



Designation: **D6567 – 00 (Reapproved 2014) D6567 – 14**

Standard Test Method for Measuring the Light Penetration of a Turf Reinforcement Mat (TRM)¹

This standard is issued under the fixed designation D6567; 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 measuring the amount of light that penetrates through a Turf Reinforcement Mat.
- 1.2 This test method does not provide light penetration values for TRM under variable normal sun and soil conditions. This test method determines nominal light penetration.
- 1.3 The values stated as a percentage are to be regarded as the standard. The values provided in foot-candles are for information only.
- 1.4 *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:*²

[D123 Terminology Relating to Textiles](#)

[D1776 Practice for Conditioning and Testing Textiles](#)

[D4354 Practice for Sampling of Geosynthetics and Rolled Erosion Control Products\(RECPs\) for Testing](#)

[D4439 Terminology for Geosynthetics](#)

[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](#)

3. Terminology

3.1 *Definitions:*

3.1.1 *light penetration, n*—the percentage of incandescent light that is measurable through a geosynthetic material from a static light source.

3.1.2 *turf reinforcement mat (TRM), n*—a long term non-degradable rolled erosion control product composed of a UV stabilized, non-degradable, synthetic fibers, nettings or filaments, or all of these, processed into three dimensional reinforcement matrices.

3.2 For definitions of other textile terms used in this test method, refer to Terminology [D123](#).

3.3 For definitions of other terms relating to geotextiles and geomembranes used in this test method, refer to Terminology [D4439](#).

4. Summary of Test Method

4.1 The nominal light penetration of TRMs is determined by observing the foot-candles on the light meter through a determined open area versus the amount of foot-candles on the light meter once the TRM is placed over the determined open area.

5. Significance and Use

5.1 Light penetration may be used to control the quality of many TRMs. Light penetration is not indicative of field performance and therefore is not recommended for specifications.

¹ This test method is under the jurisdiction of ASTM Committee [D35](#) on Geosynthetics and is the direct responsibility of Subcommittee [D35.05](#) on Geosynthetic Erosion Control.

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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.

5.2 The light penetration of TRMs may vary considerably depending on the composite materials used in the matrix of the mat or due to inconsistency within a given mat. To minimize variation, specific sample size and procedures are indicated in this test method to help ensure comparable results.

5.3 This test method may be used to determine the effect of different composite materials and make-up of TRMs.

5.4 This test method may be used for acceptance testing of commercial shipments of TRMs, but caution is advised since information on between laboratory precision is incomplete. Comparative tests as directed in 5.4.1 may be advisable.

5.4.1 In case of a dispute arising from differences in reported test results when using this test method for acceptance testing of commercial shipments, the purchaser and the supplier should conduct comparative tests to determine if there is a statistical bias between their laboratories. Competent statistical assistance is recommended for the investigation of bias. As a minimum, the two parties should take a group of test specimens that are as homogeneous as possible and that are formed from a lot of material of the type in question. The test specimens should be randomly assigned in equal numbers to each laboratory for testing. The average results from the two laboratories should be compared using Student's t-test for unpaired data and an acceptable probability level chosen by the two begun. If bias is found, either its cause must be corrected, or the purchaser and supplier must agree to the light of the known bias.

NOTE 1—The user should be aware that the makeup and possible movement of the composite materials, and the like, may affect the TRMs following the time when they are rolled up on rolls shipped and stored.

6. Apparatus

6.1 *Light Penetration Box*—See Fig. 1 (length view), and see Fig. 2 (width view).

NOTE 2—The light penetration box shown in Fig. 1 is built from 3/4 in. wood.

6.2 *Adjustable Rod with Light Bulb*—See Fig. 3.

6.3 *Light Meter*—The light meter must measure in foot-candles and be capable of measuring determined open area foot-candle reading as well as determined area with dense TRM material in place. A meter with a digital readout such as Extech Instruments Model 407026 Heavy Duty Light Meter is recommended.³

6.4 *Cutting Dies*—The cutting dies must be capable of cutting specimen dimensions at least 200 mm (8 in.) by at least 250 mm (10 in.).

NOTE 3—Due to possible loss of loose internal components during cutting and handling of many TRMs, care should be exercised to minimize these effects.

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³ The sole source of supply of the apparatus known to the committee at this time is Extech Instruments Corporation, 9 Townsend West, Nashua, NH 03063. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

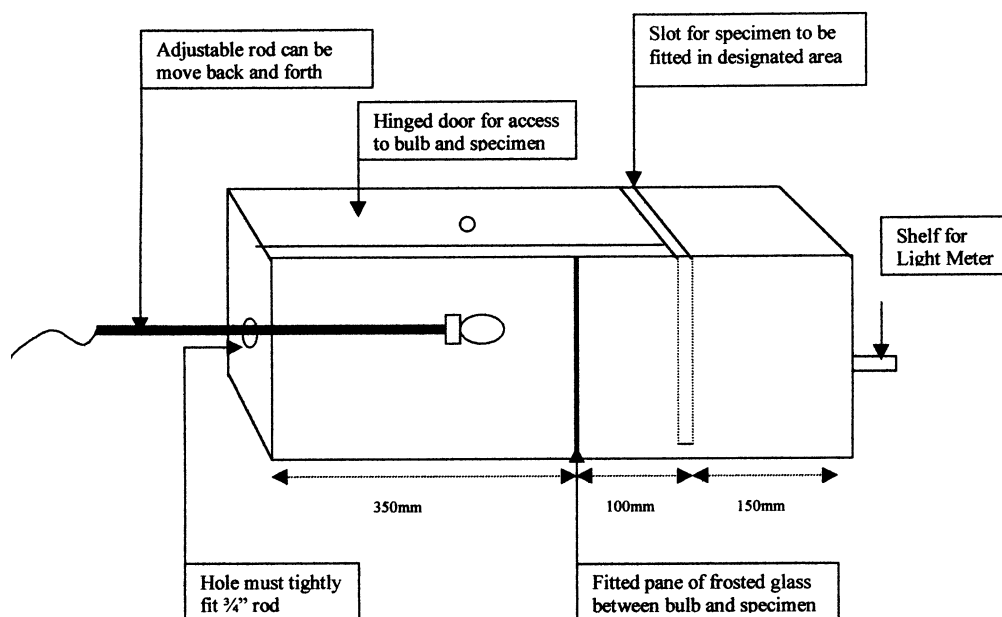


FIG. 1 Light Penetration Box