



Designation: D8237 – 18

## Standard Test Method for Determining Fatigue Failure of Asphalt-Aggregate Mixtures With the Four-Point Beam Fatigue Device<sup>1</sup>

This standard is issued under the fixed designation D8237; 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.

### 1. Scope

1.1 This test method provides a procedure for determining a fatigue curve that is developed using three or more strain levels. The resulting data can be used in the fatigue models for mechanistic-empirical pavement design (that is, Pavement ME). Failure points are determined for estimating the fatigue life of 380 mm long by 50 mm thick by 63 mm in breadth (width) asphalt mixture beam (rectangular prism) specimens sawed from laboratory or field-compacted asphalt mixture, which are subjected to repeated flexural bending.

1.2 The largest nominal maximum aggregate size (NMAS) recommended for beams 50 mm thick is 19 mm. Beams made with an NMAS greater than 19 mm might significantly interfere with the material response, thereby affecting the repeatability of the test.

1.3 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.

1.4 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard, with the exception of degrees ( $^{\circ}$ ) where angle is specified in accordance with **IEEE/ASTM SI 10**.

1.5 *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.*

1.6 *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 Recom-*

*mendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:<sup>2</sup>

- D8 Terminology Relating to Materials for Roads and Pavements
- D75/D75M Practice for Sampling Aggregates
- D140/D140M Practice for Sampling Asphalt Materials
- D979/D979M Practice for Sampling Bituminous Paving Mixtures
- D2041/D2041M Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
- D2726/D2726M Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures
- D3203/D3203M Test Method for Percent Air Voids in Compacted Asphalt Mixtures
- D3549/D3549M Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens
- D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
- D5361/D5361M Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
- D7981 Practice for Compaction of Prismatic Asphalt Specimens by Means of the Shear Box Compactor
- D8079 Practice for Preparation of Compacted Slab Asphalt Mix Samples Using a Segmented Rolling Compactor
- E4 Practices for Force Verification of Testing Machines
- E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
- E2309/E2309M Practices for Verification of Displacement Measuring Systems and Devices Used in Material Testing Machines

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.26 on Fundamental/Mechanistic Tests.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.