



Shell Marine

SHELL NATURELLE RANGE

HELPING YOU TO MEET THE LATEST REGULATIONS WITH OUR
RANGE OF BIODEGRADABLE LUBRICANTS



COMMITTED TO HELPING YOU

Shell Marine is committed to helping you to meet the latest requirements of the US EPA 2013 VGP. We offer a range of biodegradable lubricants that are approved by leading manufacturers for use in applications that have a potential oil-to-sea interface.

SHELL NATURELLE S4 STERN TUBE FLUID 100

DESIGNED TO PROVIDE SUPERIOR PROTECTION AND EFFICIENCY FOR STERN TUBES: OUR SPECIAL-PURPOSE, BIODEGRADABLE, SYNTHETIC STERN TUBE FLUID

Shell Naturelle S4 Stern Tube Fluid 100 is a non-emulsifying synthetic fluid specifically developed for use in stern tubes. Manufactured from fully saturated esters, Shell Naturelle S4 Stern Tube Fluid 100 is designed to offer superior lubrication performance while also being readily biodegradable and having low ecotoxicity.

Shell Naturelle S4 Stern Tube Fluid 100 is an environmentally acceptable lubricant according to the definitions of the US EPA 2013 VGP.

■ Designed to offer superior lubrication performance

Fully saturated esters ensure excellent resistance to oxidation and hydrolysis while offering high-temperature thermal stability.

■ Excellent hydrolytic stability

A non-emulsifying fluid with excellent water separation and anti-foaming characteristics that helps to maintain equipment performance.

■ Environmentally considerate

- EU Eco Labelled
- Independently certified as VGP compliant.

■ Increased wear protection

- Ashless (zinc-free) additives provide protection over a wide range of conditions.

■ Approvals from leading stern tube and seal manufacturers include*

- SKF Blohm + Voss Industries
- Wärtsilä Propulsion
- Kemel
- Aegir-Marine.



BEFORE

In a simple visual demonstration, 40 ml of oil and 40 ml of water were mixed for 1 minute at 1,000 rpm under ambient conditions. The photos below were taken after 30 minutes settling time at room temperature.

AFTER

**Shell Naturelle S4
Stern Tube Fluid 100**

Emulsifying oil

**RAPID WATER
SEPARATION**

Clear separation of oil and water enables easy draining from the stern tube system



**THICK, VISCOUS
MILKY
EMULSION**

Water remains in the oil and in the system



STERN TUBE FLUIDS ARE NOT ALL THE SAME

Ingress of water in some types of stern tube fluids can produce an emulsion whereby the water held in this emulsion cannot be drained away. In these situations, the stern tube fluid increases in viscosity and becomes more susceptible to hydrolysis, which leads to the formation of harmful acids. Ultimately, the life of the stern tube fluid may be reduced and equipment wear may increase.

Shell Naturelle S4 Stern Tube Fluid 100 does not form an emulsion; instead, it has excellent water separation characteristics, which means water can be easily drained from the system. Manufactured from fully saturated synthetic esters, Shell Naturelle S4 Stern Tube Fluid 100 can help to extend fluid and equipment life by protecting against hydrolysis and oxidation.



SHELL NATURELLE HF-E 46 AND 68

EFFICIENCY FOR HYDRAULIC AND POWER TRANSMISSION SYSTEMS WORKING IN ENVIRONMENTALLY SENSITIVE AREAS FROM OUR FULLY SYNTHETIC HYDRAULIC FLUID



■ Environmentally considerate

- EU Eco Labelled
- Independently certified as VGP compliant.

■ Approvals from leading marine equipment manufacturers include*

- Rolls-Royce (stabilisers)
- Sperry Marine (stabilisers)
- Wärtsilä Propulsion (stern tubes).

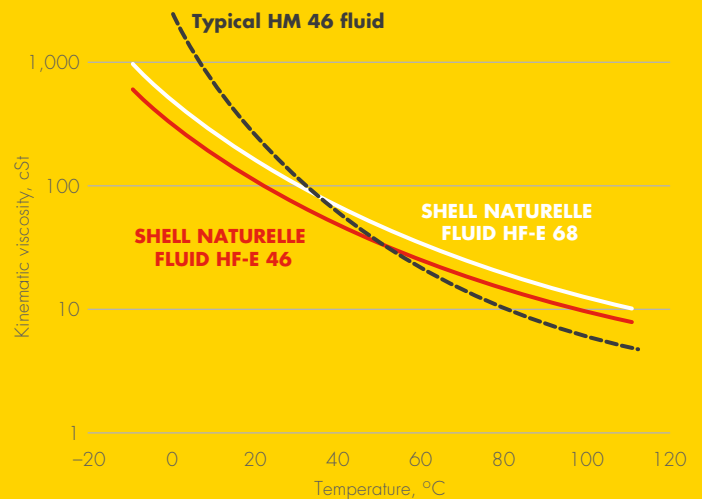
■ Specialist hydraulic approvals include*

- Eaton Vickers
- ISO 15380: HEES
- VDMA 24 568 HEES
- JCMAS P044 (endurance test).



