



Designation: D5496 – 15 (Reapproved 2026)

Standard Practice for In-Field Immersion Testing of Geosynthetics¹

This standard is issued under the fixed designation D5496; 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 practice describes an approach and methodology for immersion testing of geosynthetics (for example, geomembranes used for landfill liner).

1.2 This practice does not provide for definition of the testing to be performed on the geosynthetic samples for field immersion. This practice does not address the determination of resistance of the geosynthetic to the liquid in which it is immersed. The user of this practice is referred to the appropriate Standard Guide for Tests to evaluate the chemical resistance and for defining the testing to be performed for each of the geosynthetic components listed in 2.1.

NOTE 1—EPA Method 9090 has been used in the past to investigate the compatibility of geomembrane to leachates.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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

1.5 *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

D123 Terminology Relating to Textiles

D4439 Terminology for Geosynthetics

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

D5747/D5747M Practice for Tests to Evaluate the Chemical Resistance of Geomembranes to Liquids

2.2 *EPA Document:*³

SW846 Method 9090 Compatibility Test for Wastes and Membrane Liners

3. Terminology

3.1 *Definitions:*

3.1.1 *field testing, n*—testing performed in the field under actual conditions of temperature and exposure to the fluids for which the immersion testing is being performed.

3.1.2 For definitions relating to geosynthetics, refer to Terminology D4439.

3.1.3 For definitions relating to textiles, refer to Terminology D123.

4. Significance and Use

4.1 This practice provides an approach and methodology for conducting field immersion testing of geosynthetics used in the construction of liners in reservoirs, ponds, impoundments, or landfills for containing liquids and solids. This practice should be performed in accordance to and in conjunction with Practice D5322 for assessing chemical resistance under both laboratory and field conditions.

4.2 The specification of procedures in this practice is intended to serve as a guide for those wishing to compare or investigate the chemical resistance of geosynthetics under actual field conditions.

5. Apparatus

5.1 *Sample Container*, for containment of the geosynthetic test specimens. The containers should be perforated on all sides and at the bottom to allow for complete flooding of the test specimens. Stainless steel, or other chemically resistant steel alloys, is recommended. Do not use 316 stainless steel for fluids known to contain high chloride ion concentrations.

¹ This practice is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.02 on Endurance Properties.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from United States EPA, Office of Solid Waste and Emergency Response, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.