



Designation: **D7367 – 14 D7367 – 19**

Standard Test Method for Determining Water Holding Capacity of Fiber Mulches for Hydraulic Planting¹

This standard is issued under the fixed designation D7367; 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—Scope*

1.1 This quantitative test method determines the water holding capacity of fiber mulches, including wood, paper, and agriculturally derived and blended fiber mulches that are used for hydraulic planting, seeding and planting. Results from this testing can be used as a quality assurance and/or quality control data for manufacturing processes.

1.2 ~~The purpose of this test method is to provide a means of evaluating water holding capacity in fiber mulches. Product specimen is conditioned and weighed, saturated and re-weighed to determine water holding capacity. The water holding capacity is expressed as a percentage of increased weight after saturation. There are no known limitations to this test method. No range of concentrations/values have been determined. This test method is preferably performed in a laboratory.~~

1.3 *Units*—The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 All observed and calculated values shall conform to the guidelines for significant digits and rounding established in Practice [D6026](#).

1.4.1 The procedures used to specify how data are collected/recorded or 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 this standard to consider significant digits used in analysis methods for engineering data.

1.5 *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.*

1.6 *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

[D653 Terminology Relating to Soil, Rock, and Contained Fluids](#)

[D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction](#)

[D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing](#)

[D6026 Practice for Using Significant Digits in Geotechnical Data](#)

[E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves](#)

3. Terminology

3.1 *Definitions*—For ~~common~~ definitions of common technical terms used in this standard, refer to Terminology [D653](#).

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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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.

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

4. Summary of Test Method

4.1 ~~Product specimen is conditioned and weighed, saturated and re-weighed to determine water holding capacity. A representative sample of a fiber mulch is taken from a packaged bale or bag. The representative sample is thoroughly mixed to obtain 3 test specimens. The test specimens are allowed to condition for 24 h. Then, the mass of each test specimen is determined as is the mass of a sieve and a sieve pan. Test water is then added to the test specimen and mixed. The test water and fiber is then poured over a sieve and evenly distributed. The sieve is then placed in bowl to allow the fiber mulch to saturate. After saturation, the sieve is allowed to drain and the sieve and pan are dried off before the mass of the sieve plus sieve pan plus saturated fiber mulch is determined. This process is repeated for the other 2 test specimens. The water holding capacity is expressed as a percentage of increased weight/mass after saturation.~~

5. Significance and Use

5.1 The meaning of the test is related to the manufacturing ~~and quality assurance and quality control and~~ end use of the material, to determine characteristics of products. The water holding capacity of hydraulically applied mulches for hydraulic planting correlates directly with enhanced slurry and spray patterns by providing better soil/slurry binding ~~ability-ability, mixing ability in a tank,~~ and rate of seed germination.

NOTE 1—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice **D3740** are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice **D3740** does not in itself assure reliable results. Reliable results depend on many factors; Practice **D3740** provides a means of evaluating some of those factors.

6. Apparatus

6.1 ~~Sieves—203.2 mm diameter 2.36 mm sieve.~~A 2.36 mm full height sieve and full height (50 mm) pan both having a diameter of 203.2 mm and conforming to Specification **E11**.

6.2 ~~Thermometric Device—203.2 mm diameter sieve pan.~~A thermometric device capable of measuring the temperature range within which the test is being performed readable to 1°C or better and having an accuracy of at least $\pm 0.5^\circ\text{C}$.

6.3 ~~Mixing Bowl—Large mixing bowl.~~A large metal or glass mixing bowl having a capacity of 5.5 L \pm (10 Pt \pm) ~~capacity:0.5 L for use with the mixer.~~

6.4 ~~Balance—Electronic gram scale or~~ Balances shall conform to the requirements of Specification **D4753** ~~balance scale.~~ The balance shall have readability without estimation of 0.01 g. The capacity of this balance will need to exceed the mass of the sieve plus sieve pan and saturated fiber. In general, a balance with a minimum capacity of θ -1,500 g ~~resolution is sufficient.~~

6.5 ~~Pan/Tray—A 457 mm × 279 mm or larger baking pan or tray for draining.~~tray.

6.6 ~~Mixer—A device capable of producing a speed between 60 and 90 rpm and having a dough kneader attachment. A stand mixer with a low setting typically meets this requirement.~~

6.7 ~~Hygrometer—Mixer with dough kneader attachment capable of 60 to 90 rpm on low setting (low rpms minimize damage to fibers).~~A device capable of measuring the humidity within which the test is being performed readable to 1 % or better.

6.8 ~~Miscellaneous—Items such as a large bowl, spoons, spatulas, paper towels, and a squirt/water bottle may be useful.~~

7. Reagents

7.1 ~~Test Water—Distilled or demineralized water is the only permissible test fluid. The use of tap water is not permitted.~~

8. Sampling and Testing Specimens

8.1 Obtain the sample from an undamaged packaged bale or bag that has no visible signs of tears or openings in the packaging. If the packaging of the bale or bag is torn, do not use the bale for testing.

8.2 ~~Prepare specimen by separating 90 g of fiber from an undamaged bag or bale taking~~Cut open the bale or bag and select 30 $\frac{1}{3}$ g from the top of the bag, each the top, middle, and bottom $\frac{1}{3}$ from the middle of the bag ~~and bale for $\frac{1}{3}$ from the bottom of the bag (heterogeneous a total of 90 g. Heterogeneous blends should be mixed at the same ratio by weight, as mass per manufacturer's specifications to equal 30 g).~~g. Place the fibers in a large mixing bowl and gently break the compressed fibers apart with your thumb and fingers. Mix thoroughly to make sure the sample is representative.

8.3 ~~Break the compressed fiber apart and allow~~Allow the fibers to condition at a room temperature 23°C -of $24^\circ\text{C} \pm 2^\circ\text{C}$ and at ~~with a relative humidity level of 50 %-~~ $50 \pm 10\%$ RH ~~$\pm 10\%$ for 24 h.~~at least 24 h. At the same time, allow the test water to equilibrate to this same temperature.

8.4 Determine and record the humidity to the nearest 1% and the temperature of the fibers and test water to the nearest 1°C. After conditioning, obtain 3 representative test specimens each having a mass of 15 ± 0.1 g.