



Standard Test Method for Measurement of Index Flux Through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter¹

This standard is issued under the fixed designation D5887/D5887M; 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 an index test that covers laboratory measurement of flux through saturated geosynthetic clay liner (GCL) specimens using a flexible wall permeameter.

1.2 This test method is applicable to GCL products having geotextile backing(s). It is not applicable to GCL products with geomembrane backing(s), geofilm backing(s) or polymer coating backing(s).

1.3 This test method provides a measurement of flux under a prescribed set of conditions that can be used for manufacturing quality control. The test method can also be used to check conformance. The flux value determined using this test method is not considered to be representative of the in-service flux of GCLs.

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:*²

[D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)

[D2216 Test Methods for Laboratory Determination of Water](#)

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.

(Moisture) Content of Soil and Rock by Mass

[D4439 Terminology for Geosynthetics](#)

[D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing](#)

[E145 Specification for Gravity-Convection and Forced-Ventilation Ovens](#)

[E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)

3. Terminology

3.1 *Definitions:*

3.1.1 *flux, n*—the rate of discharge of water under laminar flow conditions through a unit cross-sectional area of a GCL specimen.

3.1.2 *geosynthetic clay liner (GCL), n*—a factory-manufactured geosynthetic hydraulic barrier consisting of clay supported by geotextiles, or geomembranes, or both, that are held together by needling, stitching, or chemical adhesives.

3.1.3 *index test, n*—a test procedure that may contain a bias, but that may be used to establish an order for a set of specimens with respect to the property of interest.

3.1.4 For definitions of other terms used in this test method, see Terminology [D653](#) and Terminology [D4439](#).

4. Summary of Test Method

4.1 This test method involves permeation of a 100-mm [4-in.] diameter GCL test specimen. The specimen is set up in a flexible-wall permeameter, subjected to a total stress of 550 kPa [80 psi] and a backpressure of 515 kPa [75 psi] for a period of 48 h. Flow is initiated using deionized water by raising the pressure on the influent side of the test specimen to 530 kPa [77 psi]. The flux is determined when inflow and outflow are approximately equal (within $\pm 25\%$).

5. Significance and Use

5.1 This test method yields the flux of water through a saturated GCL specimen that is consolidated, hydrated, and permeated under a prescribed set of conditions.

5.2 This test method can be performed to determine if the flux of a GCL specimen exceeds the maximum value stated by the manufacturer.