Caterpillar Oil Aeration Test (COAT)

(ASTM D8047)

**Specifications**
- API CK-4 and FA-4

**Objective**
- Determine the ability of an engine lubricant to resist aeration during engine operation.

**Field Service Simulated**
- This test operates at a high idle condition to induce aeration of the crankcase oil without significant thermal stress or loading.

**Test Fixture**
- In-line, six-cylinder Caterpillar C13 engine with one-piece steel pistons, dual stage turbocharging and ACERT technology.
- Same engine that is used in the C13 deposit test, but without a dynamometer.

**Test Parameters**
- The test engine is operated for 50 hours at 1800 rpm and no load. A pressurized oil sample is taken from the main gallery and measured for density over the duration of the test. This density is converted to an aeration percentage based on the fresh oil density. The real-time density measurement is conducted with the following control points:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Sample Temperature, °C</td>
<td>90</td>
</tr>
<tr>
<td>Oil Sample Pressure, kPaA</td>
<td>84</td>
</tr>
<tr>
<td>Oil Sample Flow Rate, L/min</td>
<td>1.5</td>
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</tbody>
</table>

**Test Parts Evaluation**
- None.

**Used Lubricant Analysis**
- D4052 density sweep from 30 to 90C
- Viscosity, ICP metals, fuel dilution

**Pass/Fail Criteria**
- The 40-50 hour aeration average limit is 11.8% for CK-4 and FA-4
We welcome your inquiries.
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