Mack T-11 Engine Lubricant Test  
(ASTM D7156)

**Test Engine**
The test uses a Mack E-Tech in-line six cylinder 12L engine with electronically controlled fuel injection, 2002 low-swirl cylinder heads, two modified configured dual fitted turbochargers in series, and cooled EGR.

**Test Operation**
252 hour test to evaluate the viscosity increase and soot concentration in a turbocharged, intercooled engine equipped with EGR (exhaust gas recirculation). Specified PC-9 HS test fuel is 0.04% mass fuel sulfur is used.

**Oil Specifications**
Mack, Volvo, Renault:  
EO-N, EO-O Premium Plus, VDS-3, VDS-4, VDS-4.5, EOS-4.5, RLD-2, RLD-3, & RLD-4

API:
CI-4 (optional), CI-4 Plus, CJ-4, CK-4, and FA-4

ACEA:
E9

<table>
<thead>
<tr>
<th>Pass/Fail Determination*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 cSt viscosity increase minimum at 3.5 % soot</td>
</tr>
<tr>
<td>12 cSt viscosity increase minimum at 6.0 % soot (CI-4 Plus Limit)</td>
</tr>
<tr>
<td>15 cSt viscosity increase minimum 6.7 % soot</td>
</tr>
</tbody>
</table>

*As specified by ASTM D4485, T-11A - 180 hour oil viscosity by MRV, 25,000 maximum cP, and less than 35 Pa yield stress

For more information, please contact:  
Intertek Automotive Research Services  
+1 (210) 684-2310  
intertek.com/automotive
Mack T-11 Engine Lubricant Test
(ASTM D7156)

**Engine Test**  Mack T-11

**Manufacturer**  Mack Truck Co. part of Volvo Group
Bore X Stroke, 124.0 mm X 165.0 mm
12.0L, 2002 Inline six cylinder
Two Piece (Articulated) Steel Piston with Aluminum Skirt

**Total Piston Height**  141.80mm

**Top Crown to Center Pin Bore**  94.03mm

**Crownland Configuration**  Radial Crownland to liner clearance 0.405mm

**Piston Rings**

<table>
<thead>
<tr>
<th>Type</th>
<th>Groove Widths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Ring</td>
<td>Keystone</td>
</tr>
<tr>
<td>Second Ring</td>
<td>Positive Twist Rectangular</td>
</tr>
<tr>
<td>Oil Ring</td>
<td>Rectangular</td>
</tr>
</tbody>
</table>

**Piston Rings Configuration**

<table>
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<tr>
<td>Crownland</td>
</tr>
<tr>
<td>Second</td>
</tr>
<tr>
<td>Third</td>
</tr>
</tbody>
</table>

**Intake CO₂ %**

- ~257

**Intake Manifold Temperatures**

- 70 DegC
- 66 DegC
- 25 DegC
- 40 DegC
- 88 DegC

**Intake Manifold Pressures**

- 0.5 ± 0.25 kPa

**Intake Air Temperatures**

- 3.5-4.0 range
- 2.7-3.5 range
- 140 min.

**Intake Manifold Pressures**

- 140 min.
- 207 max.

*If the oil Filter delta P exceeds 207 kPa, change the two full flow filters

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