A Program of ASTM International

Test Monitoring Center

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D4485 Information Letter 20-3
Sequence Number 10
June 9, 2020

ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: D4485 Mailing List

SUBJECT: Update API Category CH-4 Requirements

On May 28, 2020, the D4485 Surveillance Panel approved updates to the API Category CH-4 requirements in ASTM Specification D4485, to bring it in line with the most recent edition of API 1509.

The text of the revisions is shown in the attachment. These changes are effective with the issuance of this information letter.

Joe Franklin
Chairman
ASTM Subcommittee B

Frank M. Farber
Director
ASTM Test Monitoring Center

Attachment
c: http://www.astmtmc.cmu.edu/ftp/docs/d4485/IL_20-3_D4485.pdf
Distribution: Email

[*All changes are highlighted in yellow.*]

TABLE 2 Diesel Engine Oil Category CH-4

Required Test Method	Test Method	Rated or Measured Parameter		Primary Performance Criteria		
				One-test	Two-test[A]	Three-test[A]
1P (D6681[B])	D6681	Weighted demerits (WDP), max		350	378	390
		Top groove carbon (TGC), demerits, max		36	39	41
		Top land carbon (TLC), demerits, max		40	46	49
		Average Oil Consumption, g/h (0 h – 360 h), max		12.4	12.4	12.4
		Final Oil Consumption, g/h (312 h – 360 h), max		14.6	14.6	14.6
		Piston, ring, and liner scuffing		none	none	none[C]
1K (D6750[D])	D6750	Weighted demerits (WDK), %, max		332	347	353
		Top groove fill (TGF), %, max		24	27	29
		Top land heavy carbon (TLHC), %, max		4	5	5
		Average Oil Consumption	g/kWh (0 h – 252 h), max	0.54	0.54	0.54
			g/MJ (0 h – 252 h), max	0.15	0.15	0.15
		Piston, ring, and liner scuffing		none	none	none[C]
T-9 (D6483) or T-10 (D6987/D6987M) or T-12 (D7422)	D6483	Average Liner Wear, normalized to 1.75 % soot, µm max		25.4	26.6	27.1
		Average Top Ring Mass Loss, mg max[E]		120	136	144
		EOT Used Oil Lead Content less New Oil Lead Content, mg/kg, max		25	32	36
	D6987/D6987M	Liner wear, µm, max		32	34	35
		Ring wear, mg, max		150	159	163
		Lead content at EOT, mg/kg, max		50	56	59
	D7422	Liner wear, µm, max		30.0	30.8	31.1
		Top Ring Mass Loss, mg, max		120	132	137
		Lead content at EOT, mg/kg, max		65	75	79
RFWT (D5966)	D5966	Average Pin Wear	mils, max	0.30	0.33	0.36
			(µm) max	(7.6)	(8.4)	(9.1)
M11 (D6838[F]) or ISM (D7468)	D6838	Rocker Pad Average Mass Loss, normalized to 4.5 % soot, mg max		6.5	7.5	8.0
		Oil Filter Differential Pressure at EOT, kPa max		79	93	100
		Average Engine Sludge, CRC Merits at EOT, min		8.7	8.6	8.5
	D7468	Crosshead wear, mg, max		7.5	7.8	7.9
		Oil filter delta pressure, at 150 h, kPa, max		79	95	103
		Sludge rating, CRC merits, min		8.1	8.0	8.0
Ext. T-8E (D5967[G])	D5967	Relative Viscosity at 4.8 % Soot by TGA, max		2.1	2.2	2.3
		Viscosity increase at 3.8 % Soot by TGA, mm^2/s, max		11.5	12.5	13.0
Sequence IIIF (D6984)or Sequence IIIG (D7320[I])or Sequence IIIH (D8111 using IIIH60 Appendix X4)	D6984	60 h Viscosity at 40 °C, increase from 10 min sample, % max		295	295 (MTAC)[H]	295 (MTAC)[H]
	D7320	Kinematic viscosity, % increase at 40 °C max		150	150 (MTAC)	150 (MTAC)
	D8111 (IIIH60 Appendix X4)	60 h Kinematic viscosity, % increase at 40 °C max		249	249 (MTAC)	249 (MTAC)
EOAT (D6894[J])	D6894	Aeration, volume, % max		8.0	8.0 (MTAC)[H]	8.0 (MTAC)[H]

CH-4 Bench Tests		Measured Parameter	Primary Performance Criteria	
HTCBT, 135 °C (D6594)		Used Oil Elemental Concentration		
		Copper, mg/kg increase, max	20	
		Lead, mg/kg increase, max	120	
		Tin, mg/kg increase	report	
		Copper strip rating,[K] max	3	
D892 (Option A not allowed)		Foaming/Settling,[L] mL, max		
		Sequence I	10/0	
		Sequence II	20/0	
		Sequence III	10/0	
Noack (D5800) or (D6417)			SAE 10W-30	SAE 15W-40
	D5800	percent volatility loss at 250 °C, max	20	18
	D6417	percent volatility loss at 371 °C, max	17	15
D6278	D6278	Kinematic Viscosity after shearing, mm^2/s at 100 °C, min	SAE XW-30	SAE XW-40
			9.3	12.5

[*Table 2 Footnotes*]

[A] See Annex A2 for additional information.

[B] Refer to RR:D02-1441.

[C] If three or more operationally valid tests have been run, the majority of these tests shall not have scuffing. The scuffed tests are considered uninterpretable, and all data from these tests are eliminated from averaging.

[D] Refer to RR:D02-1273.

[E] Refer to RR:D02-1440.

[F] Refer to RR:D02-1439.

[G] A passing T-11 (TGA % soot at 12.0 mm^2/s increase, at 100 °C, min)—6.00 (first test), 5.89 (second test), and 5.85 (third test)—can be used in place of a T-8E in the applicable categories. This is not intended to indicate equivalence.

[H] See Annex A1; use method without transformations.

[I] The Sequence IIIG limits shown are more restrictive than the corresponding limits in Sequence IIIF, and are not intended to indicate equivalence. Results meeting the Sequence IIIG criteria stated can be used in lieu of Sequence IIIF.

[J] Refer to RR:D02-1379.

[K] The rating system in Test Method D130 is used to rate the copper coupon in Test Method D6594.

[L] Ten minutes for Sequence I, II, and III.