



## Designation: ~~D6152/D6152M – 12~~ D6152/D6152M – 12 (Reapproved 2018)

# Standard Specification for SEBS-Modified Mopping Asphalt Used in Roofing<sup>1</sup>

This standard is issued under the fixed designation D6152/D6152M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers SEBS (styrene-ethylene-butylene-styrene)-modified asphalt intended for use in built-up roof construction, construction of some modified bitumen systems, construction of bituminous vapor retarder systems, and for adhering insulation boards used in various types of roof systems.

1.2 This specification is intended as a material specification. Issues regarding the suitability of specific roof constructions or application techniques are beyond its scope.

1.3 The specified tests and property values used to characterize SEBS-modified asphalt are intended to establish minimum properties. In place system design criteria or performance attributes are factors beyond the scope of this specification.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

~~D5D5/D5M~~ D5D5/D5M Test Method for Penetration of Bituminous Materials

~~D36D36/D36M~~ D36D36/D36M Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)

~~D92~~ D92 Test Method for Flash and Fire Points by Cleveland Open Cup Tester

~~D140D140/D140M~~ D140D140/D140M Practice for Sampling Bituminous Asphalt Materials

~~D312D312/D312M~~ D312D312/D312M Specification for Asphalt Used in Roofing

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D1079 Terminology Relating to Roofing and Waterproofing

D2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene

D3111 Test Method for Flexibility Determination of Hot-Melt Adhesives by Mandrel Bend Test Method

## 3. Terminology

3.1 *Definitions*—For definitions of general terms used in this specification, refer to Terminology D1079.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *elastic recovery, n*—the degree to which a material returns to its normal dimensions after being distorted.

3.2.2 *low temperature flexibility, n*—the ability of a material to bend at a prescribed rate around a mandrel of a prescribed diameter at a prescribed low temperature without cracking or breaking.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.03 on Surfacing and Bituminous Materials for Membrane Waterproofing and Built-up Roofing.

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<sup>2</sup> 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.

#### 4. Materials and Manufacture

4.1 The base asphalt shall be prepared from crude petroleum.

4.2 The SEBS-modified asphalt shall incorporate sufficient SEBS as the primary polymeric modifier to meet the requirements of this specification.

#### 5. Physical Requirements

5.1 The SEBS modified asphalt shall be homogeneous and free of water.

5.2 The SEBS modified asphalt shall conform to the physical properties prescribed in **Table 1**.

#### 6. Sampling

6.1 Sample the material as prescribed in Practice ~~D140~~**D140/D140M**.

6.2 If the material is shipped in hot filled cardboard or plastic kegs, obtain samples from the kegs in accordance with the following procedure:

6.2.1 Remove the container from the block of SEBS-modified asphalt, cutting away the liner if present.

6.2.2 Using a hatchet or a hot knife, cut two vertical wedges approximately 50 mm [2 in.] wide and 50 mm [2 in.] deep along the entire length of the material block. Cut the wedges into 100-mm [4-in.] lengths.

6.2.3 Place the wedges in a can with a capacity of 3.8 L [1 gal]. Loosely cover the can and heat in a convection oven at  $210 \pm 5^\circ\text{C}$  [ $410 \pm 9^\circ\text{F}$ ] for a period of  $2\frac{1}{2} \pm \frac{1}{2}$  h. Stir the sample thoroughly to ensure homogeneity.

#### 7. Test Methods

7.1 Determine compliance with the requirements of this specification in accordance with the following methods:

7.1.1 *Softening Point*—Test Method ~~D36~~**D36/D36M**.

7.1.2 *Flash Point*—Test Method **D92**.

7.1.3 *Penetration*—Test Method ~~D5D5~~**D5M**.

7.1.4 *Solubility*—Test Method **D2042**.

7.1.5 *Tensile Elongation*—Test Method **D412**.

7.1.6 *Low Temperature Flexibility*—Test Method **D3111**.

7.1.7 *Elastic Recovery*—Test Method **D412**.

7.2 Specimens for tensile elongation, elastic recovery, and low temperature flexibility shall be cut from a molded or hot poured plaque  $2.00 \pm 0.15$  mm [ $0.079 \pm 0.006$  in.] thick.

7.2.1 The following simple procedure may be used for preparing a hot poured plaque. Heat the asphalt to  $210 \pm 5^\circ\text{C}$  [ $410 \pm 9^\circ\text{F}$ ] in a convection oven. While heating, place two metal strips of the thickness stated above along the sides of a piece of release paper. Pour the heated SEBS-modified asphalt onto the release paper, immediately cover with another piece of release paper, then roll out with a rolling pin, piece of pipe, and so forth, using the metal strips as guides to maintain proper specimen thickness.

7.3 Determine tensile elongation as prescribed by Test Method **D412** using die C. The test shall be made at  $23.0 \pm 2.0^\circ\text{C}$  [ $73.4 \pm 3.6^\circ\text{F}$ ] and with a speed of  $500 \pm 25$  mm/min [ $20 \pm 1$  in./min].

7.4 Determine low temperature flexibility as prescribed by Test Method **D3111** using a  $25 \pm 1$ -mm [ $1.00 \pm 0.04$ -in.] diameter mandrel. The specimens shall be  $2.00 \pm 0.15$  mm [ $0.079 \pm 0.006$  in.] thick.

**TABLE 1 Physical Requirements of SEBS-Modified Asphalt Used in Roofing<sup>A</sup>**

Property	Min	Max
Softening point, °C [°F] before and after heat exposure	85 [185]	135 [275]
Softening point change, °C [°F] after heat exposure	-5 [-9]	5 [9]
Flash point, °C [°F]	260 [500]	...
Penetration, units at 25°C [77°F] before and after heat exposure	20	60
Penetration change, units at 25°C [77°F] after heat exposure	-5	12
Solubility in trichloroethylene, %	99	...
Tensile elongation, %, at 25°C [77°F]	750	...
Elastic recovery, %	80	...
Low temperature flexibility, pass at °C [°F]	...	-7 [20]
Low temperature flexibility, pass at °C [°F]	...	-7 [20]

<sup>A</sup> The properties in this table are "as manufactured" unless otherwise noted.