



Product & Technical Data

Castrol Brayco Micronic LV/200

Synthetic subsea production control fluid

Description

Castrol Brayco Micronic LV/200 is a low viscosity third generation synthetic hydrocarbon control fluid specifically formulated for use as the control medium in subsea and surface production control systems. The product meets the environmental requirements for use in closed loop subsea production control systems.

Castrol Brayco Micronic LV/200 has been developed and qualified under a system with ISO 9001 accreditation for Research and Development.

Application

The fluid incorporates all the features that are required for operation in a wide range of equipment and are stable for operation at the high temperatures found in the well bore. Castrol Brayco Micronic LV/200 is currently rated for use at 200°C, making it suitable for use in High Pressure/High Temperature well heads and down-hole choke applications.

Castrol Brayco Micronic LV/200 represents a significant development in synthetic hydrocarbon control fluid technology, having a viscosity approximately 50% lower than previous Castrol Brayco Micronic subsea control fluids.

Castrol Brayco Micronic LV/200 is fully compatible and miscible in all proportions with the Castrol Brayco Micronic SV/200, 864HT/200 and 865 grades. However it should be appreciated that any mixture containing Castrol Brayco Micronic LV/200 will have an intermediate lower viscosity, and this may affect system response characteristics.

Castrol Brayco Micronic LV/200 must never be mixed with control fluids of different base types such as water glycol based fluids (e.g. Castrol Transaqua HT) or mineral oils (such as the Castrol Hyspin range). Contamination of Castrol Brayco Micronic LV/200 by either of these types of products will seriously affect the product performance.



Features

- Operating capability of 200°C
- Corrosion protection with sea water contamination
- Anti-wear properties
- Exceeds cleanliness standard of NAS 1638 Class 6
- Castrol Brayco Micronic LV/200 is fully compatible and miscible in all proportions with Castrol Brayco Micronic SV/200, 864HT/200, 865
- It is compatible with all metals used in subsea control systems, and with elastomers and plastics including Nitrile, Viton and PTFE.

Benefits

- Allows reliable operation of down hole, subsea or surface production control equipment exposed to conventional or HP/HT conditions.
- Provides improved hydraulic response.

Castrol Brayco Micronic LV/200 – Typical Physical Characteristics

Density 20°C	0.8100 g/ml
Pour Point, °C	< - 50
Flash Point, °C (PMC)	160
Kinematic Viscosity, cSt	
@ -20°C	70.4
@ 0°C	23.5
@ 40°C	5.9
@ 100°C	1.9
Viscosity Index	146
Bulk Modulus, N/m ²	1.05 x 10 ⁹
Coefficient of Thermal Expansion, /°C	0.8515 x 10 ⁻³ / °C
Foam Test Sequence, ml	
Sequence I	110/0
Particulate Cleanliness	
NAS 1638	Class 6 or better
ISO 4406	Code 14/11 or better
Moisture content	
Volumetric – Karl Fischer	< 500 ppm
Relative Humidity – CWS01	< 30 %



Castrol Brayco Micronic LV/200– Typical Performance Characteristics

Property	Performance
Rusting Characteristics with sea water ASTM 10% seawater	Provides anti corrosion performance on carbon steel with 10% sea water Pass (24, 48 hours)
Lubrication Shell 4 Ball Mean Wear Scar Diameter (1hr, 30 kg, 1460 rpm)	0.96 mm
Marine Environmental performance	All toxicity, biodegradation and bioaccumulation testing completed according to OSPAR guidelines.

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Castrol Brayco Micronic LV/200– Metal compatibility

Material	Compatibility	Comments
Plain Carbon Steel	Compatible	Unprotected carbon steel above the fluid surface may be subject to corrosion from condensed moisture if fluid contains excessive water.
Stainless Steel (316L)	Compatible	
Steel 1020	Compatible	
Super Duplex Steel (2507)	Compatible	
Inconel (Incoloy 825)	Compatible	Excellent for high temperature applications
Hastelloy	Compatible	
Titanium	Compatible	
Aluminium Bronze	Compatible	
Phosphor Bronze	Compatible	
Beryllium Copper	Compatible	
Aluminium	Compatible	
Cadmium Plating	Compatible	Often used on standard industrial hydraulic fittings
Zinc Plating	Compatible	
Chromium Plating	Compatible	
Nickel 200	Compatible	
Electroless Nickel Plating	Compatible	
Tungsten Carbide (Cobalt bonded)	Compatible	
Tungsten Carbide (Nickel bonded)	Compatible	

Castrol Brayco Micronic LV/200 is compatible with all materials commonly used in the construction of modern production subsea control systems, including most ferrous and yellow metal alloys. Being a non-aqueous medium, galvanic corrosion is minimized and hence Castrol Brayco Micronic LV/200 is suitable for use where a wide variety of metals are used within the control system.

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Castrol Brayco Micronic LV/200- Elastomer & Plastic compatibility

Material	Compatibility	Comments
Medium Nitrile	Compatible	Widely used as standard seal material. Performance can vary according to grade
High Nitrile	Compatible	
Carboxylated Nitrile	Compatible	Excellent abrasion resistance
Fluorocarbon (Viton)	Compatible	Performance can vary according to grade. Superior to nitrile if higher temperatures involved (90°C or above)
Butyl	Compatible	
Polyurethane	Compatible	
Chemraz	Compatible	Excellent for high temperature applications
Rubber Impregnated Fabric Composites	Not Compatible (unless Specifically developed for water service)	Wear exposes fabric, allowing moisture ingress and swell/delamination. Replace with polymeric seal compound
PEEK	Compatible	
PTFE	Compatible	
Nylon including Nylon 11	Compatible	
Ducoflex 3	Compatible	
Silicone	Not Compatible	
Ethylene Propylene	Not Compatible	Important EPR is not suitable for use with any hydrocarbon based fluids
Acetal	Limited compatibility	Do not use above 50°C

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As with all elastomer compatibility testing, 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.

Seal Materials to be avoided

Ethylene Propylene rubbers (EPR, EPDM) are not compatible with Castrol Brayco Micronic LV/200. These materials must be changed out from equipment that is to be used with Castrol Brayco Micronic SV/200.

Health and Safety

The wearing of impervious PVC (or other suitable material) apron and gloves, together with eye protection is recommended. Contaminated clothing should be changed immediately and thoroughly cleansed before re-use. This applies especially to under garments.

Material safety data sheets are available for all Castrol subsea products from www.castroloffshore.com

Or by contacting the address below.

Castrol Offshore, Pipers Way, Swindon, Wiltshire SN3 1RE, England.,

Telephone: Enquiries

+44 (0)1793 512712, Technical Enquiries +44 (0)118 984 3311, Fax +44 (0)1793 453218

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