



Designation: D5715 – 23

# Standard Practice for Estimating the Degree of Humification of Peat and Other Organic Soils (Visual/Manual Method)<sup>1</sup>

This standard is issued under the fixed designation D5715; 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.

## 1. Scope\*

1.1 This practice covers the visual determination of the degree of humification of peat and other highly organic soils by visually evaluating the color of the water expelled upon compression. This practice is not used for the determination of the degree of organic decomposition of organic matter in mineral soils.

1.2 *This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.*

1.3 *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.*

1.4 *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:<sup>2</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.22 on Media for Plant Growth.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D2944 Practice of Sampling Processed Peat Materials for Horticultural Purposes

D2974 Test Methods for Determining the Water (Moisture) Content, Ash Content, and Organic Material of Peat and Other Organic Soils

D4427 Classification of Peat Samples by Laboratory Testing

## 3. Terminology

### 3.1 Definitions:

3.1.1 For definitions of common technical terms used in this standard, refer to Terminology D653.

3.1.2 *organic soils, n*—soil with a high content of carbon-based compounds that are very compressible and have poor load sustaining properties.

3.1.3 *peat, n*—a naturally-occurring highly organic substance derived primarily from plant materials that is distinguished from other organic soil materials by its lower ash content (less than 25 % ash by dry mass—see Practice D2974) 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 *degree of humification, H, n*—is the present visual composition of peat and highly organic soils belonging in one of ten categories with H1 being the least decomposed and H10 being the most decomposed.

## 4. Significance and Use

4.1 The purpose of this practice is to standardize the routine description of peat and other organic soils for various uses (such as, peatland inventories and resource evaluations). This practice should be used to supplement other field information, such as, site location, surface morphology, surface vegetation, water table, moisture content, fiber content, wood content, and visually identifiable plant types and parts.

NOTE 1—This standard is a visual/manual method and is not meant to replace the more precise method of laboratory classification of peat (see Classification D4427). It should also be noted, this practice is independent of the determination of whether an articular deposit contains peat that is defined in Classification D4427 on the basis of laboratory determination of

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

ash content (see Test Method [D2974](#)).

## 5. Sample

5.1 The sample used for this practice can be collected using piston coring devices or simply as a grab sample (that is, by hand) or a block sample by any of a number of means as long as it still retains its original in-situ composition (that is, moisture as well as solid components).

NOTE 2—In practice, the sample is collected using a field reconnaissance peat sampler; but it may be collected by a more sophisticated piston sampler.

5.2 Samples shall be shipped and stored in containers and maintained in an environment which prevents the samples from altering from the original in-situ composition.

## 6. Procedure

6.1 A representative sample (a sphere approximately 38 mm in diameter (1.5 in.)) is picked up with the hand and squeezed firmly. The color of the water expelled between the fingers upon squeezing the sample or the amount of amorphous matter expelled is used along with the intactness of the original plant components, or both, to place the peat into one of the categories described in [7.2](#). A video describing the procedure can be obtained from the US Department of Agriculture Natural Resources Conservation Service (USDA NRCS).

## 7. Basis for Classification

7.1 Peats whose degree of humification ranges from H1 to H3 have been described as fibrous peat for geotechnical applications (fibric for other purposes). Materials that lie in the range H4 to H10 have been described as amorphous peat or highly organic soil for geotechnical applications (H4 to H6 hemic and H7 to H10 sapric for other purposes). For more precise classification of peat samples, follow the procedures described in [Classification D4427](#).

### 7.2 Peat Classification:

7.2.1 *H1*—Completely undecomposed peat that, when squeezed, releases clear colorless water. Plant remains are intact and easily identifiable. No amorphous material is present.

7.2.2 *H2*—Almost completely undecomposed peat that, when squeezed, releases yellowish water. Plant remains are still relatively intact. No amorphous material is present.

7.2.3 *H3*—Very slightly decomposed peat that, when squeezed, releases turbid brown water, but in which no amorphous peat passes between the fingers.

7.2.4 *H4*—Slightly decomposed peat that, when squeezed, releases dark brown water. No peat passes between the fingers but the plant remains are somewhat visibly altered and less distinct. The residue left in hand appears slightly pasty.

7.2.5 *H5*—Moderately decomposed peat that, when squeezed, releases very turbid water containing a small amount of amorphous granular peat through the fingers. The residue remaining in hand is strongly pasty in consistency and the tissues of the original source plants are difficult to recognize.

7.2.6 *H6*—Moderately decomposed peat that, when squeezed, releases through the fingers about one-third of the peat. The residue remaining after squeezing is strongly pasty. Very little plant structure is visible before squeezing; but, some small amount of intact debris becomes more visible after squeezing.

7.2.7 *H7*—Strongly decomposed peat that, when squeezed, releases through the fingers about one-half of the peat. The water released, if any, is dark and. The residue remaining after squeezing is primarily composed of amorphous material with little recognizable plant tissue.

7.2.8 *H8*—Very strongly decomposed peat that, when squeezed, releases through the fingers about two-thirds of the peat. The residue remaining after squeezing is primarily composed of amorphous material with very little intact plant tissue.

7.2.9 *H9*—Almost completely decomposed peat that, when squeezed, almost entirely releases through the fingers as a fairly uniform dark paste. Almost no recognizable plant structures are evident in the residue.

7.2.10 *H10*—Completely decomposed peat containing no discernible plant tissues. When squeezed, all of the peat releases through the fingers as a uniform dark paste.

## 8. Report: Test Data Sheet(s)/Form(s)

8.1 Record as a minimum, the following test specimen data:

8.1.1 The classification determined in [Section 7](#).

8.1.2 The color of the water expelled between the fingers upon squeezing the sample.

8.1.3 The amount and consistency of amorphous matter expelled between the fingers.

8.1.4 The intactness of the original plant components (how easily the components are discernable).

8.1.5 The degree of decomposition of the peat (no decomposition to completely decomposed).

8.1.6 Sample identification to include site identification, sampling location, technician initials, and if known, time and date of sampling.

8.1.7 Record other field information as applicable, such as, site location and altitude, surface morphology, surface vegetation, water table, moisture content, fiber content, wood content, and visually identifiable plant types and parts.

## 9. Keywords

9.1 classification; decomposition; humification; organic materials; peat; von Post