Forward in subsea production

Reliability taken further

Providing subsea operators and equipment manufacturers the support to work in the most challenging conditions and locations.

castrol.com/oilandgas

Castrol

Challenges are becoming more extreme **Reliability matters more than ever**

The challenges are becoming more extreme. Whether it's developing products that can meet the needs of the most demanding production assets or responding to ever-tougher environmental regulations – our subsea production offer has been leading the way in the industry for decades.

It combines high performance, technical skills and expertise to help ensure you maintain reliability in your operating conditions. That means longer up time and lower cost of ownership over the life of the field; showcased by Castrol's 40-year track record.



More extreme

operating

conditions

More remote locations



More complex systems



More ambitious targets

Helping you towards your sustainability goals



Castrol's PATH360 is our holistic sustainability program, expanding sustainable thinking into every facet of our business.

Saving waste | Reducing carbon | Improving people's lives

Castrol Brayco Micronic and Transagua products are committed to certified carbon neutral** in accordance with PAS 2060 from 2021.

We strive to be your liquid engineering and technology partner, creating innovative solutions for a world in motion

Today

- Reliable operation of subsea hydraulic systems Castrol Transaqua HT, HT2, DW, HC10
- Improved system protection subsea and for hardware storage on land – Castrol Transaqua SP and SP-HC
- Reliable operation of subsea boosting and compression Castrol Brayco Micronic SBF E

Tomorrow

- Subsea electrification
- Subsea boosting, water injection and compression
- Ultra deep water and deep water gas
- Carbon reduction and carbon capture and storage
- Integrated renewable power

Products designed to meet your needs

We offer two globally available product lines with a long and proven track record. They have both been continually developed with many years of expertise to provide maximum OEM gualification and help you meet the very latest environmental regulations.

Castrol Transagua

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The water-based control fluid range optimised for every operational need

	Castrol Transaqua HT	Castrol Transaqua DW	Castrol Transaqua HT2	Castrol Transaqua HT2-N	Castrol Transaqua SP	Castrol Transaqua SP-HC
Region	Global	Brazil	Global	Norway	Global	Global
Environmental assurance***	OSPAR and key geographies	Tested****	OSPAR and key geographies	OSPAR	OSPAR and key geographies	OSPAR and key geographies
Operating temperature range	-30°C/+170°C	-5°C /+150°C	-30°C/+170°C	-30°C/+170°C	-45°C /+150°C	-50°C/+150°C
Comments	 Released 1992 With fluoresceine dye and UV leak tracer ~700 wells globally 	 Identical chemistry to HT Lower glycol content designed for deep water Brazil market 	 Identical chemistry to HT apart from proprietary dye and UV tracer Operational since 2005 ~500 wells operating 	 Identical chemistry to HT2 without UV tracer and anti-foam additives 	 New enhanced fluid chemistry with excellent protection of subsea equipment (up to 50% seawater) Improved materials compatibility 	• Enhanced performance of Transaqua SP together with hydrate prevention characteristics for high pressure gas wells

Castrol Brayco Micronic

The world's only proven synthetic control and dielectric fluids

	Castrol Brayco Micronic SV/3	Castrol Brayco Micronic LV/3	Castrol Brayco Micronic SV/B	Castrol Brayco Micronic SV/4	Castrol Brayco Micronic SBF E
Region	Global	Global	Denmark, Netherlands, Norway, the UK	Global	Global
Environmental assurance***	OSPAR and key geographies	OSPAR and key geographies	OSPAR	OSPAR and key geographies	OSPAR and key geographies
Operating temperature range	-40°C/+200°C	-40°C/+200°C	-40°C/+150°C	-40°C/+200°C	-30°C/+200°C
Viscosity, cSt (Kv40)	10.5	5.5	8.4	8.4	5.2
Pour point (°C)	<-50	<-50	<-50	<-50	<-80
Comments	 Used in closed loop systems Operational since 2007 	 Used in closed loop subsea systems and land based wells Low viscosity useful for long tie-backs and for cold climates 	 Used in closed loop systems Developed to comply with Norwegian legislation 	• New enhanced product will replace SV/3 and SV/B, and deliver improved environmental performance	 Dielectric fluid for use as barrier fluid for subsea boosting pumps and compressors (OSS) Also qualified for use ine-actuators and compensation systems/modules

* In accordance with PAS 2060, see www.castrol.com/cneutral for more information. ** The CO2 emissions are calculated in accordance with the Greenhouse Gas Protocol's Product Life Cycle Standard and include life cycle emissions. The demonstrati carbon neutrality is assured by an Independent Third-Party and certified to BSI's PAS 2060 carbon neutral specification. See www.castrol.com/cneutral for more info

***Registered and tested in compliance with offshore environmental regulatory requirements *Tested according to customer requirements



Subsea collaboration you can rely on

We go beyond our unique and proven fluids. We believe that the only way to work is through close industry collaboration, high levels of technical support and vast expertise that give you the confidence to meet today's production challenges.

Every product is created in step with equipment manufacturers for the highest levels of performance



Tested to industry standards API 17F Annex C



Tested beyond maximum operating limits to ensure reliable performance for the life of field

Thermal stability



Materials compatibility

Tested with a wide range of system materials including key **metals**, **elastomers** and thermoplastic



Control fluid compatibility

Fully miscible with current control fluid grades including existing Castrol grades and common competitor grades



OEM qualification

Qualified with major industry OEMs across a wide range of equipment including DCVs (directional control valves), actuators, manifold valves, SSSV (sub surface safety valve), umbilicals, pumps

Technical services to help keep your operations efficient, reliable, and sustainable

Our technical services help you minimise downtime and costly part failures. We also recommend the most efficient product use and provide valuable training for your team.

Engineering support

- Front End Engineering Design support
- Technical reviews for optimum product selection (well conditions, hydrate risks, environmental considerations)
- System materials reviews for retrofits
- · Advice on product handling, use and storage

Expert investigational analysis capability

- Fluid contamination
- System cleanliness
- Corrosion
- Materials compatibility

Castrol Labcheck

- Sampling
- Online Analysis Reports





Are you ready to move Forward in subsea production? Talk to a Castrol expert today.



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