



Formerly Known As: PANOLIN HLP SYNTH-E

Shell PANOLIN S4 HLP Synth EAL 100

- EU Ecolabel Certified
- USA EPA VGP compliant
- Readily Biodegradable
- Extended Life

Hydraulic fluid - high performance, readily biodegradable, saturated synthetic esters

Shell PANOLIN S4 HLP Synth EAL is formulated with zinc-free additive technology and high-performance fully synthetic saturated esters to help provide an outstanding blend of lubrication performance and environmental acceptability. Readily biodegradable with a low ecotoxicity, Shell PANOLIN S4 HLP Synth EAL hydraulic fluids are particularly suited for use in environmentally sensitive areas where eco-label compliance is required, including US waters. For use in stationary and mobile hydraulic systems including marine and deck equipment, construction, and forestry.

High-Performance Biodegradable Lubricants

Performance, Features & Benefits

- **Extended oil life**

Shell PANOLIN S4 HLP Synth EAL has an extended oil life and is designed to help equipment operate without interruptions. Longer oil-drain intervals mean less oil being produced, purchased and disposed of.

Shell PANOLIN S4 HLP Synth EAL has good oxidative stability which results in reduced fluid degradation, reducing filter blockage and increased viscosity. This helps prevent component failures, frequent filter and fluid changes, downtime, fluid consumption and parts and labour costs.

- **Premium wear protection**

Shell PANOLIN S4 HLP Synth EAL, is designed to help equipment operate without interruptions. Shell PANOLIN S4 HLP Synth EAL offers exceptional wear protection of hydraulic equipment.

- **Designed to protect even in cold climates**

Shell PANOLIN S4 HLP Synth EAL has good cold flow behaviour which enables a safe start even in cold conditions, thereby reducing the risk of metal-on-metal wear. In addition to protecting the machine over a wide temperature operating range, high viscosity index fluids help enable increased hydraulic efficiency, in comparison to typical HM mineral oil.

- **Lower Environmental Impact**

Recommended for use in environmentally sensitive areas:

An 'environmentally acceptable lubricant' as defined by the USA EPA 2013 Vessel General Permit and offers reduced impact of leak or accidental spillage into the environment when used in marine environments compared to conventional mineral oils. Readily biodegradable - biodegraded by over 60% after 28 days in the OECD 301 B carbon dioxide evolution test. Low Ecotoxicity - Classified as 'not harmful' to bacteria, algae, freshwater and marine invertebrates, and fish when tested as water-accommodated fractions (WAFs) according to OECD and EPA test guidelines.

- Shell PANOLIN Lubricants are manufactured in Switzerland and also expanding in North America and Asia to support growing demand.

Shell PANOLIN Lubricants plastic packs contain at least 25% recycled plastic (Post Consumer Resin (PCR)).

Shell PANOLIN Lubricants combined with Shell lubricant services can help customers to unlock potential reductions in carbon footprints and improvements in operational efficiencies.

Main Applications



Specifications, Approvals & Recommendations

- Meets the requirements for EU Ecolabel - NL/027/028
- Meets requirement of United States Environmental Protection Agency's (EPA) 2013 vessel general permit (VGP)
- Meets USDA Bio-preferred programme
- Meets EN 16807-2016 criteria of bio-lubricants and bio-based lubricants
- Biodegradable OECD 301B >60%
- ISO 15380: 2023 HEES

For a full listing of equipment approvals and recommendations, please consult your local representative.

Compatibility & Miscibility

- It is strongly recommended that an oil sample is taken from the system following changeover and analysed via the Shell LubeAnalyst service to confirm the new fluid charge is fit for use.
- This lubricant should not be mixed with other biodegradable hydraulic fluids to ensure that the environmental properties and performance of fluid is maintained. The system should be drained and flushed thoroughly when changing fluids, guidelines on fluid change-over can be found in ISO15380 Annex A.
- This lubricant is compatible with fluoroelastomers (FPM/FKM) such as Viton. Other seal materials and system components such as paints may be adversely affected and advice should be sought from the respective manufacturers.

Typical Physical Characteristics

| Properties | | | Method | Shell PANOLIN S4 HLP Synth EAL 100 |
|---------------------|---------------|--------------------|------------|------------------------------------|
| ISO Fluid Type | | | ISO 6743-4 | HEES |
| Kinematic Viscosity | @-20°C | mm ² /s | ASTM D445 | 6 250 |
| Kinematic Viscosity | @40°C | mm ² /s | ASTM D445 | 100.9 |
| Kinematic Viscosity | @100°C | mm ² /s | ASTM D445 | 14.6 |
| Viscosity Index | | | ASTM D2270 | 150 |
| Density | @15°C | kg/m ³ | ASTM D4052 | 919 |
| Flash Point | | °C | ASTM D92 | 252 |
| Colour (ASTM) | | | ASTM D130 | 1 |
| Water Separability | 54°C | minutes maximum | ASTM D1401 | 30 |
| Pour Point | | °C | ASTM D97 | -30 |
| Biodegradability | after 28 days | % minimum | OECD 301B | 60 |

These characteristics are typical of production, variations in these characteristics may occur.

Health, Safety & Environment

• Health and Safety

This product is unlikely to present any significant health or safety hazard when properly used in the recommended application and good standards of personal hygiene are maintained.

Avoid contact with skin. Use impervious gloves with used oil. After skin contact, wash immediately with soap and water.

Guidance on Health and Safety is available on the appropriate Safety Data Sheet, which can be obtained from <https://www.epc.shell.com>

• Protect the Environment

Take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

• Advice

Advice on applications not covered here may be obtained from your Shell Representative.

- **Additional Technical Advice**

The information and guidance offered for use of Shell PANOLIN 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. It is recommended that you discuss application and fluid recommendations with both your OEM and local Shell technical representative before the product is used. Advice given is non binding and Shell will not be held liable for any consequence as a result of or through misuse of the fluid.