CUTTING OPERATING COSTS

Hydraulic fluids that fail to protect your equipment from wear and corrosion can increase maintenance costs and reduce equipment availability. Shell Naturelle Fluid HF-E helps to lower maintenance costs by offering **excellent wear protection** over a wide temperature range. The naturally high shear stable viscosity index (VI) of Shell Naturelle Fluid HF-E helps to deliver responsive performance from cold start to full-load, heavy-duty operation.



Shell Naturelle Fluid HF-E is suitable for hydraulic and fluid power transmission systems in exposed environments where there can be wide variations in temperature.

Shell Naturelle Fluid HF-E is blended from synthetic base stocks with a naturally high VI of 180–190. The absence of viscosity modifier additives means the fluid is shear stable (i.e., there is no loss of viscosity control under high shear operating conditions) and offers multigrade performance with no loss of VI during use. The viscosity–temperature curve is much flatter than that of conventional hydraulic fluids.

SHELL NATURELLE S4 GEAR FLUID 68, 100 AND 150

DESIGNED TO OFFER PROTECTION FOR GEARS IN THRUSTERS, PROPULSION DRIVES AND OTHER APPLICATIONS: OUR SPECIAL-PURPOSE BIODEGRADABLE, SYNTHETIC GEAR AND BEARING FLUIDS

Prematurely worn components can mean additional maintenance costs and reduced equipment availability. Shell Naturelle S4 Gear Fluid can help to lower maintenance costs by offering outstanding anti-wear and load-carrying performance through their high-quality, synthetic ester base fluid and advanced non-toxic anti-wear additives.

CUTTING OPERATING COSTS

If water and air contaminate your oil, its ability to reduce friction and keep your gears working efficiently may be compromised. Shell Naturelle S4 Gear Fluids help to cut operating costs by maintaining system efficiency through their excellent water-separating, load-carrying and anti-wear characteristics. Shell Naturelle S4 Gear Fluid meets industry standard DIN 51517/3 CLP-E, including full water separation in less than 30 minutes according to DIN ISO 6614.

LONGER SERVICE LIFE

Fully saturated esters ensure excellent resistance to oxidation and hydrolysis while offering high-temperature thermal stability. Shell Naturelle S4 Gear Fluid offers the potential to extend oil service life compared with conventional mineral gear oils.

LOAD CARRYING AND WEAR PROTECTION

Shell Naturelle S4 Gear Fluid is formulated to have excellent load-carrying capacity and anti-scuffing performance. Advanced non-toxic additives provide protection over a wide range of conditions and ensure long component life, even under shock-loading conditions. All Shell Naturelle S4 Gear Fluid grades pass the FZG load test above load stage 13 according to ISO 14635 A20.

■ Environmentally considerate

- EU Eco Labelled
- Independently certified as VGP compliant.

APPLICATIONS

Shell Naturelle S4 Gear Fluid is suitable for gears and bearings in vessel propulsion drives, thrusters and controllable pitch propellers, and is available in ISO viscosity grades 68, 100 and 150.

■ Approvals from leading thruster manufacturers include*

- Kawasaki Heavy Industries
- Nakashima Propellor
- Holland Roerpropellor (ZF).

■ Approvals from leading stern tube and seal manufacturers include*

- SKF Blohm + Voss Industries
- Wärtsilä Propulsion
- IHC Sealing Solutions
- Aegir-Marine.

■ Approved for use in

- Sperry Marine for fin stabilisers
- Caterpillar (Berg) controllable-pitch propellers
- Orthinghaus wet marine clutches.



"IT IS WELL-KNOWN THAT FREE WATER IN LUBRICATING OIL DECREASES THE LIFE OF ROLLING ELEMENT BEARINGS FROM 10 TO MORE THAN 100 TIMES."

SKF

Taken from SKF: SKF has been a leading global technology provider since 1907



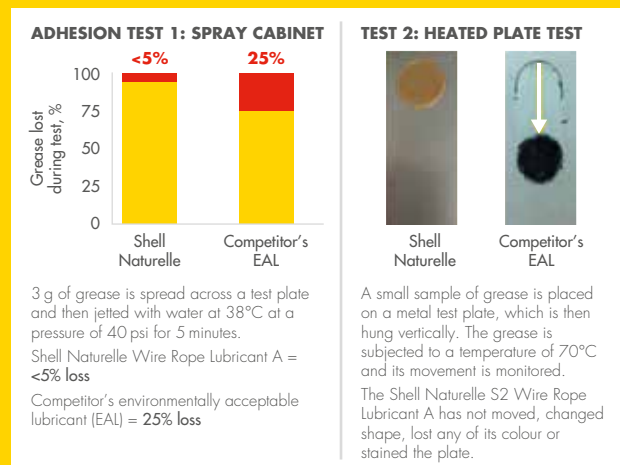
SHELL NATURELLE S2 WIRE ROPE LUBRICANT A

