



# Standard Practice for Creating Surface Appearance Changes in Pile Yarn Floor Covering from Foot Traffic<sup>1</sup>

This standard is issued under the fixed designation D 6119; 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 practice covers the trafficking of pile yarn floor coverings in a laboratory in order to effect a change in surface appearance as a result of exposure to foot traffic under controlled conditions. A separate test method covers the assessment of surface appearance change using the CRI Reference Scales.

1.2 This practice is applicable to most changes in surface appearance observed in all types of carpet that are intended for residential or commercial use. It eliminates change in appearance associated with soiling by focusing on appearance change due to matting, flattening, or change in pile fiber configuration. Although “pile reversal” or “watermarking” is occasionally visible, this practice is not a reliable method for producing this phenomenon.

1.3 This practice may be used by mutual agreement between the purchaser and supplier to set purchasing specifications.

1.4 The values stated in SI units are to be regarded as the standard. The inch-pound units given in parentheses are for information only.

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.* Specific precautionary statements are given in Section 7.

## 2. Referenced Documents

### 2.1 ASTM Standards:

D 123 Terminology Relating to Textiles<sup>2</sup>

D 1776 Practice for Conditioning and Testing Textiles<sup>2</sup>

D 5684 Terminology Relating to Pile Yarn Floor Coverings<sup>3</sup>

### 2.2 TM-101 CRI Technical Bulletin:

Assessment of Carpet Surface Appearance Change Using

## CRI Reference Scales<sup>4</sup>

## 3. Terminology

### 3.1 Definitions:

3.1.1 *change in surface appearance, n*—for pile yarn floor coverings, the cumulative change in surface appearance between unexposed and exposed specimens due to crushing, loss of tuft definition, and matting.

3.1.2 *foot traffic units, n*—for pile yarn floor coverings, the number of passes by human walkers over a specific group of specimens.

3.1.2.1 *Discussion*—Foot traffic units should not be taken as the actual number of times each specimen is stepped on, but rather as the number of times that persons pass a designated spot on the walking course.

3.1.3 For definitions of other terms relating to pile yarn floor coverings used in this practice, refer to Terminology D 5684. For definitions of other textile terms used in this practice, refer to Terminology D 123.

## 4. Summary of Practice

4.1 Specimens are exposed to a specified number of foot traffics under controlled conditions.

## 5. Significance and Use

5.1 By exposure to sufficient traffic, this practice can be applied to any pile yarn floor covering which undergoes changes in surface appearance.

5.1.1 This practice does not simulate surface appearance changes due to soiling, pivoting, or rolling traffic, or traffic on stairs.

## 6. Apparatus

6.1 *Area for Foot Traffic*—A room that meets the following conditions:

6.1.1 The floor must be level, rigid, and free of high and low areas. Tile, concrete, or wood are satisfactory. This area should be kept free of pedestrian traffic other than the designated walkers.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.21 on Pile Floor Coverings.

Current edition approved Jan. 10, 2003. Published February 2003. Originally approved in 1997. Last previous edition approved in 1997 as D 6119–97.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 07.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 07.02.

<sup>4</sup> Available from CRI, P.O. Box 2048, Dalton, GA 30722.

6.1.2 The length of the test area shall be adequate for the specimens plus the carpet walk-off areas at both ends of each row of specimens. These areas are necessary to align the walkers to avoid twisting motion while stepping on the specimens, and shall be a minimum of 2 m (2 yards) long.

6.1.3 The width of the test area shall be adequate to layout a pattern with an odd number of lanes of specimens that require the walkers to automatically reverse their direction with each pass through the course. See Fig. 1 for typical traffic pattern.

6.1.4 *Physical Barriers*, such as pylons, are suggested to ensure straight-line entry and exit of the test area.

6.1.5 *Suitable Walk-Off Mats*, used to eliminate tracking of contaminants.

6.2 *Double-Faced, Pressure Sensitive Tape*, or other means which will hold the specimens in place and yet permit easy removal.

6.3 *Traffic Counting Device*—An accurate means of counting foot traffic units. Photoelectric or hand held manual counting devices are satisfactory. Install photoelectric counters at a sufficient height to prevent multiple counting from arm or leg motion. Impact counters which generate multiple signals for an individual foot step are not recommended.

6.4 *Vacuum Cleaner*—Dual motor, top-loading, upright vacuum cleaner with a rotating brush.

6.5 *Walker Personnel*—No minimum number is required. The number shall be small enough to prevent walkers from

