
Test Procedure for

MEASUREMENT OF POLYMER SEPARATION ON HEATING IN MODIFIED ASPHALT SYSTEMS



TxDOT Designation: Tex-540-C

Effective Date: March 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.
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2. APPARATUS

- 2.1 All equipment necessary, to perform the testing described in AASHTO T 315.
- 2.2 All equipment necessary, to perform the testing described in ASTM D 7173.
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3. PROCEDURE

- 3.1 Prepare the samples from the top and bottom portion of aluminum tubes as described in ASTM D7173.
- 3.2 Perform dynamic shear rheometer tests on the top and the bottom materials using 25-mm parallel plate geometries in accordance with AASHTO T 315 and determine the $G^*/\sin\delta$ values at 12% strain, 10 rad/sec by averaging the last 10 cycles out of 20 cycles. Use the test temperature as follows:
- 58°C for PG 58-XX,
 - 64°C for PG 64-XX and Polymer-Modified Asphalt Cements.
 - 70°C for PG 70-XX,
 - 76°C for PG76-XX,
 - 82°C for PG 82-XX.
- 3.3 Calculate the difference in top and bottom results (D) as a percentage of the average values.
- $D = \{(G^*/\sin\delta)_{\text{top}} - (G^*/\sin\delta)_{\text{bottom}}\} / \{[(G^*/\sin\delta)_{\text{top}} + (G^*/\sin\delta)_{\text{bottom}}] / 2\} * 100$
- 3.4 Report results nearest of 0.1 as:
- fail if $D > 10.0\%$, or
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- pass if $D \leq 10.0\%$.

3.5 Repeat Sections 3.1 through 3.4 using any other test procedure appropriate or that is called for by the particular material specification.