Designation: D 1997 – 91 (Reapproved 2001)

Standard Test Method for Laboratory Determination of the Fiber Content of Peat Samples by Dry Mass[1]

This standard is issued under the fixed designation D 1997; 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 the laboratory determination of the fiber content of samples of peat (as defined in Classification D 4427) by dry mass. It also may be used for non-peat organic soil materials.

1.2 Because this test method is simple and requires no sophisticated equipment to perform, it is especially recommended for routine reconnaissance work, where large numbers of samples need to be tested and mineral contents are low.

1.3 The values stated in SI units are to be regarded as the standard.

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:*

D 2974 Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils[2]

D 4427 Classification of Peat Samples by Laboratory Testing[2]

E 11 Specification for Wire-Cloth Sieves for Testing Purposes[3]

3. Terminology

3.1 *Definition of Term Specific to This Standard:*

3.1.1 *fiber*—a fragment or piece of plant tissue that retains a recognizable cellular structure and is large enough to be retained on a 100-mesh sieve (openings 150 µm). Plant materials larger than 20 mm in smallest dimension are not considered fibers.

4. Summary of Test Method [4]

4.1 A known mass of undisturbed, undried peat is soaked in a dispersing agent (5 % sodium hexametaphosphate) for approximately 15 h. The material is then washed through a 100-mesh (150 µm) sieve (see Specification E 11) by application of a gentle flow of tap water. The fibrous material left on the sieve is oven-dried (at 105°C) until a constant mass is achieved. The mass of fiber is expressed as a percentage of the oven-dried mass of the original sample.

5. Significance and Use

5.1 The purpose of this test method is to standardize the procedure for determining fiber content of peat samples by dry mass.

5.2 A standard test method for determining the quantity of fibers in a peat sample is necessary not only for classifying samples (as in Classification D 4427), but is also a significant parameter in predicting or defining the many end uses of peat. In this regard, fiber content has been related to agricultural and horticultural end uses (such as mulching, soil enrichment, etc.), geotechnical measurements (such as strength, compressibility, permeability, etc.), industrial chemical uses (such as production of waxes, activated carbon, medicinals, etc.), and even energy uses (such as direct combustion, methanol production, gas yields, etc.).

6. Apparatus

6.1 *Sieve*, standard ASTM 100 mesh (150 µm) (see Specification E 11).

6.2 *Drying Oven*, capable of being set at 105°C ± 5°C.

6.3 *Balance*, capable of measuring at least to the nearest milligram.

6.4 *Standard Laboratory Stirrer*, capable of being set to 240 r/min.

6.5 *Beaker*, 1000-mL capacity.

6.6 *Large Funnel*.

[1] This test method is under the jurisdiction of ASTM Committee D 18 on Soil and Rock and is the direct responsibility of Subcommittee D18.22 on Soil as a Medium for Plant Growth.

Current edition approved April 15, 1991. Published June 1991.

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

[3] *Annual Book of ASTM Standards*, Vol 14.02.

[4] This test method is a modified version of one described in: Riley, J. L., "Laboratory Methods for Testing Peat," Ontario Peatland Inventory Project, Ontario Geological Survey Open File Report 5572, 1986, p. 21–22.

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