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**Textile floor coverings — Test methods
for the determination of fibre bind**

*Revêtements de sol textiles — Méthodes d'essai pour la détermination
du défibrage*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/PAS 11856 was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

Introduction

A test method for this parameter was originally required within ISO/TC 38/SC 12 (now ISO/TC 219) for use in conjunction with the work item *Textile floor coverings — Grading/Classification* (to have been ISO 12950 but subsequently abandoned).

Investigation of available methods highlighted two problems associated with measurement of fibre bind:

- a) there are no proven test methods to measure the property on all styles of carpet;
- b) the property of fibre bind is more associated with quality control testing than with a basic classification requirement.

It was therefore decided that the fibre bind would not be a specified characteristic in the proposed classification standard but work would continue on the topic in order to provide test method(s) should ISO/TC 219 decide to call up this property in a classification standard at a later date.

It was agreed that a document would be prepared detailing all the proposed test methods to enable TC 219 members to gain practical experience with the tests using the proposed methods on loop, cut, synthetic and natural pile carpets of known on-site performance, both good and poor.

Subsequently, it was agreed to progress the document to a Publicly Available Specification in order to enable comments to be received from a wider audience whilst the experimental work was being carried out.

Textile floor coverings — Test methods for the determination of fibre bind

1 Scope

This Publicly Available Specification describes the following six methods for determining fibre bind of textile floor coverings. Each test method states the type(s) of textile floor coverings for which the test is applicable.

- a) Lison Tretrad test:
 - Method A for mass loss for synthetic cut pile carpets;
 - Method B for appearance change of synthetic loop pile carpets.
- b) Modified Martindale machine test for mass loss/appearance change.
- c) Hexapod tumbler test for mass loss.
- d) Japanese fibre bind test.
- e) Usometer test for fuzzing and pilling of loop pile carpets.
- f) Fiberlock tester test for fuzzing and pilling of loop pile carpets.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*

ISO 1765, *Machine-made textile floor coverings — Determination of thickness*

ISO 1957, *Machine-made textile floor coverings — Selection and cutting of specimens for physical tests*

ISO 2424, *Textile floor coverings — Vocabulary*

ISO 8543, *Textile floor coverings — Methods for determination of mass*

ISO 9405, *Textile floor coverings — Assessment of changes in appearance*

ISO 10361, *Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler testers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2424 and the following apply.

3.1 mass loss per unit area

m_v
difference between the sample mass before and after the wear test, related to the area subjected to wear

3.2 relative mass loss

m_{rv}
ratio of mass loss per unit area, m_v , to the mass per unit area of the use surface

3.3 fibre bind

protrusion of fibres above the normal level after mechanical action, assessed using photographic standards

3.4 filament damage

where filaments that have been dislodged or broken away from the tuft loop or the binding site result in a fuzzy or hairy appearance of the loop surface of a pile yarn floor covering

4 Lisson Tretrad tests

4.1 Principle

The specimens of a textile floor covering are exposed at constant load and slippage and for a prescribed number of treads to the action of a four-footed wheel (Tretrad). The feet are fitted with interchangeable rubber soles.

4.2 Apparatus

4.2.1 Test apparatus

The Tretrad testing machine¹⁾ comprises a bedplate, the front edge of which is rounded with a 10 mm radius to simulate a stair edge. The faces of the bedplate shall be parallel to the track traversed by the Tretrad feet.

The wear surface is formed by the width of the Tretrad feet and the length of the track over which the Tretrad runs. The track shall be determined for each machine by measuring the distance between the front edge of the bedplate and the perpendicular projection of the Tretrad axis at its furthest point of reversal. The length of the track shall be on average (800 ± 20) mm.

The Tretrad is mounted in a frame that is able to rotate around an axis. The distance of this axis of rotation from the upper surface of the bedplate shall be 135 mm to 140 mm. The Tretrad comprising 4 legs with rigidly attached feet performs linear to-and-fro traverses over the bedplate. At the points of reversal, it remains stationary for about 1 s.

