



Standard Test Method for Estimating the Degree of Humification of Peat and Other Organic Soils (Visual/Manual Method)¹

This standard is issued under the fixed designation D 5715; 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 a system for visually discriminating peat and other highly organic soils on the basis of degree of humification.

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 Fluids²
- D 2487 Classification of Soils for Engineering Purposes²
- D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)²
- D 2974 Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Materials²
- D 3740 Practice for the Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction²
- D 4427 Classification of Peat Samples by Laboratory Testing²

3. Terminology

3.1 Definitions:

3.1.1 For common definitions of terms in this standard, refer to Terminology D 653.

3.1.2 *degree of humification*—as defined by this classification refers to any one of ten categories (indicated by the letter “H”), with H1 being the least humified and H10 being the most humified. In general, the term *humification* relates to the degree of biochemical decomposition of original starting plant components. However, this terminology actually refers to the present visual composition of the peat and highly organic soils regardless of the genesis of this composition.

¹ 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 Soil as a Medium for Plant Growth.

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

3.1.3 *organic soils*—soil with a high organic content. In general, organic soils are very compressible and have poor load sustaining properties.

3.1.4 *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 mass—see Test Method D 2974) and from other phytogenic material of higher rank (that is, lignite coal) by its lower calorific value on a water saturated basis.

4. Significance and Use

4.1 The purpose of this classification is to standardize the routine description of peat and other organic soils for various uses (such as, peatland inventories and resource evaluations). This classification is a modified version of a widely used system originally developed by L. von Post.³ This classification 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.

4.2 It should be stressed that this is a visual/manual method and is not meant to replace the more precise method of laboratory classification of peat (see Classification D 4427). It should also be noted that this method is independent of the determination of whether a particular deposit contains peat that is defined in Classification D 4427 on the basis of laboratory determination of ash content (see Test Method D 2974).

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 D 3740 are generally considered capable of competent and objective testing/sampling/inspection/etc. 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. Procedure

5.1 The sample used for this classification can be collected 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). In practice the sample is usually collected using

³ von Post, L., “Sveriges Geologiska Undersöknings Torvinventering Och Nagre av Dess Hittills Vunna Resultat,” *Sr. Mosskulturfor. Tidskr.*, 1, 1992, pp. 1–27.

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

a Macaulay Sampler, Hiller Borer, or similar field reconnaissance peat sample; but, it may be collected by more sophisticated piston coring devices or simply as a grab sample (that is, by hand) or a block sample.

5.2 A representative sample 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 below.

6. Basis for Classification

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

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

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

6.4 *H4*—Slightly decomposed peat that, when squeezed, releases very dark 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.

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

6.6 *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.

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

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

6.9 *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.

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

6.11 Table 1 summarizes the von Post System³ and can be used to identify the degree of humification. 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 D 4427.

7. Precision and Bias

7.1 *Precision*—Test data on precision is not presented due to the nature of the soil materials tested by this test method. It is either not feasible or too costly at this time to have ten or more laboratories participate in a round-robin testing program. Also, it is either not feasible or too costly to produce multiple specimens that 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.

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

8. Keywords

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

TABLE 1 Determination of Degree of Humification or Decomposition

Degree of Humification	Nature of Material Extruded on Squeezing	Nature of Plant Structure in Residue
H1	Clear, colorless water; no organic solids squeezed out	Unaltered, fibrous, undecomposed
H2	Yellowish water; no organic solids squeezed out	Almost unaltered, fibrous
H3	Brown, turbid water; no organic solids squeezed out	Easily identifiable
H4	Dark brown, turbid water; no organic solids squeezed out	Visibly altered but identifiable
H5	Turbid water and some organic solids squeezed out	Recognizable but vague, difficult to identify
H6	Turbid water; 1/3 of sample squeezed out	Indistinct, pasty
H7	Very turbid water; 1/2 of sample squeezed out	Faintly recognizable; few remains identifiable, mostly amorphous
H8	Thick and pasty; 2/3 of sample squeezed out	Very indistinct
H9	No free water; nearly all of sample squeezed out	No identifiable remains
H10	No free water; all of sample squeezed out	Completely amorphous

SUMMARY OF CHANGES

In accordance with Committee D18 policy, this section identifies the location of changes to this standard since the last edition (95) that may impact the use of the standard.

- (1) Section 2.1 — Inserted references to D 653 and D 3740.
- (2) Section 3 — Inserted reference to D 653 for terms. Renumbered subsequent sections as needed.
- (3) Section 4.2 — Inserted as Note 1 standard reference to D 3740.
- (4) Section 7 — Updated precision and bias statements.
- (5) Added Summary of Changes section.
- (6) Corrected headquarters address for ASTM.

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