

An aerial photograph of a logging machine, specifically a skidder, operating in a dense forest. The machine is red and black with large, treaded tires. It is positioned on a narrow path, surrounded by tall, green evergreen trees. The ground is covered in forest floor debris, including small trees and branches. The machine's arm is extended, and it appears to be moving through the forest. The overall scene is a mix of green and brown tones, with the machine providing a stark contrast.

# 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. Vehicle manufacturers want lower-carbon alternatives for their current and future mobility needs, and industrial customers 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 machines operating efficiently and extend 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:

- Temperature: A high viscosity index ensures performance across temperature ranges, offering reliable operations.<sup>1,2</sup>
- Pressure, speed and loading: Designed to provide shear stability<sup>2</sup>, wear protection, anti-scuffing properties and robust load-bearing capabilities.<sup>3,4</sup>
- Environment: Designed to resist dust and water contamination,<sup>4</sup> with rust and corrosion protection, contributing to equipment longevity.
- Shell PANOLIN S4 HLP Synth 32, 46, 68: The first Bosch Rexroth-approved biodegradable hydraulic oil, designed for uninterrupted equipment operation.<sup>5</sup>

### 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,<sup>6</sup> with low ecotoxicity<sup>7</sup>.

### 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 hold a range of certifications including:





- ISO 15380
- EU Ecolabel
- Swedish Standard (SS)
- USA EPA VGP

All products with EAL in the name hold the EU Ecolabel. To qualify for the EU Ecolabel standard, products must help to reduce environmental impact compared with conventional products.

### 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.\* \*\*





<sup>1</sup> Shell PANOLIN S4 hydraulics range\* are 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 have good cold flow behaviour, reducing the risk of metal-on-metal wear. <sup>2</sup> Shell PANOLIN S4 Gear oils also have high VI providing shear stability which helps protect components over a wide temperature range. \*Excluding Shell PANOLIN S4 NSF 46 <sup>3</sup> Shell PANOLIN S4 Gear oils have excellent shear stability, tested according to industry standard CEC L-48-00-A. <sup>4</sup> Excellent foam control and demulsibility properties (water separation) are coupled with load-carrying characteristics that help to reduce consumption in products such as Shell PANOLIN S4 Stern Tube EAL. <sup>5</sup> 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. <sup>6,7</sup> 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. \*\*Shell Naturelle products were marketed for over 25 years and PANOLIN biodegradables since the 1980s.

Product 	Applications 	Technology and benefits 	Specifications and approvals 
<b>Hydraulic fluids</b>			
<b>Shell PANOLIN S4 HLP Synth – ISO VG 15, 22, 32, 46, 68</b> Formerly known as – PANOLIN HLP SYNTH 15, 22, 32, 46, 68	Construction, agriculture, mining, forestry and marine applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• Enhanced life</li> <li>• Extended performance (pressure, temperature, speed, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• Bosch Rexroth Fluid Rating List RDE 90245 (ISO 32, 46, 68)</li> <li>• Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN S4 HLP Synth EAL – ISO VG 15, 22, 32, 46, 68, 100</b> Formerly known as – PANOLIN HLP SYNTH E 15, 22, 32, 46, 68, 100 Replaces Shell Naturelle S2 Hydraulic 15	Construction, agriculture, forestry, mining, power and marine applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• EAL/VGP compliant</li> <li>• Extended life</li> <li>• Extended performance (pressure, temperature, speed, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• EU Ecolabel DE/027/289</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434</li> </ul>
<b>Shell PANOLIN S3 HLP Synth – ISO VG 46</b> Formerly known as – PANOLIN HLP SYNTH ECO 46	Construction, mining and agriculture applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• Longer life</li> <li>• Good performance (pressure, temperature, speed, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN S3 HLP Synth EAL – ISO VG 32, 46, 68</b> Formerly known as – PANOLIN SPRINT 32, 46, 68	Construction, agriculture, forestry, mining, power and marine applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• EAL/VGP compliant</li> <li>• Extended life</li> <li>• Extended performance (pressure, temperature, speed, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• EU Ecolabel DE/027/289</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434</li> </ul>
<b>Shell PANOLIN S2 Hydraulic EAL – ISO VG 32</b> Formerly known as – Shell Naturelle S2 Hydraulic Fluid 32	Mainstream agriculture, forestry, construction, mining, power and marine applications	<ul style="list-style-type: none"> <li>• Unsaturated esters</li> <li>• EAL/VGP compliant (coastal, marine)</li> <li>• Renewable content</li> <li>• Reliable performance (pressure, temperature, speed, life, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• EU Ecolabel NL/027/019</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434</li> <li>• USDA BioPreferred</li> </ul>







