



Standard Test Methods for Organic Matter Content of Athletic Field Rootzone Mixes¹

This standard is issued under the fixed designation F1647; 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 These test methods cover the determination of the percent organic matter of a putting green root zone mixture using a loss on ignition method or the Walkley Black method. These test methods are useful for quantifying the organic matter content of volume ratio mixed root zone mixes. Test Methods D2974 is recommended for peat and other organic soils.

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

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use, nor the disposal of hazardous waste that may be generated. 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.* For a specific precautionary statement, see 8.2.6.

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:²

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

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

¹ These test methods are under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and are the direct responsibility of Subcommittee F08.64 on Natural Playing Surfaces.

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² 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.

3. Summary of Test Methods

3.1 *Method A*—Organic matter content is determined by loss on ignition (LOI).

3.2 *Method B*³—Organic matter content is determined by the Walkley-Black method; a dichromate oxidation procedure whereby the color intensity of the reaction product is determined colorimetrically.

4. Apparatus—Method A

4.1 *Oven*, capable of maintaining a constant temperature of $105 \pm 5^\circ\text{C}$.

4.2 *Muffle furnace*, capable of producing constant temperatures of $360 \pm 10^\circ\text{C}$.

4.3 *Evaporating dish or crucible*, made of high silica or porcelain of not less than 10-mL capacity.

4.4 *Desiccator*,

4.5 *Aluminum foil*, heavy duty, and

4.6 *Balance*, sensitive to 0.001 g.

5. Apparatus—Method B

5.1 *Soil grinder*,

5.2 *Balance*, sensitive to 0.01 g.

5.3 *Sulfuric acid*, concentrated (not less than 96 %),

5.4 *Potassium dichromate*, 1 N, made by dissolving 49.04 reagent-grade potassium dichromate in water, and diluting to a volume of 1 L,

5.5 *Spectrophotometer or colorimeter*, set at or adjustable to 610-nm wavelength.

5.6 *Standard*, 10 000 mg/L as CO_2 ,

5.7 *Pipets*, assorted, capable of measuring volumes of 0.1 to 10 mL,

5.8 *Glassware*, assorted, to include 250-mL Erlenmeyer flasks and funnels (75-mm ID), and

5.9 *Oven*, capable of maintaining a constant temperature of $105 \pm 5^\circ\text{C}$.

³ Procedure was based on procedure published in "Methods of Soil Analysis, Part 2: Chemical and Microbiological Properties," American Society of Agronomy Monograph No. 9, 2nd Ed.