PRODUCT & TECHNICAL DATA

CASTROL BIOBAR RANGE

Environmentally responsible hydraulic oil

DESCRIPTION

BioBar contains selected additives ensuring good oxidation stability, good anti-corrosion and anti-wear properties and low aquatic toxicity. The combination of base oils used in **BioBar** endows it with a very high viscosity index and an extremely low pour point as well as giving excellent compatibility with elastomeric seal materials. The careful choice of the saturated synthetic ester enables the product to operate up to +120°C system temperature.

APPLICATIONS

The **BioBar** range of high specification hydraulic oils are intended as drop-in replacements for conventional mineral oils in equipment where there is a risk of accidental spillage or leakage and consequent environmental damage.

Hydraulic systems are found throughout marine installations – on cranes, winches, life boat davits and deck hydraulic remote control systems, often located where leakage or spillage can escape into the marine environment. High flow rates, high operating pressures and extensive use of flexible hoses combine to make these systems vulnerable to a rapid loss of fluid caused by chafe or mechanical damage.

Biobar is recommended for hydraulic systems and hydrostatic transmissions incorporating gear pumps, vane pumps, radial piston or axial piston pumps and motors where there is a perceived risk of egress into the environment in the event of spillage or leakage.

BioBar is miscible with conventional mineral oil based hydraulic fluids. When changing from mineral oil based products to BioBar, the system should be drained to ensure that the mineral oil content of the refilled system is less than 5%. This is necessary to ensure that the overall biodegradability is not adversely affected. **BioBar** fulfils the requirements of the German VDMA paper 24568/ 24569 for HEES fluids.

Biobar is compatible with all common seal materials (KBR, Viton, Nitrile) allowing simple replacement of mineral oil in hydraulic systems.

FEATURES/BENEFITS

- Readily biodegradable in marine and freshwater environments.
- Significantly lower aquatic toxicity compared to conventional mineral hydraulic oils – exceeds US EPA environmental requirements.
- The majority of the base oil is derived from renewable resources and does not bioaccumulate.
- Excellent oxidation, hydrolytic and thermal stability.
- High shear stability.
- Extremely resistant to hydrolysis.
- Physical properties and hence system operating characteristics are comparable with those of mineral oil-based hydraulic fluids.
- Synergistic blend of base oils results in similar elastomer (seal) compatibility to standard hydraulic oils
- Low measured Friction Coefficient
- Good filterability – measured using ISO 13357-2 test procedure
- Long service history in offshore, off-road and forestry applications
- Environmentally responsible. The ready biodegradability of the product ensures the rapid natural degradation of product should it enter the aquatic environment.
- Minimises harm to the environment in the event of an accidental spillage.
- Superior oxidative and thermal stability provides extended product life, therefore minimizing product consumption and waste.
- Packaging can be re-used or recycled at the end of life.
- Existing equipment can be readily converted to **BioBar** with minimal risk and few, if any, system changes. Hydraulic systems will operate without noticeable changes in response times or operating characteristics.
- Resistance to “judder” under high load / slow speed operating conditions on deck equipment.
- No filter blocking.
- Assured hydraulic pump wear protection.

CARE AND HANDLING

- Put on appropriate personal protective equipment
- Workers should wash hands and face before eating, drinking and smoking.
- Do not breathe vapor or mist.
- Do not ingest.
- Avoid contact with eyes, skin and clothing.
- Use only with adequate ventilation.
- Wear appropriate respirator when ventilation is inadequate.

PACKAGING AND STORAGE

- Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.
- Store away from direct sunlight in a dry, cool and well ventilated area, away from incompatible materials
- Do not store in unlabeled containers.
- Use appropriate containment to avoid environmental contamination.
- Store in accordance with local regulations.

ADDITIONAL INFORMATION

The biodegradability of **BioBar** was measured in an OECD 306 (seawater) biodegradation test with a result greater than 60%, making it 100% more biodegradable than conventional mineral oils. **BioBar** is therefore classified as readily biodegradable in the marine environment.

The toxicity of **BioBar** was measured on 6 marine species and was found to be up to 100% less toxic than conventional mineral oils. It also has less potential for bioaccumulation and >30% of **BioBar** is derived from renewable resources.

TECHNICAL DATA

Typical Characteristics	**Unit**	**Test Method**	**Value**			
Biobar			**32**	**46**	**68**	**100**
Physical Tests						
Kinematic Viscosity @ 40°C	cSt	ASTM D445	32	47.8	68	110
Kinematic Viscosity @ 100°C	cSt	ASTM D445	6.4	8.2	11.0	15.6
Viscosity Index		ASTM D2270	145	146	150	150
Relative Density	g/ml	ASTM D4052	0.900	0.910	0.950	0.950
Pour Point	°C	ASTM D97	-45	-45	-30	-30
Flash Point	°C	ASTM D92	232	232	230	230
Steel Corrosion Distilled water Sea Water		ASTM D665	No rust No rust	No rust No rust	No rust No rust	No rust No rust
Copper Corrosion (100°C/3 hrs)		ASTM D130	1A slight tarnish	1A slight tarnish	1A slight tarnish	1A slight tarnish
Air Release Value	mins	ASTM D3427	4	4.5	5	5
Foaming tendency/stability	cm^3/cm^3	ASTM D892	20/0	20/0	50/0	50/0
Demulsification time	mins	ASTM D1401	43/37/0(15)	43/37/0(15)	43/37/0(20)	43/37/0(20)
Performance Tests						
Thermal stability after 168 hrs @ 135°C % change in kinematic viscosity Change in Acidity Sludge Copper weight loss	 mgKOH/g mg/100ml mg	ASTM D2070	Not tested	 3.23 1.6 7.9 6.1	Not tested	Not tested
Hydraulic stability % change in kinematic viscosity Copper weight loss Water layer acidity,	 mg/cm^2 mgKOH/g	ASTM D2619	Not tested	 2.4 0.1 4.4	Not tested	Not tested
Oxidation stability (RPVOT)		ASTM D2272	300	320	315	315
FZG Gear Test		DIN 51354-2	Not tested	>12	Not tested	Not tested
Filterability, dry		ISO 13357-2		Pass		
Eaton-Vickers 35VQ25A Pump Test Ring weight loss Vane weight loss			Not tested	 Pass Pass	Not tested	Not tested

The above figures are typical of those obtained with normal production tolerance and do not constitute a specification

HEALTH, SAFETY AND ENVIRONMENT

Health, safety and environmental information is provided for this product in the Material Safety Data Sheet. This gives details of potential hazards, precautions and First Aid measures, together with environmental effects and disposal of used products.

bp plc or its subsidiaries will not accept liability if the product is used other than in the manner or with the precautions or for the purpose/s specified. Before the product is used other than as directed, advice should be obtained from the local Castrol Marine representative.

GENERAL ADVICE

Further information on all Castrol Marine lubricants is available from any BP office or from:

BP Marine Ltd
Building D
Chertsey Road
Sunbury On Thames
Middlesex TW16 7LN
United Kingdom

www.bpmarine.com