ExxonMobil

# Mobilgard™ 1 SHC

ExxonMobil Marine , Sudan

Synthetic Diesel Engine Oil

## Product Description

Mobilgard 1 SHC by ExxonMobil is a supreme performance, synthetic diesel engine oil specifically formulated to address the needs of high power, distillate fueled diesel engines. It provides unsurpassed lubrication including long drain capability and extended engine life for today's marine diesel engines operating in severe applications.

The unsurpassed performance capabilities of Mobilgard 1 SHC are the result of extensive cooperative development work with major equipment builders combined with the latest engine lubrication engineering. It is especially effective in extreme temperature applications. A true SAE 40 grade lubricant, on very hot engine parts, it provides stronger lubrication film strength than most SAE 50 engine oils. At low temperatures, it flows like an SAE 20W product and thus provides outstanding start-up reliability and wear protection at extreme low temperatures as low as -54ºC.

Revolutionary load carrying additives also make Mobilgard 1 SHC an outstanding wide temperature range gear lubricant.

## Features and Benefits

Modern high performance, low emission, diesel engines in severe-service applications significantly increase the demands on engine lubricants. Current engine designs are tighter, reducing oil consumption and resulting in less fresh oil make-up to replenish depleted additives. Top piston rings may be located higher bringing the oil film closer to the combustion chamber where temperatures increase thermal stress on the lubricant. Higher fuel injector pressure and retarded timing improve control of exhaust emissions, but also increase engine temperatures and increase soot loads in engines operating with exhaust gas re-circulation. Mobilgard 1 SHC can provide satisfactory lubrication at temperatures significantly higher than the upper limit for other extra high performance diesel engine oils. Its inherent viscosity is SAE 40 and on very hot engine components it resists oil film breakdown better than conventional SAE 50 lubricants. The synthetic chemistry and wax free nature also provides low temperature pumpability in comparison with a conventional SAE 20W lubricant. Mobilgard 1SHC is fully compatible with conventional oils.

Mobilgard 1 SHC has all the advantages of an SAE 40 weight oil without the higher oil consumption inherent in multigrade oils that use very light base stocks to achieve low temperature performance. Because of the unique molecular structure of the advanced base stocks used, combined with a highly responsive additive system, Mobilgard 1 SHC is not as volatile in the high temperature ring-belt area of the pistons in turbocharged engines. It reduces oil consumption and wear, while improving fuel economy.

Mobilgard 1 SHC is also environmentally friendly in that it can significantly extend oil drain intervals beyond conventional oils which reduces waste oil disposal. In addition, the formulation is designed without the use of zinc and with low chlorine levels well below the most stringent regulations in effect today.

Key features and potential benefits include:

| Features | Advantages and Potential Benefits |
|---|---|
| Exceptional thermal and oxidation stability | Minimises high temperature deposit formation, bore polish, varnish and sludge build-up<br>Extends oil drain and service periods |
| Excellent antiwear properties | Extends the life of critical engine components |
| Enhanced frictional properties | Maintains effective oil film under severe operation and improves fuel economy |
| Excellent rust and corrosion protection | Protects critical engine components and bearing metals |
| Outstanding high and low temperature performance | Wide temperature and operating application range<br>Quick start-up and immediate oil circulation at low ambient temps |
| Excellent water separation and anti-foam performance | Maintains film strength for reliable performance under severe operating conditions |

| Features | Advantages and Potential Benefits |
|---|---|
| Low volatility | Reduced oil consumption |

## Applications

Mobilgard 1 SHC is recommended for use as a crankcase lubricant in medium and high speed diesel engines in severe marine service. It is especially suited to the needs of high power concentration engines where thermal stress and loading on the lubricant are severe, as well as for applications involving low-temperature and /or frequent start-up, rapid loading following rapid start-up, and abrupt shutdown after high speed operations.

Specific applications include:

- Military patrol vessels, high speed ferry/passenger vessels, racing boats and luxury yachts
- Life and rescue boat engines, emergency generators, auxiliary engines
- Marine gearing applications where FZG Level 12 is required
- Fully compatible with conventional mineral oils and mineral oil systems
- Can be used in confidence in engines containing silver bearing components due to non-zinc formulation

## Specifications and Approvals

| This product has the following approvals: |
|---|
| MTU Oil Category 2 |
| Everllence (formerly MAN Energy Solutions) 4 Stroke medium speed engines for Distillate operation |
| Progress Rail Worthy of Field Test (recognition letter on file) |
| Wartsila 4-Stroke Medium Speed Engines for Distillate- and Dual-Fuel operations |

| This product is recommended for use in applications requiring: |
|---|
| API CF |
| API CF-2 |

## Properties and Specifications

| Property | |
|---|---|
| Grade | SAE 40 |
| Ash, Sulfated, wt%, ASTM D874 | 1.6 |
| Chlorine, ppm, ASTM D6443 | 150 |
| Density @ 15 C, kg/l, ASTM D4052 | 0.872 |
| Flash Point, Cleveland Open Cup, °C, ASTM D92 | 250 |
| Kinematic Viscosity @ 100 C, mm2/s, ASTM D445 | 14.5 |

| Property | |
|---|---|
| Kinematic Viscosity @ 40 C, mm2/s, ASTM D445 | 109 |
| Pour Point, °C, ASTM D97 | -54 |
| Total Base Number, mgKOH/g, ASTM D2896 | 15 |
| Viscosity Index, ASTM D2270 | 136 |

## Health and safety

Health and Safety recommendations for this product can be found on the Material Safety Data Sheet (MSDS) @ http://www.msds.exxonmobil.com/psims/psims.aspx

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