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



Product	Applications	Technology and benefits	Specifications and approvals
			
<b>Specialist hydraulic fluid</b>			
<b>Shell PANOLIN S2 Hydraulic DU EAL – ISO VG 46, 68</b> Formerly known as – PANOLIN SYNTHSAFE 46, 68 Replaces Shell Naturelle S2 Hydraulic Fluid 46, 68	Construction, agriculture, mining, forestry and marine applications	<ul style="list-style-type: none"> <li>• Unsaturated esters</li> <li>• EAL/VGP compliant (coastal, marine)</li> <li>• Renewable content</li> <li>• Fire resistant</li> <li>• Reliable performance (pressure, temperature, speed, life, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• EU Ecolabel NL/027/019</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434, USDA BioPreferred</li> <li>• FM Approval, ISO 12922 (fire resistant)</li> </ul>
<b>Shell PANOLIN S4 Hydraulic NSF H1 EAL – ISO VG 46</b> Formerly known as – PANOLIN ORCON SYNTH E 46	Construction, agriculture, forestry and mining, power and marine applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• EAL/VGP compliant (coastal, marine)</li> <li>• Food grade applicability</li> <li>• Enhanced performance (pressure, temperature, speed, life, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• Food Grade NSF Cat. H1</li> <li>• EU Ecolabel DE/027/289</li> <li>• US EPA VGP 2013 compliant</li> </ul>
<b>Shell PANOLIN S4 Hydraulic OS EAL – ISO VG 5, 15, 22, 32</b> Formerly known as – PANOLIN ATLANTIS 5, 15, 22, 32	Construction, mining and agriculture applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• Designed for offshore and underwater applications</li> <li>• VGP compliant</li> <li>• Extended performance (pressure, temperature, speed, life)</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 15380 HEES</li> <li>• OSPAR Recommendation 2010/3 on HOCNF</li> <li>• Cefas, UK: OCNS Group A: This product contains one or more substitutable substances</li> <li>• US EPA VGP 2013 compliant</li> </ul>
<b>Shell PANOLIN S4 Polar Synth – ISO VG 30</b> Formerly known as – PANOLIN POLAR SYNTH 30	Construction, agriculture, forestry, mining, power and marine applications	<ul style="list-style-type: none"> <li>• Saturated esters</li> <li>• Designed for low-temperature conditions</li> <li>• Extended performance (pressure, temperature, speed, life, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• Readily biodegradable, OECD 301B &gt; 60%</li> </ul>




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Product 	Applications 	Technology and benefits 	Specifications and approvals 
<b>Gear oil</b>			
<b>Shell PANOLIN S4 Gear – ISO VG 68, 100, 150, 220</b> Formerly known as – PANOLIN EP GEAR SYNTH 68, 100, 150, 220	Construction, mining and agriculture applications	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Enhanced life</li> <li>Extended performance (pressure, temperature, speed, wear)</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> <li>FZG load stage 12 (DIN 51354)</li> <li>ZF TE-ML 04M</li> </ul>
<b>Shell PANOLIN S4 Gear EAL – ISO VG 68, 100, 150, 220, 320</b> Formerly known as – PANOLIN MARGEAR68, 100, 150, 220, 320 Replaces Shell Naturelle S4 Gear Oil 68, 100, 150	Marine, dredging, construction, mining and wind power applications	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Designed for offshore and underwater applications</li> <li>VGP compliant</li> <li>Extended performance (pressure, temperature, speed, life)</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> <li>EU Ecolabel DE/027/289</li> <li>US EPA VGP 2013 compliant</li> </ul>
<b>Shell PANOLIN S4 Gear RS 80W90</b> Formerly known as – PANOLIN BIOGEAR RS 80W-90	Construction, mining and agriculture applications	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Designed for gearboxes, differentials and final drives</li> <li>Anti-corrosion properties</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Stern tube oil</b>			
<b>Shell PANOLIN S4 Stern Tube EAL - ISO VG 100</b> Formerly known as – PANOLIN STELLA MARIS 100	Stern tube bearings and controllable-pitch propellers	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>VGP compliant</li> <li>Extended performance (pressure, temperature, speed, life)</li> <li>Excellent oxidation</li> <li>High VI for low-torque start</li> <li>Strong corrosion protection</li> <li>Excellent foam control</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> <li>SO 15380 HEES</li> <li>EU Ecolabel NL/027/019</li> <li>US EPA VGP 2013 compliant</li> <li>SKF Marine GmbH</li> <li>Wartsila</li> <li>KEMEL</li> <li>Lagersmit</li> </ul>
<b>Universal tractor transmission oil</b>			
<b>Shell PANOLIN Biofluid SBH-N</b> Formerly known as – PANOLIN BIOFLUID SBH-N (10W-30)	Universal oil for tractor transmissions, hydraulic systems and final drives (fitted with wet brakes)	<ul style="list-style-type: none"> <li>Universal tractor hydraulic fluid</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN Biofluid PRS 32</b> Formerly known as – PANOLIN BIOFLUID PRS 32	Universal oil for tractor transmissions, hydraulic systems and final drives (fitted with wet brakes)	<ul style="list-style-type: none"> <li>Universal tractor hydraulic fluid</li> <li>Good wear protection</li> <li>Excellent air release helps to reduce foaming</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN Biofluid ZFH</b> Formerly known as – PANOLIN BIOFLUID ZFH	Universal oil for tractor transmissions, hydraulic systems and final drives (fitted with wet brakes)	<ul style="list-style-type: none"> <li>Universal tractor hydraulic fluid</li> <li>Excellent cold-flow characteristics</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> <li>Meets the requirements for ZF TE ML 03H, ZF TE ML 06G, ZF TE ML 07E</li> </ul>

