



Bio Range
Environmental Lubrication Solutions



**IT'S MORE THAN JUST OIL
IT'S HIGH PERFORMANCE
ENVIRONMENTAL SOLUTIONS**

IT'S MORE THAN JUST OIL. IT'S LIQUID ENGINEERING.



Marine

**REDUCED ENVIRONMENTAL
IMPACT. ENHANCED
PERFORMANCE.
GREATER OVERALL VALUE.**





HIGH PERFORMANCE PRODUCTS +
INDUSTRY LEADING SERVICES =
**IMPROVED OPERATING EFFICIENCY +
MAXIMUM OVERALL VALUE**

We know that using high performance lubricants translates directly into less maintenance and downtime and greater operating efficiency. For maximum value, don't compromise, choose Castrol.

The performance of your vessel depends on the quality of its lubricants. The world's oceans depend on us to protect them.

That's why we have developed a comprehensive range of advanced high performance lubricants that protect the world's oceans while delivering outstanding lubricant performance.

Our Bio Range helps you keep your critical equipment operating at maximum efficiency, adding value to your operations and reducing your environmental impact.

The Castrol Bio Range can be easily retrofitted to existing equipment with minimal downtime.

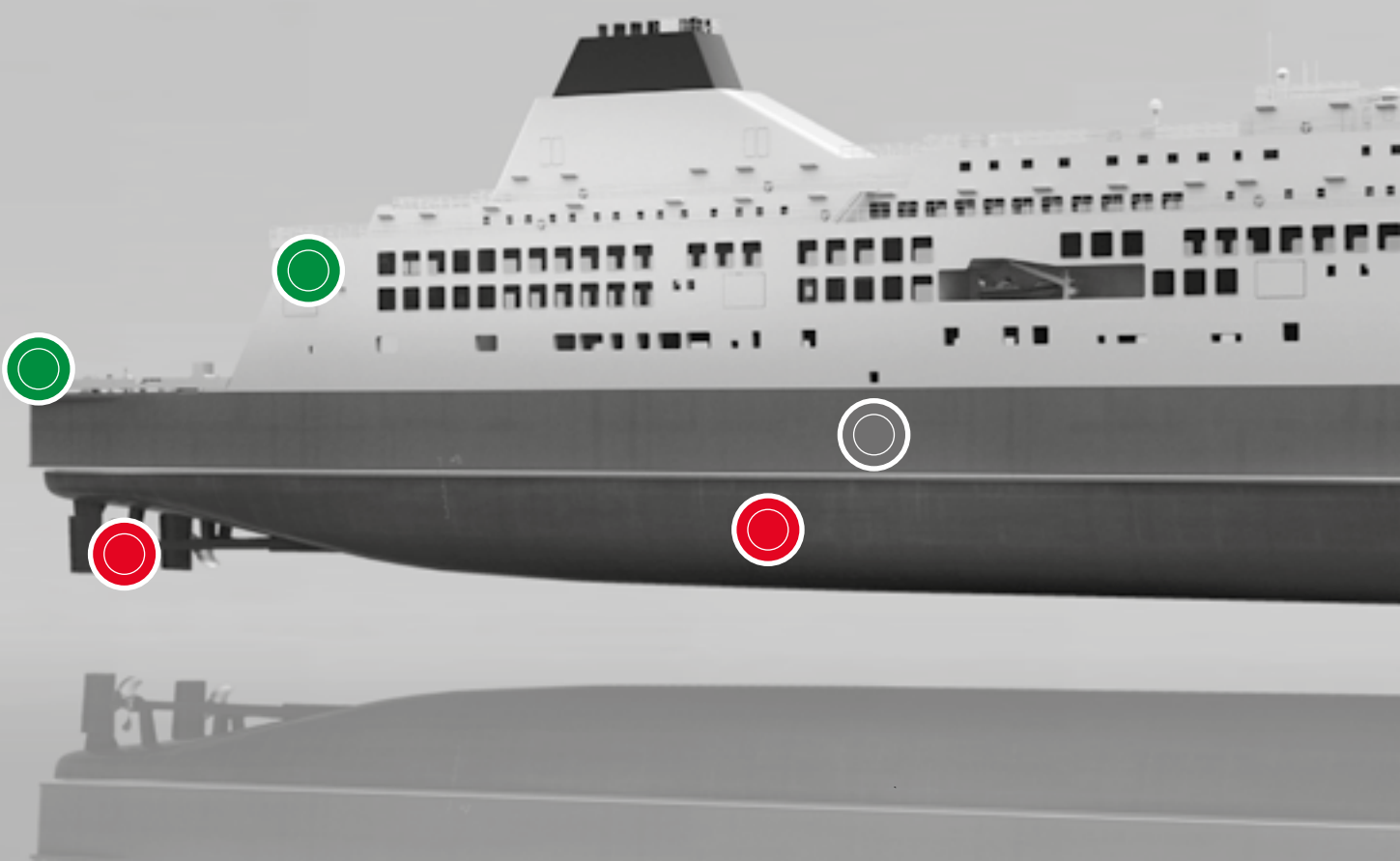
SOLUTIONS DESIGNED AROUND THE INDUSTRY'S NEEDS

Each year, up to 224,000 tons of oil-based lubricants enter the world's oceans, releasing potentially persistent, bioaccumulative and toxic chemicals into the marine environment.

