Product Data

Brayco Micronic SBF

Barrier fluid based on highly refined base oil technology

Description

Castrol Brayco Micronic SBF is a 2007 OSPAR compliant fluid with no substitutable components.

Castrol Brayco Micronic SBF utilises highly refined base oil technology and is specifically formulated for use as a barrier fluid in subsea pumps. The fluid incorporates all the features required for reliable operation in this demanding subsea environment.

Castrol Brayco Micronic SBF has been developed under a Quality Management System with ISO 9001:2000 certification and an Environmental Management System with ISO 14001:2004 certification for Research and Development.

Application

- Castrol Brayco Micronic SBF is designed specifically for use in subsea pump applications.
- The product has excellent electrical insulation properties that make it suitable for internal cooling high voltage electric motors.
- Castrol Brayco Micronic SBF is rated for operation over a temperature range of -30ºC (-22ºF) to 120ºC (249ºF).
- The low pour point also allows use in areas where low ambient temperatures prevail.

Advantages

- Fully compliant with 2007 OSPAR environmental legislation and does not contain any "substitutable" components.
- Excellent insulating properties make it suitable for internal cooling high voltage AC electric motors (Tested to IEC 156).
- See Table 1 and Table 2 for detailed physical and performance characteristics for Castrol Brayco Micronic SBF.
- Physical and chemical testing has demonstrated that Castrol Brayco Micronic SBF is compatible and miscible in all proportions with typical mineral oil based fluids.
- Castrol Brayco Micronic SBF provides corrosion protection with water contamination according to IP135B, with up to 5% seawater contamination.
- Castrol Brayco Micronic SBF has excellent lubrication performance.
- Castrol Brayco Micronic SBF is compatible with materials commonly used in subsea pumps.

- Compliance with 2007 OSPAR environmental legislation ensures minimal impact on the environment.
- Allows reliable operation when exposed to the operating conditions of subsea pumps.
- Excellent lubrication characteristics ensure good performance in both radial and axial bearings, with stable and low levels of leakage across mechanical seals.
- Compatibility and miscibility properties of Castrol Brayco Micronic SBF with typical mineral oil based products allow easy upgrade of existing systems by top up. For further details contact Castrol offshore.
- The low pour point of the fluid allows operation in low ambient temperature environments.

Typical Physical Characteristics

Table 1						
Fluid - Castrol Brayco Micronic SBF Rheology at Ambient Pressure						
Property	Units @	4ºC	20ºC	40ºC	60ºC	80ºC
Density	g/ml	0.8465	0.8352	0.8078	0.7941	0.7804
	lb/ft^3	52.85	52.14	50.43	49.58	48.72
Viscosity	mm^2/s	10.8	6.3	3.7	2.5	1.8

General Properties			
Property	Code	Units	Typical Value
Appearance			Clear mobile liquid
Color			Pale Amber
Pour Point	IP15 / ASTM D97	ºC (ºF)	-72ºC typical
Flash Point	ASTM D92	ºC (ºF)	120ºC typical
Breakout Voltage	IEC 156	Kv	32 typical
Coefficient of Thermal Expansion		$m^3/m^3ºC$	0.00099
Thermal Conductivity	ASTM D2717	W/m/ºC	0.14
Specific Heat	ASTM D2766	Kj/Kg/K	2.0
Foam Test Sequence 1 Tendency	IP146 / ASTM D892	ml	100 maximum
Foam Test Sequence 1 Stability	IP146 / ASTM D892	ml	0 maximum
Moisture Content Volumetric-Karl Fisher	IP386	p.p.m.	<100
Relative Humidity	CWS01	%	<30
Particulate Cleanliness	SAE AS4059E		Class 6 B to F or better
	ISO 4406		Code -/14/11 or better

Table 2			
Fluid - Castrol Brayco Micronic SBF Typical Performance Characteristics			
Property		Code	Performance
Corrosion		ISO 13628-6 Annex C (2006 E)	Provides anti corrosion performance on carbon steel with up to 5% seawater - Pass (24 hours)
Lubrication Shell 4 Ball - Mean Wear Scar Diameter (1hr, 30 kg, 1460 rpm)		IP239	0.5 mm typical
Environmental Performance		2007 OSPAR Requirements	Meets 2007 OSPAR requirements - all components tested for toxicity, biodegradation and bioaccumulation
Compatibility	Metals	ISO 13628-6:2006 Annex C	Compatible with a wide range of metals*
	Elastomers/ Plastics	ISO 13628-6:2006 Annex C	Compatible with a wide range of elastomers/polymers*

For a more extensive list of tested material and detailed information on testing contact Castrol Offshore.
*Testing on equipment specific materials can be carried out, contact Castrol Offshore for more information.

