



Designation: D5818 – 11

Standard Practice for Exposure and Retrieval of Samples to Evaluate Installation Damage of Geosynthetics¹

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1. Scope

1.1 This practice covers standardized procedures for obtaining samples of geosynthetics from a test section for use in assessment of the effects of damage immediately after installation caused only by the installation techniques. The assessment may include physical testing. This practice is applicable to any geosynthetic.

1.2 This practice is limited to full-scale test sections, and does not address laboratory modeling of field conditions. This practice does not address which test method(s) to use for quantifying installation damage.

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

D4439 Terminology for Geosynthetics

D4873 Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples

3. Terminology

3.1 *Definitions:*

3.1.1 *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.

3.1.2 *sample, n*—(1) a portion of material that is taken for testing or for record purposes; (2) a group of specimens used, or of observations made, which provide information that can be

used for making statistical inferences about the population(s) from which the specimens are drawn.

3.1.3 *test section, n*—a distinct area of actual or simulated full-scale construction.

3.1.4 For definitions of other geosynthetic terms used in this practice, refer to Terminology D4439.

4. Summary of Practice

4.1 Damage to geosynthetics from installation operations may be quantified by evaluating specimens from a sample(s) exhumed from a full-scale installation. The sample(s) should be installed using project specific procedures and materials. When project specific materials and/or procedures are unknown, generally accepted, representative materials and procedures, should be used and thoroughly documented and reported. Addressed within this practice are: amount of geosynthetic sample(s) to install procedures for installing the geosynthetic sample(s); procedures for exhuming the geosynthetic sample(s); procedure for obtaining control sample(s); and report preparation guidelines. The sample(s) should be retrieved immediately after installation to minimize potential aging of the geosynthetic. Comparison of test results on exhumed and control specimens may be used to assess effects of installation. Tests to perform are not addressed herein, and will vary with the type and function of geosynthetic and project requirements.

5. Significance and Use

5.1 The ability to maintain design function (for example, reinforcement, separation, barrier, etc.) or design properties (for example, tensile strength, chemical resistance, etc.), or both, of a geosynthetic may be affected by damage to the physical structure of the geosynthetic due to the rigors of field installation. The effect of damage may be assessed by analyzing specimens cut from sample(s) retrieved after installation in a representative test section. Analysis may be performed with visual examination or laboratory testing of specimens from the control sample(s), and from the exhumed sample(s).

5.2 A uniform practice for installing and retrieving representative sample(s) from a test section is needed to assess installation damage using project specific or generally accepted, representative materials and procedures. Damage of

¹ This practice 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.