



Standard Test Method for Determining Filtering Efficiency and Flow Rate of the Filtration Component of a Sediment Retention Device¹

This standard is issued under the fixed designation D5141; 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 is used to determine the filtering efficiency and the flow rate of the filtration component of a sediment retention device, such as a silt fence, silt barrier, or inlet protector.

1.1.1 The results are shown as a percentage for filtering efficiency and cubic metres per square metre per minute ($\text{m}^3/\text{m}^2/\text{min}$) or gallons per square foot per minute ($\text{gal}/\text{ft}^2/\text{min}$) for flow rate.

1.1.2 The filtering efficiency indicates the percent of sediment removed from sediment-laden water.

1.1.3 The flow rate is the average rate of passage of the sediment-laden water through the filtration component of a sediment retention device.

1.2 This test method requires several specialized pieces of equipment, such as an integrated water sampler and an analytical balance, or a vacuum filtration system. At the client's discretion the test soil is either a site-specific soil or a soil that is representative of a target default gradation.

1.3 The values stated in SI units are the standard, while the inch-pound units are provided for information. The values expressed in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any way.

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:²

D123 Terminology Relating to Textiles

¹ This test method is under the jurisdiction of ASTM Committee D35 Geosynthetics and is the direct responsibility of Subcommittee D35.03 on Permeability and Filtration.

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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.

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D4439 Terminology for Geosynthetics

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

D4759 Practice for Determining the Specification Conformance of Geosynthetics

2.2 *American Public Health Association (APHA) Standard: 208D Total Nonfiltrable Residue Dried at 103–105°C (Total Suspended Matter)*³

3. Terminology

3.1 Definitions:

3.1.1 *filtration component*—a geotextile or other material designed to act as a filter.

3.1.2 *filter*—See Terminology **D653**.

3.1.3 *geosynthetic, n*—a planar product manufactured from polymeric material used with foundation soil, rock, earth, or any other geotechnical engineering related material as an integral part of a man-made project, structure, or system. (See Practice **D4759**.)

3.1.4 *performance property, n*—a result obtained by conducting a performance test.

3.1.5 *performance test, n—in geosynthetics*, a laboratory procedure which simulates selected field conditions which can be used in design.

3.1.6 For definitions of other terms relating to geosynthetics, refer to Terminology **D4439**. For definitions of textile terms, refer to Terminology **D123**. For definitions of soil terms, refer to Terminology **D653**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *filtering efficiency, FE, n—in geosynthetics*, the percent of sediment removed from sediment-laden water by the filtration component of a sediment retention device over a specified period of time.

³ Available from American Public Health Association (APHA), 1015 Eighteenth St. NW, Washington, DC 20036.