



## Product & Technical Data

# Castrol Transaqua DW

## Water-based subsea production control fluid

### Description

Castrol Transaqua DW is a water-based hydraulic control fluid specifically formulated for use as the control medium in deepwater subsea production control systems. The fluid incorporates all the features that are required for operation in a wide range of equipment, and can therefore be used as the operating medium throughout the control system including subsurface safety valve control areas.

Castrol Transaqua DW has been developed and qualified under a system with ISO 9001 accreditation for Research and Development.

### Application

Castrol Transaqua DW is designed specifically for use in conventional and high pressure, high temperature applications. Castrol Transaqua DW is tolerant of the high well temperatures encountered by those parts of the control system located at the well bore. Castrol Transaqua DW is rated for use at operating temperatures of up to 180°C.

### Features

- Density balanced to seawater to reduce hydrostatic head.
- Operating capability of 180°C
- Corrosion protection with sea water contamination
- Anti-wear properties
- Exceeds cleanliness standard of NAS 1638 Class 6
- Contains unique tracer to aid low level leak detection
- Castrol Transaqua DW is fully compatible and miscible in all proportions with Castrol Transaqua HT and most other water-based subsea control fluids.
- It is compatible with all metals used in subsea control systems, and with elastomers and plastics including Nitrile, Ethylene Propylene and PTFE.

### Benefits

- Allows reliable operation of deepwater subsea equipment exposed to conventional or HP/HT conditions.
- Allows rapid detection of leaks with ROV mountable Castrol Transaquatracka – leak detection tool.

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**Castrol Transaqua DW – Typical Physical Characteristics**

Relative Density, g/ml	
@ 20°C	1.0354
@ 50°C	1.0219
Pour Point, °C	-9
Flash Point, °C	Not applicable
Viscosity, cSt	Typical values
@ 40°C	1.2
@ 20°C	1.98
@ 0°C	3.97
pH @ 20°C	8.9
Bulk Modulus, N/m <sup>2</sup>	2.31 x 10 <sup>9</sup>
Coefficient of Thermal Expansion, /°C	0.00044
Thermal Conductivity, W/m/°C	0.48
Specific Heat, KJ/Kg/K	3.830
Foam Test Sequence, ml	
Sequence I	110/0
Particulate Cleanliness	
NAS 1638	Class 6 or better
ISO 4406	Code 14/11 or better

**Castrol Transaqua DW – Typical Performance Characteristics**

<b>Property</b>	<b>Performance</b>
Sea water stability	Stable to 10% sea water contamination. Provides anti corrosion performance on carbon steel with 10% sea water.
Microbiological growth – 28 day challenge test Fungi Bacteria	Sterile during and after test
Lubrication Shell 4 Ball  Mean Wear Scar Diameter (1hr, 30 kg, 1460 rpm)	  0.924 mm
Environmental performance	All toxicity, biodegradation and bioaccumulation testing completed within OSPAR guidelines.

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**Castrol Transaqua DW – Metal compatibility**

<b>Material</b>	<b>Compatibility</b>	<b>Comments</b>
Plain Carbon Steel	Compatible	Unprotected carbon steel above the fluid surface may be subject to corrosion from condensed moisture if the fluid contains excessive water.
Stainless Steel (316L)	Compatible	
Steel 1020	Compatible	
Super Duplex Steel (2507)	Compatible	
Inconel (Incoloy 825)	Compatible	High temperature applications
Hastelloy	Compatible	
Titanium	Compatible	
Aluminium Bronze	Compatible	
Phosphor Bronze	Compatible	
Chromium Plating	Compatible (see comments)	Plating thickness must be sufficient to avoid porosity. Copper and nickel substrates can improve performance
Nickel 200	Compatible	
Electroless Nickel Plating	Compatible (see comments)	Ensure even plating thickness
Aluminium	Limited Compatibility	Components may be protected by hard-anodising. Avoid rubbing contacts.
Cadmium Plating	Not Compatible	Often used on standard industrial hydraulic fittings
Zinc Plating	Not Compatible	Effect is largely cosmetic (soft deposits on surface) but system cleanliness could be adversely affected

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**Castrol Transaqua DW – Elastomer & Plastic compatibility**

<b>Material</b>	<b>Compatibility</b>	<b>Comments</b>
Medium Nitrile	Compatible	Widely used as standard seal material. Performance can vary according to grade
Carboxylated Nitrile	Compatible	Excellent abrasion resistance
Viton	Compatible	Performance can vary according to grade. Superior to nitrile if higher temperatures involved (90°C or above)
Butyl	Compatible	
Polyurethane	Compatible (see comments)	Avoid in parts of hydraulic system operating at temperatures above 60°C (some grades have improved hydrolytic stability and are therefore suitable – consult seal supplier)
Ethylene Propylene	Compatible	Important if changing fluid type - EPR is not suitable for use with <b>any</b> hydrocarbon based fluids
Silicone	Compatible	
Chemraz	Compatible	Excellent for high temperature applications
Acetal	Compatible	
PTFE	Compatible	
Nylon	Compatible	See separate compatibility data for Nylon 11 thermoplastic as umbilical hose liner material
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

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### **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](http://www.castroloffshore.com)

Or by contacting the address below.

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