



Standard Test Method for Measuring the Nominal Thickness of Geosynthetics¹

This standard is issued under the fixed designation D 5199; 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 is limited to measuring the nominal thickness of geotextiles, smooth surfaced geomembranes, geonets, and geocomposite drainage products.

1.2 The values stated in SI units are to be regarded as the standard. The values are provided in inch-pound units for information only.

1.3 This test method does not provide thickness values for geosynthetics under variable normal compressive stresses. This test method determines nominal thickness, not necessarily minimum thickness.

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:

D 123 Terminology Relating to Textiles²

D 1776 Practice for Conditioning Textiles for Testing²

D 1777 Method for Measuring Thickness of Textile Materials²

D 4354 Practice for Sampling of Geosynthetics for Testing³

D 4439 Terminology for Geosynthetics³

3. Terminology

3.1 Definitions:

3.1.1 *geomembrane, n*—an essentially impermeable membrane used with foundation, soil, rock, earth or any other geotechnical engineering related material as an integral part of a man-made project, structure, or system.

3.1.2 *geotextiles, 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.

3.1.3 *geotextiles, n*—any permeable textile used with soil, rock, earth or any other geotechnical material as an integral part of a man-made project, structure, or system.

3.1.4 *pressure, n*—the force or load per unit area.

3.1.5 *thickness*—(1) the distance between one planar surface and its opposite parallel and planar surface; (2) in the textiles the distance between the upper and lower surfaces of the material, measured under a specified pressure and time.

3.1.6 For definition of other textile terms used in this standard, refer to Terminology D 123.

3.1.7 For definitions of other terms relating to geotextiles and geomembranes used in this standard, refer to Terminology D 4439.

4. Summary of Test Method

4.1 The nominal thicknesses of geosynthetics is determined by observing the perpendicular distance that a movable plane is displaced from a parallel surface by the geotextile or geomembrane material while under a specified pressure (2 kPa for geotextiles and 20 kPa for geomembranes for 5 s).

5. Significance and Use

5.1 Thickness is one of the basic physical properties used to control the quality of many geosynthetics. Thickness values are required in calculation of some geotextile and geomembrane parameters such as permeability coefficients, tensile stress (index), and the like thickness is not indicative of field performance and therefore is not recommended for specifications.

5.2 The thickness of geotextiles and geomembranes may vary considerably depending on the pressure applied to the specimen during measurement. Where observed changes occur, thickness decreases when applied pressure is increased. To minimize variation, specific sample size and applied pressure are indicated in this method to ensure all results are comparable.

5.3 To determine the effect of difference pressure loadings on the measure thickness of geotextiles and geomembranes, use this test method.

5.4 This test method may be used for acceptance testing of commercial shipments of geotextiles and geomembranes, but caution is advised since information on between-laboratory precision is incomplete. Comparative tests, as directed in 5.4.1 may be advisable.

5.4.1 In case of a dispute arising from differences in reported test results when using this test method for acceptance testing of commercial shipments, the purchaser and the supplier should conduct comparative tests to determine if there is

¹ This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.03 on Permeability and Filtration.

Current edition approved Jan. 10, 2001. Published April 2001. Originally published as D 5199 – 91. Last previous edition D 5199 – 99.

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

³ *Annual Book of ASTM Standards*, Vol 04.09.