

# Caterpillar C13 Engine Lubricant Test (ASTM D7549)



## Test Engine

The test uses a 2004 Caterpillar ACERT C13, 320kW engine, two turbochargers in series, in-line six-cylinder 13L engine equipped with electronic direct fuel injection.

## Test Operation

Engine operates for 500 hours at steady state, heavy operating conditions at 1800 RPM rated power to evaluate the performance towards oil consumption and piston deposits. The test fuel is ULSD (ultra-low sulfur diesel).

## Oil Specifications

API: CJ-4, CK-4 and FA-4  
Caterpillar: ECF-3

## Pass/Fail Determination\*

	CJ-4 Limit
Oil Consumption Delta (g/h max)	31
Top Land Carbon (% max)	35
Top Groove Carbon (% max)	53
Second Ring Top Carbon (% max)	33
Merits	1000 min.

\*As specified by ASTM D4485

**For more information,  
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<b>Engine Test</b>	Cat C13	
<b>Manufacturer</b>	Caterpillar Inc. Bore X Stroke, 130.0mm x 157.0mm 12.5L, 2003-2005 Inline 6-cylinder One-piece Steel Piston	
<b>Total Piston Height</b>	105.20mm	
<b>Top Crown to Center Pin Bore</b>	69.63mm	
<b>Crownland Configuration</b>	Radial Crownland to Liner Clearance 0.700mm	
<b>Piston Rings</b>	<b>Type</b>	<b>Groove Widths</b>
Top Ring	Positive Twist Keystone w/ Inside Step	4.00mm
Second Ring	Positive Twist Rectangular w/ Inside Bevel	3.07mm
Oil Ring	Rectangular	4.06mm
<b>Land Widths</b>		
Crownland	12.20mm	
Second	5.26mm	
Third	2.96mm	

Parameters	Operating Conditions	Units
Test Duration	500	Hours
Speed	1800	r/pm
Torque	1760	Nm
Fuel Flow	1200	g/min
Temperatures		
Intake Manifold	40	DegC
Coolant Out	88	DegC
Oil Gallery	98	DegC
Inlet Air	25	DegC
Fuel In	40	DegC
Pressures		
Intake Manifold	280 ± 5	kPa
Coolant System (Expansion Tank)	103 ± 4	kPa
Inlet Air	93 ± 1.5	kPaA
Exhaust	6	kPaA
Intercooler Delta	15 max	kPa

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