Designation: D 2977 – 03

Standard Test Method for Particle Size Range of Peat Materials for Horticultural Purposes[1]

This standard is issued under the fixed designation D 2977; 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[2] covers measurement of the weight percentage of fractions of a peat material defined in terms of selected ranges of screen sizes.

1.2 *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:*

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[3]

D 3740 Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction[3]

D 2974 Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils[3]

3. Summary of Test Method

3.1 A representative test specimen of air-dried peat is separated into four designated fractions by means of an 8-mesh and a 20-mesh sieve. The fractions are: (*1*) foreign matter removed manually from the 8-mesh sieve, (*2*) coarse fiber retained on the 8-mesh sieve, (*3*) medium fiber through the 8-mesh sieve but retained on the 20-mesh sieve and (*4*) fine fibers and fines through the 20-mesh sieve. The weight percentage of each fraction is reported on the as-received basis.

4. Significance and Use

4.1 This test method separates peat material into arbitrary fractions based on particle size. Physical separation of peat material according to particle size provides a useful indicator of the properties of a peat specimen such as pore space, decomposition, etc. It provides a means of determining the amount of foreign matter not in a divided state such as sticks, stones, and glass.

4.2 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 D 3740 are generally considered capable of competent and objective testing/ sampling/inspection/ and the like. Users of this standard are cautioned that compliance with Practice D 3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D 3740 provides a means of evaluating some of those factors.

5. Apparatus and Material

5.1 *Oven*, regulated to a constant temperature of 105°C.

5.2 *Evaporating Dishes*, high silica or porcelain, not less than 75-ml capacity.

5.3 *Blender*, high-speed.

5.4 *Aluminum Foil*, heavy-duty.

5.5 *Porcelain pan, spoons, etc*.

5.6 *Mechanical Sieve Shaker*.

5.7 *Sieves*—U. S. standard 8-in. diameter 8 and 20-mesh sieves equipped with cover and bottom pan.

6. Preparation of Sample

6.1 Air-dry sample in accordance with Method II of Test Methods D 2974, and record the weight percentage of moisture removed by air-drying.

7. Procedure

7.1 Mix the air-dried sample thoroughly and place a 20-g specimen on the 8-mesh sieve. Secure the 8 and 20-mesh sieves equipped with cover and bottom pan and shake at a suitable speed for 10 min. Remove foreign matter from the 8-mesh sieve and weigh. Designate this fraction as foreign matter. Weigh the remaining fraction retained on the 8-mesh sieve and designate this fraction as coarse fiber. Weigh the fraction retained on the 20-mesh sieve and designate this fraction as medium fiber. Weigh the fraction found in the bottom pan and designate this fraction as fines.

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[1] This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.2 on Peats and Related Materials.

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[2] This test method is currently undergoing an extensive review by Committee D-18.

[3] *Annual Book of ASTM Standards,* Vol 04.08.

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

NOTE 1—If a mechanical sieve shaker is not available, hand sieving can be used. Conduct sieving by appropriate lateral and vertical motions accompanied by a jarring action. Continue until no appreciable change is noted in the sieve fraction.

8. Calculation

8.1 Convert the specimen weight and fraction weights to the as-received basis in accordance with Method II of Test Methods D 2974.

NOTE 2—If foreign matter is absent, conversion to the as-received basis is not necessary.

9. Report

9.1 Report the as-received weight of the fractions as a weight percentage of the as-received specimen as follows:
Foreign matter = fraction removed from 8-mesh sieve
Coarse fiber = fraction retained on 8-mesh sieve
Medium fiber = fraction retained on 20-mesh sieve
Fine fibers and fines = fraction through 20-mesh sieve (in pan)

10. Precision and Bias

10.1 *Precision*, Due to the nature of the soil or rock materials tested by this method it is either not feasible or too costly at this time to produce multiple specimens which have uniform physical properties. Any variation observed in the data is just as likely to be due to specimen variation as to operator or laboratory testing variation. Subcommittee D18.18 welcomes proposals that would allow for development of a valid precision statement.

10.2 *Bias*—There is no accepted reference value for this test method, therefore, bias cannot be determined.

11. Keywords

11.1 particle size; peat; sieving

SUMMARY OF CHANGES

In accordance with Committee D18 policy, this section identifies the location of changes to this standard since the last edition (71–(1998)) that may impact the use of this standard.

(1) Terminology D 653 and Practice D 3740 were added to the Referenced Documents Section.

(2) 4.2 was added to the Significance and Use Section.