The environmental impacts of classical oil pollution are well known – large spills can result in the smothering of sea birds and marine life, causing physical damage to marine habitats with toxic and bioaccumulative effects throughout the food chain.

Marine lubricant spills and releases are usually smaller scale, more frequent, but less obvious. The mixture of crude oil base stocks and additives (up to 30% of the finished products) result in persistent, bioaccumulative and toxic chemicals entering the marine environment.

The effects can impact marine ecosystems at all levels and result in chemicals working their way through the food chain up to humans.





Castrol Bio Range delivers scientifically demonstrable improvements in environmental performance.*

The ethos behind Castrol Bio Range is to offer:

- Superior biodegradation
- Significantly reduced toxicity to marine organisms
- Enhanced renewability - products contain components derived from renewable resources, minimising their mineral oil content
- Significantly reduced potential for bioaccumulation in marine organisms

*When compared to conventional mineral oils

RESPONSIBILITY WITHOUT COMPROMISE

Castrol Bio Range has been designed to minimise the impact of oil entering the seawater without compromising the product performance as a lubricant. Test programmes have shown that product life, component life and system reliability are in no way compromised by Bio Range's superior environmental performance. The base oils and additives are performance-tested against national and equipment manufacturers' standards. We also ensure compatibility with existing components and lubricants to simplify the conversion process.

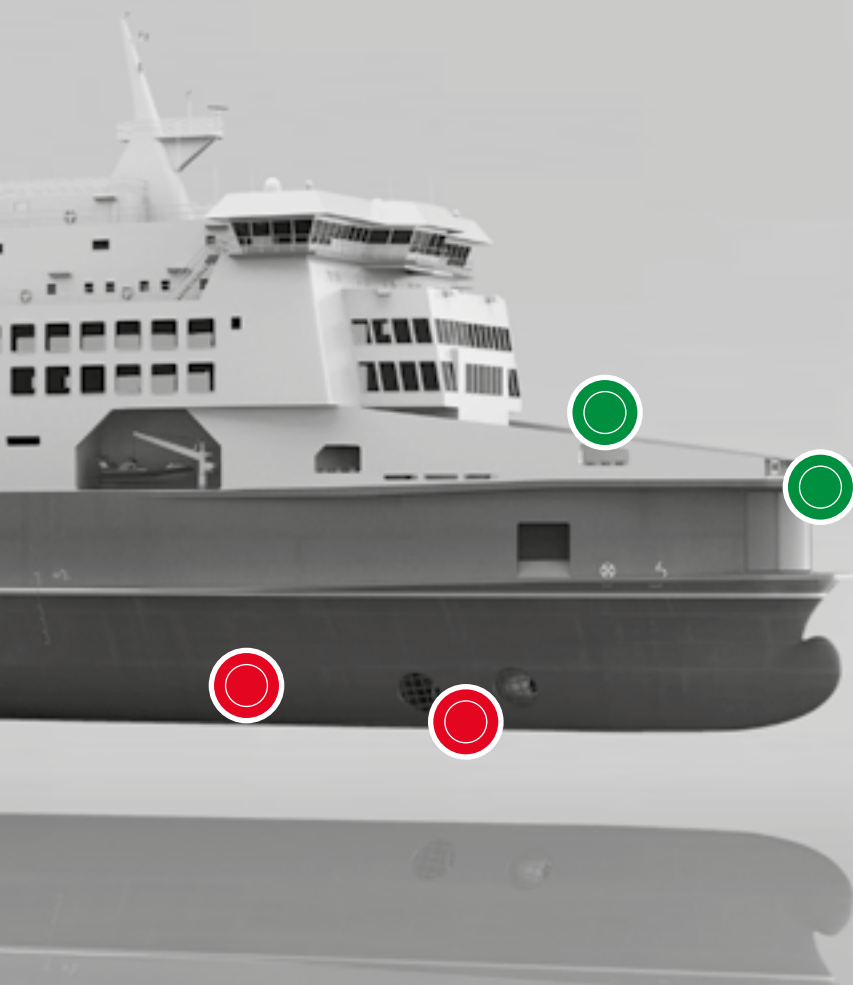
LEGISLATIVE COMPLIANCE

The use of Bio Range products will assist ship owners and operators to meet the US EPA's recommendation that ship owners and operators should use environmentally preferable lubricants for stern tubes, thrusters, stabilisers and wire ropes.

