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.

Application

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

- Reduced environmental impact when compared to conventional lubricants – demonstrable benefits in the following key environmental performance criteria:-
    - Superior biodegradation.
    - Significantly reduced bioaccumulation* and toxicity.
    - Enhanced renewability
      *Using OSPAR criteria for assessing bioaccumulation potential.
- 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.
- 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.

Additional Information

Castrol BioBar 46:

- Exceeds readily biodegradable standards*.
  * In extended OECD 306 seawater biodegradation product testing.
- Significantly reduced bioaccumulation in the marine environment*.
  *Compared with conventional lubricants.
- Significantly reduced toxicity to marine organisms*. Exceeds stringent OSPAR** and US EPA*** toxicity requirements by at least 4 times.
  *In comparison with conventional lubricants
  **As specified in the OSPAR Harmonised Pre-Screening Scheme
  ***As specified in NPDES permit GMG29000 for subsea production control fluids
- >30% of the raw materials used in Castrol BioBar 46 are derived from renewable sources.

Technical Data

Name	Method	Units	BioBar 22	BioBar 32	BioBar 46	BioBar 68	BioBar 100
Kinematic Viscosity @ 40ºC	ASTM D445	cSt	22	32	46	68	100
Kinematic Viscosity @ 100ºC	ASTM D445	cSt	4.9	6.4	8.2	11.0	15.6
Viscosity Index	ASTM D2270	None	139	145	147	150	150
Relative Density @ 15ºC	ASTM D4052	g/ml	0.90	0.90	0.92	0.95	0.95
Pour Point	ASTM D97	°C	-45	-45	-45	-30	-30
Flash Point, COC	ASTM D92	°C	226	232	218	230	230
Steel Corrosion - Distilled Water	ASTM D665	None	No Rust	No Rust	No Rust	No Rust	No Rust
Steel Corrosion - Sea Water	ASTM D665	None	No Rust	No Rust	No Rust	No Rust	No Rust
Copper Corrosion (100ºC/3hrs)	ASTM D130	None	1A slight tarnish	1A slight tarnish	1A slight tarnish	1A slight tarnish	1A slight tarnish
Air Release Value	ASTM D3427	minutes	4	4	4.5	5	5
Foam Sequence I, Tendency	ASTM D892	ml	20	20	20	50	50
Foam Sequence I, Stability	ASTM D892	ml	0	0	0	0	0
Demulsification time	ASTM D1401	minutes	43/37/0(15)	43/37/0(15)	43/37/0(15)	43/37/0(20)	43/37/0(20)
Thermal stability after 168hrs @ 135ºC:							
% change in kinematic viscosity	%	ASTM D2070	Not tested	Not tested	3.23	Not tested	Not tested
Change in acidity	mgKIH/g	ASTM D2070	Not tested	Not tested	1.6	Not tested	Not tested
Sludge	mg/100ml	ASTM D2070	Not tested	Not tested	7.9	Not tested	Not tested
Copper weight loss	mg	ASTM D2070	Not tested	Not tested	6.1	Not tested	Not tested
Hydrolytic stability:							
% change in kinematic viscosity	%	ASTM D2619	Not tested	Not tested	2.4	Not tested	Not tested

Name	Method	Units	BioBar 22	BioBar 32	BioBar 46	BioBar 68	BioBar 100
Copper weight loss	mg/cm²	ASTM D2619	0	Not tested	0.1	Not tested	Not tested
Water layer acidity	mgKOH/g	ASTM D2619	1.1	Not tested	4.4	Not tested	Not tested
Oxidation stability (RPVOT)	minutes	ASTM D2272	300	300	320	315	315
FZG gear test	failed load stage	DIN 51354-2	Not tested	Not tested	>12	Not tested	Not tested
Filterability, dry		ISO 13357-2	Not tested	Not tested	Pass	Not tested	Not tested
Eaton-Vickers 35VQ25A pump test:							
Ring weight loss			Not tested	Not tested	Pass	Not tested	Not tested
Vane weight loss			Not tested	Not tested	Pass	Not tested	Not tested

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

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.

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