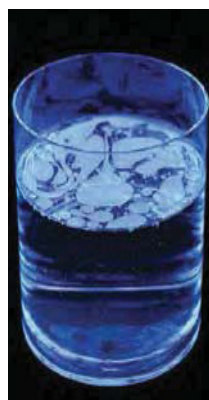
\*Typical properties, not to be construed as specifications.



Neptune® AW Series Hydraulic Fluid



AW 32 Mineral Oil Hydraulic Fluid



Fully Saturated Synthetic Ester Hydraulic Fluid



Biobased Polyalphaolefin (PAO) Hydraulic Fluid



Vegetable Oil Hydraulic Fluid

American Chemical Technologies, Inc.

# NEPTUNE<sup>®</sup> AW SERIES HYDRAULIC FLUIDS

The only hydraulic fluid chemistry fully compliant with the 2013 VGP, U.S. EPA Clean Water Act and USCG Surface Force Logistics Center EAL Standards

## A Global Source for Premium Synthetic Lubricants

American Chemical Technologies, Inc. (ACT) provides premium synthetic lubricants to a wide range of industries. Founded more than 30 years ago in the U.S., ACT has grown to become an international supplier of highly specialized products for industry and markets through a global network. Our commitment to advanced technology and personal service continues today as we set new standards for product performance and customer satisfaction.

## Call on Us for Total Support

We want your experience with our products to be successful. ACT supports its products with a full range of sales, technical, and customer service support, including information and/or assistance to help you with product selection, handling, maintenance, and disposal. Our Check-Mate hydraulic fluid monitoring program is designed to enable users to maintain fluid quality while monitoring the condition of system components. Call ACT today for expert lubricant support.

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## Ask About the Full Line of Lubricants from ACT

- EcoSafe<sup>®</sup> FR Fire Resistant Hydraulic Fluids
- EcoSafe<sup>®</sup> EHC Hydraulic Fluids for the Power Generation Industry
- EcoSafe<sup>®</sup> Revive<sup>™</sup> Premium Turbine Fluid Additive
- EcoSafe<sup>®</sup> TF-25 Turbine Fluid
- Neptune<sup>®</sup> AW Hydraulic Fluid
- Neptune<sup>®</sup> Gear Oils
- EcoGear<sup>®</sup> Gear Oils



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