



Standard Test Method for Flexural Rigidity of Geogrids, Geotextiles and Related Products¹

This standard is issued under the fixed designation D7748/D7748M; 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.

^{ε1} NOTE—Equation 4 in Section 11.5 was editorially corrected in June 2016.

1. Scope

1.1 This test method covers the measurement of stiffness properties of geogrids, geotextiles and geogrid-geotextile composites all of which are referred to as geosynthetics within this test method. Bending length is measured and flexural rigidity is calculated through use of the cantilever test procedure.

1.1.1 This test method employs the principle of cantilever bending of the geosynthetic under its own mass.

1.2 This test method applies to geogrids, geotextiles and geogrid-geotextile composites.

1.3 This test method is for manufacturing quality control purposes only, to ensure uniformity and consistency of flexural rigidity for a specific product from roll to roll and lot to lot.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.5 *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

D1776 Practice for Conditioning and Testing Textiles

D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products(RECPs) for Testing

D4439 Terminology for Geosynthetics

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 For common definitions of terms in this test method, refer to Terminology **D123** and Terminology **D4439**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *bending length, n* —a measure of the interaction between geosynthetic weight and geosynthetic stiffness as shown by the way in which a geosynthetic bends under its own weight.

3.2.1.1 *Discussion*—Bending length reflects the stiffness of a geosynthetic when bent in one plane under the force of gravity.

4. Summary of Test Method

4.1 A specimen is slid at a specified rate in a direction parallel to its long dimension, until its leading edge projects from the edge of a horizontal surface. The length of the overhang is measured when the tip of the specimen is depressed under its own mass to the point where the line joining the top to the edge of the platform makes a 0.724 radians [41.5°] angle with the horizontal. From this measured length, the bending length and flexural rigidity are calculated.

5. Significance and Use

5.1 This test method is considered satisfactory for manufacturing quality control testing of a specific geosynthetic; however, caution is advised since information about between-laboratory precision is incomplete. Comparative tests as directed in **5.1.1** may be advisable.

5.1.1 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 **D35.01** on Mechanical Properties.

Current edition approved Jan. 1, 2014. Published January 2014. Originally approved in 2012. Last previous edition approved in 2013 as D7748/D7748M–13. DOI: 10.1520/D7748_D7748M–14E01.

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.