

## PERFORMANCE TESTS

# Caterpillar 1K / 1N

### SCOPE:

The 1K and 1N tests are run in the Caterpillar 1Y540 SCOTE (Single Cylinder Oil Test Engine) utilizing a one-piece aluminum piston. The 1N test was originally developed to replace the 1K test as part of the upgrade requirements to move from API CF-4 to CG-4.

The Caterpillar 1K test was originally designed to evaluate an oil's ability to protect against piston deposits in direct injection diesel engines using conventional (non-low sulfur) diesel fuel. In API CG-4 the Caterpillar 1K test was replaced by the 1N test which used the exact same hardware and test conditions, but with low sulfur (<0.05 m%) diesel fuel. The 1K (or the 1N as an alternate) has been added to the PC-9 category as an adjunct to the 1-Q test to insure that oils developed for this new category also protect engines which use one-piece aluminum pistons.

### TEST CONDITIONS:

Engine speed:	2100 RPM
Fuel flow rate:	8000 BTU/MIN
Test length:	252 Hr
Approximate power output:	70 HP

### CH-4 (1K) / CG-4 (1N) Pass/Fail Criteria:

	<u>1 Test</u>	<u>2 Tests</u>	<u>3 or more Tests</u>
Top groove fill, %	24 / 20	27 / 23	29 / 25
Crownland carbon, %	4 / 3	5 / 4	5 / 5
WDK	332 / 286.2	347 / 311.7	323
Avg. Oil consumption, max.	0.5 / 0.5	0.5 / 0.5	0.5 / 0.5

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