

A large red and white offshore oil rig is positioned on the left side of the frame, with several tall white chimneys. In the distance, several wind turbines are visible against a blue sky with scattered white clouds. The foreground is dominated by the dark blue, rippling surface of the ocean.

Shell PANOLIN

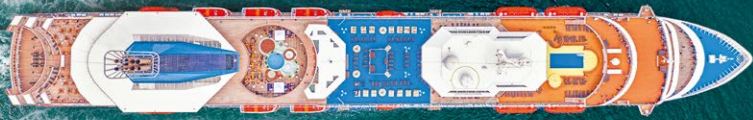
More industry, less impact

Shell PANOLIN leverages decades of expertise and a team of specialists dedicated to biodegradables research and development.

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**Shell
PANOLIN**



Lubricants play a vital role in keeping the world moving and machinery operating efficiently. As the world's need for mobility, construction and industrial production grows, the demand for lubricants will also increase. There is a shared responsibility to meet this rising demand while reducing the environmental impact of lubricants.

Suppliers are expected to offer sustainable products and services, and to make it easier for customers to make sustainable choices. Ship Charterers want lower-carbon alternatives for their current and future mobility needs, and Ship Owners and Technical Managers need to extend equipment life while reducing their net carbon emissions and protecting the environments in which they operate.

Your choice of lubricant is important. The right products and supporting services can help to keep your vessels operating efficiently and extend engines and equipment life while reducing environmental impact without compromising on performance.

Providing uncompromising performance

The Shell PANOLIN range offers biodegradable lubricants designed to provide excellent equipment protection in harsh conditions:

- The Shell PANOLIN S4 product range contains fully saturated esters and ensures excellent resistance to oxidation and hydrolysis.
- Temperature: A high viscosity index ensures performance across temperature ranges, offering reliable operations.¹
- Pressure, speed and loading: Designed to provide wear protection, anti-scuffing properties and robust load-bearing capabilities.
- Shell PANOLIN S4 HLP Synth 32, 46, 68: The first Bosch Rexroth-approved biodegradable hydraulic oil, designed for uninterrupted equipment operation.²

Reducing environmental impact

For customers looking to take concrete steps towards improving their sustainability, Shell PANOLIN lubricants present an easy choice.

- When compared to conventional mineral oils, they will have a reduced environmental impact in the event of a leak or accidental spillage.
- A high percentage hold EU Ecolabel certification.
- They are well balanced technically and readily biodegradable,³ with low ecotoxicity.⁴

Approved to the highest standards

Shell PANOLIN protects equipment and the environment with one solution to help customers navigate regulatory requirements and improve environmental stewardship. Products have been rigorously tested and can hold a range of certifications, such as:





- US EPA VGP 2013
- EU Ecolabel
- OSPAR Yellow Rating
- Swedish Standard (SS)
- ISO 15380.

For detailed specifications and approvals for each product, see the table on the following pages.





Decades of biodegradable lubricants expertise

Shell PANOLIN products have been trusted by customers in the marine, forestry and other sectors for more than 40 years.⁵

¹Shell PANOLIN S4 hydraulics range is designed to protect machines over a wide temperature operating range, and high viscosity index fluids enable increased hydraulics efficiency, in comparison with typical HM mineral oils, tested in line with standards ASTM D97, ASTM D2270 and DIN 51360-6. The range also has good cold flow behaviour, reducing the risk of metal-on-metal wear. ² Shell PANOLIN S4 HLP Synth, the only Bosch Rexroth-approved biodegradable hydraulic oil, is designed to help equipment operate without interruptions. Measured using industry standards. Actual effects and benefits may vary. No guarantees provided. ^{3,4} Source: ASTM D6384-99, "Standard Terminology Relating to Biodegradability and Ecotoxicity of Lubricants" and as defined by EU Ecolabel, particularly when using test adaptations focused on lubricants, such as in EN 17181:2019. ⁵ Shell Naturelle products were marketed for over 25 years, and PANOLIN biodegradables since the 1980s.