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Product 	Applications 	Technology and benefits 	Specifications and approvals 
<b>Grease</b>			
<b>Shell PANOLIN S5 Grease EAL A460 0 – ISO VG 460</b> Formerly known as – PANOLIN MARGREASE W EP 0	Mining, construction, dredging and marine applications	<ul style="list-style-type: none"> <li>• Calcium technology</li> <li>• EAL/VGP compliant</li> <li>• Excellent water washout resistance</li> <li>• Outstanding load-carrying capacity</li> <li>• Excellent anticorrosion properties</li> <li>• Operating temperature range –40 to 100°C</li> </ul>	<ul style="list-style-type: none"> <li>• EU Ecolabel</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434 SP</li> <li>• NLGi Status 0</li> </ul>
<b>Shell PANOLIN S5 Grease EAL A600P 1 – ISO VG 560</b> Formerly known as – PANOLIN BIOGREASE W EP 1	Coastal, marine, wire rope and open gear mechanisms	<ul style="list-style-type: none"> <li>• Calcium technology</li> <li>• EAL/VGP compliant</li> <li>• Excellent water washout resistance</li> <li>• Good load-carrying capacity</li> <li>• Good anticorrosion properties</li> <li>• Longer life</li> </ul>	<ul style="list-style-type: none"> <li>• EU Ecolabel</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS155434 SP</li> <li>• NLGi Status 1</li> </ul>
<b>Shell PANOLIN S5 Grease EAL V320 2 – ISO VG 320</b> Formerly known as – PANOLIN BIOGREASE LL-EP 2	Mining, construction, dredging and marine applications	<ul style="list-style-type: none"> <li>• Lithium technology</li> <li>• EAL/VGP compliant</li> <li>• EP universal lubricating grease for exposed applications</li> <li>• Renewable content</li> <li>• Longer life</li> </ul>	<ul style="list-style-type: none"> <li>• EU Ecolabel</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS155434 SP</li> <li>• NLGi Status 1</li> </ul>
<b>Shell PANOLIN S4 Grease U68AP 1.5 – ISO 68</b> Formerly known as – Shell Naturelle S4 Grease U68AP 1.5	Open gear mechanism applications	<ul style="list-style-type: none"> <li>• Calcium technology</li> <li>• Heavy-duty multipurpose offshore and jacking grease</li> </ul>	<ul style="list-style-type: none"> <li>• OSPAR Yellow Rating</li> <li>• NLGi Status 1.5</li> <li>• Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN S5 Grease EAL V120P 2 – ISO VG 120</b> Formerly known as – Shell Naturelle S5 Grease V120P 2	Marine bearing applications	<ul style="list-style-type: none"> <li>• Unsaturated esters</li> <li>• EAL/VGP compliant (coastal, marine)</li> <li>• Renewable content</li> <li>• Reliable performance (pressure, temperature, speed, life, wear)</li> </ul>	<ul style="list-style-type: none"> <li>• EU Ecolabel</li> <li>• US EPA VGP 2013 compliant</li> <li>• Swedish Standard SS 155434 SP</li> <li>• USDA BioPreferred</li> <li>• Becker Marine Systems</li> <li>• Rolls Royce Marine</li> </ul>
<b>Transformer fluid</b>			
<b>Shell PANOLIN S4 Transformer</b> Formerly known as – PANOLIN TRAFOSYNTH 2	Power stations and transformer applications	<ul style="list-style-type: none"> <li>• Readily biodegradable</li> <li>• Excellent viscosity and temperature characteristics</li> </ul>	<ul style="list-style-type: none"> <li>• Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN S4 Transformer - I</b> Formerly known as – Shell Naturelle S4 Transformer - I	Industrial transformer, electric locomotive transformers and power station applications	<ul style="list-style-type: none"> <li>• Readily biodegradable</li> <li>• Extended oil life</li> <li>• Low flammability</li> <li>• Excellent viscosity and temperature characteristics</li> </ul>	<ul style="list-style-type: none"> <li>• IEC 61039 Type 1</li> <li>• Meets IEC 61039 K fire point</li> </ul>

