



Designation: D 4427 – 92 (Reapproved 1997)

## Standard Classification of Peat Samples by Laboratory Testing<sup>1</sup>

This standard is issued under the fixed designation D 4427; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This classification is a system for subdividing and assigning nomenclature to peat samples through laboratory tests.

NOTE 1—A field classification of peat is presently being developed by Subcommittee D18.18.

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 420 Guide for Investigating and Sampling Soil and Rock<sup>2</sup>
- D 1997 Test Method for the Laboratory Determination of the Fibre Content of Peat Samples By Dry Mass<sup>2</sup>
- D 2944 Test Method of Sampling Processed Peat Materials<sup>2</sup>
- D 2974 Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils<sup>2</sup>
- D 2976 Test Method for pH of Peat Materials<sup>2</sup>
- D 2980 Test Method for Volume Weights, Water-Holding Capacity, and Air Capacity of Water Saturated Peat Materials<sup>2</sup>

### 3. Terminology

#### 3.1 Definitions:

3.1.1 *peat*—a naturally-occurring highly organic substance derived primarily from plant materials. Peat is distinguished from other organic soil materials by its lower ash content (less than 25 % ash by dry weight (see Test Methods D 2974)), and from other phytogenic material of higher rank (that is, lignite coal) by its lower calorific value on a water saturated basis.

#### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *absorbency*—the maximum amount of moisture (by weight) that can be held by the peat. This is expressed in terms of the water-holding capacity as measured using Test Method D 2980.

3.2.2 *acidity*—this is expressed as the pH of the peat in water as measured using Test Method D 2976.

3.2.3 *ash content*—the percentage by dry weight of material remaining after the oven dry peat is burned, using the methods

described in Test Methods D 2974.

3.2.4 *botanical composition*—the dominant plant genus, genera, or informal plant group identified by visual inspection as comprising a portion of the fiber in the peat.

3.2.5 *fiber content*—the dry weight of fibers remaining on a 100 mesh sieve after wet sieving. Fiber content is expressed as a percentage of the original dry weight, using the method described in Test Method D 1997.

### 4. Significance and Use

4.1 The purpose of this classification is to standardize the naming of peat materials so that the peat-producer can better identify the product and the peat-consumer better select peat materials to meet requirements. This system may also be used for peat resource evaluations, environmental impact reports, and preliminary engineering studies. The parameters selected for use in this classification are ones which have been determined to relate to the agricultural/horticultural, geotechnical, and energy uses of peats.

### 5. Sample

5.1 Representative samples of the peat should be used. The size and type of sample required is dependent on the tests to be performed and the coarseness and moisture content of the peat. On taking the sample it should be accurately identified and placed in a sealed container to prevent moisture loss.

### 6. Basis for Classification

#### 6.1 Fiber Content:

6.1.1 *Fibric*—Peat with greater than 67 % fibers.

6.1.2 *Hemic*—Peat with between 33 % and 67 % fibers.

6.1.3 *Sapric*—Peat with less than 33 % fibers.

NOTE 2—These fiber content categories may be related to the widely used field assessment of the degree of humification ( $H$ ) developed by Von Post.<sup>3</sup> Fibric corresponds approximately to  $H_1 - H_3$ , hemic to  $H_4 - H_6$ , and sapric to  $H_7 - H_{10}$ .

#### 6.2 Ash Content (as measured by Test Methods D 2974):

6.2.1 *Low Ash*—Peat with less than 5 % ash.

6.2.2 *Medium Ash*—Peat with between 5 and 15 % ash.

<sup>1</sup> This classification is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.07 on Identification and Classification of Soils.

Current edition approved July 15, 1992. Published November 1992. Originally published as D 4427 – 84. Last previous edition D 4427 – 84.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.08.

<sup>3</sup> Korpijaakko, E. O., and Woolnough, D. F., "Peatland Survey and Inventory", *Muskeg and the Northern Environment in Canada*, University of Toronto Press, 1977.