



# Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures<sup>1</sup>

This standard is issued under the fixed designation D6927; 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 covers measurement of resistance to plastic flow of 4 in. (102 mm) cylindrical specimens of asphalt paving mixture loaded in a direction perpendicular to the cylindrical axis by means of the Marshall apparatus. This test method is for use with dense graded asphalt mixtures prepared with asphalt cement (modified and unmodified), cutback asphalt, tar, and tar-rubber with maximum size aggregate up to 1 in. (25 mm) in size (passing 1 in. (25 mm) sieve).

1.2 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered 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 and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

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

- C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials
- D1188 Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
- D2726 Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
- D3549 Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens
- D3666 Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
- D6752 Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic

### Vacuum Sealing Method

D6926 Practice for Preparation of Bituminous Specimens Using Marshall Apparatus

E2251 Specification for Liquid-in-Glass ASTM Thermometers with Low-Hazard Precision Liquids

## 3. Terminology

### 3.1 Definitions:

3.1.1 *lab mix lab compacted (LMLC) asphalt mixture, n*—asphalt mix samples that are prepared in the laboratory by weighing and blending each constituent then compacting the blended mixture using a laboratory compaction apparatus.

3.1.1.1 *Discussion*—LMLC typically occurs during the asphalt mixture design phase. Laboratory compaction devices such as the Superpave Gyratory Compactor, Marshall Hammer, or other laboratory compaction devices may be used.

3.1.2 *plant mix laboratory compacted (PMLC) asphalt mixture, n*—asphalt mixture samples that are manufactured in a production plant, sampled prior to compaction, then immediately compacted using a laboratory compaction apparatus.

3.1.2.1 *Discussion*—PMLC specimens are often used for quality control testing. The asphalt mixture is not permitted to cool substantially and it may be necessary to place the mixture in a laboratory oven to equilibrate the mixture to the compaction temperature before molding. Laboratory compaction devices such as the Superpave Gyratory Compactor, Marshall Hammer, or other laboratory compaction devices may be used.

3.1.3 *reheated plant mix lab compacted (RPMLC) asphalt mixture, n*—asphalt mixture samples that are manufactured in a production plant, sampled prior to compaction, allowed to cool to room temperature, then reheated in a laboratory oven and compacted using a laboratory compaction apparatus.

3.1.3.1 *Discussion*—RPMLC are often used for quality acceptance and verification testing. The reheating time should be as short as possible to obtain uniform temperature to avoid artificially aging the specimens. Asphalt mixture conditioning, reheat temperature, and reheat time should be defined in the applicable specification. Laboratory compaction devices such as the Superpave Gyratory Compactor, Marshall Hammer, or other laboratory compaction devices may be used.

<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 D04.20 on Mechanical Tests of Asphalt Mixtures.

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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.