



## Mobilgard HSD CI-4 Series

ExxonMobil Marine , Georgia

High Performance Diesel Engine Oils

### Product Description

Mobilgard HSD CI-4 series by Mobil are extra high performance, multi-grade engine oils specifically formulated for severe service high-speed diesel engines in marine applications. The advanced chemistry of these products provides outstanding performance in both modern, demanding low-emission diesel engines and older diesel engines operating on low or high sulphur distillate fuel. Mobilgard HSD CI-4 series is approved or recommended by the major marine high-speed diesel engine builders.

### Features and Benefits

Mobilgard HSD CI-4 series combines a blend of high quality base stocks with a superior balanced additive system to provide exceptional control of oil thickening due to soot build-up and high temperatures, as well as outstanding resistance to oxidation, corrosion, and high temperature varnish deposits.

When used as recommended, Mobilgard HSD CI-4 series diesel engine oils provide the following features and potential benefits:

| Features  | Advantages and Potential Benefits  |
|---|--|
| High thermal and oxidation stability                | Reduces formation of deposits and sludge build-up<br>Keeps engines clean and operating smoothly              |
| Excellent wear protection                           | Extended life of critical engine components  |
| High Viscosity Index                                | Stable oil film at all operating temperatures<br>Reduced oil consumption                                     |
| Increased high temp/high shear performance          | Reduced engine scuffing, bore polishing and ring sticking  |
| Outstanding TBN retention                           | Protects engine parts from corrosive wear and deposits   |
| Excellent water tolerance and separation capability | Maintains effective lubrication and film-strength in the presence of water                                   |
| Excellent low temperature properties                | Improved oil pumpability/circulation at start-up<br>Start-up wear protection especially for valve train area |

### Applications

Mobilgard HSD CI-4 series is designed to provide outstanding performance in the most severe service marine applications of modern high-speed diesel engines (such as Caterpillar 3500 Series and smaller bore, Cummins, Volvo, Daihatsu, Yanmar, and others) as well as of older diesel engines operating on low or high sulphur distillate fuel.

### Specifications and Approvals

| This product has the following approvals: | MOBILGARD HSD 15W-40 CI-4 | MOBILGARD HSD 20W-50 CI-4 |
|---|---------------------------|---------------------------|
| MTU Oil Category 2                        | X                         |                           |

| <b>This product has the following approvals:</b> | <b>MOBILGARD HSD 15W-40 CI-4</b> | <b>MOBILGARD HSD 20W-50 CI-4</b> |
|--|----------------------------------|----------------------------------|
| VOLVO VDS-3                                      | X                                |                                  |

| <b>This product is recommended for use in applications requiring:</b> |   |  |
|---|---|--|
| API CF  | X |  |
| API CF-4  | X |  |
| API CG-4  | X |  |
| CUMMINS CES 20071   | X |  |
| CUMMINS CES 20072   | X |  |
| MAN M 3275-1  | X |  |

| <b>This product meets or exceeds the requirements of:</b> |   |   |
|---|---|---|
| API CH-4  | X |   |
| API CI-4  | X | X |
| API SJ  | X |   |
| Cummins CES 20077   | X |   |
| ACEA E7-16  | X |   |
| CUMMINS CES 20076   | X |   |
| CUMMINS CES 20077   | X |   |
| Caterpillar ECF-2   | X |   |

#### Properties and Specifications

| <b>Property</b>  | <b>MOBILGARD HSD 15W-40 CI-4</b> | <b>MOBILGARD HSD 20W-50 CI-4</b> |
|--|----------------------------------|----------------------------------|
| Grade  | SAE 15W-40                       | SAE 20W-50                       |
| Ash, Sulfated, mass%, ASTM D874                            | 1.3                              | 1.1                              |
| Density @ 15 C, kg/l, ASTM D4052                           | 0.869                            | 0.88                             |
| Flash Point, Cleveland Open Cup, °C, ASTM D92              | 223                              | 227                              |
| Kinematic Viscosity @ 100 C, mm <sup>2</sup> /s, ASTM D445 | 14.2                             | 19                               |
| Kinematic Viscosity @ 40 C, mm <sup>2</sup> /s, ASTM D445  | 109                              | 169                              |
| Pour Point, °C, ASTM D97                                   | -33                              | -30                              |

| Property                               | MOBILGARD HSD 15W-40 CI-4 | MOBILGARD HSD 20W-50 CI-4 |
|--|---------------------------|---------------------------|
| Total Base Number, mgKOH/g, ASTM D2896 | 10                        | 9                         |
| Viscosity Index, ASTM D2270            | 133                       | 130                       |

### 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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