



Test Monitoring Center

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D8047 COAT Information Letter 17-2
Sequence No. 4
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ASTM consensus has not been obtained on this information letter. An appropriate ASTM ballot will be issued in order to achieve such consensus.

TO: Caterpillar Surveillance Panel Mailing List

SUBJECT: COAT Procedure Updates

During the September 21, 2017 CAT Surveillance Panel meeting the panel agreed to make a changes to the COAT method D8047 to clarify and fix various issues that have been found. These changes include a change to the warmup conditions (Table 3), addition of a missing parameter to the Schedule of Conditions (Table 4), removal of extra wording concerning when the test timer restarts following a shutdown during the test (Section 10.5.3.1) and fixing a typographical error in the air density equation (Section 11.1.1.2). Sections 10.5.3.1 and 11.1.1.2 and Tables 3 and 4 have been updated accordingly and are attached. These changes are effective as of September 21, 2017.

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Attachment

c: ftp://ftp.astmtmc.cmu.edu/docs/diesel/cat_coat/procedure_and_ils/il17-2.pdf

Distribution: Email

(Revises Test Method D8047-16 as amended by IL 16-2 and 17-1)

10.5.3.1 *Test Timer*—The 50 h test timer starts immediately following the warmup. If a shutdown occurs, stop the test timer immediately at the initiation of the shutdown. The test timer shall resume after the warmup described in Table 3.

11.1.1.2 Then, using Eq 3, calculate the air density, ρ_{AIR} , at the temperature, T_{SAMPLE} and pressure P_{SAMPLE} , respectively, of the oil sample:

$$\rho_{AIR} = \frac{P_{SAMPLE}}{[287.003 \times (T_{SAMPLE} + 273.15)]} \quad (2)$$

where:

P_{SAMPLE} = the pressure of the sampled oil determined as described in 10.5.6.3

T_{SAMPLE} = the temperature of the sampled oil determined as described in 10.5.6.2

273.15 = the ice point in °C and

287.003 = the specific gas constant for dry air with units $\frac{J}{kg \cdot K}$, where K is the symbol for kelvin.

TABLE 3 Warmup Conditions

Quantity, units	Step 1	Step 2	Step 3
Stage Length, min	5	30	5
Speed, r/min	900	1800	1800
Load, N·m	0	0	0
Coolant Out Temperature, ^A °C	90	90	90
Intake Air Temperature, ^A °C	25	25	25
Manifold Temperature, ^A °C	40	40	40
Fuel Temperature, ^A °C	40	40	40
Gallery Oil Temperature, ^A °C	90	90	90
Sample Oil Temperature, ^A °C	90	90	90
Sample Oil Flow Rate, ^A L/min	1.5	1.5	1.5
Sample Oil Pressure, ^A kPa (absolute)	150	150	84
Intake Air Pressure, ^A kPa (absolute)	96	96	96
Fuel Flow Rate, g/min	Record	Record	Record
Blowby Flow Rate, L/min	Record	Record	Record
Intake Manifold Pressure, ^B kPa (gauge)	Record	Record	Record
Exhaust After Turbo Temperature, °C	Record	Record	Record
Fuel Pressure, kPa (gauge)	Record	Record	Record
Oil Gallery Pressure, kPa (gauge)	Record	Record	Record
Coolant System Pressure, kPa (gauge)	100	100	100
Exhaust Restriction Pressure, kPa (absolute)	104	104	104
Crankcase Pressure, kPa (absolute)	103	103	103
Aeration Enclosure Temperature, °C	50	50	50

TABLE 4 Schedule of Conditions for the 50 h Test

Quantity, units	Step 1
Stage Length, h	50
Speed, r/min	1800
Load, N·m	0
Coolant Out Temperature, °C	90
Air Intake Temperature, °C	25
Intake Manifold Temperature, °C	40
Fuel-in Temperature, °C	40
Oil Gallery Temperature, °C	90
Sample Oil Temperature, ^A °C	90
Sample Oil Flow Rate, ^A L/min	1.5
Sample Oil Pressure, ^A kPa (absolute),	84
Intake Air Pressure, kPa (absolute),	96 ± 1.5
Fuel Flow Rate, g/min	Record
Blowby Flow Rate, L/min	Record
Intake Manifold Pressure, ^B kPa (gauge)	Record
Crankcase Pressure, kPa (gauge)	103
Intercooler Delta Pressure, kPa (gauge)	15 max
Exhaust After Turbo Temperature, °C	Record
Fuel Pressure, kPa (gauge)	Record
Oil Gallery Pressure, kPa (gauge)	Record
Coolant System Pressure, kPa (gauge)	99 to 107
Exhaust Restriction Pressure, kPa (absolute)	104
Pressure Regulator Controller Output, ^{C,D} %	<50 %
Micropump Controller Output, ^{C,D} %	<50 %
Aeration Measurement System Enclosure Temperature, °C	50

^A Micro Motion quantity.

^B With turbocharger waste-gate fully closed.

^C If this value is above 50 % output for 15W-40 or thinner viscosity oils, the test is invalid. Oils of higher viscosity need a statement of validity in the comments section of the report if they exceed 50 % output.

^D Average value over the length of the test.