This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D6766 – 20a

# Standard Test Method for Evaluation of Hydraulic Properties of Geosynthetic Clay Liners Permeated with Potentially Incompatible Aqueous Solutions[1]

This standard is issued under the fixed designation D6766; 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 laboratory measurement of both flux and hydraulic conductivity (also referred to as *coefficient of permeability*) of geosynthetic clay liner (GCL) specimens permeated with chemical solutions and leachates utilizing a flexible wall permeameter. For test measurement of index hydraulic properties of geosynthetic clay liners, refer to Test Method D5887/D5887M. For hydraulic conductivity compatibility of soils with aqueous chemical solutions and leachates, refer to Test Method D7100.

1.2 This test method may be utilized with GCL specimens that have a hydraulic conductivity less than or equal to $1 \times 10^{-5}$ m/s ($1 \times 10^{-3}$ cm/s).

1.3 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).

1.4 This test method allows the requester to evaluate the hydraulic properties of a GCL with site-specific or laboratory-prepared solution under different test conditions; thus, the test method also may be used to check performance or conformance, or both.

1.5 The values stated in SI units are to be regarded as the standard, unless other units are specifically given. By tradition in U.S. practice, hydraulic conductivity is reported in centimeters per second, although the common SI units for hydraulic conductivity are meters per second.

1.6 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*[2]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D854 Test Methods for Specific Gravity of Soil Solids by Water Pycnometer

D2216 Test Methods for Laboratory Determination of Water (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

D5887/D5887M Test Method for Measurement of Index Flux Through Saturated Geosynthetic Clay Liner Specimens Using a Flexible Wall Permeameter

D7100 Test Method for Hydraulic Conductivity Compatibility Testing of Soils with Aqueous Solutions

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

## 3. Terminology

3.1 *Definitions:*

3.1.1 *flux, n*—the rate of discharge of liquid under laminar flow conditions through a unit cross-sectional area of a GCL specimen at a standard temperature condition (22 ± 3 °C).

3.1.2 *geosynthetic clay liner (GCL), n*—a factory-manufactured geosynthetic hydraulic barrier consisting of clay supported by geotextiles, geomembranes, or a combination

[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.

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