



Formerly Known As: **PANOLIN ATLANTIS**

# Shell PANOLIN S4 Hydraulic OS EAL 15

- Readily Biodegradable
- USA EPA VGP compliant
- For subsea applications
- Cefas UK: OCNS Group A
- OSPAR Recommendation 2010/3 on HOCNF

## *Hydraulic & control line fluid - readily biodegradable, saturated synthetic esters*

Shell PANOLIN S4 Hydraulic OS EAL has a zinc-free additive technology, blended with high-performance fully synthetic saturated esters which provides an excellent blend of lubrication performance and environmental acceptability. Readily biodegradable with a low ecotoxicity, particularly suited for subsea, offshore, and marine applications where compliance is required including US waters.

### High-Performance Biodegradable Lubricants

#### Performance, Features & Benefits

- **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.

- **Underwater applications**

Shell PANOLIN S4 Hydraulic OS EAL fully complies to the low ecotox profile required by the OSPAR commission (Environmental Category Yellow) in order to protect the marine environment and contains no substitutable components according to the Cefas classification procedure, so can be used in offshore and underwater applications.

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

Shell PANOLIN S4 Hydraulic OS 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, shear-stable, high viscosity index fluids enable increased hydraulic efficiency.

- **Maintaining system efficiency**

High VI provides performance across a wide temperature operating window

#### Main Applications



#### Specifications, Approvals & Recommendations

- Meets requirement of United States Environmental Protection Agency's (EPA) 2013 vessel general permit (VGP)

- Biodegradable OECD 301B >60%

For a full listing of equipment approvals and recommendations, please consult your local Shell Technical Helpdesk

#### Compatibility & Miscibility

- It is strongly recommended that an oil sample is taken from the system following changeover and analysed via the Shell Rapid Lubricants Analysis service to confirm the new fluid charge is fit for use.

- **Fluid Compatibility**

Shell PANOLIN Fluids are miscible with mineral oils.

However, in order to ensure that the environmental properties and performance of Shell PANOLIN Fluids are maintained, the system should be drained and flushed thoroughly when changing fluids.

## Typical Physical Characteristics

Properties			Method	Shell PANOLIN S4 Hydraulic OS EAL 15
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D445	16.4
Pour Point		°C	ASTM D97	-50
Flash Point		°C	ASTM D92	220
Density		kg/m <sup>3</sup>	ASTM D4052	921

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 <http://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.