



## Designation: D312/D312M – 16a (Reapproved 2023)

# Standard Specification for Asphalt Used in Roofing<sup>1</sup>

This standard is issued under the fixed designation D312/D312M; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 1. Scope

1.1 This specification covers four types of 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. The specification is intended for general classification purposes only, and does not imply restrictions on the slope at which an asphalt must be used.

1.2 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 nonconformance with the 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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>

**D5/D5M Test Method for Penetration of Bituminous Materials**

**D36/D36M Test Method for Softening Point of Bitumen**

<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.

(Ring-and-Ball Apparatus)

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

**D113 Test Method for Ductility of Asphalt Materials**

**D140/D140M Practice for Sampling Asphalt Materials**

**D1079 Terminology Relating to Roofing and Waterproofing**

**D2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene or Toluene**

**D3461 Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)**

**D4402/D4402M Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer**

**D7553 Test Method for Solubility of Asphalt Materials in N-Propyl Bromide**

## 3. Materials and Manufacture

3.1 The asphalts shall be prepared from crude petroleum.

## 4. Physical Requirements

4.1 Asphalts shall be homogeneous and free of water.

4.2 Asphalts of each type shall conform to the physical properties prescribed in **Table 1**.

## 5. Sampling and Test Methods

5.1 Sample the material and determine the properties enumerated in this specification in accordance with the following methods:

5.1.1 *Sampling*—Practice **D140/D140M**.

5.1.2 *Softening Point*—See Test Methods **D36/D36M** or **D3461**. In cases where a disagreement exists between the purchaser and the seller, Test Method **D36/D36M** shall be used as the referee method.

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

5.1.4 *Penetration*—Test Method **D5/D5M**.

5.1.5 *Ductility*—Test Method **D113**.

5.1.6 *Solubility*—Test Method **D2042** or **D7553**. In cases where a disagreement exists between the purchaser and the seller, Test Method **D2042** shall be used as the referee method.

5.1.7 *EVT*—Test Method **D4402/D4402M**.

**TABLE 1 Physical Requirements of Asphalt in Roofing**

Property	Type I		Type II		Type III		Type IV	
	Min	Max	Min	Max	Min	Max	Min	Max
Softening point, °C [°F]	57 [135]	66 [151]	70 [158]	80 [176]	85 [185]	96 [205]	99 [210]	107 [225]
Flash point, °C [°F]	302 [575]	...	302 [575]	...	302 [575]	...	302 [575]	...
Penetration, units:								
at 0 °C [32 °F]	3	...	6	...	6	...	6	...
at 25 °C [77 °F]	18	60	18	40	15	35	12	25
at 46 °C [115 °F]	90	180	...	100	...	90	...	75
Ductility at 25 °C [77 °F], cm	10.0	...	3.0	...	2.5	...	1.5	...
Solubility, %	99	...	99	...	99	...	99	...
EVT, °C [°F]								
At 125 cPs						221 [430]		235 [455]
At 75 cPs						243 [470]		252 [485]

## 6. Inspection

6.1 Inspection of the material shall be agreed upon between the purchaser and the seller as part of the purchase contract.

## 7. Rejection and Resubmittal

7.1 Failure to conform to any of the requirements prescribed in this specification shall constitute grounds for rejection. In case of rejection, the seller shall have the right to reinspect the rejected material and resubmit the lot after removal of those packages not conforming to the requirements.

## 8. Packaging and Marking

8.1 Asphalt shall be suitably packaged (if not shipped in bulk) to permit acceptance by the carrier and to afford adequate protection from the normal hazards of handling and shipment.

8.2 Each container or bill of lading on bulk shipments shall be plainly marked with the name of the manufacturer or seller and the ASTM designation and type of product, maximum kettle temperature of 550 °F, and the lot-specific equiviscous temperature (EVT) for mop and for mechanical spreader application.

## 9. Keywords

9.1 asphalt; built-up roof; roofing; softening point

## APPENDIX

### (Nonmandatory Information)

### X1. APPLICATION GUIDE

X1.1 For built-up membrane construction, asphalt should be applied within the EVT application range for asphalt as described in Terminology **D1079**.

X1.2 At no time should the kettle temperature exceed 550 °F.

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