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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: Cummins Mailing List

SUBJECT: Crosshead Weight Loss Correction Factor
            Injector Adjusting Screw Weight Loss Correction Factor
            ISM Merit Calculation Method

Crosshead Weight Loss Correction Factor
        Effective June 28, 2007 the Cummins Surveillance Panel implemented a correction factor of +1.7 mg for Crosshead Weight Loss to address a shift in test severity. New section 11.1.8 is attached.

Injector Adjusting Screw Weight Loss Correction Factor
        Effective June 28, 2007 the Cummins Surveillance Panel implemented a correction factor of +19.1 mg for Injector Adjusting Screw Weight Loss to address a shift in test severity, which is due to the screening of test parts for tooling marks. New section 11.2.5 is attached.

ISM Merit Calculation Method
        The ISM Merit Calculation has been added as Annex A16. The new annex is attached.

The updated version of the test procedure, designated as "ISM Procedure (Draft 11)", is available in its entirety from the TMC web site (www.astmtmc.cmu.edu/docs/diesel/cummins/procedure_and_ils/ISM) or by contacting the TMC for a hardcopy.

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Senior Engineer   Administrator
Cummins, Inc.   ASTM Test Monitoring Center

Attachment

c: ftp://astmtmc.cmu.edu/docs/diesel/cummins/procedure_and_ils/ISM/il07-3.pdf

Distribution: Email

Updates 'ISM Procedure (Draft 10)'

Add to Section 1.4 Table of Contents:

Add New Section 11.1.8:

11.1.8 Correction Factor – For all tests that complete on or after June 28, 2007 add a correction factor of

+1.7 mg to the crosshead mass loss value calculated in 11.1.7.

Add New Section 11.2.5:

11.2.5 Correction Factor – For all tests that complete on or after June 28, 2007, add a correction factor of

+19.1 mg to the injector adjusting screw mass loss value calculated in 11.2.5.

Add New Annex A16

A16 ISM MERIT RATING CALCULATION

A16.1 *Merit System Components:*
A16.1.1 *Anchors* – anchor performance level based on one test.
A16.1.2 *Maximums* – limit of acceptable performance.
A16.1.3 *Minimums* – best achievable result.
A16.1.4 *Weights* – relative contribution to total merit.

Table A16.1

Criterion	Crosshead Weight Loss	Oil Filter Plugging	Average Sludge Rating	Injector Adjusting Screw Weight Loss
Weight	350	150	150	350
Maximum	7.1	19	8.7	49
Anchor	5.7	13	9.0	27
Minimum	4.3	7	9.3	16

A16.1.5 *Multipliers* – Using Table A16.1, determine the multiplier for each parameter as follows:

A16.1.5.1 If a result is at the anchor, multiplier is one. (e.g., Crosshead Weight Loss = 5.7 yields multiplier=1)

A16.1.5.2 If a result is at or below the minimum, multiplier is two (e.g., Crosshead Weight Loss = 4.0 yields multiplier=2)

A16.1.5.3 If a result is at the maximum, multiplier is zero (e.g., Crosshead Weight Loss = 7.1 yields multiplier=0)

A16.1.5.4 If a result is between minimum and anchor, linearly interpolate multiplier between 2 and 1. (e.g. Crosshead Weight Loss = 5.0 yields multiplier = 1.50)

A16.1.5.5 If a result is between anchor and maximum, linearly interpolate multiplier between 1 and 0. (e.g. Crosshead Weight Loss = 6.4 yields multiplier = 0.50)

A16.1.5.6 If a result is above the maximum, linearly extrapolate multiplier on the same line as between 1 and 0. (e.g. Crosshead Weight Loss = 7.8 yields multiplier = -0.50)

A16.2   *Calculated Merit Result* – Sum the products of weights and multipliers across the four results. This is the calculated merit result. In equation form:

$$\text{Calculated Merit} = \sum_{i=1}^{4} \text{Weight}_i$$

$$\times \left\{ \begin{array}{l} \delta(\text{result}_i > \text{anchor}_i) \times (\text{max}_i - \text{result}_i) / (\text{max}_i - \text{anchor}_i) \\ + \delta(\text{min}_i < \text{result}_i \leq \text{anchor}_i) \times [1 + (\text{anchor}_i - \text{result}_i) / (\text{anchor}_i - \text{min}_i)] \\ + \delta(\text{result}_i \leq \text{min}_i) \times 2 \end{array} \right\}$$

where $\delta(x) = 1$ if x is true; 0 if x is false

A16.2.1 Report the results of the merit calculations on the appropriate form.