Designation: D6141 – 97 (Reapproved 2004)

Standard Guide for Screening Clay Portion of Geosynthetic Clay Liner (GCL) for Chemical Compatibility to Liquids[1]

This standard is issued under the fixed designation D6141; 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 guide covers procedures and test methods that can be used in the evaluation of the ability of the clay portion of a geosynthetic clay liner to resist change due to exposure to liquids. These liquids may come from a site, or be generated in a laboratory from a site-specific soil.

1.2 The scope of this guide is limited to short-term screening and is not intended to replace evaluation procedures that measure a performance property such as EPA 9100, Test Method D5887, or *other* suitable ASTM standards as they become available.

1.3 This guide applies to the clay component of a GCL. The synthetic carrier components are covered independently as described in Practice D5322.

1.4 *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

D4439 Terminology for Geosynthetics

D5322 Practice for Laboratory Immersion Procedures for Evaluating the Chemical Resistance of Geosynthetics to Liquids

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

D5890 Test Method for Swell Index of Clay Mineral Component of Geosynthetic Clay Liners

D5891 Test Method for Fluid Loss of Clay Component of Geosynthetic Clay Liners

D6072 Practice for Obtaining Samples of Geosynthetic Clay Liners

2.2 *Other Document:*[3]

EPA Test Method 9100 Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability

3. Terminology

3.1 *Definitions:*

3.1.1 *geosynthetic clay liner (GCL), n*—a manufactured hydraulic barrier consisting of clay bonded to a layer or layers of geosynthetics.

3.1.2 *test liquid, n—within this guide,* a liquid either supplied to, or obtained by the testing laboratory, or generated by the testing laboratory through prolonged contact of a reagent with a test soil or other solid material.

3.2 Other definitions may be found in the referenced Terminologies D4439 and D653.

4. Significance and Use

4.1 This guide is intended as a starting place for those wishing to investigate the chemical compatibility of the clay portion of a geosynthetic clay liner to test liquids. Within the scope of this guide, the clay portion of a geosynthetic clay liner that is chemically compatible with a test liquid may be expected to maintain its swelling characteristics. Conversely, the clay portion of a geosynthetic clay liner that is incompatible with a test liquid may be expected not to maintain its swelling characteristics. In instances where the compatibility of the clay portion of a GCL is questionable, additional hydraulic testing under the expected site conditions may be warranted.

5. Apparatus

5.1 Refer to the appropriate evaluation test standards for a description of the apparatus necessary to perform those tests.

5.2 *Containers*, manufactured of a chemically resistant material, such as polyethylene or stainless steel, *may* be needed to prepare and contain test liquid generated from soils. The

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

Current edition approved June 1, 2004. Published July 2004. Originally approved in 1997. Last previous edition approved in 1997 as D6141 - 97. DOI: 10.1520/D6141-97R04.

[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.

[3] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.