



Designation: D4886 – 10

# Standard Test Method for Abrasion Resistance of Geotextiles (Sand Paper/Sliding Block Method)<sup>1</sup>

This standard is issued under the fixed designation D4886; 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 the determination of resistance of geotextiles to abrasion using an abrasion tester. This test method at this point has only been evaluated for geotextiles—not geomembranes, grids, etc. Therefore, the test method is designated for geotextiles, not geosynthetics, as all products may not lend themselves to this test method for abrasion. If later developments indicate a wider scope for this test method, appropriate changes will be made.

1.2 The values stated in SI units are to be regarded as standard. The values given in inch-pound units are provided as information only.

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>

D123 Terminology Relating to Textiles

D1776 Practice for Conditioning and Testing Textiles

D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing

D4439 Terminology for Geosynthetics

D5035 Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)

## 3. Terminology

3.1 For definitions of other terms used in this test method, refer to Terminologies D123 or D4439.

3.2 *Definitions:*

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.02 on Endurance Properties.

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<sup>2</sup> 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.

3.2.1 *abrasion, n*—the wearing away of any part of a material by rubbing against another surface. **D123**

3.2.2 *loss in breaking force, n*—percent comparison of breaking force before and after abrasion.

## 4. Summary of Test Method

4.1 A test specimen, mounted on a stationary platform is rubbed by an abradant with specified surface characteristics. Under controlled conditions of pressure and abrasive action, the abradant is rubbed on a horizontal axis using a uniaxial motion. Resistance to abrasions is expressed as a percentage of original strength before abrading.

## 5. Significance and Use

5.1 This test method may be used for acceptance testing of commercial shipments of geotextiles, but caution is advised since information on the precision of the test is lacking. Comparative testing as directed in 5.1.1 may be advisable.

5.1.1 In case of a dispute arising from differences in reported test results when using this test method, the purchaser and the supplier should conduct comparative tests to determine if there is a statistical bias between their laboratories. Competent statistical assistance is recommended for the investigation of bias. As a minimum, the two parties should take a group of test specimens that are as homogeneous as possible and that are from a lot of material of the type in question. The test specimens should then be randomly assigned in equal numbers to each laboratory for testing. The average results from the two laboratories should be compared using Student's *t*-test for unpaired data and an acceptable probability level chosen by the two parties before the testing is begun. If a bias is found, either its cause must be found and corrected or the purchaser and the supplier must agree to interpret future test results in light of the known bias.

5.2 The resistance of abrasion is also greatly affected by the conditions of the tests, such as the nature of abradant, variable action of the abradant over the area of specimen abraded, the tension of the specimen, the pressure between the specimen and abradant, and the dimensional changes in the specimens.

5.3 The resistance of geotextile materials to abrasion as measured on a testing machine in the laboratory is generally only one of several factors contributing to performance or