At the front edge of the bedplate, the Tretrad runs beyond the bed and is held there by a height-adjustable stopper in such a way that the lower edge of the foot (without sole material) at the perpendicular position of the Tretrad leg can be adjusted between -5 mm below and $+5$ mm above the level of the surface of the

1) Producer: Feingeräte Baumberg GmbH and Co. AG. Am Sportplatz 58, D 40789 Mannheim, Germany. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. Equivalent products may be used if they can be shown to lead to the same results.

bedplate. During the brief stoppage, the Tretrad at the forward point of reversal is rotated through an angle by which it is ensured that the test specimen is uniformly exposed to wear.

The diameter of the Tretrad is 225 mm. The peripheral speed of the Tretrad with sole covering is $(20 \pm 1) \%$ greater than the linear speed. The linear speed is $(0,28 \pm 0,02)$ m/s. This causes slippage of the feet on the test specimen in addition to the compressive action.

The surface of the Tretrad feet has a radius of curvature of 112,5 mm, a length of 100 mm and width of 55 mm. The ends of the contact surfaces are rounded with a radius of 4,0 mm.

The load applied by the Tretrad feet to the test specimen is the sum of the mass of the Tretrad and the mass of the frame in which the Tretrad is mounted. In the stationary state, the force shall be (150 ± 2) N.

NOTE A ring dynamometer can be used to check this force.

Two clamp mounts are used to hold the test specimen. By means of a weighted third clamp, the test specimen is subjected to a nominal tension of 200 N and mounted in the clamps at this pre-tension.

The suction nozzles which follow the to-and-fro traverses of the tread-wheels are flexibly mounted on a hinge. On their underside they are equipped with slides which under the dead weight of the suction nozzles rest on the edges of the test specimen not subjected to wear. An industrial suction cleaner is used to extract the abraded fibre.

The suction cleaner shall have the following characteristics:

— power rating	1 000 W
— water gauge pressure	12 kPa
— airflow	38 l/s

4.2.2 Sole material

The rubber soles²⁾ with which the Tretrad feet are covered are 190 mm long and 55 mm wide.

The material is vulcanized SBR rubber with silicic acid-based white filler additives. The soles have a wave profile on one face. The sole material is a special production for this purpose and its slip resistance is controlled. It shall have the following characteristics:

— Specific gravity (g/cm^3)	$1,32 \pm 0,03$
— Hardness (Shore A)	90 ± 3
— Thickness (mm)	$2,0 \pm 0,2$
— Wave length (mm)	$13,0 \pm 0,5$
— Amplitude (mm)	$4,0 \pm 0,3$
— Profile height (mm)	$0,6 \pm 0,1$
— Slip resistance (cN)	$280 \pm 10 \%$

2) Sales: Deutsches Teppich-Forschungsinstitut, Charlottenburger Allee 41, D-52080 Aachen, Germany. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. Equivalent products may be used if they can be shown to lead to the same results.

4.3 Sampling

Sampling shall be carried out in accordance with ISO 1957.

Take at least 4 test specimens from the laboratory sample, each 150 cm long in the longitudinal direction (i.e. in the direction of manufacture) and 10 cm wide, evenly distributed over the sample area.

4.4 Conditioning and preparation

Before testing is carried out, the test specimens shall be numbered or given an identification mark and cleaned with a suction cleaner. In the case of floor coverings with unsealed edges, the cut edges shall be treated so that no parts of the test specimen (e.g. pile tufts) can become detached during the test. Before testing the test specimens shall be conditioned for at least 72 h in the standard atmosphere for textiles specified in ISO 139.

4.5 Calibration of the apparatus

4.5.1 General

The test apparatus shall be checked with a calibration carpet and calibrated by adjusting the set number of to-and-fro traverse cycles. Calibration instructions are supplied with the calibration carpet³⁾.

4.5.2 Procedure

Carry out the tests in the standard atmosphere for textiles as given in ISO 139.

Fit new rubber soles to the Tretrad feet before each test.

Specimens with distinguishable directional lay of the pile (pile lean) shall be placed in accordance with carpet fitting practice on stairs so that pile lay is in the direction of the stair edge.

Perform the tests under continuous operation of the vacuum cleaner. Fit the test specimens over the 10 mm radius rounded edge of the table to the forward mount and clamp on to the table under the pre-tension of 200 N. After 500 to-and-fro traverses of the Tretrad, re-tension the test specimens at a pre-tension of 200 N.

