



Standard Practice for Determining the Separation Tendency of Polymer from Polymer Modified Asphalt¹

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1. Scope

1.1 This practice describes a laboratory procedure for determining the tendency of polymer to separate from polymer modified asphalt under static heated storage conditions. The results of testing on material prepared according to this practice may be used as a guideline when formulating products or to establish field handling procedures. Large differences in test results between top and bottom specimens indicate that there is a degree of incompatibility between the polymer and the base asphalt.

1.2 The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)

D7175 Test Method for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer

3. Summary of Practice

3.1 A measured quantity of polymer modified asphalt in a sealed aluminum tube is conditioned in a vertical position for 48 h at a temperature of $163 \pm 5^\circ\text{C}$. At the end of the conditioning period, top and bottom portions are separated and

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

subjected to further testing to determine the degree of separation. Tests chosen for this purpose depend on the polymer modification system being evaluated and the type of information desired by the user. Softening Point (Test Method D36) and DSR (Test Method D7175) are the most common tests used for this purpose.

4. Significance and Use

4.1 Purchasers of polymer modified asphalt need to be given guidelines on proper storage and handling procedures to maintain the integrity of material they have purchased. This practice provides a significant tool for understanding the characteristics of these materials as well as comparing various sources of supply.

5. Apparatus

5.1 *Aluminum Tubes*—25-mm diameter by 125-mm to 140-mm length aluminum separation tubes, used to hold the test sample during conditioning.³

5.2 *Balance*—Capable of being read to the nearest 0.1 g.

5.3 *Oven*—Capable of maintaining a temperature of $163 \pm 5^\circ\text{C}$.

5.4 *Freezer*—Capable of maintaining a temperature of $-10 \pm 10^\circ\text{C}$.

5.5 *Rack*—Capable of supporting the aluminum tubes in a vertical position in the oven and freezer.

5.6 *Containers*—Metal or glass, $100 \pm 20\text{-mL}$ capacity.

5.7 *Hammer and Cutting Tool*—The cutting tool must be rigid and sharp to allow cutting of the tube containing the sample when at a low temperature.

NOTE 1—A tool known as a 6-in-1 painter's tool has been found ideal for this purpose.

³ Aluminum tubes suitable for this purpose may be obtained from R/H Specialty & Machine, Inc., P.O. Box 10187, Terre Haute, IN 47801, (812) 232-0781, as Part No. 100-550; from HMA Lab Supply, 3407 W. Leigh St., Richmond VA 23230, (888) 569-0499, as Part No. SC-4200; or from Freund Container, 11535 S. Central Ave., Alsip, IL, (800) 363-9822 as Part No. 6219T11. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

6. Procedure

6.1 Place the empty aluminum tube in the rack, with sealed end down, or support it some other way in a vertical position.

6.2 If the sample is not already hot, heat it in the oven at $163 \pm 5^\circ\text{C}$ until sufficiently fluid to pour. Stir the sample thoroughly and pour 50 ± 0.5 g into the vertically held tube. Depending on the type of tube used, either fold the excess tube over two times and crimp tightly, screw on the cap, insert a cork stopper wrapped in aluminum foil, or seal it in some other way to prevent the introduction of air.

6.3 Place the sealed tube assembly in the $163 \pm 5^\circ\text{C}$ oven (other temperatures may be used if deemed more appropriate by all parties). Allow the tube to stand undisturbed in the oven for a period of 48 ± 1 h. At the end of the conditioning period, remove the tube from the oven, and place it immediately in the freezer at $-10 \pm 10^\circ\text{C}$, taking care to keep the tube in a vertical

position at all times. Leave the tube in the freezer for a minimum of 4 h to solidify the sample completely.

6.4 Remove the tube from the freezer and place it on a hard flat surface. Cut the section of the tube containing the specimen into three portions of approximately equal length. A hammer and cutting tool is normally used, but other means are appropriate if they can make a clean separation. Discard the center asphalt section, and place the top and bottom portions of the tube into separate covered 100 ± 20 -mL containers. Place the covered containers in the $163 \pm 5^\circ\text{C}$ oven until the asphalt is sufficiently fluid to remove the pieces of the aluminum tube, but not longer than 30 minutes.

6.5 Stir the samples thoroughly before pouring them up for comparative testing of the top and bottom portions.

7. Keywords

7.1 Modified asphalt; polymer; separation; storage

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