



SLOVENSKI STANDARD
SIST EN 985:2001

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Tekstilne talne obloge - Preskus s stolom na kolescih

Textile floor coverings - Castor chair test

Textile Bodenbeläge - Stuhlrollenprüfung

Revetements de sol textiles - Essai a l'appareil a roulettes

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 985

July 2001

ICS 50.080.60

Supersedes EN 985:1994

English version

Textile floor coverings - Castor chair test

Revêtements de sol textiles - Essai à l'appareil à roulettes

Textile Bodenbeläge - Stuhlrollenprüfung

This European Standard was approved by CEN on 2 June 2001.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN 985:2001 (E)

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 134 "Resilient and textile floor coverings", the secretariat of which is held by BSI.

This European Standard replaces EN 985:1994.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies three methods for assessing the behaviour of textile floor coverings under the movement of a castor chair.

- Test A: Assessment of the wear behaviour of textile floor coverings under the castor chair,
- Test B: Assessment of the change in colour (glossing) of needed floor coverings without a pile,
- Test C: Assessment of the general structural integrity of textile floor coverings.

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 20139, *Textiles — Standard atmospheres for conditioning and testing (ISO 139:1973)*.

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

EN 1471, *Textile floor coverings — Assessment of changes in appearance*.

EN 12529:1998, *Castors and wheels — Castors for furniture — Castors for swivel chairs — Requirements*.

ISO 2424, *Textile floor coverings – Vocabulary*.

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3 Terms and definitions

For the purposes of this standard the terms and definitions given in ISO 2424 apply.

4 Principle

A textile floor covering is submitted for a prescribed number of cycles to the action of three castors which produce an eccentric turning motion.

At the end of each test:

- the change in appearance in accordance with EN 1471 is assessed after 5 000 cycles and 25 000 cycles (Test A);
- the change in colour by means of grey scales is assessed after 750 cycles (Test B);
- the extent of deterioration of the specimen is assessed after 10 000 or 25 000 cycles (Test C).

5 Test apparatus (Figure 1)

5.1 Circular, rotating testing platform, of diameter (800 ± 5) mm on which the specimen support plate is mounted. The rotation speed of the testing platform shall be (19 ± 1) r/min and the direction of rotation shall reverse at (180 ± 20) s intervals. The stop time between reversals shall be (5 ± 1) s.

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5.2 Castor assembly, comprising a vertical shaft set in a bearing and a plate, R, on which the castors are mounted. This castor assembly is offset at a distance of (198 ± 1) mm from the centre of the testing platform.

The three castors (**5.3**) are arranged concentrically at 120° intervals around the centre of the plate and at a distance of (130 ± 1) mm from the centre of the plate. They are free to rotate so that they follow the rotation of the castor assembly. The rotation speed of the castor assembly shall be (50 ± 1) r/min.

The castor assembly when loaded has a mass of (90 ± 1) kg that is divided equally over the three castors.

The distance under load between the castor assembly plate R and the load/drive plate C (castor plate clearance) shall be more than 3 mm at the point of measurement (see Figure 1).

NOTE 1 The area of stress produced on the test specimen is determined by the distance between the axes of revolution of the castor chair assembly and of the testing platform and also by the distance of the castors from the centre of the plate. The stressed area is approximately $0,3 \text{ m}^2$

NOTE 2 The relationship between the rotation speed of the testing platform and that of the castor assembly causes a sharp reverse movement of the castors near the edges of the stressed area.

5.3 Castor set, comprising three castors as illustrated in Figure 2 with the following dimensions:

diameter of castors	(50 ± 2) mm
width of castors :	(20 ± 2) mm
radius of curvature of castor tread:	(130 ± 5) mm
crank distance:	(32 ± 2) mm

The distance between any two castor mountings shall be (225 ± 5) mm.

The castors shall be Type H in accordance with EN 12529:1998. The castor treads shall be made from polyamide having hardness between 90 and 100 Shore scale A units and shall be replaced after every 2 million cycles of the testing platform, or earlier if necessary.

5.4 Lifting device, to raise the castor assembly above the testing platform when the apparatus is stationary.

5.5 Cycle counter, for setting the number of cycles of the testing platform.

5.6 Suction device, with a flow rate of 25 to 30 l/s mounted over the entire width of the stressed part of the specimen, the height of this device being adjustable.