Test specimens that, due to excessive extensibility, become distorted in mounting or during testing, shall be stabilized by suitable means, e.g. adhesive tape. Tiles shall be cut and assembled to table length and similarly adhesively fixed.

4.5.3 Test A — Determination of mass loss

Follow the test conditions specified in 4.5.2. Weigh the test specimens individually to the nearest 0,01 g (m_1), and mount them on the machine table as specified in 4.5.2.

Adjust the height of the wheels in position beyond the table (see Table 1) to the total thickness of the textile floor covering in accordance with ISO 1765.

Subject the test specimens to the calibrated number of to-and-fro traverses of the Tretrad (see 4.5.2).

On completion of the test, remove the specimens, suction clean them and expose them for at least 24 h in the standard atmosphere. Determine the weight of the tested specimens (m_2) to the nearest 0,01 g.

3) A standard carpet, supplied with calibration details is available from TFI, Charlottenburger Allee 41, 52068 Aachen, Germany. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. equivalent products may be used if they can be shown to lead to the same results.

Table 1 — Wheel height adjustment

Total thickness of specimen	Adjustment of wheel height
Thin textile floor coverings (< 10 mm)	– 5 mm
Thick textile floor coverings (> 10 mm)	0 mm

4.5.4 Test B — Fibre bind of synthetic loop pile carpets

The appropriate test conditions specified in 4.5.2 shall be applied. After the mechanical action, compare the specimens against the most appropriate of a pair of reference standard photographs⁴⁾ representing the borderline of acceptance for the fibre bind:

- of a fine gauge loop pile carpet;
- of a coarse loop pile carpet.

Bend the specimens to 180° using a radius of 15 mm to 20 mm. Assess dark-coloured carpets under good light conditions in front of a white background and bright-coloured carpets in front of a black background.

Carry out the assessment on three places on each specimen by at least three assessors independent of each other. Decide whether the specimens are better or worse than the photo standard.

4.6 Calculation and expression of results

4.6.1 Test A

Calculate the mass loss per unit area, m_v , in g/m² by the following equation:

$$m_v = (m_1 - m_2)/A$$

where

m_1 is the conditioned specimen mass in grams before testing;

m_2 is the conditioned specimen mass in grams after testing;

A is the tested area of the test specimen in square metres (product of width of Tread feet and measured length of the track according to 4.2.1).

Calculate the absolute and relative confidence limit of m_v results at a confidence level $1 - \alpha = 0,95$.

Calculate the relative mass loss, m_{rv} , by the following equation

$$m_{rv} = [m_v / (m_{A,P})] \times 100$$

where

$m_{A,P}$ is the mass per unit area of the pile surface or use surface of the textile floor covering in accordance with ISO 8543.

4) Reference Standard Photographs (Loop Pile Carpets) can be obtained from TFI, Charlottenburger Allee 41, 52068 Aachen, Germany. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. Equivalent products may be used if they can be shown to lead to the same results.

4.6.2 Test B

Express the pass-fail result as the median of the individual assessments of the assessors.

4.7 Test report

The test report shall contain the following information:

- a) reference to this Publicly Available Specification, i.e. ISO/PAS 11856;
- b) type of test carried out;
- c) complete identification of the product tested, including type, source, colour and manufacturer's reference numbers;
- d) previous history of the sample;
- e) test results according to 4.6;
- f) any deviation from this Publicly Available Specification which may have affected results.

5 Determination of inadequacy of fibre bind using a modified Martindale machine

5.1 Scope

The method uses a modified Martindale fabric abrasion machine to assess inadequacy of fibre bind in pile carpets by weighing the amount of fibre pulled out and by visual assessment of pilling/hairiness. It is applicable to all types of textile floor coverings.

5.2 Apparatus

5.2.1 Martindale fabric abrasion machine⁵⁾ — modifications to apparatus

A hexapod tumbler polyurethane stud as specified in ISO 10361 is screwed into a suitable spindle and sufficient weight added so that the total weight of the assembly is between 515 g and 520 g.

It is important to ensure that when the head is in position on the carpet specimen there is sufficient clearance between the top of the head and spindle holder to allow the abradant head assembly to move freely over the specimen.