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Product 	Applications 	Technology and benefits 	Specifications and approvals 
<b>Specialist fluids</b>			
<b>Shell PANOLIN eCool LV</b> Formerly known as – PANOLIN eCOOL LV	E-vehicle charging	<ul style="list-style-type: none"> <li>Fully synthetic</li> <li>Readily biodegradable</li> <li>Low electrical conductivity</li> <li>High flash point</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN eCool HP</b> Formerly known as – PANOLIN eCOOL HP	E-vehicle charging	<ul style="list-style-type: none"> <li>Fully synthetic</li> <li>Readily biodegradable</li> <li>Low pour point for operation at low temperatures</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN VCP</b> Formerly known as – PANOLIN VCP	Vapour corrosion fluid for mining, construction and agricultural applications	<ul style="list-style-type: none"> <li>Vapour corrosion fluid</li> <li>Readily biodegradable</li> <li>Low pour point for operation at low temperatures</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Wire rope fluid</b>			
<b>Shell PANOLIN S4 Wire Rope EAL - ISO VG 68, 320, 700</b> Formerly known as – PANOLIN BIOTRACK E 68, 320, 700	Mining, construction, rail and marine applications	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Fully synthetic</li> <li>Readily biodegradable</li> <li>Renewable content</li> <li>Extended life</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Turbine fluid</b>			
<b>Shell PANOLIN S4 Turbine – ISO VG 32, 46, 68, 100</b> Formerly known as – PANOLIN TURWADA SYNTH 32, 46, 68, 100	Turbine applications	<ul style="list-style-type: none"> <li>Fully synthetic</li> <li>Readily biodegradable</li> <li>High VI</li> <li>Excellent oxidation resistance</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Heavy duty diesel engine oil</b>			
<b>Shell PANOLIN Biomot LX 10W-40</b> Formerly known as – PANOLIN Biomot LX 10W-40	Rail, mining and construction applications - diesel engines Euro 4 ,5 and 6 Engines	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Good low temperature performance</li> <li>Field experience in rail sector</li> <li>Out-of-warranty engines, Deutz</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN Biomot LD 10W-40</b> Formerly known as – PANOLIN BIOMOT LD 10W-40	Rail, mining and construction applications – for the latest Euro 4, 5 and 6 diesel engines	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Good performance (life)</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>
<b>Shell PANOLIN Biomot LE-X 5W-30</b> Formerly known as – PANOLIN BIOMOT LE-X 5W-30	Rail, mining and construction applications – for Euro 4, 5 and 6 diesel engines	<ul style="list-style-type: none"> <li>Saturated esters</li> <li>Good low-temperature performance</li> </ul>	<ul style="list-style-type: none"> <li>Readily biodegradable, OECD 301B &gt; 60%</li> </ul>

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**Expert advice from the Shell technical team** designed to ensure that you use the right Shell lubricants, at the right time, every time. By helping to improve lubrication and maintenance practices, this service enables you to achieve significant benefits, including increased productivity, less downtime and, ultimately, a competitive advantage. In addition, more-efficient operations can help to reduce your carbon footprint.



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