



Standard Test Method for Individual Geogrid Junction Strength¹

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1. Scope

1.1 This test method is an index test which provides a procedure for determining the strength of an individual geogrid junction, also called a node. The test is configured such that a single rib is pulled from its junction with a rib(s) transverse to the test direction to obtain the maximum force, or strength of the junction. The procedure allows for the use of two different clamps with the appropriate clamp selected to minimize the influence of the clamping mechanism on the specific type of geogrid to be tested.

1.2 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.

1.3 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

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:* Definitions of other terms applying to this test method appear in Terminology D4439.

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.

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 *geogrid, n*—a geosynthetic formed by a regular network of integrally connected elements with apertures greater than 6.35 mm [0.25 in.] to allow interlocking with surrounding soil, rock, earth, and other surrounding materials to primarily function as reinforcement. **D5262**

3.1.4 *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.

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

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

3.1.7 *rib, n*—for geogrids, the continuous elements of a geogrid which are either in the machine or cross-machine direction as manufactured.

3.1.8 *rupture, n*—for geogrids, the breaking or tearing apart of ribs.

4. Summary of Test Method

4.1 This standard proposes a test method for performing tension tests on geogrid junctions. The procedure provides two clamping techniques for the junction to be tested including: Method A in which the clamps firmly grip the ribs transverse to the test direction on each side of the junction; and, Method B in which the ribs transverse to the test direction are constrained in a slot, constraining rotation of the junction, while the rib in the test direction passes through the slot without the junction clamp applying confinement to the junction. The junction clamping technique is selected for the specific type of geogrid in order to minimize rotation and corresponding peel of the junction during the test. The rib in the test direction going through the junction is then clamped at a distance from the junction and the system tensioned until junction (or rib) failure occurs. This forces a tension or shear force to occur within the junction in the direction of the applied load. The junction has no normal pressure on it, that is, it is horizontally unconfined.