5.2.2 Balance, capable of weighing to the nearest 0,01 g.

5.3 Sampling

Cut two specimens in accordance with ISO 1957, of suitable size to fit the base plate of the machine. Lightly vacuum clean the specimens to remove loose surface fibre. Condition them, use-surface upwards for 24 h in the standard atmosphere for testing, i.e. (65 ± 2) % relative humidity and (20 ± 2) °C (see ISO 139).

5.4 Test method

Mount the specimens on the base plate ensuring that they remain flat.

Mount the polyurethane head, spindle and additional weights so that the head is in contact with the carpet specimen. Repeat for the second specimen.

5) BS 5690, *Method for determination of abrasion resistance of fabrics*.

Switch on the machine and at intervals collect and save the loose fibre from the specimens by light finger tip brushing and forceps. It is suggested that the loose fibre be collected at 500, 1 000, 5 000, 10 000, 15 000 and 20 000 cycles to prevent loss during the test. At the same time assess the degree of pilling/hairiness according to:

- 5 = No change
- 4 = Slight change
- 3 = Moderate change
- 2 = Considerable change
- 1 = Severe change

After 20 000 cycles, condition and weigh the individual and total amounts of loose fibre collected per specimen during the test.

5.5 Results

5.5.1 Calculate the weight of fibre removed per specimen in g/m^2 .

5.5.2 Express the total weight of loose fibre as a percentage of the mass of pile per unit area above the substrate (see ISO 8543).

5.5.3 Calculate the mean value of the percentage weight of loose fibre from both specimens.

5.5.4 Assess the fibre length of fibre removed, i.e. whether the fibre is short or long in comparison to the tuft leg length.

5.5.5 Assess the degree of pilling/hairiness.

5.6 Test report

The test report shall contain the following information:

- a) weight of fibre collected at each stage per specimen;
- b) degree of hairiness/pilling at each stage;
- c) total mass loss per specimen, and mean of two specimens as percentage of surface pile mass per unit area above the substrate;
- d) subjective assessment of fibre length.

6 Determination of mass loss by hexapod tumbler test

6.1 General

This method is applicable to all cut pile textile floor coverings.

6.2 Procedure

Carry out a standard hexapod test in accordance with ISO 10361 except that instead of vacuum cleaning at the hourly stages and at the end of the test, collect and save the loose fibre from the specimens by light finger tip brushing and forceps.

Calculate the mass of fibre removed from the specimen in g/m^2 and the total mass of loose fibre as a percentage of the mass of pile per unit area above the substrate (see ISO 8543).

6.3 Test report

The test report shall contain the following information:

- a) weight of fibre collected at each stage;
- b) total weight loss as percentage of the mass of pile per unit area above the substrate.

7 Japanese fibre bind test

7.1 General

The Japanese fibre bind test method was established as a Japanese industrial standard (JIS) in 1974. The tester is a Japanese original apparatus developed to examine the fibre bind performance of textile floor coverings. Its use in Japan has shown that the method is suitable for reproducing loss of tuft definition, tufting out, wearing out, hairiness and/or cobwebbing phenomena that occur in actual use.

This method is applicable for assessment of fibre bind performance of textile floor coverings, mainly textile floor coverings with a pile.