Product 	Applications 	Technology and benefits 	Specifications and approvals* 
Hydraulic fluids			
Shell PANOLIN S2 Hydraulic EAL – ISO VG 32 Formerly known as – Shell Naturelle S2 Hydraulic Fluid 32	Hydraulic crane rotator, hydraulic systems, hydraulic brake and pitch, controllable-pitch propellers, stabilisers and thrusters	<ul style="list-style-type: none"> • Unsaturated esters • Good oxidation, thermal stability and wide temperature range • Renewable content • Reliable performance (pressure, temperature, speed, life, wear) 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel NL/027/019 • ISO 15380 HEES • Swedish Standard SS 155434 • USDA BioPreferred
Shell PANOLIN S2 Hydraulic DU EAL – ISO VG 46, 68 Formerly known as – Shell Naturelle S2 Hydraulic Fluid 46, 68	Hydraulic crane rotator, hydraulic systems, hydraulic brake and pitch, controllable-pitch propellers, stabilisers and thrusters	<ul style="list-style-type: none"> • Unsaturated esters • Good oxidation, thermal stability and wide temperature range • Renewable content • Fire resistant • Reliable performance (pressure, temperature, speed, life, wear) 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel NL/027/019 • ISO 15380 HEES • FM Approval, ISO 12922 (fire resistant) • Swedish Standard SS 155434 • USDA BioPreferred
Shell PANOLIN S4 HLP Synth EAL – ISO VG 15, 22, 32, 46, 68 Formerly known as – PANOLIN HLP SYNTH E 15, 22, 32, 46, 68	Hydraulic crane rotator, hydraulic systems, hydraulic brake and pitch, controllable-pitch propellers, stabilisers and thrusters	<ul style="list-style-type: none"> • Saturated esters • Extended life • Extended performance (pressure, temperature, speed, wear) 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel DE/027/289 • ISO 15380 HEES • Swedish Standard SS 155434
Shell PANOLIN S4 HLP Synth – ISO VG 15, 22, 32, 46, 68 Formerly known as – PANOLIN HLP SYNTH 15, 22, 32, 46, 68	Hydraulic crane rotator, hydraulic systems, hydraulic brake and pitch, controllable-pitch propellers, stabilisers and thrusters	<ul style="list-style-type: none"> • Saturated esters • Enhanced life • Extended performance (pressure, temperature, speed, wear) 	<ul style="list-style-type: none"> • ISO 15380 HEES • Bosch Rexroth Fluid Rating List RDE 90245 (ISO 32, 46, 68) • Readily biodegradable, OECD 301B > 60%
Shell PANOLIN S4 Hydraulic OS EAL – ISO VG 5, 15, 22, 32 Formerly known as – PANOLIN ATLANTIS 5, 15, 22, 32	Designed for offshore and subsea applications, for example, ROVs	<ul style="list-style-type: none"> • Saturated esters • Extended performance (pressure, temperature, speed, life) 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • OSPAR Recommendation 2010/3 on HOCNF • Cefas, UK: OCNS Group A: This product contains one or more substitutable substances • ISO 15380 HEES
Gear oil			
Shell Naturelle S4 Gear Fluid – ISO VG 68, 100, 150	Industrial gears, bearings in circulation and splash systems Marine propulsion drives, thrusters, controllable-pitch propellers and stern tubes	<ul style="list-style-type: none"> • Saturated esters • Excellent load-carrying capacity and anti-scuffing performance • Excellent water separation • Wide temperature range 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel on ISO 150 DE/027/290 • DIN 51517-3 CLP • Kongsberg: 68, 100, 150; KHI: 68, 100; Schottel: 100, 150; Brunvoll: 68, 100; Wärtsilä: 68, 100, 150
Stern tube oil			
Shell Naturelle S4 Stern Tube Fluid – ISO VG 100	Stern tubes and controllable-pitch propellers	<ul style="list-style-type: none"> • Saturated esters • Non-emulsifying • High viscosity index providing low-torque system startup and maintaining fluid film thickness at higher operating temperatures 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel DE/027/290 • SKF Marine GmbH • Wärtsilä Propulsion • KEMEL • AEGIR-Marine

* For a full list of approvals and specifications, please speak to your Shell representative.

Product 	Applications 	Technology and benefits 	Specifications and approvals* 
Grease			
Shell Naturelle S2 Grease A600P 1.5 – ISO VG 600	Wire ropes, cables, fairleads, and crane and davit wires Open gears and low-speed plain bearings (< 500 rpm) Rudder stocks and trunk voids, propeller caps Dredging bucket wheels	<ul style="list-style-type: none"> • Calcium technology • Excellent adhesion and wash-off resistance • Extreme pressure and antiwear • Excellent corrosion protection 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • NLGI 1.5
Shell PANOLIN S5 Grease EAL V120P 2 – ISO VG 120 Formerly known as – Shell Naturelle S5 Grease V120P 2	Sliding and rolling element bearings, and marine applications where resistance to water washout is required	<ul style="list-style-type: none"> • Unsaturated esters • Renewable content • Lithium technology • Designed for extreme pressure, antioxidant, antiwear and anti-rust • Temperature range: –35 °C to 100 °C 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel • Swedish Standard SS 155434 SP • USDA BioPreferred • Becker Marine Systems • Rolls-Royce Marine • NLGI 2
Shell PANOLIN S5 Grease EAL A460 0 – ISO VG 460 Formerly known as – PANOLIN MARGREASE W EP 0	Sliding and rolling element bearings and marine applications where resistance to water washout is required	<ul style="list-style-type: none"> • Calcium technology • Excellent water washout resistance • Outstanding load-carrying capacity • Excellent anticorrosion properties • Temperature range: –40 °C to 100 °C 	<ul style="list-style-type: none"> • US EPA VGP 2013 compliant • EU Ecolabel • Swedish Standard SS 155434 SP • NLGI 0 • 3K Industry-approved for a.o. rudder stocks
Shell PANOLIN S4 Grease U68AP 1.5 – ISO 68 Formerly known as – Shell Naturelle S4 Grease U68AP 1.5	Heavy-duty, slow-moving components and gears exposed to seawater Designed for offshore jack-up systems	<ul style="list-style-type: none"> • Calcium technology • Designed for enhanced load-carrying and wear protection • Excellent mechanical stability in wet conditions • Temperature range: –20 °C to 150 °C 	<ul style="list-style-type: none"> • OSPAR Yellow (Norway), E (UK) • NLGI 1.5 • Readily biodegradable, OECD 301B > 60%

* For a full list of approvals and specifications, please speak to your Shell representative.



Shell LubeAnalyst

Oil and equipment monitoring that enables you to identify issues early, reducing maintenance time and costs.



Shell LubeMonitor

Cylinder condition monitoring for two-stroke engines that helps you strike a balance between oil and maintenance costs.



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for more information on products offered, and operational and ordering requirements at each port.



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