**Diesel CK-4/DH-2**

API CK-4 / VOLVO VDS-4.5 / JASO DH-2

Diesel CK-4/DH-2 is diesel engine oil which meets stringent engine test and performance requirements of the API commercial classification "API CK-4" standard, VOLVO proprietary "VDS-4.5" standard and "JASO DH-2" standard. Customers possessing vehicles from various manufacturers will be able to unify oil types and reduce the burden of inventory control.

● **Special Features**

1. **Meets the latest diesel engine oil standard**

"API CK-4" standard was established as the latest standard of the API commercial classification in December 2016 for the model car of 2017, and it has performance exceeding API CH-4, CI-4, CI-4 PLUS and CJ-4.

"VOLVO VDS-4.5" standard was established in October 2017 as the new VOLVO proprietary standard from "VOLVO VDS-4" standard, and it also conforms to the new engine of VOLVO.

"DH-2" of JASO M 355: 2017 is a diesel engine oil standard for buses and trucks equipped with exhaust gas after-treatment equipment such as DPF. It is printed on containers since October 2017.

**Diesel CK-4 / DH-2** is a multi-grade diesel engine oil that can be used for heavy-duty trucks and buses equipped with the latest engines, construction machines, agricultural machines, etc. It can also be used for vehicles that recommend the existing API standard (CH-4 to CJ-4), VOLVO VDS-4 standard and JASO DH-2 standard.

2. **Suitable for exhaust gas after-treatment equipment such as DPF**

Diesel CK-4/DH-2 is compatible with latest emissions regulated vehicles equipped with exhaust gas after-treatment devices such as DPF and construction machines / agricultural machines complying with Tier 4 exhaust gas regulations. API CK-4 standard suppresses clogging of DPF by reducing sulfated ash content (metal content in oil) to 1% by mass or less. Also, compatibility with the exhaust gas catalyst is improved by reducing the phosphorus content in the oil to 0.12 mass% or less, the sulfur content to 0.4 mass% or less, and further suppressing the evaporation to 13 mass% or less.

3. **Extension of engine life**

API CK-4 standard requires nine types of engine tests to have excellent viscosity increase suppression (soot dispersancy) and anti-wear performance (valve train, liner, piston rings, bearings).

Wear of various parts of the engine and adhesion of carbon / sludge are suppressed, because Diesel CK-4/DH-2 is excellent in anti-wear performance, shear stability, detergency and oxidation stability by optimum blending of high-performance additives. As a result, the life of the engine will be prolonged.

● **Applications**

For heavy-duty trucks / buses, diesel engines such as construction machines and agricultural machines, especially for DPF equipped vehicles.

● **Containers**

200-liter drums and 20-liter cans.
Typical Properties of Diesel CK-4/DH-2

<table>
<thead>
<tr>
<th>Approved Specifications</th>
<th>API CK-4</th>
<th>VOLVO VDS-4.5</th>
<th>JASO DH-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE Grade</td>
<td>10W-30</td>
<td>15W-40</td>
<td></td>
</tr>
<tr>
<td>Color (ASTM)</td>
<td>L3.5</td>
<td>L3.5</td>
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</tr>
<tr>
<td>Density</td>
<td>0.872</td>
<td>0.878</td>
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</tr>
<tr>
<td>Viscosity (40°C)</td>
<td>79.88</td>
<td>113.2</td>
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</tr>
<tr>
<td>Viscosity (100°C)</td>
<td>11.7</td>
<td>14.7</td>
<td></td>
</tr>
<tr>
<td>Viscosity Index</td>
<td>140</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>226</td>
<td>232</td>
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</tr>
<tr>
<td>Pour Point</td>
<td>-45</td>
<td>-45</td>
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</tr>
<tr>
<td>Evaporation Loss</td>
<td>12.2</td>
<td>10.4</td>
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</tr>
<tr>
<td>Acid Number</td>
<td>2.21</td>
<td>2.21</td>
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</tr>
<tr>
<td>Base Number</td>
<td>5.7</td>
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<tr>
<td>Sulfated Ash</td>
<td>1.00</td>
<td>0.98</td>
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<tr>
<td>Elements</td>
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</tr>
<tr>
<td>Phosphorus</td>
<td>0.10</td>
<td>0.09</td>
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<tr>
<td>Sulfur</td>
<td>0.39</td>
<td>0.36</td>
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</tr>
</tbody>
</table>

Note: The typical properties may be changed without notice. (February 2018)

Handling Precautions

Follow these precautions when handling this product.

Composition: Base Oil, Additives
Precautionary pictograms: Not applicable
Signal word: Not applicable
Hazard Statement: Not applicable
Precautionary Statements:

Prevention
- Do not handle until all safety precautions have been read and understood.
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not allow the eyes to become exposed to the product. Do not swallow the product.
- Wash hands thoroughly after handling.
- Do not eat, drink or smoke when using this product.

Response
- IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- If the eyes are exposed to the product: Rinse the eyes with plenty of running water and immediately contact a physician.
- IF ON SKIN: Wash with plenty of soap and water.

Storage
- The product must be stored in a cool, well-ventilated location where it will not be exposed to direct sunlight.
- Containers that have been opened must be tightly sealed.

Disposal
- Dispose of contents/container in accordance with local/regional/national/international regulations.
- If there are any doubts about proper methods of handling the product, contact the point of purchase before proceeding with usage.