



Shell Naturelle S4 Stern Tube Fluid 100

- US EPA VGP Compliant
- European Union Ecolabel

Special Purpose Biodegradable Synthetic Stern Tube Fluid

Shell Naturelle S4 Stern Tube Fluid is a non-emulsifying synthetic fluid specifically developed for use in stern tubes. Manufactured from fully saturated esters, Shell Naturelle S4 Stern Tube Fluid is designed to offer superior lubrication performance whilst also being readily biodegradable with low ecotoxicity. Shell Naturelle S4 Stern Tube Fluid is an Environmentally Acceptable Lubricant (EAL) according to the definitions of the US EPA 2013 Vessel General Permit (VGP)

DESIGNED TO MEET CHALLENGES

Performance, Features & Benefits

- **High viscosity index**
Provides low torque system start up at lower temperatures and maintains fluid film thickness at higher operating temperatures.
- **Longer service life**
Fully saturated esters ensure excellent resistance to oxidation and hydrolysis while offering high temperature thermal stability.
- **Increased wear protection**
Advanced ashless (zinc-free) additives provide protection over a wide range of conditions
- **Maintaining system efficiency**
Superior load carrying properties are coupled with excellent demulsibility (water separation) characteristics to reduce consumption.
- **Readily biodegradable**
Shell Naturelle Stern Tube Fluid is biodegraded by over 60% after 28 days in the OECD 301 bio degradation test.
- **Low toxicity towards the environment**
Reduced impact from accidental discharge into the environment. Shell Naturelle S4 Stern Tube Fluid is 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.

- **Recommended for use in environmentally sensitive areas**

Shell Naturelle S4 Stern Tube Fluid is an 'environmentally acceptable lubricant' as defined by the USA EPA 2013 Vessel General Permit and offers reduced harm when used in marine environments compared to conventional mineral oils.

It has a reduced environmental impact in the event of a leak or accidental spillage.

It is particularly suited for use in environmentally sensitive areas.

Main Applications

- **Vessel stern tubes**

Shell Naturelle S4 Stern Tube Fluid is designed for the lubrication and corrosion protection of stern tube bearings.

Specifications, Approvals & Recommendations

- ISO 3448 VG 100
- USA EPA VGP compliant
- SKF Blohm & Voss
- Wartsila
- KEMEL
- James Walker Seals
- Aegir Marine
- Ecolabel licence DE/027/134

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

Compatibility & Miscibility

Fluid Compatibility

Shell Naturelle Stern Tube Fluid is miscible with mineral oils. However, in order to ensure that the environmental properties and performance of Shell Naturelle S4 Stern Tube Fluid is maintained, the system should be drained and flushed thoroughly when changing fluids. Further changeover advice can be gained from your local Shell technical helpdesk. Owing to the surface-wetting properties of EAL's, if the system previously contained mineral oil, deposits formed in the system during previous operation may be loosened and accumulate in

the system filters. The filters should therefore be checked at regular intervals, especially after change-over. It is strongly recommended that an oil sample is taken from the system both before and following changeover. The sample should then be analysed via the Shell Rapid Lubricants Analysis service to confirm the new fluid charge is fit for use.

Seal Compatibility

Some elastomers found in stern tube seals may not be suitable for use with Shell Naturelle S4 Stern Tube Fluid. The manufacturer of the seal must be consulted to determine its suitability for use with this ester based fluid.

Typical Physical Characteristics

Properties			Method	Naturelle S4 Stern Tube Fluid 100
ISO Viscosity Grade			ISO 3448	100
Kinematic Viscosity	@ 40°C	cSt	ISO 3104	100
Kinematic Viscosity	@ 100°C	cSt	ISO 3104	13.7
Viscosity Index			ISO 2909	137
Demulsification	20 mins		ISO 6614	41-37-2
Flashpoint COC		°C	ISO 2592	>230
Pourpoint		°C	ISO 3016	-30
Density	@ 20°C	kg/m ³	ISO 51757	940

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

Shell Naturelle S4 Stern Tube Fluid 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

When used in marine applications, ensure used fluids are disposed of in accordance with IMO MARPOL 73/78 Annex V (as amended) regulations to a Port waste reception facility. For non-marine applications, take used oil to an authorised collection point. Do not discharge into drains, soil or water.

Additional Information

• Advice

Information and guidance offered for use of Shell Naturelle products is based on experience and understanding gained through the development and manufacturing of lubricants. Product performance 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.

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