

# BIOGEAR XP RANGE

DESCRIPTION	<b>BIOGEAR XP</b> is a range of environmentally acceptable, high performance, extreme pressure (EP) gear oils based on fully saturated esters with a high degree of renewability.
APPLICATIONS	The <b>BIOGEAR XP</b> range is designed for use in sensitive marine environments, where there is potential for fluid loss to occur and has a high degree of renewability. Typical applications include thrusters and some CPP designs.
VGP	<b>BIOGEAR XP</b> and its components have been evaluated by independent laboratories. Using these test results, Vickers Oils has determined that it meets the VGP definition of an Environmentally Acceptable Lubricant
FEATURES	<p><b>BIOGEAR XP</b> is designed for an exceptionally wide operating temperature range, protecting equipment from -25°C to over 100°C. A highly stable top-tier lubricant that provides superior oxidation protection under severe conditions. It is not prone to oxidative thickening thereby ensuring a longer service life.</p> <p><b>BIOGEAR XP</b> does not contain viscosity index improvers and will therefore not shear down in use. It exhibits excellent water separation, extended fluid lifetime, high EP protection and low wear.</p> <p><b>BIOGEAR XP</b> has good compatibility with common sealing materials including Nitrile and Viton®. Miscible with common mineral based gear oils, but old oils should be drained completely to avoid any risk of additive incompatibility.</p> <p><b>BIOGEAR XP</b> has excellent demulsification properties and separates readily from any water entering the thruster allowing it to be removed from the unit in accordance with thruster OEM guidelines. It is recommended that water content should not exceed 1000ppm (0.1%).</p> <p><b>BIOGEAR XP</b> achieves a biodegradability of greater than 60% in the 28 day OECD 301B test, and is considered non-toxic in the marine environment.</p>

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Accredited to the ISO  
9001 Quality Standard  
and the ISO 14001  
Environmental  
Management Standard

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## BENEFITS

- Exceptional anti-wear and resistance to micro-pitting.
- Excellent thermal stability.
- Superior oxidation resistance under severe conditions and not prone to oxidation thickening, ensuring a longer service life.
- Excellent water separation if contaminated due to excellent demulsification properties.
- Does not use Viscosity Index Improvers and so will not shear down in service, resulting in an extended fluid life.

## TYPICAL CHARACTERISTICS

BIOGEAR	XP 68	XP 100	XP 150	TEST METHOD
Appearance	Clear	Clear	Clear	
Colour	Yellow	Yellow	Yellow	ASTM D1500
Viscosity @ 40°C (cSt)	68	100	150	ASTM D7042
Viscosity Index	143	139	138	ASTM D2270
Density @ 15°C (kg / l)	0.91	0.92	0.93	ISO 12185
Pour Point (°C)	<-30	<-30	<-30	ASTM D7346
Flash Point (Cleveland Open Cup) (°C)	>200	>200	>200	ASTM D92
Shelf Life	5 years in original containers whilst stored out of direct sunlight			

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## PERFORMANCE DATA

<b>Gear &amp; Bearing Performance</b>	Very good anti-wear performance in four ball wear and EP load / weld tests. Very good performance in the FZG Scuffing test (FLS14), FZG FVA 54 micropitting (LS=10, GFT high) and FE8 Bearing test (2mg roller loss).
<b>Industrial Gear Standards</b>	<b>BIOGEAR XP</b> meets all requirements of DIN 51517:3 type CLP lubricating oils and also the ISO 12925 CKD specification.
<b>Hydrolytic Stability</b>	<b>BIOGEAR XP</b> grades show very good hydrolytic stability when compared to competing EALs. However, when used for prolonged periods in the presence of water, at medium to high temperatures, hydrolysis may occur. Therefore the use of a water separator is highly recommended when water is present.
<b>Demulse / Water Separation</b>	Very good water demulsification properties, ensuring easy water separation, if contaminated.
<b>Corrosion Protection</b>	Shows good corrosion resistance to steel with salt and fresh water. Also, good corrosion resistance to Copper and Zinc, the common elements in yellow metal.
<b>Foaming</b>	Passes the foam test according to ASTM D892 and shows minimal foaming tendency in Flender foam test.
<b>Oil Compatibility</b>	Miscible with mineral oil and synthetic esters but, in accordance with best practice, it is recommended that the previous oil be fully drained and the system ideally flushed. Vickers do not recommend the mixing of oils.
<b>Elastomer Compatibility</b>	Compatible with standard NBR, HNBR and FKM seal elastomers. Compatible with PTFE and PU80 / PU90 polyurethane samples as tested, but testing of specific grades of polyurethane is advised.

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