



# Standard Test Method for Evaluating the Unconfined Tension Creep and Creep Rupture Behavior of Geosynthetics<sup>1</sup>

This standard is issued under the fixed designation D5262; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method is intended for use in determining the unconfined tension creep and creep rupture behavior of geosynthetics at constant temperature when subjected to a sustained tensile loading. This test method is applicable to all geosynthetics.

1.2 The test method measures total elongation of the geosynthetic test specimen, from the time of loading, while being maintained at a constant temperature. It includes procedures for measuring the tension creep and creep rupture behavior at constant temperature of conditioned geosynthetics as well as directions for calculating tension creep and creep rupture curves.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are 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:<sup>2</sup>

- D123 Terminology Relating to Textiles
- D1776 Practice for Conditioning and Testing Textiles
- D2990 Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
- D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products(RECPs) for Testing
- D4439 Terminology for Geosynthetics

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.02 on Endurance Properties.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standards's Document Summary page on the ASTM website.

- D4491 Test Methods for Water Permeability of Geotextiles by Permittivity
- D4595 Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
- D6637 Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method
- E6 Terminology Relating to Methods of Mechanical Testing

## 3. Terminology

3.1 *Definitions*—For definitions of many terms used in this test method, refer to Terminologies D123, D4439 and E6.

### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *atmosphere for testing geosynthetics, n*—air maintained at a relative humidity between 50 and 70 % and the test (Section 10.2).

3.2.2 *creep, n*—the time-dependent increase in accumulative strain in a material resulting from an applied constant force.

3.2.3 *design load, n*—the load at which the geosynthetic is required to operate in order to perform its intended function.

3.2.4 *failure, n*—an arbitrary point at which a material ceases to be functionally capable of its intended use.

3.2.5 *geogrid, n*—a geosynthetic formed by a regular network of integrally connected elements with apertures greater than 6.35 mm ( $\frac{1}{4}$  in.) to allow interlocking with surrounding soil, rock, earth, and other surrounding materials to function primarily as reinforcement.

3.2.6 *geomembrane, n*—an essentially impermeable geosynthetic composed of one or more synthetic sheets.

3.2.6.1 *Discussion*—In geotechnical engineering, essentially impermeable means that no measurable liquid flows through a geosynthetic when tested in accordance with Test Methods D4491.

3.2.7 *geosynthetic, 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.

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

3.2.8.1 *Discussion*—Current manufacturing techniques produce nonwoven fabrics, knitted (non-tubular) fabrics, and woven fabrics.