Designation: D3203/D3203M – 11

Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures[1]

This standard is issued under the fixed designation D3203/D3203M; 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 determination of the percent air voids in compacted dense and open bituminous paving mixtures.

1.2 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this 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:*[2]

D1188 Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples

D2041 Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

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

D4460 Practice for Calculating Precision Limits Where Values are Calculated from Other Test Methods

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

D6857 Test Method for Maximum Specific Gravity and Density of Bituminous Paving Mixtures Using Automatic Vacuum Sealing Method

3. Terminology

3.1 *Definitions:*

3.1.1 *air voids*—the pockets of air between the bitumen-coated aggregate particles in a compacted bituminous paving mixture.

3.1.2 *dense bituminous paving mixtures*—bituminous paving mixtures in which the air voids are less than 10 % when compacted.

3.1.3 *open bituminous paving mixtures*—bituminous paving mixtures in which the air voids are 10 % or more when compacted.

3.1.3.1 *Discussion*—For borderline cases, a bituminous paving mixture shall be designated an open bituminous paving mixture if the calculated percent air voids, based on either 6.1 or 6.2, is 10 % or more.

4. Significance and Use

4.1 The percent of air voids in a bituminous mixture is used as one of the criteria in the design methods and for evaluation of the compaction imparted in bituminous paving projects.

NOTE 1—The text of this test method 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 test method.

NOTE 2—The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the equipment used. Agencies that meet the criteria of Standard Practice D3666 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice D3666 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of Practice D3666 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.

5. Sampling

5.1 Samples for testing shall consist of specimens from laboratory molded mixtures or cores from field compacted mixtures.

[1] This test method is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.21 on Specific Gravity and Density of Bituminous 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.