



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

This standard is issued under the fixed designation D 4886; 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.

^{ε1} NOTE—Paragraph 3.1.1 was corrected.

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:

- D 123 Terminology Relating to Textiles²
- D 1682 Test Methods for Breaking Load and Elongation of Textile Fabrics³
- D 1776 Practice for Conditioning Textiles for Testing²
- D 4354 Practice for Sampling of Geosynthetics for Testing⁴
- D 4439 Terminology for Geosynthetics³

3. Terminology

3.1 Definitions:

3.1.1 *atmosphere for testing geotextiles, n*—air maintained at a relative humidity of $65 \pm 5\%$ and a temperature of $21 \pm 2^\circ\text{C}$ ($70 \pm 4^\circ\text{F}$). **D 4439**

3.1.2 *abrasion, n*—the wearing away of any part of a material by rubbing against another surface. **D 123**

3.1.3 *geotextiles, n*—any permeable textile used with foun-

ation, soil, rock, earth, or any other geotechnical engineering related material as an integral part of a man-made project, structure, or system. **D 4439**

3.1.4 For definitions of other terms used in this test method, refer to Terminologies D 123 or D 4439.

4. Summary of Test Method

4.1 A test specimen, mounted on a stationary platform is rubbed by an abrasant with specified surface characteristics. Under controlled conditions of pressure and abrasive action, the abrasant 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 abrasant, variable action of the abrasant over the area of specimen abraded, the tension of the specimen, the pressure between the specimen and abrasant, 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

¹ This test method is under the jurisdiction of ASTM Committee D-35 on Geosynthetics and is the direct responsibility of Subcommittee D35.02 on Endurance Properties.

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² *Annual Book of ASTM Standards*, Vol 07.01.

³ Discontinued—See 1991 *Annual Book of ASTM Standards*, Vol 07.01.

⁴ *Annual Book of ASTM Standards*, Vol 04.09.