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Standard Test Method for Tuft Element Length of Uncoated Pile Yarn Floor Coverings¹

This standard is issued under the fixed designation D6283; 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 the measurement of tuft length and pile yarn length of uncoated pile floor coverings.

1.2 Usually the tuft elements measured as directed in this test method will each be bound at only one binding site, but this test method also may be used for tuft elements bound at more than one binding site, provided that every tuft element measured is bound at the same number of binding sites.

~~1.3 The values stated in SI units are to be regarded as standard. The values stated in inch-pound units are provided as information only and are not exact equivalents. In case of referee decisions, the SI units shall prevail.~~

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This practice 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 practice to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ~~ASTM Standards:~~

~~D76 Specification for Tensile Testing Machines for Textiles~~ ASTM Standards:²

D123 Terminology Relating to Textiles

D1776 Practice for Conditioning and Testing Textiles

D2904 Practice for Interlaboratory Testing of a Textile Test Method that Produces Normally Distributed Data

D2906 Practice for Statements on Precision and Bias for Textiles

D5684 Terminology Relating to Pile Floor Coverings

3. Terminology

3.1 For definitions of terms relating to Pile Floor Coverings, D13.21, refer to Terminology D5684.

3.1.1 The following terms are relevant to this standard: carpet, cut pile yarn floor covering, finished, finished pile yarn floor covering, floor covering, loop pile yarn floor covering, pile, pile yarn floor covering, textile floor covering, tuft, tuft element, tuft leg, tuft length, tufted fabric.

3.2 For definitions of other terms related to textiles, refer to Terminology D123.

4. Summary of Test Method

4.1 The individual tuft elements of like character (cut or loop, and height) are removed from the test sample and placed, one at a time, in a grooved holder that maintains the tuft fibers in a straight line while the length of the tuft element is measured with a graduated scale and a magnifying glass.

4.2 In loop pile yarn floor covering, adjacent elements are first separated by cutting the connecting loops at the midpoint of the bend with sharp scissors before the tuft elements are withdrawn from the backing fabric.

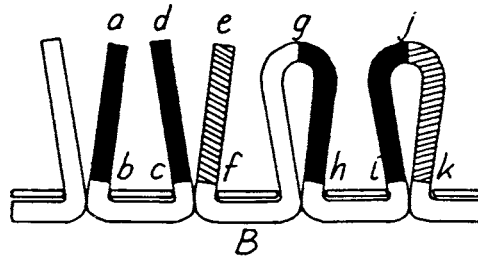
5. Significance and Use

5.1 The determination of the tuft length of pile yarn floor covering is useful in quality and cost control during the manufacture of pile yarn floor covering. Both appearance and performance can be affected by changes in this characteristic.

5.2 In case there are disputable differences between reported test results for two or more laboratories, comparative tests should be performed to determine if there is a statistical bias between them, using competent statistical assistance. At a minimum, test

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.21 on Pile Yarn Floor Coverings. Current edition approved March 1, 2005; 2012. Published April 2005; March 2012. Originally approved in 1998. Last previous edition approved in 2003 as D6283-98(2003); D6283-05. DOI: 10.1520/D6283-05.10.1520/D6283-12.

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.



ad = cut pile tuft element
 gj = loop pile tuft element
 ab, cd, ef, gh, ij, jk = tuft legs
 cd, ef = cut pile tuft leg pair
 ij, jk = loop pile tuft leg pair, a loop
 B = one binding site

FIG. 1 Cross-Section of Tufted Pile Yarn Floor Covering

samples should be used that are as homogeneous as possible, that are drawn from the material from which disputable test results were obtained, and that are assigned randomly in equal numbers to each laboratory for testing. The test results from the two laboratories should be compared using a statistical test for unpaired data, at a probability level chosen prior to the testing series. If a bias is found, either its cause must be found and corrected, or future test results must be adjusted in consideration of the known bias.

6. Apparatus

6.1 Grooved Specimen Holders—The holder shall be of a length at least 10 % longer than the longest tuft element to be measured. A 100-mm (4-in.) 4 in. (100 mm) length normally will be adequate.

6.1.1 The grooves shall be a V-shaped cross-section with a 1.05 rad (60°) angle at the bottom. The depth of the grooves and width across the top of the grooves should accommodate a variety of yarns according to the following example:

Yarns	Groove Widths, mm (in.)
Yarns	Groove Widths, in. (mm)
Coarse	4.6 (0.18)
Coarse	0.18 (4.6)
Medium	3.3 (0.13)
Medium	0.13 (3.3)
Fine	2.0 (0.08)
Fine	0.08 (2.0)

6.1.2 Additional grooves of intermediate width also may be used.

6.2 Scale, at least 100 mm (4 in.) long, graduated in 2-mm (0.10-in.) divisions.

6.2.1 If the scale is not transparent, it shall be no thicker than 1 mm (0.04 in.), at least 4 in. (100 mm) long, graduated in 0.10-in. (2 mm) divisions.

6.2.1 If the scale is not transparent, it shall be no thicker than 0.04 in. (1 mm).

6.3 Cover Plate, clear plastic to be used when nontransparent scale is used.

6.4 Magnifying Glass, 2× to 5×, mounted above the holder to permit centering the glass immediately above the cut ends of the tuft to avoid parallax in reading the scale.

6.5 Scissors, with sharp points.

7. Sampling

7.1 The basic sampling unit of uncoated pile yarn floor covering is a production roll.

7.2 Lot Sample—As a lot sample for acceptance testing, take at random the number of rolls, or pieces, of pile yarn floor covering as directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider the rolls, or pieces, of pile yarn floor covering to be the primary sampling units. In the absence of such agreement, take one roll or piece from the lot to be tested.

NOTE 1—An agreement between the purchaser and supplier requires taking into account the variability between rolls or pieces of pile yarn floor covering and between specimens from a roll or pieces of pile yarn floor covering to provide a sampling plan with a meaningful producer’s risk, consumer’s risk, acceptable quality level, and limiting quality level.

7.3 Test Sample—The test sample shall consist of a full width section of pile yarn floor covering cut from one end of each roll in the lot sample and shall be at least 100 mm (4 in.) 4 in. (100 mm) longer than the specimens required for the tests being conducted. Do not cut any laboratory sample from the seam end of the production roll.

7.4 Test Sample Area—The test sample area(s) is designated on the laboratory sample as follows.

7.4.1 For laboratory samples 3000 mm (120 in.) 120 in. (3000 mm) wide or wider, designate three test sample areas, one from each edge portion, no nearer to the edge than 5 % of the pile yarn floor covering width and one from the center portion.