



Formerly Known As: PANOLIN MARGEAR

## Shell PANOLIN S4 Gear EAL 220

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

### *Industrial gear oil - readily biodegradable, saturated synthetic esters*

Shell PANOLIN S4 Gear EAL is an advanced synthetic fluid for use in gearing applications such as marine thrusters and propulsion drives. Industrial gears, bearings and other components in circulated and splash lubricated systems. Manufactured from fully saturated esters, Shell PANOLIN S4 Gear EAL is designed to offer outstanding load carrying performance whilst also being readily biodegradable with low ecotoxicity. Shell PANOLIN S4 gear EAL is an Environmentally Acceptable Lubricant (EAL) and holds the EU Ecolabel.

### High-Performance Biodegradable Lubricants

#### Performance, Features & Benefits

- **Increased Wear Protection**

Load carrying and wear protection, formulated to have excellent load carrying capacity and anti-scuffing performance. Advanced nontoxic additives provide protection over a wide range of conditions and ensure long component life, even under shock loading conditions. Advanced non-toxic additives provide protection over a wide range of conditions and ensure long component life, including providing protection against micro-pitting.

- **Maintaining system efficiency**

Shell PANOLIN S4 Gear Oil EAL has a high viscosity index providing shear stability which helps protect components over a wide temperature range. The low pour point and cold flow characteristics provide protection and performance even in cold climates.

- **Longer Service Life**

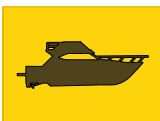
Shell PANOLIN S4 Gear Oil EAL has strong oxidative stability at high temperatures which results in reduced fluid degradation, reducing filter blockage and increased viscosity. This helps prevent component failures, frequent filter and fluid changes, downtime, fluid consumption and parts and labour costs.

- **Lower Environmental Impact**

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 when tested as water-accommodated fractions (WAFs) according to OECD test guidelines.

#### Main Applications



## Specifications, Approvals & Recommendations

### Meets or exceeds the following industrial standards:

- ISO 12925-1 Type CKES
- DIN 51517 Part 3 CLP
- EU Ecolabel - NL/027/028
- USDA Bio-preferred programme
- EN 16807-2016 criteria of bio-lubricants and bio-based lubricants
- United States Environmental Protection Agency's (EPA) 2013 vessel general permit (VGP)  
Biodegradable OECD 301B >60%
- SKF Marine GmbH

### Shell Panolin S4 Gear EAL 220 has been approved by:

- Flender - approved according to Flender T 7300  
Shell Panolin S4 Gear EAL ISO 150-320 are approved by Flender for use in Flender helical, bevel, planetary and marine gear units.
- MAAG Gear – according to approval process, Shell Panolin S4 Gear EAL ISO 100-320 are approved for use in MAAG gearboxes.

- FLSmidth Gear – according to approval process, Shell Panolin S4 Gear EAL ISO 100-320 are approved for use in FLSmidth gearboxes.

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 Gear EAL 220 |
|---------------------|-------|-------------------|------------|-------------------------------|
| Kinematic Viscosity | @40°C | °C                | ASTM D445  | 214.4                         |
| Pour Point          |       | °C                | ASTM D97   | -30                           |
| Flash Point         |       | °C                | ASTM D92   | 244                           |
| Density             | @15°C | kg/m <sup>3</sup> | ASTM D4052 | 939                           |

These characteristics are typical of current production. Whilst future production will conform to Shell's specification, 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.