Designation: D5268 – 13

Standard Specification for Topsoil Used for Landscaping Purposes[1]

This standard is issued under the fixed designation D5268; 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 specification covers a physical evaluation of an inorganic soil containing a limited amount of organic material, relative to its use as a topsoil for horticultural purposes in construction. For classification, a full agricultural textural classification may be used.

1.2 The presence in the soil of the correct nutrients and pH status is necessary for healthy plant growth. This specification does not, however, cover a determination of the nutrients, nor their availability.[2]

NOTE 1—The nutrient content of topsoil is important and the nutrients usually evaluated are nitrogen, phosphate, and potassium. Nutrient deficiencies may be corrected using organic or inorganic fertilizers. Excess soluble salts should be examined as to their desirability. The acidity or alkalinity of the soil is also important. Excess acidity may be corrected by the application of lime. Excess alkalinity may be corrected by the application of sulfur or other suitable acidifying compounds. The latter item, in addition to lowering pH, also could be considered as an aggregate when considering the particle size distribution.

1.3 Typical general ranges of soil content are presented in Table 1. Soils falling within these ranges will generally form a suitable topsoil. It must, however, be recognized that in some geographic regions, concurrence with the values of Table 1 would be most difficult. In such cases, locally acceptable specifications would need to be developed.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *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:*[3]

D653 Terminology Relating to Soil, Rock, and Contained Fluids

D1140 Test Methods for Amount of Material in Soils Finer than No. 200 (75-µm) Sieve

D2974 Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils

D3740 Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction

D4753 Guide for Evaluating, Selecting, and Specifying Balances and Standard Masses for Use in Soil, Rock, and Construction Materials Testing

D4972 Test Method for pH of Soils

D6026 Practice for Using Significant Digits in Geotechnical Data

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 *Description of Term Specific to This Standard:*

3.1.1 *topsoil*—usually the original surface layer of grassland or cultivated land. It does not generally include soil from peat lands or other special areas, such as land disturbed by industrial activity. Topsoil is usually a darker shade of brown, grey, or red than the subsoil that lies immediately beneath it, because it contains organic matter intimately mixed with the mineral matter. Topsoil tends to be more friable and pervious than inorganic soils.

4. Significance and Use

4.1 When physically evaluating a soil, relative to its suitability to support plant growth (primarily grasses), tests must be made to determine the presence and the amount of organic matter, inorganic matter (sand, silt and clay), and deleterious materials.

[1] This specification 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] Nutrient testing procedures are found in the state Agricultural Experiment Station recommendations from the state within which the landscape is located: Black, C. A. (editor-in-Chief), "Methods of Soil Analysis," *Agronomy No. 9*, Vol 2, American Society of Agronomy, Inc., Madison, WI; and Hesse, P. R., *A Textbook of Soil Chemical Analysis*, Chemical Publishing Co., New York, NY, 1972.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

TABLE 1 Specification for Topsoil

Compositional Category	Percentage by Mass
Total Sample:	
Deleterious materials (rock, gravel, slag, cinder, roots, sod)	5 max
Material passing the No. 10 (2 mm) sieve:	
Organic material	2 to 20
Sand content	20 to 60
Silt and clay content	35 to 70
pH	5 to 7

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 D3740 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with Practice D3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D3740 provides a means of evaluating some of those factors.

5. Apparatus

5.1 *Sieves and Containers,* in accordance with Test Method D1140.

5.2 *Furnace,* capable of producing the required ashing temperature in accordance with Test Methods D2974.

5.3 *Balances*—Balances sensitive to 0.01 g for samples less than 100 g, sensitive to 0.1 g for samples between 100 g and 1000 g, or sensitive to 1 g for samples over 1000 g.

5.4 *Oven,* meeting the requirements of Specification E145 and capable of being regulated to a constant temperature of 105 ± 5°C.

6. Procedure

6.1 Select a representative sample of the topsoil as indicated in Test Method D1140.

6.2 Oven-dry the sample at 105 ± 5°C and determine its mass.

6.3 Screen the sample over a 2.00-mm (No. 10) sieve and identify this deleterious material fraction as rock, gravel, slag, cinder, roots, sod, and the like.

6.4 Take a sample of the fraction passing the 2.00-mm (No. 10) sieve and determine the percentage by mass of organic matter fractions by ashing at 440 ± 40°C using the techniques described in Test Methods D2974.

6.5 Take another sample and test in accordance with Test Method D1140 to find the percentage of the 2.00-mm (No. 10) sieve fraction that is retained on the 75-µm (No. 200) sieve. Take care to agitate the samples so that all organic matter is decanted away. The material that remains represents the sand content. Calculate the silt/clay content of the minus 2.00-mm (No. 10) sieve material as the difference between 100 and the sum of the sand and organic matter percentages.

7. Report: Test Data Sheet(s)/Form(s)

7.1 Record as a minimum the following general information:

7.1.1 Sample/specimen identifying information, such as Project No., Boring No., Sample No., Depth, etc.

7.1.2 Any special selection and preparation process, such as removal of gravel or other materials.

7.1.3 Technician name, method used and date.

7.2 Report the percentages by mass of the following:

7.2.1 Deleterious materials.

7.2.2 Organic material.

7.2.3 Sand content, and

7.2.4 Silt and clay content.

8. Keywords

8.1 landscaping; organic material; plant growth; soil; topsoil

SUMMARY OF CHANGES

Committee D18 has identified the location of selected changes to this standard since the last issue (D5268 – 07) that may impact the use of this standard. (Approved June 1, 2013.)

(1) Minor style and typos were changed.

(2) Section 7 expanded.