5.7 Specimen support, comprising a circular sheet of rigid plastic (e.g. polymethylmethacrylate) of (7 ± 2) mm thickness and diameter (800 ± 5) mm. The support is placed on the testing platform with the holes in the support locating on studs on the testing platform to prevent slippage.

5.8 Metal clamping ring, of height (10 ± 2) mm, external diameter (700 ± 5) mm and internal diameter (680 ± 5) mm, to hold loose laid tiles, or carpet over an underlay, in position during the test.

5.9 Brush vacuum cleaner, with rotating brush, driven by an independent motor.

6 Sampling and preparation of specimens

6.1 Sample the material to be tested according to ISO 1957.

6.2 Prepare the specimens as follows.

6.2.1 Test A

Cut either three semi-circles or six quadrants of radius (350 ± 3) mm ensuring that the edges are parallel to and/or at right angles to the direction of manufacture. Cut also a reference specimen with dimensions of

(200 ± 2) mm x (200 ± 2) mm. In all cases mark the specimens with the direction of manufacture.

If testing only one textile floor covering a third specimen is required to fill the gap left by removal of the 5 000 cycle specimen (see **8.4.2**).

6.2.2 Test B

If possible, test different batches/colour ways during each test.

Cut either one semi-circle or one quadrant of radius (350 ± 3) mm from each batch/colour. Cut also a reference specimen, with dimensions of (200 ± 2) mm by (200 ± 2) mm. In all cases mark the specimens with the direction of manufacture.

If testing only one textile floor covering, specimens are required to fill in the gaps.

6.2.3 Test C

Cut two semicircles from the sample.

If testing only one textile floor covering a third specimen is required to fill the gap left by removal of the 10 000 cycle specimen (see **8.8.1**).

7 Atmosphere for conditioning and testing

Condition and test the specimens in the standard atmosphere for testing textiles as defined in EN 20139, i.e. relative humidity (65 ± 2) % and temperature (20 ± 2) °C, for at least 24 hours.

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8 Procedure

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8.1 Mounting of the specimens

Mount two semicircular specimens or four quadrant specimens on the specimen support (**5.7**) using double sided adhesive tape or adhesive net applying the tape or net over the whole area of the specimen support plate. Ensure that there are no gaps between the specimens and top tape to prevent movement or delamination.

If testing over an underlay or testing loose lay tiles, use the clamping ring (**5.8**) to hold the specimens in place.

Prior to testing clean the specimens with the upright vacuum cleaner (**5.9**), making four forward and backward passes and ensuring that all the area is covered.

8.2 Verification of the castors

Check that the castors rotate and swivel freely and are free of fibre remaining from previous tests.

8.3 Preparing the apparatus

8.3.1 Place the specimen support (on which the test specimens are mounted) onto the testing platform, ensuring that the holes in the specimen support engage the studs on the testing platform.

8.3.2 Lower the castors slowly into contact with the test specimens.

8.3.3 Place the suction device (**5.6**) as close as possible to the specimens but without touching. Start the suction device so that it remains running throughout the test except for Test C.

8.4 Test A - stage 1

8.4.1 Set the number of cycles on the counter (**5.5**) to 5 000 and start the machine.

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8.4.2 When the machine stops after 5 000 cycles of the testing platform inspect the specimen(s) for any delamination and then remove the specimen(s) intended for assessment after 5 000 cycles.

NOTE Inspection prior to removing from the plate is important, as the material can become damaged just by the action of removing the specimen.

8.4.3 Brush vacuum the 5 000 cycle specimen(s) immediately on removal from the machine. Brush four times both with and against pile lean using a slow movement and ending in the direction of pile lean.

8.4.4 Condition the 5 000 cycle specimen(s) in the standard atmosphere for testing textiles (clause 7) for at least 24 hours before assessing, laying the specimen(s) flat with use surface uppermost, or hanging them freely.

8.5 Test A - Stage 2

8.5.1 Mount unworn specimens of the floor covering on the specimen support in place of the removed 5 000 cycle specimens.