7.2 Principle

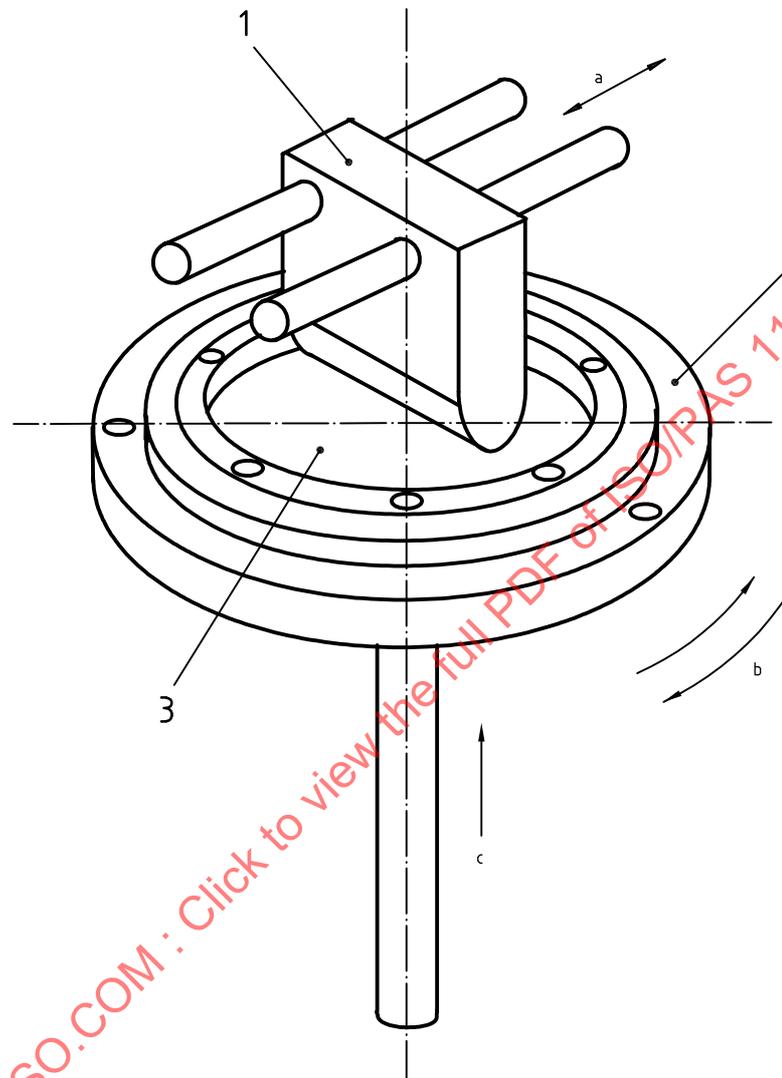
Mechanical friction is applied to the use-surface of a textile floor covering by means of the fibre bind tester and the changes of tuft and/or pile shape are evaluated by visual assessment. The appearance retention of tested specimens is compared against the criteria shown in the reference table. The test result is described as a grade between 5 and 1.

7.3 Apparatus

The fibre bind tester (Figure 1) consists of an abrasion part made from hard, chrome plated steel that performs a reciprocating motion on the specimen, and a test table that rotates applying constant pressure to the specimen. A cross sectional view and dimensions of principal parts of the apparatus are shown in Figure 2.

Typically, the height of the abrasion part is 155 mm, the length is 120 mm and width is 50 mm. The tip of the abrasion part is semicircular with a radius of 7,5 mm. Both ends in the length direction of the abrasion part are semicircular with a radius of 15 mm. The reciprocating motion speed of the abrasion part is 92,8 mm/s and its travel distance is 98 mm.

