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Mobil Stern Tube Lubricant

ExxonMobil Marine , Guam

Product Description

Mobil Stern Tube Lubricant is a high performance, high viscosity lubricant developed especially for the lubrication of Cedervall-type stern tube bearings used in ships and for certain bearings of ships' fin stabilizers. Mobil Stern Tube Lubricant is formulated from relatively high Viscosity Index (VI) base oils combined with emulsifiers, structure modifiers, surface active agents and corrosion preventives. It emulsifies readily with seawater to form a stable water-in-oil emulsion that is adhesive and an excellent lubricant. It provides effective rust protection in the presence of seawater and the lubricating film is resistant to water washing so that corrosion protection is maintained for extended periods under severe operating conditions.

Where the propeller shaft passes through the hull of a ship, it is supported by a bearing that is housed in the stern tube. Three distinct types of bearings are employed in this application: 1) The lignum vitae bearing, which has a stuffing box on the inboard side and no seal on the outboard side, is lubricated by seawater. The stuffing box may be lubricated with grease or oil, if this is deemed necessary. 2) Bronze or white metal bearings having oil-tight rubber seals on the inboard and outboard ends normally are filled with a lubricating oil that readily separates from water. Turbine oils, engine oils or hydraulic oils of the required viscosity generally are recommended. 3) The Cedervall type, which is a bronze or white metal bearing having an oil-tight inboard seal or stuffing box and metallic outboard seal that is not fully oil-tight, requires a lubricant that readily emulsifies with water. Mobil Stern Tube Lubricant has been formulated to meet this need. With the Cedervall type bearing a high viscosity lubricant generally is supplied to the bearing from a gravity tank located above the waterline so that the lubricant is under sufficient pressure to help exclude water from the bearing.

A recent development in ship stabilizers is the Denny-Brown-AEG stabilizer developed jointly by Brown Brothers and Co. Ltd, William Denny and Brothers Ltd., AEG, and Deutsche Weft. In these newer designs, the fins are mounted on trunnion bearings which permit them to be folded forward into storage boxes in the hull of the ship when not in use. A fixed shaft extends from the crux trunnion and the fin is mounted on this shaft on two bearings, which permit the fin to be tilted by a hydraulic mechanism to provide the righting movement to reduce roll of the ship. The interior of the fin and the fin bearings are lubricated by gravity from a header tank located above the waterline and the crux trunnion bearings are lubricated by pressure feed from a lubricator pump.

Features and Benefits

The requirements for lubrication of these three sets of bearings in the stabilizers and stern tubes are sufficiently similar so that a single, carefully formulated lubricant can be used for all of them. To perform satisfactorily, however, the lubricant must have the correct viscosity to flow properly under gravity head without excessive rapid flow that would result in high consumption; must minimize wear under the heavy loads encountered in the bearings; must protect the bearings and other components from corrosion and must emulsify with any seawater that passes the seals in order to maintain lubricating characteristics and minimize corrosion.

In stern tube applications, consumption of the lubricant is a major concern, both from the standpoint of the cost of the lubricant and the cost of labor required to fill the tanks. In two ship trials conducted over an extended period, Mobil Stern tube Lubricant gave significantly reduced consumption compared to the previous formulation, and at least as low as the best competitive product. Throughout the tests, lubrication was entirely satisfactory. These results indicate that Mobil Stern Tube Lubricant provides effective and low cost lubrication of stern tube bearings.

Key features and potential benefits include:

Features	Advantages and Potential Benefits
Selected viscometrics	Effective lubrication of critical stabilizer and stern tube components
Good emulsification properties	Emulsifies readily to maintain lubrication in the presence of seawater
Excellent rust and corrosion properties	Protects critical bearing surfaces exposed to seawater
Multi-use capability	Reduces the number of lubricants required on-board
Good viscosity retention in severe applications	Effective leakage control and reduced oil consumption

Applications

Mobil Stern Tube Lubricant is recommended for the lubrication of Cedervall-type stern tube bearings on ships where a high viscosity, readily-emulsifying lubricant is recommended by the manufacturer. It is also recommended for the lubrication of fin tilting bearings, as well as the crux trunnion bearings of Denny-Brown-AEG ship stabilizers and is approved by the manufacturer for use in these applications.

Specifications and Approvals

Mobil Stern Tube Lubricant has the following builder approvals	
Brown Brothers and Company, Ltd.	
William Denny and Brothers Ltd.	
AEG	
Deutsche Weft	

Typical Properties

Viscosity	
cSt @ 40°C	385
cSt @ 100°C	24
Viscosity Index, ASTM D 2270	82
Pour Point, °C, max, ASTM D 97	10
Flash Point, °C, min, ASTM D 92	246
Density @15°C kg/l, ASMT D 4052	0.915
API Gravity	23.1
Rust Test-Seawater, ASTM D 1401	Pass
Timken Salt Water Corrosion Test	Pass
Emulsion Test, ASTM D 1401	
Emulsion @ 60 min, ml	60
Emulsion characteristics	Thick and Stable

Health and Safety

Based on available information, this product is not expected to produce adverse effects on health when used for the intended application, following the recommendations provided in the Material Safety Data Sheet (MSDS). MSDSs are available upon request through your sales contract office, or via the Internet on http://www.exxonmobil.com. This product should not be used for purposes other than its intended use. If disposing of used product, take care to protect the environment.

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01-2020
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