Table 3		
Fluid - Castrol Brayco Micronic SBF Metal Compatibilty		
Material	Compatibility	Comments
Carbon Steel	Compatible	Unprotected carbon steel above the fluid surface may be subject to corrosion from condensed moisture if fluid contains excessive water
Alloy Steel	Compatible	
Stainless Steel	Compatible	
Super Duplex	Compatible	
Aluminium Bronze	Compatible	
Tungsten Carbide - Nickel/Cobalt	Compatible	
Silicon Carbide	Compatible	
Carbon Steel - Polymer Coated (PTFE)	Compatible	

Castrol Offshore recommend a complete materials review before using Brayco Micronic SBF.

Metals to be avoided

Being a non-aqueous medium, galvanic corrosion is minimized and hence Castrol Brayco Micronic SBF is suitable for use where a wide variety of metals are used within the system.

For coating compatibilty data, please contact Castrol Offshore.

Table 4		
Fluid - Castrol Brayco Micronic SBF Elastomer & Plastic Compatibility		
Material	Compatibility	Comments
Nitile (NBR)	Compatible	Widely used as standard seal material. Performance can vary according to grade
Hydrogenated Nitrile (HNBR)	Compatible	
Fluorocarbon (FKM - Viton)	Compatible	Performance can vary according to grade. Superior to nitrile if higher temperatures involved (90ºC or above)
PTFE	Compatible	Very inert, and suitable for high temperature and pressure applications
PEEK	Compatible	Very inert, and suitable for high temperature and pressure applications
Perfluoroelastomer (FFKM - Chemraz)	Compatible	Suitable for extreme temperature applications
Ethylene Propylene (EPDM)	Not compatible	**Important** EPDM is not suitable for use with any hydrocarbon based fluids or greases
Nylon 11	Testing planned	Testing will be to API 17 E standard test method
Ducoflex 3	Testing planned	Testing will be to API 17 E standard test method
Silicone	Limited compatibilty	Some swell is typical; however electrical insulation properties are maintained
Polyester Based Thermoplastic	Not compatible	
Resin Impregnated Cotton Insulating Material	Compatible	Commonly used insulating material for motor windings
Glass Composite (Resin Bound)	Compatible	Spacer material

As with all elastomer compatibility, performance of materials can vary between manufacturers. The data reported above refer to "standard" compounds recognised by industry. In critical applications it is advisable to carry out additional testing on specific materials obtained from the component manufacturer.

Compatibility

Seal Materials to be Avoided

Ethylene Propylene rubbers (EPR, EPDM) are not compatible with Castrol Brayco Micronic SBF or any other hydrocarbon based oils. These materials must be changed out where equipment is to be used with Castrol Brayco Micronic SBF.

Silicone based insulating materials, and polyester based plastics have limited compatibilty. Testing is recommended before use.

User Advice

Paint and other Surface Coatings

It is recommended that in accordance with good working practice the internal surfaces of the equipment should not be coated. Where it is necessary to use internal surface coatings such as PTFE these should be assessed for suitability of use. Manufacturers guidelines should be observed with regards cure times and temperatures and as with paints systems surface preparation specifications should be adhered to.

Environmental Compliance

Castrol Brayco Mirconic SBF is compliant with 2007 OSPAR environmental legislation providing a large global operational footprint.

Care and Handling

Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

Storage

All packages should be stored under cover. Where outside storage is unavoidable drums should be laid horizontally to avoid the possible ingress of water and the obliteration of drum markings. Products should not be stored above 600C, exposed to hot sun or freezing conditions.

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