



Designation: D 5322 – 98

Standard Practice for Laboratory Immersion Procedures for Evaluating the Chemical Resistance of Geosynthetics to Liquids¹

This standard is issued under the fixed designation D 5322; 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 covers laboratory immersion procedures for the testing of geosynthetics for chemical resistance to liquid wastes, prepared chemical solutions, and leachates derived from solid wastes.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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.* For specific hazards statements, see Section 7.

2. Referenced Documents

2.1 ASTM Standards:

- D 123 Terminology Relating to Textiles²
- D 471 Test Method for Rubber Property—Effect of Liquids³
- D 543 Test Method for Resistance of Plastics to Chemical Reagents⁴
- D 4439 Terminology for Geotextiles⁵
- D 5747 Practice for Tests to Evaluate the Chemical Resistance of Geomembranes to Liquids⁵

2.2 Other Document:

- SW 846, Method 9090 Compatibility Test for Wastes and Membrane Liners⁶

3. Terminology

3.1 Definitions—For definitions of many terms used in this practice, refer to Terminologies D 123 and D 4439.

¹ This practice is under the jurisdiction of ASTM Committee D-35 on Geosynthetics and is the direct responsibility of Subcommittee D35.02 on Endurance Properties.

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² *Annual Book of ASTM Standards*, Vol 07.01.

³ *Annual Book of ASTM Standards*, Vol 09.01.

⁴ *Annual Book of ASTM Standards*, Vol 08.01.

⁵ *Annual Book of ASTM Standards*, Vol 04.13.

⁶ Available from US EPA, Office of Solid Waste and Emergency Response, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

3.2 Descriptions of Terms Specific to This Standard:

3.2.1 *chemical resistance*—the ability to resist chemical attack.

3.2.1.1 *Discussion*—The attack is dependent on the test method, and its severity is measured by determining the changes in physical properties. Time, temperature, stress, and reagent may all be factors affecting the chemical resistance of a material.

3.2.2 *geosynthetic, n*—a planar product manufactured from polymeric material used with soil, rock, earth, or other geotechnical engineering-related material as an integral part of a man-made project, structure, or system.

4. Significance and Use

4.1 This practice provides a standard immersion procedure for investigating the chemical resistance of a geosynthetic to a liquid waste, leachate, or chemical. The conditions specified in this practice are intended both to provide a basis of standardization and to serve as a guide for those wishing to compare or investigate the chemical resistance of a geosynthetic material(s).

4.2 This practice is not intended to establish, by itself, the behavior of geosynthetics when exposed to liquids. Such behavior, referred to as chemical resistance, can be defined only in terms of specific chemical solutions and methods of testing and evaluation criteria selected by the user.

4.3 Without regulatory approval, this practice does not supersede testing requirements, such as SW 846, Method 9090, stipulated by regulatory agencies.

5. Apparatus

5.1 *Exposure Tank*, for containment of the solution and test material. The tank must be chemically resistant and impermeable to the solution being used. Stainless steel or glass is recommended. Glass should not be used with strongly basic solutions.

5.1.1 The size of the exposure tank is not specified since the volume of liquid to be used with any given amount of immersed geosynthetic has not been standardized by ASTM or specified by the Environmental Protection Agency at the time of the writing of this practice. Sufficient liquid must be used to ensure the presence of any potentially detrimental chemicals