



Designation: D5496 – 98(Reapproved 2009)

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.

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

D123 Terminology Relating to Textiles

D4439 Terminology for Geosynthetics

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

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.

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 service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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 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.

NOTE 1—A chemical analysis of the fluid should be available to the user prior to the start of field compatibility testing to allow for a review of a suitable material of construction for the sample container. If in doubt, tests can be conducted by placing samples of the sample container material of construction in the fluid for a suitable period of time to determine compatibility of the sample container with the fluid. If in doubt, and testing cannot be performed prior to start of field compatibility testing, then an alloy such as Carpenter 20 or tantalum-coated carbon steel should be considered for any field samples that will be exposed to aggressive fluids for more than one year.

5.1.1 The size of the sample container is not specified since it will be dependent on the number of geosynthetic specimens requiring testing and the size of the sump, tank, or other device used for conducting the field testing.

5.1.2 *Sample Container Lid*, to allow easy access for placing and removing geosynthetic specimens from the container. The lid should be constructed from the same material as the sample container and perforated to allow for contact between fluid and the geosynthetic samples within the container. In addition, the lid should be secured to the container using threaded rods made from the same material as the container.