



Designation: D6927 – 22

Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures¹

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 (ϵ) 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 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 binder (modified and unmodified) 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 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 *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.*

1.5 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

C670 Practice for Preparing Precision and Bias Statements for Test Methods for Construction Materials

¹ 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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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.

D8 Terminology Relating to Materials for Roads and Pavements

D1188/D1188M Test Method for Bulk Specific Gravity and Density of Compacted Asphalt Mixtures Using Coated Samples

D2726/D2726M Test Method for Bulk Specific Gravity and Density of Non-Absorptive 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

D6752/D6752M Test Method for Bulk Specific Gravity and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method

D6926 Practice for Preparation of Asphalt Mixture Specimens Using Marshall Apparatus

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

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology **D8**.

4. Significance and Use

4.1 Marshall stability and flow values along with density, air voids in the total mix, voids in the mineral aggregate, or voids filled with asphalt binder, or both, filled with asphalt binder are used for laboratory mix design and evaluation of asphalt mixtures. In addition, Marshall stability and flow can be used to monitor the plant process of producing asphalt mixture. Marshall stability and flow may also be used to relatively evaluate different mixes and the effects of conditioning such as with water.

4.1.1 Marshall stability and flow are asphalt mixture characteristics determined from tests of compacted specimens of a specified geometry. The Marshall Test can be conducted with two different types of equipment: (1) Method A—using a loading frame with a load ring and a dial gauge for deformation or flow meter (Traditional Method); or (2) Method B—using a load-deformation recorder in conjunction with a load cell and linear variable differential transducer (LVDT) or other automatic recording device (Automated Method).