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Sequence IIIG Information Letter 07-2
Sequence No. 15
June 5, 2007

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

TO: Sequence III Mailing List

SUBJECT: 1. Change Viscosity Evaluation Procedure Name from IIIGVIS to IIIGVS
2. Correction to Piston Ring Gap Delta
3. Metrication of Table A4
4. Changes to Instrumentation Calibration Requirements

1. On April 27, 2007, the Sequence III Surveillance Panel approved a change in the title of the test procedure for conducting only viscosity evaluations using the IIIG Test Method. The current procedure is called IIIGVIS and has been changed to IIIGVS. This change was made at the request of users of the test. Appendix X2 has been revised.

2. Recently, an error was noted in the reporting of the difference between top and bottom compression ring gaps. Specifically, the current method requires that differences less than 0.381 mm (0.015 in) be brought to the attention of the Test Procedure Developer. Section 9.10.1 has been revised to require notifying the Test Procedure Developer when the difference between top and bottom compression ring gaps is less than 0.330 mm (0.013 in).

3. When issued, Table A4 was not in metric units. Table A4 has been revised to reflect metric units for all methods referenced.

4. On June 1, 2007, the Surveillance Panel approved an electronic ballot to revise the calibration frequencies of stand instrumentation. Section 10.8.11 has been revised and Sections 10.8.11.1 and 10.8.11.2 have been added to better define the time intervals for calibration of stand instrumentation.

The attached changes to Test Method D 7320 are effective June 1, 2007.

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Attachments

c: ftp://ftp.astmtmc.cmu.edu/docs/gas/sequenceiii/procedure_and_ils/IIIG/IL07-2.pdf

Distribution: Electronic Mail

9.10.1 *Piston Rings*—The rings are pre-sized for each run, check the gap in the cylinder bore before each test. The top ring gap shall be 0.635 ± 0.051 mm (0.025 ± 0.002 in.). The bottom ring gap shall be 1.067 ± 0.051 mm (0.042 ± 0.002 in.). The top ring gap shall be smaller than the bottom ring gap and the difference between the two ring gaps shall be between 0.330 mm and 0.533 mm (0.013 in and 0.021 in.). If the ring gap difference is below 0.330 mm (0.013 in.), contact the Test Procedure Developer. Check the ring gap with a Starrett Ring Taper Gage No. 270 with the ring positioned in the cylinder bore using a piston ring depth gage (drawing RX-118602-B). Position the rings 23.67 mm (0.932 in.) below the cylinder-block deck surface during gap measurement. Record the top and bottom ring gaps on Form 12, Hardware Information, in standardized report form set (See Annex A5). Record and report ring gaps in mils (1 mil = 0.001 in. = 0.0254 mm).

10.8.11 Calibrate the stand instrumentation used for data acquisition and control, on all controlled and non-controlled parameters (see Annex A7), every 6 months.

10.8.11.1 At a minimum, calibrate the following parameters prior to every reference test sequence, unless the required 6 month calibration was completed within 60 days prior to reference test start; engine speed, dynamometer torque, engine coolant out thermocouple, oil filter block thermocouple, engine coolant flow.

10.8.11.2 Calibrate the intake air-humidity system no less than every six months

X2. SEQUENCE IIIGVS TEST PROCEDURE

X2.1 *Overview*- The Sequence IIIGVS test procedure was developed to support the viscosity increase requirements for Diesel Category CJ-4 (see Specification D 4485). The Sequence IIIGVS test procedure consists of examining the percent viscosity increase data obtained at the end of a normal 100-h Sequence IIIG test method. No parts ratings or measurements are required in the Sequence IIIGVS test procedure. A separate Sequence IIIGVS report form set is available from the TMC for reporting Sequence IIIGVS test results. Do not use the Sequence IIIG Report Form Set to report Sequence IIIGVS test results.

X2.2 *Preparation of Apparatus*- Prepare the Sequence IIIGVS test engine in the same manner as a Sequence IIIG test engine. No special preparations are required or permitted on test engines for Sequence IIIGVS use. Do not perform Camshaft and Lifter Measurements for the Sequence IIIGVS test procedure.

X2.3 Calibration

X2.3.1 There is no stand-alone calibration system for the Sequence IIIGVS test procedure. Any stand that is considered calibrated for Sequence IIIG testing shall be considered calibrated for Sequence IIIGVS testing.

X2.3.2 No special calibration of stand instrumentation is required for Sequence IIIGVS testing.

X2.3.3 Apply Sequence IIIG percent viscosity increase Severity Adjustments (SA) to Sequence IIIGVS results.

X2.3.4 A Sequence IIIGVS test procedure start counts as one run against the Sequence IIIG calibration period in which it is run.

X2.4 *Test Procedure*- Conduct the Sequence IIIGVS test procedure in a calibrated IIIG test stand.

X2.5 *Determination of Result*- Determine the test result using Sections 12.6, 12.12 and 12.13.

X2.6 *Test Reporting*- Report the Sequence IIIGVS result using the standard IIIGVS report form set, available from the TMC.

X2.7 Precision & Bias

X2.7.1 Test precision for the IIIGVS test procedure is assumed to be the same as that established for the Sequence IIIG test method, which is based on reference oil test results (for operationally valid tests) monitored by the TMC. The Sequence IIIG Surveillance Panel reviews the data semiannually; contact the TMC for current industry data.

X2.7.2 Bias for the IIIGVS test procedure is assumed to be the same as that determined by applying an accepted statistical technique to Sequence IIIG test method reference oil test results. When a significant bias is determined, an SA is permitted for non-reference oil test results.

A4. Sequence III Test Fuel Analysis (Haltermann HF003 Test Fuel)

TEST	METHOD	UNITS	HALTERMANN HF003 Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	°C	23.9		35
5%		°C			
10%		°C	48.9		57.2
20%		°C			
30%		°C			
40%		°C			
50%		°C	93.3		110.0
60%		°C			
70%		°C			
80%		°C			
90%		°C	151.7		162.8
95%		°C			
Distillation - EP		°C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
API Gravity (@60°F/60°F)	ASTM D4052	°API	58.7		61.2
Density (@15°C)	ASTM D4052	kg/L	0.734		0.744
Reid Vapor Pressure	ASTM D5191	kPa	60.8		63.4
Reid Vapor Pressure	ASTM D323	kPa		Report	
Carbon	ASTM D3343	wt fraction		Report	
Carbon	ASTM E191	wt fraction		Report	
Hydrogen	ASTM E191	wt fraction		Report	
Hydrogen/Carbon ratio	ASTM E191	mole/mole		Report	
Oxygen	ASTM D4815	wt %			0.05
Sulfur ppm	ASTM D5453	mg/kg	3		15
Lead	ASTM D3237	mg/L			2.6
Phosphorus	ASTM D3231	mg/L			1.3
Composition, aromatics	ASTM D1319	vol %	26.0		32.5
Composition, olefins	ASTM D1319	vol %			10.0
Composition, saturates	ASTM D1319	vol %		Report	
Particulate matter	ASTM D5452	mg/L			1
Oxidation Stability	ASTM D525	minutes	240		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mL			5
Fuel Economy Numerator/C Density	ASTM E191		2401		2441
C Factor	ASTM E191			Report	
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D3338	J/kg		Report	
Net Heating Value, btu/lb	ASTM D240	J/kg		Report	
Color	VISUAL	1.75 ptb		Red	