ROYAL PURPLE® SYNTHETIC OIL

TECHNICAL DATA SHEET

BioMax Hydraulic EAL

ENVIRONMENTALLY ACCEPTABLE HYDRAULIC LUBRICANT

BE/027/004

EU Ecolabel www.ecolabel.eu

Royal Purple's BioMax EAL product line is comprised of environmentally friendly, synthetic, high-performance lubricants formulated for equipment operating in environmentally sensitive areas. Environmentally friendly lubricants often compromise performance and durability to meet requirements of Environmentally Acceptable Lubricants, but BioMax EAL provides uncompromised lubrication and protection for all lubricated components.

Hydraulic and circulating oils are subject to ever increasing severity as operating loads and duty cycles continue to increase while equipment oil volume decreases. Increased equipment wear and thermal degradation of the oil are the result. Under these severe operation conditions, BioMax Hydraulic EAL provides enhanced lubrication and protection against wear and deposits, while helping improve system operational efficiency. The superior synthetic formulation and Royal Purple's proprietary Synerlec® additive technology are the key to outstanding lubrication. The EU Ecolabel certification of BioMax Gear EAL guarantees superior environmental and technical standards.

BioMax Hydraulic EAL is recommended for any hydraulic or oil circulating system requiring an environmentally friendly oil or EAL. Common applications include, but are not limited to, the applications below:

APPLICATIONS

- Inland waterways and offshore marine equipment including vessel thruster, controllable pitch propellers (CPP) and deck machinery
- Wind turbine and other power generation equipment
- Construction and mining mobile and stationary equipment
- Forestry service equipment
- Waterparks and water treatment facilities

PERFORMANCE ADVANTAGES

- HIGH FILM STRENGTH - Synerlec® additive technology dramatically reduces metal-to-metal contact, friction, and wear
- OUTSTANDING WEAR PROTECTION - Provides exceptional protection against friction and wear of hydraulic components
- EXCEPTIONAL CORROSION & RUST PROTECTION - Prevents internal damage to equipment from chemical attack
- SUPERIOR OXIDATION & THERMAL STABILITY - Resists oil degradation and varnish formation for longer oil life
- EXCELLENT DEMULSIBILITY - Rapidly separates from water, allowing free water to be drained from the system
- EXCELLENT HYDROLYTIC STABILITY – Resists breakdown and acidity due to water contamination
- IMPROVED SYSTEM PERFORMANCE - Lowers operating temperatures and improves efficiency
- REDUCED CARBON FOOTPRINT – Extended oil change intervals reduces waste, energy expenditure and CO2 production

SPECIFICATIONS AND APPROVALS

- EU Ecolabel License No. BE/027/004
- US EPA VGP (2013) and VIDA
- HS Marine (BioMax Hydraulic EAL 46)
- ISO 15380 category HEPR
- DIN 51524 Part 2
- Fives Cincinnati P-68, P-69, P-70

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Typical Physical Properties					
Property	**Test Method**	**22**	**32**	**46**	**68**
Viscosity @ 0°C, cSt	ASTM D445	168.7	284.9	445.7	720.2
Viscosity @ 40°C, cSt	ASTM D445	22.0	32.0	48.0	68.0
Viscosity @ 100°C, cSt	ASTM D445	4.86	6.19	8.13	10.70
Viscosity Index	ASTM D2270	158	159	159	159
Density @15°C, g/ml	ASTM D4052	0.908	0.859	0.869	0.863
Demulsibility, ml/ml/ml	ASTM D1401	40/40/0	42/38/0	42/38/0	42/38/0
Copper Corrosion, 3hr @ 100°C	ASTM D130	1A	1A	1A	1A
Rust Prevention, Dist. Water	ASTM D665A	PASS	PASS	PASS	PASS
Rust Prevention, Sea Water	ASTM D665B	PASS	PASS	PASS	PASS
Elastomer Compatibility	ISO 6072	PASS	PASS	PASS	PASS
Pour Point, °C (°F)	ASTM D97	-63 (-81)	-60 (-76)	-60 (-76)	-45 (-49)
Flash Point, °C (°F)	ASTM D92	246 (475)	233 (451)	233 (451)	231 (448)
Foam Tendency, Seq. I, II, III	ASTM D892	0/0	0/0	0/0	0/0
Air release @ 50°C, minutes	ASTM D3427	0	<4	<7	<10
Dielectric Breakdown, kV	ASTM D877	43	48	49	47

Wear and Extreme Pressure Properties					
Property	**Test Method**	**22**	**32**	**46**	**68**
Vane Pump Wear, Ring, mg	ISO 20763	2	2	2	2
Vane Pump Wear, Vanes, mg	ISO 20763	1.5	1.5	1.5	1.5
Four-Ball Wear, mm	ASTM D4172	0.49	0.47	0.48	0.49
Four-Ball EP, LWI	ASTM D2783	37.6	54.2	56.9	57.4
Four-Ball EP, Weld Load, kg	ASTM D2783	200	200	250	250
FZG Gear Test, A/8.3/90	ASTM D5182	>12	>12	>12	>12

Environmental Properties					
Property	**Test Method**	**22**	**32**	**46**	**68**
Biodegradability, % (28 days)	OECD 301B	>60	>60	>60	>60
Toxicity (Algae), mg/L	OECD 201	>1000	>1000	>1000	>1000
Toxicity (Daphnia), mg/L	OECD 202	>1000	>1000	>1000	>1000
Toxicity (Fish), mg/L	OECD 203	>1000	>1000	>1000	>1000
Toxicity (Bacteria), mg/L	OECD 209	>1000	>1000	>1000	>1000
Bioaccumulation, log POW	OECD 107	<3	<3	<3	<3

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