Test Procedure for

MEASUREMENT OF POLYMER SEPARATION ON HEATING IN MODIFIED ASPHALT SYSTEMS

TxDOT Designation: Tex-540-C

Effective Date: July 2021 - February 2023

1. SCOPE

1.1 This procedure describes a method of predicting the degree of phase separation such as settlement that may occur when modified asphalt systems (those containing latex rubber, SBS block copolymer, tire rubber, or other modifiers) are heated and stored.

1.2 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

2. APPARATUS

2.1 *Oven,* capable of maintaining a temperature of 163 ± 1°C (325 ± 2°F) for up to 48 hr.

2.2 *Metallic spatula.*

2.3 *Friction-lid can,* 0.5 L (1 pt.)

2.4 *All equipment necessary,* to perform the testing described in AASHTO T 53.

3. PROCEDURE

3.1 Heat the asphalt in an oven set at a temperature lower than 165°C until it is liquid enough for pouring.

Note 1—Avoid overlong heating; most material will be pourable in less than 1 hr.

3.2 Thoroughly stir the asphalt binder with a wooden tongue depressor or a metal rod and make sure that it is fully melted and homogenized.

3.3 Pour approximately 350 g of asphalt into the 0.5-L (1-pt.) can.

Note 2— Avoid overfilling the test container; the can should be roughly filled up to 5 mm from the top edge.

3.4 Place the lid loosely on top of the can~~,~~ and put the can in the oven maintained at a temperature of 163±1°C (325 ± 2°F).

3.5 Leave the sample in the oven for 5 hr. (or 48 hr., depending on the particular material specification), then remove it from the oven and remove the lid.

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3.6 While the sample is still hot, use a clean spatula or a knife to visually check for formation of skim or clump of polymer at the upper surface of the specimen. To minimize the disturbance of the sample, pass the edge of spatula through the surface of the specimen.

3.7 It is optional to inspect the bottom of the sample by inserting a narrow spatula (with a width less than 5 mm) all the way down to the bottom of the can, not stirring or significantly disturbing the sample, but paying attention to any noticeable changes in consistency.

3.8 Report the results of this general inspection as:

- positive if observing significant clumping, skimming, or other changes in consistency, or
- negative if observing no inconsistencies.

Note 3 —Engineer can waive this requirement if there is no significant difference between the mechanical properties of the top and bottom of the sample, following Sections 3.9 through 3.14.

Allow the sample to cool, refrigerating it if necessary, to a point where it does not flow appreciably in 10–20 min.

3.9 Cut the bottom out of the sample can.

3.10 Use a clean spatula or small spoon to remove a small amount of asphalt from the top and from the bottom of the can, and place them separately in two different clean 3 oz. containers.

Note 4—The sampling should be done at least 5 mm away from the wall of the container and in a depth no more than 3 mm from the top or bottom surface.

3.11 Perform testing on top and bottom materials in accordance with AASHTO T 53.

3.12 Calculate the difference in top and bottom results (D) as a percentage of the average values.

3.13 Report results as:

- fail if $D > 4\%$, or
- pass if $D \leq 4\%$.

3.14 Repeat Sections 3.9 through 3.13 using any other test procedure appropriate or that is called for by the particular material specification.

Note 5—Use visual inspection and softening point unless otherwise stated in the material specification.

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