



Designation: D8239 – 23

Standard Specification for Performance-Graded Asphalt Binder Using the Multiple Stress Creep and Recovery (MSCR) Test¹

This standard is issued under the fixed designation D8239; 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 specification² covers asphalt binders graded by performance. Grading designations are related to the LTPP-Bind Online calculated maximum pavement design temperature, the minimum pavement design temperature, and the traffic loading.

NOTE 1—For more information on LTPPBind Online, see <https://infopave.fhwa.dot.gov/Tools/LTPPBindOnline> accessed May 23, 2023.

1.2 This specification incorporates Test Method D7405 for determining non-recoverable creep compliance, J_{nr} . “S,” “H,” “V,” or “E” designations must be specified for standard, heavy, very heavy, and extremely heavy traffic loading, respectively.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

NOTE 2—A guidance document for specifying bodies using R % for elastic properties is under development.

NOTE 3—For asphalt binders graded by penetration at 25 °C, see Specification D946/D946M. For asphalt binders graded by viscosity at 60 °C, see Specification D3381/D3381M. For performance-graded asphalt binder, see Specification D6373.

NOTE 4—AASHTO R 29 provides non-mandatory information for determining the performance grade of an asphalt binder.

1.5 *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.*

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 This specification is based on SHRP Product 1001, AASHTO M 320, and AASHTO M 332.

2. Referenced Documents

2.1 ASTM Standards:³

- D8 Terminology Relating to Materials for Roads and Pavements
- D92 Test Method for Flash and Fire Points by Cleveland Open Cup Tester
- D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation
- D140/D140M Practice for Sampling Asphalt Materials
- D946/D946M Specification for Penetration-Graded Asphalt Binder for Use in Pavement Construction
- D2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene or Toluene
- D2872 Test Method for Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)
- D3381/D3381M Specification for Viscosity-Graded Asphalt Binder for Use in Pavement Construction
- D4402/D4402M Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer
- D6373 Specification for Performance-Graded Asphalt Binder
- D6521 Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)
- D6648 Test Method for Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)
- D6723 Test Method for Determining the Fracture Properties of Asphalt Binder in Direct Tension (DT) (Withdrawn 2021)⁴
- D7175 Test Method for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer
- D7405 Test Method for Multiple Stress Creep and Recovery (MSCR) of Asphalt Binder Using a Dynamic Shear Rheometer

³ 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 The last approved version of this historical standard is referenced on www.astm.org.