



Designation: D449/D449M – 03 (Reapproved 2021)

Standard Specification for Asphalt Used in Dampproofing and Waterproofing¹

This standard is issued under the fixed designation D449/D449M; 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 (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers three types of asphalt suitable for use as a mopping coat in dampproofing; or as a plying or mopping cement in the construction of membrane waterproofing systems with felts in accordance with Specification D226/D226M; fabrics in accordance with Specification D173/D173M or D1668/D1668M (asphalt types); asphalt-impregnated glass mat in accordance with Specification D2178/D2178M; and with primer in accordance with Specification D41/D41M.

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 should 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:*²

D5/D5M Test Method for Penetration of Bituminous Materials

¹ 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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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.

D36/D36M Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
D41/D41M Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
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
D173/D173M Specification for Bitumen-Saturated Cotton Fabrics Used in Roofing and Waterproofing
D226/D226M Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
D1668/D1668M Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing
D2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene
D2178/D2178M Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
D3461 Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)

3. Classification

3.1 Asphalts covered by this specification include three types:

3.1.1 *Type I*—A soft, adhesive, “self-healing” asphalt that flows easily under the mop and is suitable for use below grade under uniformly moderate temperature conditions both during the process of installation and during service.

NOTE 1—Type I asphalt is suitable for foundations, tunnels, subways, and so forth.

3.1.2 *Type II*—A somewhat less susceptible asphalt than Type I, with good adhesive and “self-healing” properties, suitable for use above grade where it will not be exposed to temperatures exceeding 50 °C [122 °F].

NOTE 2—Type II asphalt is suitable for railroad bridges, culverts, retaining walls, tanks, dams, conduits, spray decks, and so forth.

3.1.3 *Type III*—An asphalt less susceptible to temperature than Type II, with good adhesive properties, and suitable for use above grade on vertical surfaces exposed to direct sunlight or temperatures above 50 °C [122 °F].

TABLE 1 Physical Requirements of Asphalt Used in Dampproofing and Waterproofing

	Type I		Type II		Type III	
	Min	Max	Min	Max	Min	Max
Softening point (ring-and-ball), °C [°F]	46 [115]	60 [140]	63 [145]	77 [170]	82 [180]	93 [200]
Flash point (Cleveland open cup), °C [°F]	232 [450]	...	232 [450]	...	246 [475]	...
Penetration:						
0 °C [32 °F], 200 g, 60 s; 0.1 mm	5	...	10	...	10	...
25 °C [77 °F], 100 g, 5 s; 0.1 mm	50	100	25	50	20	40
46 °C [115 °F], 50 g, 5 s; 0.1 mm	100	130	...	100
Ductility at 25 °C [77 °F], cm	30	...	10	...	2	...
Solubility in trichloroethylene, %	99	...	99	...	99	...

4. Materials and Manufacture

4.1 The asphalt shall be prepared from crude petroleum by suitable refining processes to conform to the applicable physical requirements for each type.

5. Physical Requirements

5.1 The asphalt shall be homogeneous and free of water.

5.2 Each type shall conform to the appropriate requirements prescribed in **Table 1**.

6. Sampling and Test Methods

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

- 6.1.1 *Sampling*—Practice **D140/D140M**.
- 6.1.2 *Softening Point*—Test Methods **D36/D36M** and **D3461**.
- 6.1.3 *Flash Point*—Test Method **D92**.
- 6.1.4 *Penetration*—Test Method **D5/D5M**.
- 6.1.5 *Ductility*—Test Method **D113**.
- 6.1.6 *Solubility in Trichloroethylene*—Test Method **D2042**.

7. Inspection and Certification

7.1 Inspection and certification of the material shall be as agreed upon between the purchaser and the seller. Specific requirements shall be made part of the purchase contract.

8. Rejection and Rehearing

8.1 If the results of any test do not conform to the requirements of this specification, retesting to determine conformity may be performed as agreed upon between the purchaser and the seller.

9. Packaging and Marking

9.1 The material shall be suitably packaged to permit acceptance by the carrier and to afford adequate protection from the normal hazards of handling and shipment.

9.2 Each container shall be plainly marked with the name and brand of the manufacturer or seller.

10. Keywords

10.1 asphalt; dampproofing; fabrics; waterproofing

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