ISO 14001 COMPLIANCE

The use of Castrol Bio Range products, as part of an environmental improvement programme, can assist ship owners in achieving compliance with the requirements of ISO 14001.

The Castrol Bio Range of advanced environmentally responsible lubricants provides solutions for applications throughout the vessel where leakage presents a risk.



DISCHARGES IN USE

Stern tubes

Thrusters

Horizontal stabilisers

POTENTIAL SPILL OR LEAK

Crane hydraulics

Winch or windlass gears

Crane wires

Process pumps

Loading and unloading ramps

ENCLOSED MACHINERY

Gearboxes

Cargo pump drives

BioStat is available in the following
ISO viscosity grades: 68cSt, 100cSt, 150cSt, 220cSt

CASTROL BIOSTAT STERN TUBE/ THRUSTER LUBRICANTS





Castrol BioStat continues to deliver effective lubrication with up to 20% water contamination, significantly more than conventional mineral oils can, as shown by the graph below. This allows continued operations under faulty conditions, helping you minimise downtime.

TECHNICAL PERFORMANCE

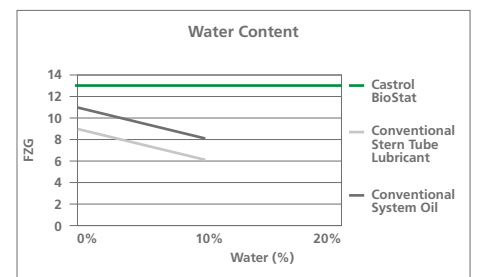
- Specifically designed for stern tubes
- Readily emulsifiable; 20% water absorption without compromising lubricating performance
- Better protection of bearings and gear components* to avoid unscheduled inspections/repairs

ENVIRONMENTAL PERFORMANCE

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

SERVICE BENEFITS



*When compared to conventional mineral oils

**Using OSPAR criteria for assessing bioaccumulation potential

BioBar is available in the following
ISO viscosity grades: 32cSt, 46cSt, 68cSt, 100cSt

CASTROL BIOBAR HYDRAULIC FLUIDS





Castrol BioBar helps to extend oil life by up to 50%,* reducing lubricant consumption and providing greater equipment availability in operations, thus avoiding unnecessary maintenance.

TECHNICAL PERFORMANCE

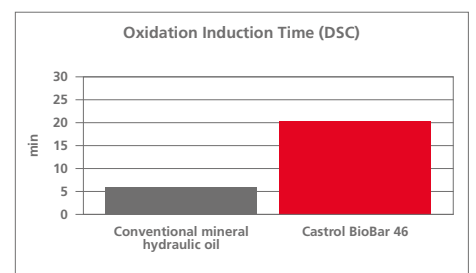
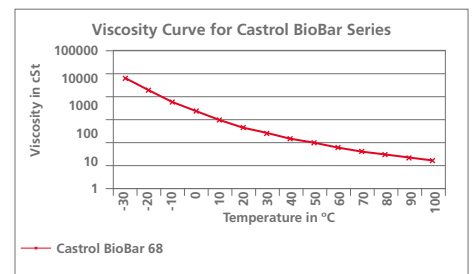
- Extended oil life (up to 50%)* proven in long field experience
- High viscosity index and low pour point:
 - Allows start-up at low temperatures
 - Provides thicker lubricating film and therefore enhanced component protection at high temperatures
- Excellent wear and corrosion protection, providing long term machinery protection

ENVIRONMENTAL PERFORMANCE

Reduced environmental impact when compared to conventional hydraulic fluids - demonstrable benefits in the following key environmental performance criteria:

- Superior biodegradation
- Significantly reduced bioaccumulation** and toxicity
- Enhanced renewability

SERVICE BENEFITS



*When compared to conventional mineral oils

**Using OSPAR criteria for assessing bioaccumulation potential

CASTROL BIOTRANS GEAR LUBRICANTS





Castrol BioTrans provides long-term machinery protection and extends oil life by up to 100%,* considerably reducing your overall lubricant consumption.

