



Standard Test Method for Strength of Sewn or Thermally Bonded Seams of Geotextiles¹

This standard is issued under the fixed designation D 4884; 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 covers the seam strength of geotextiles. The primary distinction of this test method for evaluating seam strength is the width of the specimen. This is in contrast to the more narrow specimen width used in the tensile grab strength test discussed in Test Method D 1683.

1.2 This test method will provide data to indicate the seam strength that can be achieved for each particular geotextile and seam assembly construction.

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

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 76 Specification for Tensile Testing Machines for Textiles²
- D 123 Terminology Relating to Textiles²
- D 1683 Test Method for Failure in Sewn Seams of Woven Fabrics²
- 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
- D 4595 Test Method for Tensile Properties of Geotextiles by the Wide Width Strip Method³
- D 4632 Test Method for Grab Breaking Load and Elongation of Geotextiles³

E 178 Practice for Dealing with Outlying Observations⁴

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of Test Methods⁴

2.2 Federal Standard:

Fed. Std. No. 751a Stitches, Seams, and Stitchings⁵

3. Terminology

3.1 Definitions:

3.1.1 *cross-machine direction*—the direction in the plane of the geotextile perpendicular to the direction of manufacture.

3.1.2 *geotextile, n*—a permeable geosynthetic comprised solely of textiles.

3.1.3 *linear density, n*—mass per unit length; the quotient obtained by dividing the mass of a fiber or yarn by its length.

3.1.4 *machine direction*—the direction in the plane of the geotextile parallel to the direction of manufacture.

3.1.5 *seam allowance, n*—the width of geotextile used in making a seam assembly, for sewn seams bounded by the edge of the geotextile and the furthest stitch line, and for thermally bonded seams bounded by the edge of the geotextile and the furthest seam edge.

3.1.5.1 *Discussion*—In geotextiles, the distance from the selvage or turned edge of the geotextile to the edge of the seam.

3.1.6 *seam assembly, n*—the unit obtained by joining geotextile with a seam, including details such as geotextile direction(s), seam allowance, seam width, seam type, speed, and if sewn—sewing threads used and number of stitches per unit length, needle type and size, and so forth.

3.1.7 *seam efficiency, n*—the ratio expressed as a percentage of seam strength to geotextile strength.

3.1.8 *seam design engineering, n*—the procedures used to select a specific thread, a specific stitch type, and a specific seam type to achieve the required seam strength of a sewn seam and the procedures used to select a specific seam width, specific seam bonding temperature, and a specific seam speed and pressure to achieve the required seam strength of a thermally bonded seam.

3.1.9 *seam interaction, n*—the result of combining specific textile, a specific stitch type, and a specific seam type for a

¹ This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.01 on Mechanical Properties.

Current edition approved Feb. 10, 1996. Published June 1996. Originally published as D 4884 – 89. Last previous edition D 4884 – 90.

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

³ *Annual Book of ASTM Standards*, Vol. 04.13.

⁴ *Annual Book of ASTM Standards*, Vol. 14.02.

⁵ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.