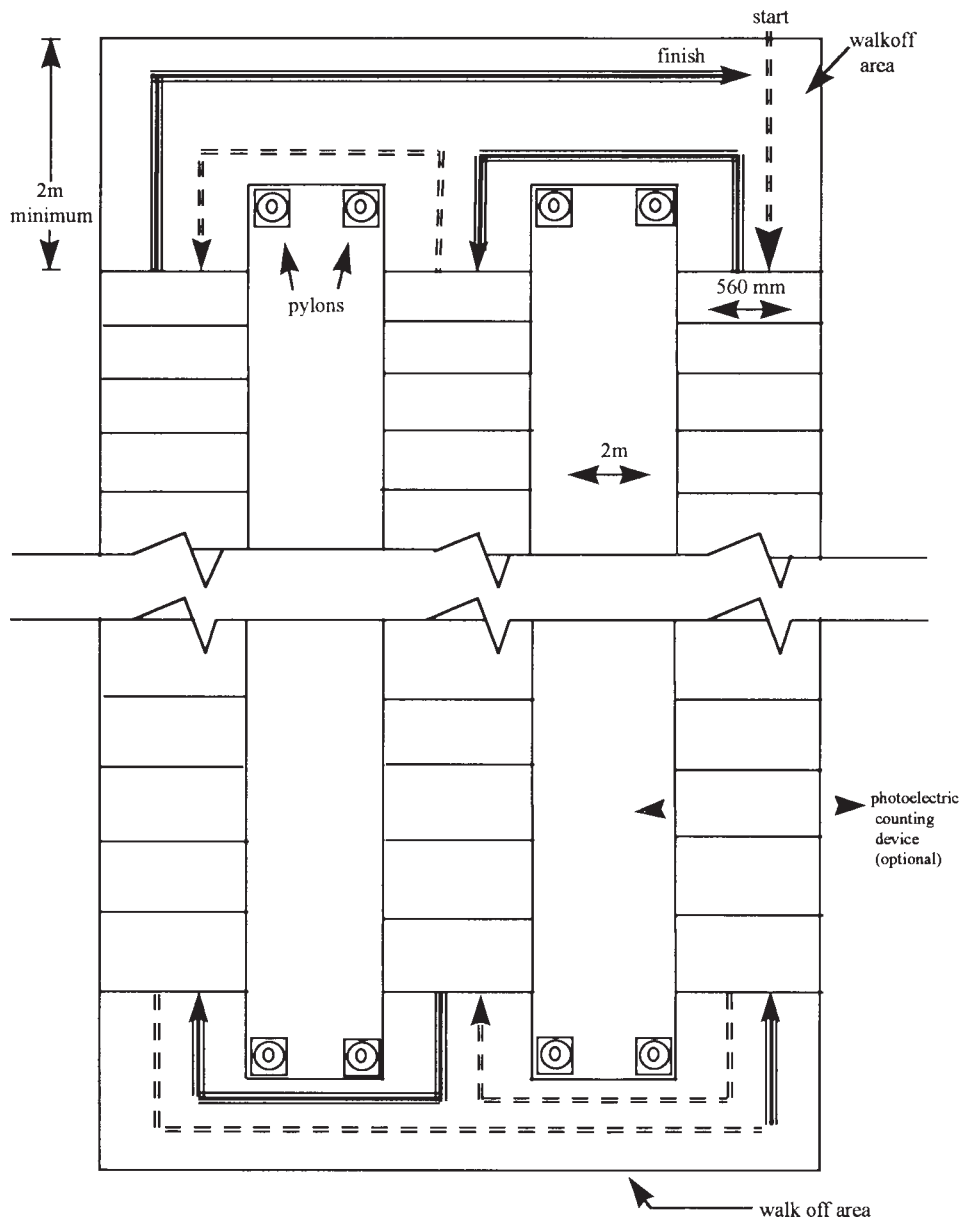


FIG. 1 Typical Walking Test Area

interfering with the progress of each other through the test area. Walking or athletic shoes must be worn by all walkers.

## **7. Hazards**

7.1 The carpet specimens shall be secured to the floor to avoid a slipping or tripping hazard. Inspect the specimens periodically and secure loose specimens immediately.

## **8. Test Specimens**

8.1 Test at least one specimen from the machine direction and one from the cross machine direction. Retain an original (unexposed) specimen for grading comparisons.

8.1.1 In cases where there is a choice of color, select the lighter color specimen as this facilitates rating.

8.2 Cut each individual specimen 230 by 560 mm (9 by 22 in.). The long dimension is always the width of the designated walker path. The specified width of the specimen is necessary to assure uniform traffic density from one site to another. The specimen length can be varied with no affect on test results.

8.3 *Marking Specimen*—To orient the carpet specimen with respect to machine direction, place a distinguishing mark such as an arrow on the back of the carpet. Place any other required identification on the back of each specimen before installation in the test area.

## **9. Conditioning**

9.1 Specimens need not be conditioned in the standard atmosphere (70°F, 65 % RH) for testing textiles.

## **10. Procedure**

10.1 Choose a traffic level high enough to produce a noticeable change in surface appearance. 20 000 foot traffic units is recommended for household applications.

10.2 Place the specimens adjacent to one another with the 560 mm (22 in.) dimension perpendicular to the traffic flow.

10.2.1 Group carpet specimens to minimize thickness variation from one specimen to another.

10.3 Secure the individual specimens in place. Do not use any cushioning material with the specimens, unless the test is specifically designed to test the effect of a specific cushion.

10.4 Walkers shall start at the designated start point and follow a walk path in accordance with the layout in Fig. 1.

10.4.1 Walkers shall use a normal walking pace without scuffing.

10.5 Vacuum all specimens uniformly every 1000 foot traffic units, normally while walkers are resting, and at completion of the exposure.

10.5.1 If significant contamination appears in the test area, the source shall be defined and eliminated.

10.6 Remove specimens without stacking. Allow all specimens to recover for a minimum of 16 h.

## **11. Report**

11.1 Report the following information:

11.1.1 Carpet specimens were exposed in accordance with this practice,

11.1.2 Identify the material or product sampled and the method of sampling used,

11.1.3 The number of foot traffic units, and

11.1.4 Detail any deviations from this practice.

## **12. Keywords**

12.1 appearance; carpet; foot traffic units; textile floor covering

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