EFFECTIVE EXTREME-PRESSURE PROTECTION FOR WIRE ROPES, CABLES, PLAIN BEARINGS AND GENERAL DECK MACHINERY OPERATING IN CHALLENGING MARINE ENVIRONMENTS FROM OUR ADVANCED BIODEGRADABLE LUBRICANT

Lubricants with poor resistance to water wash-off may fail to protect your equipment, which means there is an increased likelihood of additional costs through unplanned maintenance or equipment downtime. Shell Naturelle S2 Wire Rope Lubricant A is designed for wire ropes, open gears and other deck equipment. It has excellent adhesion properties and is formulated with a selected blend of additives to offer superior extreme-pressure and anti-corrosion protection in the most challenging of environments.

CUTTING OPERATING COSTS

Low-cost lubricants can be poor value if they fail to stay where you need them. Shell Naturelle S2 Wire Rope Lubricant A offers high resistance to water wash-off owing to its outstanding adhesion properties. This can help to cut product consumption and labour costs, thereby reducing the cost of keeping your mooring and crane wires protected and working efficiently.



EXTREME PRESSURE AND ANTI-WEAR

Specially selected solid lubricants and additives protect components from excessive wear, even under heavy loads.

EXCELLENT CORROSION PROTECTION

Shell Naturelle S2 Wire Rope Lubricant A is formulated to include special anti-corrosion additives to offer enhanced protection from corrosion, even under the influence of seawater. In an SKF EMCOR test for a period of one week, there was no sign of corrosion.

READILY BIODEGRADABLE

Shell Naturelle S2 Wire Rope Lubricant A achieves the OECD 301 F requirement of >60% degradation within 28 days and is made from >60% renewable raw materials classed as minimally toxic and non-bioaccumulative.

APPLICATIONS

Shell Naturelle S2 Wire Rope A Lubricant is designed for use on wire ropes and open gears. It can also be used on other applications such as crane and davit wires, rudder stocks, propeller caps and dredger bucket wheels.



SHELL NATURELLE S5 GREASE V120P 2

Shell Naturelle S5 Grease V120P 2 is a biodegradable grease for use in rudder bearings; applications such as slow-speed plain bearings (slower than 500 rpm) and high-speed ball and roller bearings (up to 2,000 rpm) that require an extreme-pressure grease; and in routine greasing of deck equipment. The grease is based on a lithium hydroxystearate soap thickener and is fortified with extreme-pressure, anti-oxidant, anti-wear and anti-rust additives.

- Fully biodegradable to the latest CEC-L-33-A-93 standard
- Provides resistance to the formation of deposits caused by oxidation at high operating temperatures and **maintains consistency, thereby reducing leakage**
- Offers **good corrosion resistance** characteristics to offer effective protection in challenging environments.

Approvals from leading marine manufacturers include*

- Becker Marine Systems (full approval for rudder carriers)
- Rolls-Royce (full approval for rudder carriers).

CHANGE OVER TO THE SHELL NATURELLE PRODUCT RANGE

To change to our range of biodegradable lubricants, the entire process must be carefully managed.

A detailed changeover guide can be obtained from your local Shell Marine technical services team. The team is available to provide you with the necessary advice to help to guide you through the changeover process and also to help you achieve the best performance from Shell Naturelle products while ensuring minimal waste throughout the process.

As part of its international offering, Shell Marine offers the following range of branded technical services:

- **Shell LubeAdvisor** – Technical support services, lubrication surveys and audits, storage and handling advice
- **Shell LubeExpert** – Specialist on-site critical application support and inspections by application, marine and product experts
- **Shell Lube Monitor** – Cylinder condition monitoring
- **Shell Rapid Lubricants Analysis** – Laboratory oil condition monitoring tools service
- **Shell Rapid Lubricants Onboard Plus** and **Shell Rapid Lubricants Onboard Alert** – Onboard oil condition monitoring tools.

*The information and guidance offered for use of Shell Naturelle products is based on experience and understanding gained through the development and manufacturing of lubricants. The performance of the products can be influenced by a number of variables, not limited to, contamination, operating temperature, equipment application, external environment and material type.

The suitability of Shell Naturelle products must be checked for all applications with original equipment manufacturers (OEM) or with Shell technical representatives before these products are used. It is important to check that the fluid has the necessary OEM approval for the specific make and model of equipment and to check that the materials used for seals, flexible hoses, O-rings and tank coatings are also compatible with the Shell Naturelle products that are to be used. Please contact your Shell technical manager for the complete list of approvals.

CONTACT US

To find out more about our range of marine fluids for operations in environmentally sensitive areas, please contact your local Shell representative or email shellmarine-info@shell.com

Visit www.shell.com/marine

