

NAVISTAR, INC.		
CEMS (CORPORATE ENGINEERING MATERIAL SPECIFICATION)		NUMBER: CEMS BT-46
TITLE: Reducing Ion Test		CURRENT ISSUE DATE: August 2009
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<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		
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1.0 SCOPE

This method covers a procedure to determine the compatibility of antifreeze with chromate filter elements based on sludge formation. (This test is adapted from Cummins Engine Company's procedure for "Checking Antifreeze Compatibility with Chromate Filter Elements".)

2.0 APPARATUS

- 2.1 Analytical balance with a sensitivity of 1 milligram.
- 2.2 Oven capable of maintaining a temperature of $165 \pm 2^{\circ}\text{F}$ ($74 \pm 1^{\circ}\text{C}$).
- 2.3 Centrifuge capable of 10 000 relative centrifugal force (rcf).

$$rcf = \left(\frac{rpm}{422} \right)^2 \times \text{diameter of swing in centimeters}$$

$$rcf = \left(\frac{rpm}{265} \right)^2 \times \text{diameter of swing in inches}$$

3.0 MATERIAL

- 3.1 Sodium chromate, anhydrous, ACS
- 3.2 Calcium acetate, monohydrate, ACS
- 3.3 Distilled water.
- 3.4 1 liter volumetric flask.
- 3.5 50 milliliter graduated cylinder.
- 3.6 100 milliliter centrifuge tube with stopper to fit. Tube must be capable of withstanding 10 000 rcf.

4.0 PROCEDURE

- 4.1 Prepare sodium chromate solution by dissolving 35 grams of anhydrous sodium chromate in 1 liter of distilled water.
- 4.2 Prepare a calcium acetate solution by dissolving 0.220 grams of calcium acetate monohydrate in 1 liter of distilled water.

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4.3 Add 10 milliliters of the chromate solution and 40 milliliters of the calcium acetate solution to the 100 milliliter centrifuge tube.

4.4 Add 50 milliliters of test antifreeze to the centrifuge tube. Stopper and shake thoroughly.

4.5 Tape stopper down. Place in oven at 165°F (74°C) for 96 hours.

4.6 At the end of 96 hours, remove and cool to room temperature. Centrifuge for 15 minutes at 10 000 rcf. Read the sludge level to the nearest 0.1 ml.

5.0 REPORT

Report the volume of sludge.

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