



Designation: D3381/D3381M – 12

Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction¹

This standard is issued under the fixed designation D3381/D3381M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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

1. Scope

1.1 This specification covers asphalt cements graded by viscosity at 60°C [140°F] for use in pavement construction. Three sets of limits are offered in this specification. The purchaser shall specify the applicable table of limits. In the event the purchaser does not specify limits, **Table 1** shall apply. For asphalt cements graded by penetration at 25°C [77°F]. See Specification **D946**. If needed, volume corrections for asphalt cements should be made according to Practice **D4311**.

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 non-conformance with the standard.

2. Referenced Documents

2.1 ASTM Standards:²

- D5** Test Method for Penetration of Bituminous Materials
- D92** Test Method for Flash and Fire Points by Cleveland Open Cup Tester
- D36** Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
- D70** Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)
- D95** Test Method for Water in Petroleum Products and Bituminous Materials by Distillation
- D113** Test Method for Ductility of Bituminous Materials
- D140** Practice for Sampling Bituminous Materials
- D946** Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction

¹ This specification is under the jurisdiction of ASTM Committee **D04** on Road and Paving Materials and is the direct responsibility of Subcommittee **D04.40** on Asphalt Specifications.

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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.

- D1754** Test Method for Effects of Heat and Air on Asphaltic Materials (Thin-Film Oven Test)
- D2042** Test Method for Solubility of Asphalt Materials in Trichloroethylene
- D2170** Test Method for Kinematic Viscosity of Asphalts (Bitumens)
- D2171** Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer
- D2872** Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)
- D4311** Practice for Determining Asphalt Volume Correction to a Base Temperature

3. Manufacture

3.1 The asphalt cement shall be prepared from crude petroleum by suitable methods.

4. Physical Requirements

- 4.1 The asphalt cement shall be homogeneous, free from water, and shall not foam when heated to 175°C [350°F].
- 4.2 The asphalt cements shall conform to the requirements given in **Table 1**, **Table 2**, **Table 3**, or **Table 4**, as specified by the purchaser.

5. Methods of Sampling and Testing

5.1 Sample and test asphalt cements in accordance with the following methods:

- 5.1.1 *Sampling*—Practice **D140**.
- 5.1.2 *Water*—Test Method **D95**.
- 5.1.3 *Viscosity at 60°C [140°F]*—Test Method **D2171**.
- 5.1.4 *Viscosity at 135°C [275°F]*—Test Method **D2170**.
- 5.1.5 *Penetration*—Test Method **D5**.
- 5.1.6 *Flash Point, Cleveland Open Cup*—Test Method **D92**.
- 5.1.7 *Solubility in Trichloroethylene*—Test Method **D2042**.
- 5.1.8 *Thin-Film Oven Test*—Test Method **D1754** (see **Table 1** and **Table 2**).
- 5.1.9 *Rolling Thin-Film Oven Test*—Test Method **D2872** (see **Table 3**).
- 5.1.10 *Ductility*—Test Method **D113**.