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.

Designation: D7267 – 19a

Standard Test Method for Edge Ravel Resistance of Finished Loop Pile, Pile Yarn Floor Covering[1]

This standard is issued under the fixed designation D7267; 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 determination of the force required to ravel a straight sewn yarn from the edge of a loop pile, textile floor covering.

1.2 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.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

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]

D76 Specification for Tensile Testing Machines for Textiles
D123 Terminology Relating to Textiles
D1776 Practice for Conditioning and Testing Textiles
D5684 Terminology Relating to Pile Floor Coverings

3. Terminology

3.1 For definitions of terms relating to pile floor coverings, refer to Terminology D5684.

3.2 The following terms are relevant to this standard: carpet, constant-rate-of-extension, finished, finished pile yarn floor covering, floor covering, loop pile yarn floor covering, pile, pile yarn floor covering, textile floor covering, tuft, tuft leg, tufted fabric, edge ravel.

3.3 For definition of other terms related to textiles, refer to Terminology D123.

4. Summary of Test Method

4.1 A yarn end is raveled from a straight sewn, loop pile textile floor covering using a tensile testing machine. The force required to pull the tufted yarn from the edge of a tufted loop pile floor covering is measured and recorded. The required load or force to remove the yarn from the specimen is calculated and defined as "edge ravel strength." Floor covering installation experts recommend using a seam sealer to secure the cut edges of a textile floor covering.

5. Significance and Use

5.1 The satisfactory performance of a loop pile floor covering depends, to a considerable extent, on the installation and maintenance of the product. A loop pile floor covering with inadequate edge ravel strength may result in loops pulling out from the backing, resulting in an aesthetically displeasing appearance. Tuft rows located at the seam of a loop pile floor covering are the most susceptible to raveling.

6. Apparatus

6.1 *Tensile Testing Machine*—A constant-rate-of extension (CRE) type conforming to Specification D76, a constant rate of speed of 12 ± 0.5 in./min (300 ± 10 mm/min) is required. Full-scale loads range from 1 to 10 lb (0.545 to 4.53 kg) are generally adequate. A constant rate of traverse (CRT) type tensile testing machine conforming to the Specification D76 and operated at the same speed is permitted. There may be no overall correlation with CRE-type and CRT-type testing machines. Consequently, the two machines cannot be used interchangeably. In the case of controversy, the CRE-type testing machine shall prevail.

6.2 *Clamps and Jaw Faces*—The use of hydraulic or pneumatic, serrated or padded face, clamping systems with a minimum of 1 by 3 in. (25 by 75 mm) are recommended to reduce specimen slippage. The faces shall be parallel and have

[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 Floor Coverings.

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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.

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matching centers with respect to one another (in the same clamp) and to the corresponding jaw face of the other clamp.

7. Sampling, Test Specimens, and Test Units

7.1 *Lot Sample*—When performing acceptance testing for a sample lot, take at random the number of rolls or pieces of pile yarn floor covering as directed on 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.

7.2 *Laboratory Sample*—The minimum of 18 in. by width sampling for a specimen that is only 6 in. (150 mm) long and 2 in. wide creates substantial waste and does not add to the improvement of the test. It is recommended that the minimum carpet sample size be 10 in. (254 mm) by width of carpet roll or three separate carpet tile samples which allows for less waste and still provides for larger samples if needed.

7.3 *Test Specimens*—From each laboratory sample unit, cut three specimens with the longer side of the specimen parallel to the machine direction of manufacturing (see 7.4).

7.4 *Specimen Dimension*—Cut the specimens to a width/length dimension of 2 by 6 in. ± 0.1 in. (50 by 150 mm ± 2 mm), respectively.

7.5 *Specimen Sampling and Labeling*—Obtain specimens, representing a broad distribution along the length and width of each laboratory sample unit. Take one specimen near each edge of the sampling unit but, no nearer the edge than 5 % of the width, and take one specimen from the center area. Ensure that specimens are free of folds, creases or wrinkles. Label to maintain specimen identity.

7.6 *Preparation of Specimens*—With hemostats or like device, grasp a yarn end that is near to the edge of the specimen and that can be pulled the entire specimen length. Remove the entire tufted row of yarn from the specimen.

7.7 With scissors or knife remove the void backing area (created by removing the tufted row of yarn in 7.6), See Fig. 1.

7.8 Grasp the yarn from the tufted row next to the area trimmed from in 7.7, and pull the yarn away from the backing for distance of 1.5 to 2 in. (37.5 to 50.0 mm).

8. Preparation of Apparatus

8.1 *Tensile Testing Machine*—Prepare the machine according to the manufacture's instructions and using the conditions given in 8.1.1 and 8.1.2.

8.1.1 The distance between the clamps should be 1 ± 0.05 in (25 ± 1 mm). Select the "full scale force" range of the testing machine such that the maximum force occurs between 15 and 85 % of "full scale" force. Verify the testing machine for this range.

8.1.2 Select a testing machine speed of 12 ± 0.5 in. (300 ± 12 mm)/min.

9. Conditioning

9.1 Condition the laboratory sampling unit or the test specimens in the standard atmosphere for textile testing for 12 h or until the mass changes no more than 0.1 % in 2 h as directed in Practice D1776.

10. Procedure

10.1 Center and secure the length of the test specimen in the lower clamps with the trimmed edge facing the top clamp, as shown in Fig. 2. Set the distance between the upper and lower clamps to 1 in.

10.2 Secure the partially raveled yarn end in the upper clamps, as shown in Fig. 2.

10.3 Activate the machine to start the test. The recording device will record the force required to ravel the loop away from the specimen. The recording will show a series of peaks and valleys. Each peak represents the force required to ravel the yarn end from the edge of the carpet backing. Conduct the evaluation until there is approximately 6 in. (150 mm) of jaw separation. Then stop the machine, remove the yarn and specimen from the clamps, and return the clamp to the starting position.

11. Calculation or Interpretation of Results

11.1 From the recording device, determine and document the five highest peaks for each specimen of the sampling unit. Average the five highest peaks and record to the nearest 0.1 lbf (0.5 N).

11.2 If the yarn breaks during testing, record the breaking strength obtained, and report the "edge ravel strength was greater than the yarn strength."

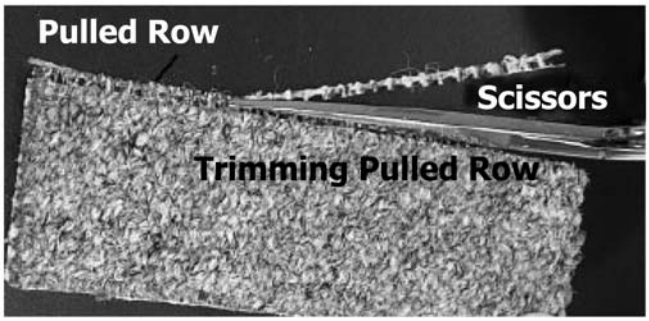

FIG. 1 Photograph of Trimming the Edge of a Pulled Tufted Row of Yarn