ASTM CE50S Lubricity Test
(ASTM D4863)

Specifications
• ASTM TC Sequence II

Objective
• Evaluate the lubricity of a two-stroke cycle air-cooled engine lubricant.

Field Service Simulated
• Typical two-stroke cycle air-cooled engines in off-road use over hilly terrain.

Test Fixture
• A Yamaha CE50S single-cylinder, air-cooled, two-stroke cycle, spark-ignition engine is coupled to a high-speed 10-hp dynamometer.
• External cooling air is supplied to the engine by a variable delivery fan.

Test Parameters
• A test consists of three sets of five to seven piston “tightenings.” In a tightening, the torque decrease is measured as the spark plug gasket temperature increases from 200°C to 300°C.
• Each tightening begins with a stabilization period at the following conditions:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed, rpm</td>
<td>4000</td>
</tr>
<tr>
<td>Load</td>
<td>WOT</td>
</tr>
<tr>
<td>Spark plug gasket temp, °C</td>
<td>170</td>
</tr>
<tr>
<td>Fuel/lubricant ratio</td>
<td>150:1</td>
</tr>
</tbody>
</table>

• After stabilization, the cooling air is stopped and torque decrease is monitored as spark plug gasket temperature rises.
• Cooling air is restored when spark plug gasket temperature reaches 350°C.
• This procedure is repeated five times in each of two sets on both the reference and candidate lubricants.

Test Parts Evaluation
• General engine condition is evaluated.

Used Lubricant Analysis
• None.

Pass/Fail Criteria
• The candidate lubricant must demonstrate performance equal to or better than ASTM 600 reference lubricant at the 95% confidence level.
• The torque decrease of the candidate lubricant must be less than or equal to the ASTM 600 reference lubricant at the 95% confidence level.
We welcome your inquiries.

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