

## READILY BIODEGRADABLE HYDRAULIC FLUID

### Description:

EnviroLogic® 168 hydraulic fluid is a readily biodegradable, biobased ISO 68 hydraulic oil for use in general purpose hydraulic systems. EnviroLogic® 168 is based on natural ester technology and is a direct replacement for petroleum oil based hydraulic fluids of the same viscosity. EnviroLogic® 168 exceeds the requirements of petroleum oil based hydraulic fluids. EnviroLogic® 168 is intended for use in applications with temperature requirements ranging from -20°F to 200°F and pressure requirements up to 5000 psi. EnviroLogic® 168 has reduced environmental impact in the event of a leak or spill, as it is readily biodegradable and non-sheening.

EnviroLogic® 168 is self certified as an Environmentally Acceptable Lubricant (EAL) compliant with 2013 US EPA Vessel General Permit (VGP).

EnviroLogic® 168 and meets or exceeds the requirements of:

- USDA BioPreferred\*
- MIL-PRF-32073 Grade V
- Jacobsen
- McNeilus
- Sauer Danfoss
- Loadmaster
- Autocar
- Wayne Engineering

Property	Method	Requirements	Result
Kinematic Viscosity	D445		
At 40°C, cSt		61.2 – 74.8	68
At 100°C, cSt		7.8 min	14.5
Viscosity Index	D2270	140 min	224
Density (60°F), kg/m <sup>3</sup>	D4052	Report	920
Density (60°F), lbs/gal	D4052	Report	7.66
API Gravity (60°F)	D1298	Report	22.3
Pour Point, °C	D97	-18 max	-36
Flash Point (COC), °C	D92	185 min	230
Acid Number, mgKOH/g	D664	report	0.30
Steel Pin Corrosion (4 hours, 100°C)	D665	Pass	
Deionized Water			Pass
Synthetic Salt Water			Pass
Copper Corrosion (3 hours, 100°C)	D130	2 max	1B

## 168 Readily Biodegradable Hydraulic Fluid

Property	Method	Requirements	Result
Foam Properties (after 10 minutes)	D892		
Sequence I, mL	Tendency-Stability	50-0 max	50-0
Sequence II, mL	Tendency-Stability	50-0 max	50-0
Sequence III, mL	Tendency-Stability	50-0 max	50-0
Demulse Properties (54°C)	D1401		
Oil / Water / Emulsion		40 / 37 / 3	40 / 40 / 0
Minutes		30 max	30
Copper Corrosion (3 hours, 100°C)	D130	2 max	1B
Hydrolytic Stability	D2619		
Copper Weight Loss, mg/cm <sup>3</sup>			0.09
Change in Acid Number, mgKOH/g			0.09
Appearance of Copper Panel			1B
Four Ball Wear	D4172		0.37
75°C/ 1200 rpm/ 40 kg/ 1 Hr.			
Vickers 35VQ25 Vane Pump*	35VQ25		Pass
FZG (A/8.3/90), fail load*	D5182	10 min	11
Vickers V104C Vane Pump*	ISO 20763		
Loss of ring, mg		120 max	1.9
Total loss of vanes, mg		30 max	4.8
Denison HF-6 Hybrid Pump*	T6H20C		
Total loss of pistons, mg		300 max	186.7
Total loss of vanes and pins, mg		15 max	1.4
Biodegradability	D7373	> 60	> 60
Ecotoxicity			
Fathead minnow, 96h LC50, ppm	OECD 203	> 100	> 10,000
Daphnia magna, 48h EC50, ppm	OECD 202	> 100	> 100
Algae, 72h EC50, ppm	OECD 201	> 100	> 100
Elastomer SRE-NBR-1 (100°C 168 hours)	D471	Pass	Pass
Elastomer HNBR (100°C 168 hours)	D471	Pass	Pass
Elastomer FKM (100°C 168 hours)	DIN 1817	Pass	Pass
Compatibility with Select Hydraulic Fluids			
Biodegradable Competitor stored @ 100°F		Pass	Pass
Biodegradable Competitor stored @ -5°F		Pass	Pass
Petroleum Hydraulic Fluid stored @ 100°F		Pass	Pass
Petroleum Hydraulic Fluid stored @ -5°F		Pass	Pass

\*based on read across from EnviroLogic® 146.

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