TECHNICAL PERFORMANCE

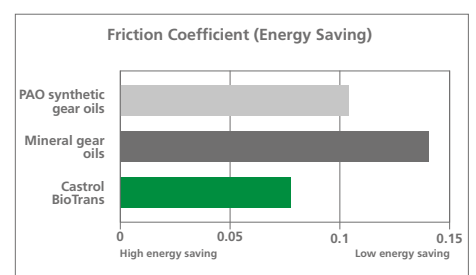
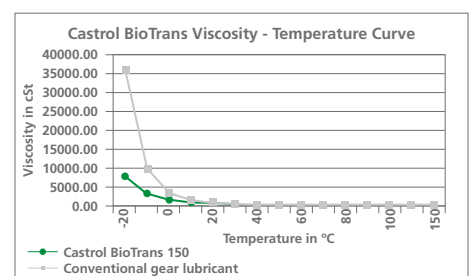
- Long-term machinery protection (up to 25% life extension of gear teeth in wind turbines, operating under high load 24/7)*
- Oil life extended by up to 100%*
- High viscosity index and lower pour point:
 - Allows start-up at low temperatures
 - Thicker lubricating film at high temperatures
 - Additional anti-wear protection

ENVIRONMENTAL PERFORMANCE

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

SERVICE BENEFITS



*When compared to conventional mineral oils

**Using OSPAR criteria for assessing bioaccumulation potential

CASTROL BIOTAC EP2 GREASE





Castrol BioTac EP2 provides excellent protection for equipment even when exposed to water wash, reducing frequency of relubrication.

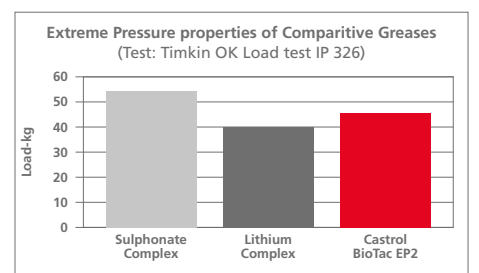
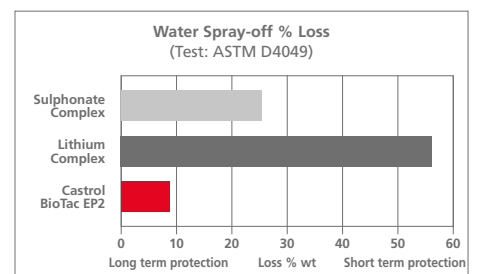
TECHNICAL PERFORMANCE

- Water spray-off resistance reduces frequency of application
- Good pumpability at low temperatures (operating temperature range from -35 to 120°C) facilitates use of pressurised lubrication equipment
- High load carrying capacity and anti-corrosion properties protecting equipment and adding value

ENVIRONMENTAL PERFORMANCE

- Formulated with a base oil that is rapidly biodegradable
- Improved marine biodegradation potential in comparison with conventional greases

SERVICE BENEFITS



For use in water-cooled outboard
and personal watercraft engines.

CASTROL BIOLUBE 2T 2-STROKE ENGINE LUBRICANT





BioLube 2T is a fully synthetic, inherently biodegradable* 2-stroke engine oil, specifically developed to combine the requirements of high performance engines with modern environmental demands.

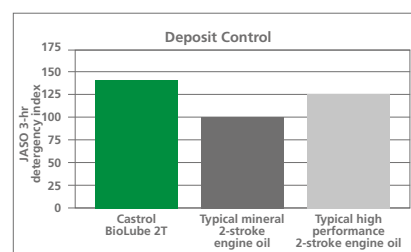
TECHNICAL PERFORMANCE

- Fulfils the requirements of major American and Japanese 2-stroke outboard engine manufacturers and can be used where API TC and NMMA TC-W3 lubricants are specified
- Offers excellent high temperature deposit control as demonstrated in the JASO M341 3-hour detergency test
- Outstanding lubricity, thus helping to extend engine life and improve power release
- Proven under high stress conditions
- Excellent engine cleanliness, which helps to minimise spark plug deposits
- Outstanding storage protection, helping to maintain engine condition during periods of inactivity

ENVIRONMENTAL PERFORMANCE

- BioLube 2T provides reduced environmental impact when compared to conventional mineral or typical part-synthetic 2-stroke engine oils
- Fully formulated oil has been tested for biodegradability as per OECD 301B requirements – results show >60% biodegradability, compared to <30% for conventional mineral or typical part-synthetic 2-stroke engine oils
- Fully formulated oil exhibits low aquatic toxicity when tested to OECD 203 guidelines

SERVICE BENEFITS



* Meets the criteria for inherently biodegradable to OECD 301B in product level testing

**ENVIRONMENTALLY
RESPONSIBLE SOLUTIONS.
RELIABLE SUPPLY.**





Created to meet your most demanding global environmental challenges, the Castrol Bio Range is available through our port network. To help you manage your global lubricant needs, speak to your local Sales Representative who will provide comprehensive information on our lubricant supply facilities, port and berth information, notice periods, methods of delivery and volume parameters at specific ports.



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