Designation: D 6496 – 04

# Standard Test Method for Determining Average Bonding Peel Strength Between Top and Bottom Layers of Needle-Punched Geosynthetic Clay Liners[1]

This standard is issued under the fixed designation D 6496; 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 the laboratory determination of the average bonding strength between the top and bottom layers of a sample of a geosynthetic clay liner (GCL).

1.2 The values in SI units are to be regarded as the standard. The values in inch-pound units are in parentheses for information.

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]

D 76 Specification for Tensile Testing Machines for Textiles

D 4439 Terminology for Geosynthetics

## 3. Terminology

3.1 *Definitions:*

3.1.1 *geosynthetic*, *n*—a product manufactured wholly or in part from polymeric material used with soil, rock, earth, or other geotechnical engineering related material as an integral part of a project, structure, or system. **D 4439**

3.1.2 *geosynthetic clay liner*, *n*—a manufactured hydraulic barrier consisting of clay bonded to a layer or layers of geosynthetic material(s). (Currently being balloted under D35 Committee on Terminology)

## 4. Summary of Test Method

4.1 The top and bottom layers of a geosynthetic clay liner are gripped individually in tensile grips and pulled at a constant rate of extension by a tensile testing machine until the top and bottom layers of the specimen separate. The average bonding peel strength of the test specimen can be calculated from machine scales, dials, recording charts, or an interface computer.

## 5. Significance and Use

5.1 The bonding strength test for the top and bottom layers of the geosynthetic clay liner is intended to be an index test. It is anticipated that the results of the test will be used to evaluate the quality of the bonding process.

## 6. Apparatus

6.1 *Tensile Testing Machine*—A constant rate of extension (CRE) type of testing machine described in Specification D 76 shall be used with a minimum precision measuring capability of 0.1 N/m ($5.71 \times 10^{-4}$ lbf/in).

6.2 *Clamps*—The clamps shall be a minimum 25 by 100 mm (1 by 4 in.) and with appropriate clamping power to prevent slipping or crushing (damage).

6.3 *Die or Template*, 100 by 200 mm (±1 mm) (4 by 8 in.).

6.4 *Miscellaneous*, knives, razor, and the like, as required.

## 7. Test Specimen

7.1 The sample received at the testing laboratory should be in satisfactory condition and representative of the product manufactured or delivered to a site, or both.

7.2 The size of the die or template for cutting specimens is 100 by 200 mm (4 by 8 in.).

7.3 The loss of clay during the specimen cutting process should have no bearing on the results of the test.

7.4 A minimum of five test specimens should be cut from the laboratory sample such that they are representative of the entire roll width. All specimens should be parallel to the machine direction.

## 8. Conditioning

8.1 The test specimen shall be tested as received.

[1] This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.04 on Geosynthetic Clay Liners.

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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.