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.

Designation: D8297/D8297M – 22

Standard Test Method for Determination of Erosion Control Products (ECP) Performance in Protecting Slopes from Sequential Rainfall-Induced Erosion Using a Tilted Bed Slope[1]

This standard is issued under the fixed designation D8297/D8297M; 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 evaluate the ability of erosion control products (ECP) to protect slopes from rainfall-induced erosion using an adjustable tilting bed slope. The standard slopes range from 2:1 to 4:1 (H:V) having a target rainfall intensity of 3.5 in./h [90 mm/h].

1.2 There are three main elements the ECPs must have the ability to perform: 1. Absorb the impact force of raindrops, thereby reducing soil particle loosening and detachment through "splash" mechanisms; 2. Slow runoff and encourage infiltration, thereby reducing soil particle displacement and transport through "overland flow" mechanisms; and 3. Trap soil particles beneath the ECP. When comparing data from different ECPs under consideration, it is important to keep the test conditions the same for the ECPs being evaluated, for example, the rainfall intensity rate and the slope.

1.3 The results of this test method can be used to evaluate performance and acceptability, and can be used to compare the effectiveness of different ECPs. This method provides a comparative evaluation of an ECP to baseline bare soil conditions under controlled and documented conditions. This test method can provide information about a product that is under consideration for a specific application where no performance information currently exists.

1.4 This test method covers the use of three different soil types, ECP installation: sprayed, rolled, or dry applied, and a runoff collection procedure. This test is typically performed indoors, but may be performed outside as long as certain requirements are met. Partially enclosed facilities are acceptable providing the environmental conditions are met.

1.5 *Units*—The values stated in either inch-pound units or SI units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in nonconformance with the standard. Reporting of test results in units other than inch-pound shall not be regarded as nonconformance with this standard.

1.5.1 The gravitational system of inch-pound units is used when dealing with inch-pound units. In the system, the pound (lbf) represents a unit of force (weight), while the units for mass is slugs. The slug unit is not given, unless dynamic (F = ma) calculations are involved.

1.5.2 It is common practice in the engineering/construction profession to concurrently use pounds to represent both a unit of mass (lbm) and of force (lbf). This practice implicitly combines two separate systems of units; the absolute and the gravitational systems. It is scientifically undesirable to combine the use of two separate sets of inch-pound units within a single standard. As stated, this standard includes the gravitational system of inch-pound units and does not use/present the slug unit of mass. However, the use of balances and scales recording pounds of mass (lbm) or recording density in lbm/ft^3 shall not be regarded as nonconformance with this standard.

1.5.3 Calculations are done using only one set of units; either gravitational inch-pound or SI. Other units are permissible provided appropriate conversion factors are used to maintain consistency of units throughout the calculations, and similar significant digits or resolution, or both are maintained.

1.6 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice D6026, unless superseded by this test method.

1.6.1 The procedures used to specify how data are collected/recorded and calculated in the standard are regarded as the industry standard. In addition, they are representative of the significant digits that generally should be retained. The procedures used do not consider material variation, purpose for obtaining the data, special purpose studies, or any considerations for the user's objectives; and it is common practice to increase or reduce significant digits of reported data to be commensurate with these considerations. It is beyond the scope of these test methods to consider significant digits used in analysis methods for engineering data.

[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.25 on Erosion and Sediment Control Technology.

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*A Summary of Changes section appears at the end of this standard

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