



Standard Test Method for Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method¹

This standard is issued under the fixed designation F510/F510M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method² describes a laboratory procedure for determining the abrasion resistance of resilient flooring using an abrader with a grit feeder.³

1.2 The equipment used in this test method is a modification of the Taber abraser. The regular abrading wheels are replaced by leather clad brass wheels (rollers). As the specimen holder rotates, a grit-feeding device feeds aluminum oxide grit onto the specimen before it passes under the leather clad brass wheels. Using the vacuum system incorporated in the apparatus, the used grit and abraded material are removed after passing under both wheels.

1.3 This test method employs a rotary, rubbing action caused by loose abrasive grit and the two abrading wheels. One wheel rubs the specimen from the center outward and the other from the outside toward the center. The wheels traverse a complete circle and have an abrasive action on the rotating specimen at all angles. This action approaches the twisting action between shoe and floor that occurs when a person turns. The use of loose grit serves the function of an abradant and also aids in the rolling action characteristic of normal walking.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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 and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:⁴

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

E122 Practice for Calculating Sample Size to Estimate, With Specified Precision, the Average for a Characteristic of a Lot or Process

G195 Guide for Conducting Wear Tests Using a Rotary Platform Abraser

2.2 ANSI Standard:

B74.12 Checking the Size of Abrasive Grain for Grinding Wheels, Polishing, and General Industrial Uses⁵

3. Terminology

3.1 Definitions:

3.1.1 *abrasion*—of resilient floor coverings, a form of wear, in which a gradual removing of a flooring surface is caused by the frictional action of relatively fine hard particles.

3.1.2 *resistance to abrasion*— of resilient floor coverings, the ability of a material to withstand mechanical actions of relatively fine hard particles, which by rubbing, scraping, and eroding remove material from a floor covering surface.

4. Significance and Use

4.1 When subjected to normal in-use traffic conditions, a flooring material is exposed to abrasion caused by the destructive action of fine hard particles. This situation occurs whenever loose debris, dirt and other particulate matter exists between traffic bodies (that is, shoes and a flooring surface).

¹ This test method is under the jurisdiction of ASTM Committee F06 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.30 on Test Methods - Performance.

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² This test method is described by W. E. Irwin in "Development of a Method to Measure Wear on Resilient Flooring," *Journal of Testing and Evaluation*, Vol 4, No. 1, January 1976, pp. 15–20.

³ This grit feed method is frequently referred to as the "Frick Grit Feed Method" because it is based on work done by Otto F. V. Frick as described in "Studies of Wear on Flooring Materials," *Wear*, Vol 14, 1969, pp. 119–131.

⁴ 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.

⁵ Available from American National Standards Institute, 25 West 43rd St., 4th Floor, New York, NY 10036.