

# Heavy-Duty Diesel Engine Test Category For API CG-4/CF/CF-2

Requirements	Test Method	Properties	Unit	Limits		
				1 Test	2 Tests	3 Tests
<b>1. LABORATORY TESTS</b>						
1.1 Viscosity Grades		SAE J300		Manufacturer specifies viscosity target within SAE J300 specification		
1.2 Cummins Bench Corrosion Test <sup>(4)</sup>	ASTM D5968	Copper increase, max Lead increase, max Tin increase, max Copper corrosion rating, max (D130)	ppm ppm ppm	20 60 report 3	No MTAC <sup>(1)(2)</sup>	
1.3 Foam Test <sup>(4)</sup>	ASTM D892	Sequence I Sequence II Sequence III	mL mL mL	10/0 max 20/0 max 10/0 max	No MTAC <sup>(1)(2)</sup>	
<b>2. ENGINE TESTS FOR API CG-4</b>						
2.1 Mack T-8	ASTM D5967	Viscosity increase at 3.8% soot, max Filter plugging, differential pressure, max Oil consumption, max	cSt kPa/(psi) g/kW-h (lb/bhp.h)	11.5 138(20) 0.304(0.0005)	12.5 138(20) 0.304(0.0005)	13.0 138(20) 0.304(0.0005)
2.2 Caterpillar 1N	ASTM D1321	Weighted total demerits, max Top groove fill, max Top land heavy carbon, max Oil consumption, max Scuffing, piston-rings-liner Number of tests allowed Stuck rings	% volume % g/kW-h	286.2 20 3 0.5	311.7 23 4 0.5	323.0 25 5 0.5
2.3 Roller Follower Wear Test	ASTM D5966	Wear, max	µm (mils)	11.4 (0.45)	12.4 (0.49)	12.7 (0.50)
2.4 Sequence IIIE	ASTM D5533	Hours to 375% viscosity increase, min	hours	67.5	65.1	64.0
2.5 CRC L-38	ASTM D5119	Bearing weight loss, max Used oil viscosity, cSt greater than SAE J300 lower limit for grade, min	mg cSt	43.7 0.5	48.1 0.5	50.0 0.5
2.6 HEUI Air Entrainment Test	ASTM D1379	Aeration, max	% volume	10.0	–	–
<b>3. ENGINE TESTS FOR API CF/CF-2</b>						
3.1 Caterpillar 1MPC	RR:D02-1320	Weighted total demerits, max Top groove fill, max Piston ring sticking Piston ring and liner scuffing Weighted total demerits, CF-2 max	% volume mm	240 70 none none 100	MTAC applies <sup>(2)</sup>	
3.2 CRC L-38	ASTM D5119	Bearing weight loss, max	mg	43.7	48.1	50.0
3.3 Detroit Diesel 6V92TA <sup>(3)</sup>	ASTM D5862	Cylinder liner scuffing area, max Average fire ring face distress Average 2 & 3 ring face distress Broken rings Cylinder liner port plugging area Average, max Single cylinder, max	% demerits demerits  % %	45 0.23 0.20 none 2 5	48 0.24 0.21 none 2 5	50 0.26 0.22 none 2 5

<sup>(1)</sup> Not an ACC Test.

<sup>(2)</sup> MTAC is a statistical method for treating engine test results. Consult your sales representative for further information.

<sup>(3)</sup> This test is not required for API CF.

<sup>(4)</sup> This test is not required for CF/CF-2.

