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METHOD OF TEST FOR RESIDUE BY EVAPORATION OF NON-MODIFIED ASPHALTIC EMULSION

A. SCOPE

This test method describes a procedure for rapidly determining the percentage of asphalt in emulsified asphalt by evaporating the water and weighing the residue. This test is a modification to Section 7 of AASHTO T 59-15.

B. REFERENCES

AASHTO T 59-15 – Standard Test Method for Emulsified Asphalts.
AASHTO M 231-95 (2015) – Weighing Devices used in the Testing of Materials

C. APPARATUS

1. A flat bottom, cylindrical, seamless tin 12 oz. container commonly known as a 12 oz. tin container (see Diagram 1).



Diagram 1

2. A balance or scale conforming to the requirements of AASHTO M 231, Class G 2.
3. A thermostatically controlled hot plate capable of maintaining a surface temperature of $149^{\circ}\text{C} \pm 14^{\circ}\text{C}$ ($300^{\circ}\text{F} \pm 25^{\circ}\text{F}$).
4. Forceps capable of gripping the edge of the container.

D. PROCEDURE

1. Determine and record the mass of the three containers to the nearest 0.1 g (M_b).
2. Weigh 25 g \pm 0.1 g of thoroughly mixed emulsified asphalt into the three containers.
3. Confirm the hot plate has a surface temperature of 149°C \pm 14°C (300°F \pm 25°F).
4. Place one container on the hot plate, which has been adjusted to have a surface temperature of 149°C \pm 14°C (300°F \pm 25°F), for 25 min. \pm 5 min. Allow the water in the emulsified asphalt to boil off.

NOTE: Under no circumstances should the material be left on the hot plate until the asphalt emulsion smokes.

5. When the material has reached a condition where the surface is slightly bubbly, use the forceps to pick up the container by the edge.
6. Gently swirl the container until the bubbles disappear. The materials must appear mixed.
7. Place the container back on the hot plate until the asphalt emulsion has a smooth and glassy appearance. Remove the container from the hot plate and allow it to cool to room temperature.
8. Weigh and record the mass (M_a).
9. Repeat steps 1 through 8 for the second and third samples.

E. CALCULATIONS

1. Calculate the percentage of residue for each sample, as follows:

$$\text{Residue, \%} = 4 \times (M_a - M_b)$$

where:

M_a = Weight of the container and asphalt emulsion residue in grams, and

M_b = Tare weight of the container in grams.

F. REPORTING OF RESULTS

Report the percentage of residue by evaporation as the average of the three results.

G. PRECAUTIONS

Exercise care with regard to eye and skin protection as there a possibility of splattering.

H. HEALTH AND SAFETY

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment.

Caltrans Laboratory Safety Manual is available at:

http://www.dot.ca.gov/hq/esc/ctms/pdf/lab_safety_manual.pdf

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(California Test 330 contains 2 pages)