



Standard Test Method for Measuring Pavement Macrotexture Depth Using a Volumetric Technique¹

This standard is issued under the fixed designation E 965; 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 describes a procedure for determining the average depth of pavement surface macrotexture (see 3.1) **(1)²** by careful application of a known volume of material on the surface and subsequent measurement of the total area covered. The technique is designed to provide an average depth value of only the pavement macrotexture and is considered insensitive to pavement microtexture characteristics.

1.2 The results obtained using this procedure to determine average pavement macrotexture depths do not necessarily agree or correlate directly with those obtained by other pavement macrotexture measuring methods **(1-5)**.

1.3 The values stated in inch-pound units are to be regarded as 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 1155 Test Method for Roundness of Glass Spheres³

E 178 Practice for Dealing with Outlying Observations⁴

E 867 Terminology Relating to Traveled Surface Characteristics⁵

3. Terminology

3.1 Terminology used in this standard conforms to Terminology E 867.

3.2 Definition of Term Specific to This Standard:

3.2.1 *pavement macrotexture*—the deviations of a pavement surface from a true planar surface with the characteristic dimensions of wavelength and amplitude from 0.5 mm up to those that no longer affect tire-pavement interaction.

4. Summary of Test Method

4.1 The standard materials and test apparatus consist of a quantity of uniform material, a container of known volume, a suitable wind screen or shield, brushes for cleaning the pavement surface, a flat disk for spreading the material on the surface, and a ruler or other measuring device for determining the area covered by the material. A laboratory balance is also recommended for further ensuring consistent amounts for each measurement sample.

4.2 The test procedure involves spreading a known volume of material on a clean and dry pavement surface, measuring the area covered, and subsequently calculating the average depth between the bottom of the pavement surface voids and the tops of surface aggregate particles. This measurement of pavement surface texture depth reflects the pavement macrotexture characteristics **(1, 5)**.

NOTE 1—In spreading the material specified in this test method, the surface voids are completely filled flush to the tips of the surrounding aggregate particles. This test method is not considered suitable for use on grooved surfaces or pavements with large (≥ 1.0 in. (25 mm)) surface voids.

5. Significance and Use

5.1 This test method is suitable for field tests to determine the average macrotexture depth of a pavement surface. The knowledge of pavement macrotexture depth serves as a tool in characterizing the pavement surface texture. When used in conjunction with other physical tests, the macrotexture depth values derived from this test method may be used to determine the pavement skid resistance capability and the suitability of paving materials or finishing techniques. When used with other tests, care should be taken that all tests are applied at the same location. Improvements in pavement finishing practices and maintenance schedules may result from use of this test method.

5.2 The texture depth measurements produced using this test method are influenced by pavement macrotexture characteristics and not significantly affected by pavement microtexture. Pavement aggregate particle shape, size, and distribution are texture features not addressed in this procedure. This test method is not meant to provide a complete assessment of pavement surface texture characteristics.

5.3 The pavement macrotexture depth values measured by this test method, with the equipment and procedures stated herein, do not necessarily agree or correlate directly with other

¹ This test method is under the jurisdiction of ASTM Committee E-17 on Vehicle-Pavement Systems and is the direct responsibility of Subcommittee E17.23 on Surface Characteristics Related to Tire-Pavement Slip Resistance.

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² The boldface numbers in parentheses refer to the list of references at the end of this test method.

³ Annual Book of ASTM Standards, Vol 06.02.

⁴ Annual Book of ASTM Standards, Vol 14.02.

⁵ Annual Book of ASTM Standards, Vol 04.03.