



Designation: D8203 – 18

Standard Test Method for Determination of the Horizontal Water Flow Rate of a Geosynthetic Screening Material, Product, or Device¹

This standard is issued under the fixed designation D8203; 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 covers test procedures for determining the horizontal water flow rate through a geosynthetic or geosynthetic-enhanced screening device, such as a sediment retention device (SRD), under a constant-head pressure. The test is conducted with potable water.

1.2 This test is intended to be used for quality control and product development efforts, but should not be considered a performance test.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information purposes 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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

D5819 Guide for Selecting Test Methods for Experimental Evaluation of Geosynthetic Durability

¹ This test method is under the jurisdiction of ASTM Committee D35 on Geosynthetics and is the direct responsibility of Subcommittee D35.05 on Geosynthetic Erosion Control.

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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. Terminology

3.1 Definitions:

3.1.1 For definitions of common technical terms used in this standard, refer to Terminology D4439.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *geosynthetic screening device, n*—geosynthetic or geosynthetic-enhanced materials, products, or devices that primarily provide the screening function, such as a sediment retention device (SRD).

3.2.2 *screening*—a geosynthetic, placed across the path of a flowing fluid (ground water, surface water, wind), carrying particles in suspension, provides screening when it retains some or all fine soil particles while allowing the fluid to pass through. After some period of time, particles accumulate against the screen, which requires that the screen be able to withstand pressures generated by the accumulated particles and the increasing pressure from accumulated fluid. (See Guide D5819.)

3.2.3 *sediment retention device (SRD), n*—a material, product, or device designed to intercept sediment-laden flow, screening out suspended solids and reducing the velocity of the flow, causing transported sediments to settle out. Typical SRDs include silt fences, as well as natural or manmade materials encapsulated in geosynthetic fabrics, meshes, or nettings such as wattles, filter logs, fiber filtration tubes, fiber rolls, and compost socks.

4. Summary of Test Method

4.1 A test specimen is positioned vertically across the mouth of a “box” reservoir, and potable water is introduced upstream and maintained at a predetermined constant head as the water is allowed to seep through the specimen. Once a steady-state flow condition is established, a discharge volume and the associated time are measured.

5. Significance and Use

5.1 The test method simulates the flow conditions (without sediment) applicable to sediment retention devices exposed to sheet-flow runoff. Horizontal flow rate is an inherent (index) property of sediment retention devices (SRDs), and can be used to control quality and to assess the effects of product changes.