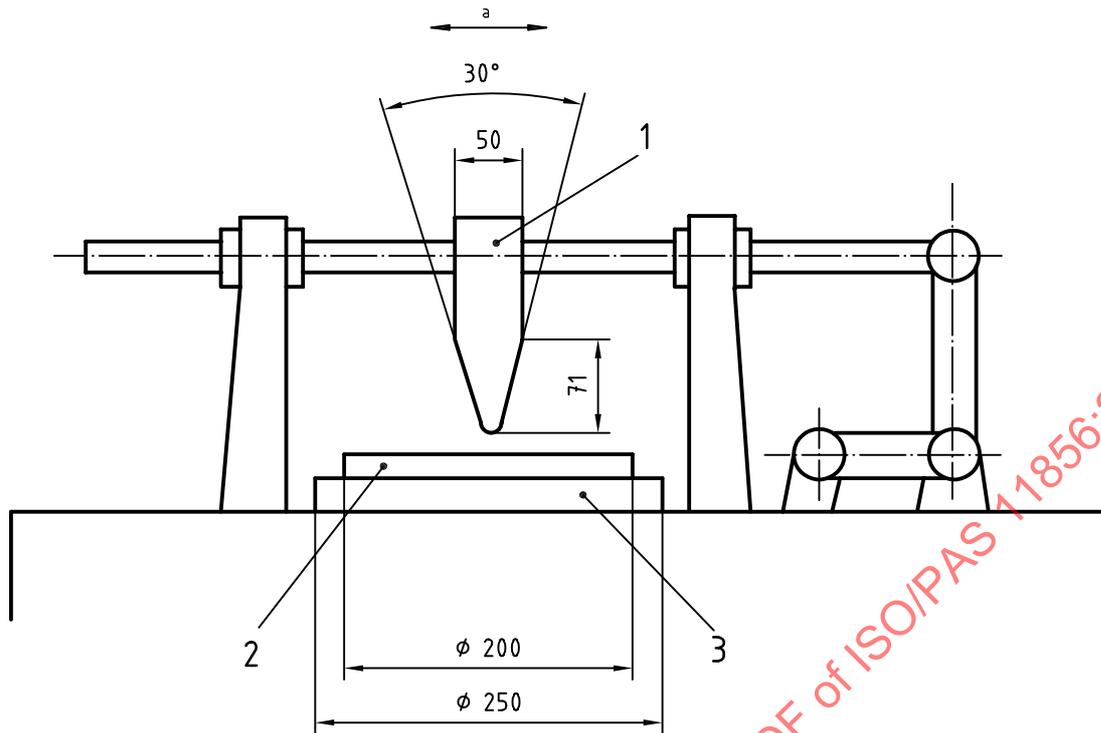
The test table is circular and measures 250 mm in diameter. It is capable of rotating at a speed of 14 rev/min ($0,233\ 3\ \text{s}^{-1}$) and reversing the direction of rotation every 5 min without delay. The specimen holder to fix the specimen on the test table is ring-shaped with a typical outside diameter of 200 mm and inside diameter of 170 mm. A load of 235 N, 157 N or 78,5 N is commonly applied to the specimen, and a suitable load is selected according to the purpose of test.

**Key**

- 1 abrasion part
- 2 test table
- 3 specimen

- a Reciprocating motion.
- b Rotation in the reverse direction every 5 min.
- c Application of load.

Figure 1 — Schematic drawing of Japanese fibre bind tester



Key

- 1 abrasion part
- 2 specimen holder
- 3 test table

^a Reciprocating travel distance (98 mm).

Figure 2 — Japanese fibre bind tester — Cross-sectional view

7.4 Atmosphere for conditioning and testing

The specimens shall be conditioned in the standard atmosphere for conditioning and testing textiles as specified in ISO 139.

7.5 Test specimens

Cut out four circular specimens, each measuring 200 mm in diameter, following sampling in accordance with ISO 1957.

7.6 Procedure

7.6.1 Test set-up

Mount the specimen on the test table. After the selected load is applied to the specimen, set the apparatus to run for 20 min in total.

7.6.2 Assessment of appearance retention of the use-surface

Arrange a piece of the original and of the tested specimen side by side in the same plane and orientated in the same direction. Illuminate the surfaces to be compared by north sky light or an equivalent source with an illumination of 400 lux or more so that the light is incident upon the surfaces at an angle of approximately 45°.

and the direction of viewing is along the normal to the plane of the surfaces. Make the assessment according to the criteria described in Table 2 and give the corresponding grade to the tested specimen. Intermediate grades may be given.

Table 2 — Criteria for appearance change of the tested specimen

Grade	Criterion for appearance change
5	When the original specimen is compared with the tested one, the pile shape is not appreciably changed.
4	When the original specimen is compared with the tested one, slight change of the pile shape is noticed.
3	When the original specimen is compared with the tested one, moderate change of the pile shape is noticed, e.g. the hairiness is observed on the surface of the tested specimen.
2	When the original specimen is compared with the tested one, severe hairiness is formed on the surface, and the pile shape is changed.
1	When the original specimen is compared with the tested one, a very severe appearance change, e.g. cobwebbing, is noticed, and the pile shape has disappeared.

7.7 Test report

The test report shall include the following information:

- a) type of test;
- b) load used for test (N);
- c) grade for tested specimen.

8 Usometer test

8.1 Scope

This test method is applicable to all loop pile textile floor coverings and is intended to assess the susceptibility of the carpet to fuzzing and pilling in use.

