SYNTEC TECH NOTE LD4
SYNTEC, LLC
4800 Pulaski Highway
Baltimore, Maryland 21224 • USA
Phone: 410-327-1070 • Toll Free: 1-800-874-7437 Fax: 410-327-1078
www.synteccorp.com

GEONET TENSILE STRENGTH:

The Difference between Three Tensile Strength Tests

This technical note addresses the confusion about the three testing methods for one property, geonet tensile strength. The American Society for Testing Materials (ASTM) has three methods for tensile strength that are currently active: they are ASTM D4595, ASTM D5035, and ASTM D7179. These testing methods are all different methods for determining tensile strength and are written based on the type of materials tested. The ASTM D4595 and ASTM D5035 tests are specifically developed for geotextiles, ASTM D7179 is specifically designed for geonets, and each of these methods are approved by the ASTM Geosynthetics Committee D35. The ASTM D7179 test method has been determined to be the most appropriate testing method for geonets. This technical note summarizes the different testing methods and explains why ASTM D7179 is recommended for testing tensile strength of geonets.

Summary of the Three Tensile Strength Test

The test ASTM D4595 (2005) is the "Standard Test Method for Tensile Properties of Geotextile be the Wide-Width Method." This test covers "the measurement of tensile properties for geotextiles using a wide-width strip specimen tensile method (Scope 1.1)." The specimen strip is 8 inches wide by 8 inches long; strain rate is 10± 3% in/min. The use of this test method should provide design parameters for reinforcement applications.

The test ASTM D5035 (1995) is the "Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)." This test covers "raveled strip and cut strip test procedures for determining the breaking force and elongation of most textile fabrics"… "raveled strip test is applicable for woven fabrics while the cut strip test is applicable to nonwoven fabrics, felted fabrics, and dipped or coated fabrics (Scope 1.1-1.1.1)." The specimen strip is 1~2 inches wide and the strain rate is 12± 0.5 in/min.

The test ASTM D7179 (2005) is the "Standard Test Method for Determining Geonet Breaking Force." The specimen strip is 4 inches wide by 8 inches in length with elongation test speed of 12 in/min until specimen has ruptured. "This test method is used to measure the breaking force of a geonet"… "this test is applicable for manufacturing quality control (MQC) and construction quality assurance (CQA) testing and is not recommended as a performance test (Scope 1.1-1.2)."

Conclusion

ASTM D7179 is the most appropriate test method for geonet tensile strength measurement because it has been specifically developed for geonets. Conversely, ASTM D4595 and ASTM D5035 are created for determining the tensile strength and elongation properties of geotextiles. These ASTM standards are not designed for testing geonets.