



Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method¹

This standard is issued under the fixed designation D6637/D6637M; 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 determination of the tensile strength properties of geogrids by subjecting strips of varying width to tensile loading.

1.2 Three alternative procedures are provided to determine the tensile strength, as follows:

1.2.1 *Method A*—Testing a single geogrid rib in tension (N or lbf).

1.2.2 *Method B*—Testing multiple geogrid ribs in tension (kN/m or lbf/ft).

1.2.3 *Method C*—Testing multiple layers of multiple geogrid ribs in tension (kN/m or lbf/ft).

1.3 This test method is intended for quality control and conformance testing of geogrids.

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 may involve hazardous materials, operations, and equipment. 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

D76/D76M Specification for Tensile Testing Machines for Textiles

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.

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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.

D123 Terminology Relating to Textiles

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

D4439 Terminology for Geosynthetics

D5262 Test Method for Evaluating the Unconfined Tension Creep and Creep Rupture Behavior of Geosynthetics

3. Terminology

3.1 *Definitions:*

3.1.1 *atmosphere for testing geosynthetics, n*—air maintained at a relative humidity of 50 to 70 % and a temperature of $21 \pm 2^\circ\text{C}$ [$70 \pm 4^\circ\text{F}$].

3.1.2 *breaking force, (F), n*—the force at failure.

3.1.3 *corresponding force, n*—synonym for force at specified elongation.

3.1.4 *force at specified elongation, FASE, n*—a force associated with a specific elongation on the force-elongation curve (synonym for corresponding force.)

3.1.5 *force-elongation curve, n*—in a tensile test, a graphical representation of the relationship between the magnitude of an externally applied force and the change in length of the specimen in the direction of the applied force (synonym for stress-strain curve.)

3.1.6 *geogrid, n*—a geosynthetic formed by a regular network of integrally connected elements with apertures greater than 6.35 mm [$1/4$ in.] to allow interlocking with surrounding soil, rock, earth, and other surrounding materials to primarily function as reinforcement. **D5262**

3.1.7 *geosynthetic, n*—a 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.

3.1.8 *index test, n*—a test procedure which may contain known bias, but which may be used to establish an order for a set of specimens with respect to the property of interest.

3.1.9 *integral, adj*—in geosynthetics, forming a necessary part of the whole; a constituent.

3.1.10 *junction, n*—the point where geogrid ribs are interconnected to provide structure and dimensional stability.