8.2 Apparatus

8.2.1 Test chamber

The test chamber is cubic with 300 mm sides. There are two cubes on the usometer machine each having two removable faces. These faces are opposite each other and are at right angles to the direction of rotation, forming lids to the cubes. The test specimens are mounted on the inside surfaces of these lids.

The speed of rotation is typically 50 revs/min ($0,833\ 3\ \text{s}^{-1}$). After 250 revs in one direction, there is an 8 s pause before the machine reverses direction.

8.2.2 Tubes

There are two lead-weighted tubes to each cube, of weight 326 g, diameter 32 mm and length 152 mm.

8.3 Standard atmosphere

The standard atmosphere for conditioning and testing shall be (65 ± 2) % relative humidity and (20 ± 2) °C. (See ISO 139.)

8.4 Test specimens

Select four specimens per sample in accordance with ISO 1957, each 240 mm × 240 mm. Mark each specimen on the back with the direction of manufacture. Retain an additional specimen of at least 150 mm × 150 mm for comparative purposes.

8.5 Test procedure

Test two specimens simultaneously in each chamber.

Fix the specimens to the inside of the four lids with double-sided tape. The direction of manufacture should be in the same direction as the direction of rotation of the test chamber.

NOTE For foam-backed carpets, it is necessary to pre-fix some polyethylene sheeting to the back of the specimens to prevent damage when they are removed at the end of the test.

Fit one lid to each chamber and clamp securely in place. Rotate the chamber through 180°, insert the two lead-weighted rubber tubes into each box and then fit the two remaining lids.

Check that all the clamps are securely fastened, pre-set the counter for 36 000 revs and switch on (36 000 revs takes approximately 10 h).

At the end of the test, remove the four specimens and assess them.

8.6 Assessment

Assess the degree of pilling/fuzzing separately according to the following grading scheme:

- 5 = No change
- 4 = Slight change
- 3 = Moderate change
- 2 = Considerable change
- 1 = Severe change

Carry out the assessment out under the lighting conditions specified in ISO 9405.

8.7 Test report

The test report shall include the following information:

- a) pilling grade for the four specimens;
- b) fuzzing grade for the four specimens;
- c) whether the pills are loose or attached.

9 Determination of filament damage in loop pile yarn floor covering

9.1 Method 1 (North American)

9.1.1 Scope

This test method describes a procedure using the Fibrelock tester to evaluate the resistance to filament damage and/or filament release of loop pile yarn floor covering.

WARNING The testing and evaluation of a product against this test method may require the use of material and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this test method has the responsibility of consulting the appropriate authorities and of establishing appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

9.1.2 Principle

The Fibrelock tester, covered with hooked tape, is rolled to-and-fro in the machine direction on the loop pile surface for a specified number of strokes. The filament damage is determined under specific lighting conditions using the Canadian Carpet Institute (CCI) standard reference photographs.

9.1.3 Apparatus and materials

9.1.3.1 Viewing cabinet⁶⁾, designed for standard illumination and simultaneous viewing of the photographic standards and the test specimens being evaluated. The cabinet shields the test specimens from external light and illuminates them using north sky daylight [600 lux (55 fast candles)] or more.

9.1.3.2 Hooked tape⁷⁾, 50 mm ± 2 mm in width, with approximately 48 hooks per square centimetre, secured to the circumference of the metal cylinder.

9.1.3.3 Fiberlock tester⁸⁾, consisting of a metal cylinder free to rotate on a spindle of a roller with the following parameters:

— diameter	40 mm ± 1 mm
— width	88 mm ± 2 mm
— mass	900 g ± 10 g

9.1.3.4 CCI standard reference photographs⁸⁾, a set of standard photographs to evaluate the degree of filament damage of the pile loop floor covering.

9.1.3.5 Portable hand-held vacuum cleaner.

6) Information on the viewing cabinets can be obtained from the Canadian Carpet Institute (CCI), 130 Slater Street, Suite 1050, Ottawa, Ontario K1P 6E2.

7) Supplied by QTE – 204 West Industrial Blvd., Dalton, Georgia 30720. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. Equivalent products may be used if they can be shown to lead to the same results.

8) Supplied by CCI. This information is given for the convenience of users of this Publicly Available Specification and does not constitute an endorsement by ISO of the product. Equivalent products may be used if they can be shown to lead to the same results.