



Designation: D 312 – 95a00

Standard Specification for Asphalt Used in Roofing¹

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This standard has been approved for use by agencies of the 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 (see Appendix X1). ~~used.~~

1.2 *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 determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 5 Test Method for Penetration of Bituminous Materials²

¹ This specification is under the jurisdiction of ASTM Committee D-8 D08 on Roofing, Waterproofing, and Bituminous Materials 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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- D 36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)³
- D 92 Test Method for Flash and Fire Points by Cleveland Open Cup⁴
- D 113 Test Method for Ductility of Bituminous Materials²
- D 140 Practice for Sampling Bituminous Materials²
- D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials³
- D 2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene²
- D 3461 Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)³

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 D 140.
 - 5.1.2 *Softening Point*— See Test Methods D 36 or D 3461. In cases where a disagreement exists between the purchaser and the seller, Test Method D 36 shall be used as the referee method.
 - 5.1.3 *Flash Point*— Test Method D 92.
 - 5.1.4 *Penetration*— Test Method D 5.
 - 5.1.5 *Ductility*—Test Method D 113.
 - 5.1.6 *Solubility*—Test Method D 2042.

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, flash point and the equiviscous temperature (EVT) for mop and for mechanical spreader application.

9. Keywords

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

² Annual Book of ASTM Standards, Vol 04.03.

³ Annual Book of ASTM Standards, Vol 04.04.

⁴ Annual Book of ASTM Standards, Vol 05.01.

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, °F (°C)	135 (57)	151 (66)	158 (70)	176 (80)	185 (85)	205 (96)	210 (99)	225 (107)
Softening point, °C (°F)	57 (135)	66 (151)	70 (158)	80 (176)	85 (185)	96 (205)	99 (210)	107 (225)
Flash point, °F (°C)	500 (260)	...	500 (260)	...	500 (260)	...	500 (260)	...
Flash point, °C (°F)	260 (500)	...	260 (500)	...	260 (500)	...	260 (500)	...
Penetration, units:								
at 32°F (0°C)	3	...	6	...	6	...	6	...
at 77°F (25°C)	18	60	18	40	15	35	12	25
at 115°F (46°C)	90	180	...	100	...	90	...	75
Ductility at 77°F (25°C), cm	40.0	...	3.0	...	2.5	...	1.5	...
Ductility at 25°C (77°F), cm	10.0	...	3.0	...	2.5	...	1.5	...
Solubility in trichloroethylene, %	99	...	99	...	99	...	99	...

APPENDIXES

(Nonmandatory Information)

X1. SLOPE GUIDELINES

X1.1 This appendix covers suggested slope guidelines for the four types of asphalts. However, no restrictions are implied or intended on the slope at which a specific type of asphalt must be used. These guidelines may be modified to whatever degree is justified by the familiarity and experience of those skilled in the art of built-up roofing construction and performance as well as with local roofing practices and local weather conditions. For example, modifications from the suggested guidelines may be made depending upon: the type and occupancy of the building; the nature of the roofing components and the roof system construction; including type and thickness of insulation; the application procedures, including the experience and competency of the roofing crew; and the roofing specification, including nailing requirements. Other considerations may include but should not be restricted to the chemical and rheological properties of the asphalt; the type and character of the felt or fabric used; the amount of asphalt used between plies; the color, type, and mass of surfacing; and the direction of exposure. Keeping in mind these considerations and that no restrictions are intended on the slope at which a specific asphalt must be used, the following guidelines are provided:

X1.1.1 *Type I* includes asphalts that are relatively susceptible to flow at roof temperatures with good adhesive and “self-healing” properties. They are generally used in slag or gravel-surfaced roofs on inclines up to 2 % (1/4 in./ft) slope.

X1.1.2 *Type II* includes asphalts that are moderately susceptible to flow at roof temperatures. They are generally for use in built-up roof construction on inclines from approximately 2 % (1/4 in./ft) slope to 8 % (1 in./ft) slope.

X1.1.3 *Type III* includes asphalts that are relatively nonsusceptible to flow at roof temperatures for use in the construction of built-up roof construction on inclines from approximately 2 % (1/4 in./ft) slope to 25 % (3 in./ft) slope.

X1.1.4 *Type IV* includes asphalts that are generally nonsusceptible to flow at roof temperatures for use in the construction of built-up roofing on inclines from approximately 2 % (1/4 in./ft) slope to 50 % (6 in./ft) slope. These asphalts may be useful in areas where relatively high year-round temperatures are experienced.

X2. APPLICATION

X1. APPLICATION GUIDE

X2.1.1 Asphalt should be applied within the EVT application range for asphalt as described in Terminology D 1079.

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