



Formerly Known As: PANOLIN STELLA MARIS

## Shell PANOLIN S4 Stern Tube EAL 100

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

### *Special Purpose Biodegradable Synthetic Stern Tube Fluid*

Shell PANOLIN S4 Stern Tube Fluid EAL 100 is a non-emulsifying synthetic fluid specifically developed for use in stern tubes. Manufactured from fully saturated esters, Shell PANOLIN S4 Stern Tube Fluid EAL 100 is designed to offer excellent lubrication performance whilst also being readily biodegradable with low toxicity. Shell PANOLIN S4 Stern Tube Fluid EAL 100 is an Environmentally Acceptable Lubricant (EAL) and holds the EU Ecolabel.

### High-Performance Biodegradable Lubricants

#### Performance, Features & Benefits

- **Longer service life**

Fully saturated esters ensure excellent resistance to oxidation result in reduce fluid degradation. Shell PANOLIN S4 Stern Tube EAL 100 has good hydrolytic stability enabling longer oil life.

- **Increased wear protection**

Advanced additives provide protection over a wide range of conditions. Shell PANOLIN S4 Stern Tube EAL 100 offers strong corrosion protection for stern tube bearings. High viscosity index provides low torque system start up at lower temperatures and maintains fluid film thickness at higher operating temperatures.

- **Maintaining system efficiency**

Excellent foam control and demulsibility properties (water separation) are coupled with load carrying characteristics that help to reduce consumption.

- **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.

#### Main Applications



#### Specifications, Approvals & Recommendations

- Meets the requirements for EU Ecolabel - DE/027/289
- Meets requirement of United States Environmental Protection Agency's (EPA) 2013 vessel general permit (VGP)
- Biodegradable OECD 301B >60%
- Approved by SKF Marine GmbH
- Approved by Wartsila
- Approved by KEMEL
- Approved by Lagersmit
- Approved by Aegir-Marine

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 Stern Tube EAL 100
Kinematic Viscosity	@40°C	mm <sup>2</sup> /s	ASTM D445	96.5
Pour Point		°C	ASTM D97	-33
Flash Point		°C	ASTM D92	284
Density	@15°C	kg/m <sup>3</sup>	ASTM D4052	919

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.