8.5.2 Repeat 8.3.1 to 8.3.3, set the number of cycles on the counter (**5.5**) to 20 000 and start the machine.

8.5.3 When the machine stops, inspect the specimen(s) for any delamination, remove the specimens, discard the 20 000 cycle specimen and proceed with the 25 000 cycle specimen(s).

8.5.4 Brush vacuum the 25 000 cycle specimen(s) immediately on removal from the machine. Brush four times both with and against pile lean using a slow movement and ending in the direction of pile lean.

8.5.5 Condition the 25 000 cycle specimen(s) in the standard atmosphere for testing textiles (clause 7) for at least 24 hours before assessing, laying the specimen(s) flat with use surface uppermost, or hanging them freely.

8.6 Test B

8.6.1 Set the number of cycles on the counter (**5.5**) to 750 and start the machine.

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8.6.2 When the machine stops inspect the specimen(s) for any delamination and remove the specimen(s).

8.6.3 Condition the specimen(s) in the standard atmosphere for testing textiles (clause 7) for at least 24 hours before assessing, laying the specimen(s) flat with use surface uppermost, or hanging them freely.

8.7 Test C - Stage 1

8.7.1 Set the number of cycles on the counter (5.5) to 10 000 and start the machine the suction device being off.

8.7.2 When the machine stops after 10 000 cycles of the testing platform, inspect the specimen(s) for any delamination and remove the specimen(s) intended for assessment.

8.7.3 Condition the 10 000 cycle specimen(s) in the standard atmosphere for testing textiles (clause 7) for at least 24 hours before assessing, laying the specimen(s) flat with use surface uppermost, or hanging them freely.

8.8 Test C - Stage 2

8.8.1 Mount unworn specimens of the floor covering on the specimen support in place of the removed 10 000 cycle specimen(s).

8.8.2 Repeat **8.3.1** to **8.3.3**, set the number of cycles to 15 000 and then start the machine.

8.8.3 When the machine stops, inspect the specimen(s) for any delamination and remove the specimens, discard the 15 000 cycle specimen(s) and proceed with the 25 000 cycle specimen(s).

8.8.4 Condition the 25 000 cycle specimen(s) in the standard atmosphere for testing textiles (clause 7) for at least 24 hours before assessing, laying the specimen(s) flat with use surface uppermost, or hanging them freely.

9 Assessment

9.1 Test A

9.1.1 Structural integrity assessment

Examine the tested specimens to observe any delamination or breakdown of the structure caused during the test; do not include any damage caused by removal of the material from the plate.

9.1.2 Appearance retention assessment

Use the assessment conditions specified in EN 1471. Lay the specimens tested at 5 000 cycles and 25 000 cycles side by side together with the unfatigued reference specimen. In cases where the test has produced uneven appearance change in the form of rings due to non-uniform action of the castors (usually at the inner and outer boundaries of the stressed area but sometimes elsewhere also), perform the appearance assessment on parts of the stressed area unaffected by the rings described.

Assess the appearance retention grade by comparing the contrast between the unfatigued specimens and each of the two fatigued specimens with the contrast shown by the standard reference scale (EN 1471) nearest in type to the tested floor covering. Assign grades to the nearest 0,5 grade.

9.2 Test B - Colour change assessment

Use the assessment conditions specified in EN 1471. Lay the specimens tested at 750 cycles next to the unfatigued reference specimens. In cases where the test has produced uneven appearance change in the form of rings due to non-uniform action of the castors (usually at the inner and outer boundaries of the stressed area but sometimes elsewhere also) perform the appearance assessment on parts of the stressed area unaffected by the rings described.

Assess the change in colour by comparing the contrast between the unfatigued and the fatigued specimens with the contrast shown by the standard grey scales (EN 1471). Assign grades to the nearest 0,5 grade.

9.3 Test C - Structural integrity assessment

Examine the tested specimens at 10 000 and 25 000 cycles to observe any physical damage. Do not include any damage caused by removal of the material from the plate.

Examples of types of damage to be observed are

- loosening, swelling or tearing of the covering;
- delamination;
- flaking or delamination of foam backing;
- loss of cohesion and /or powdering of binders;
- any destruction of the material as a whole.

10 Calculation and expression of results

10.1 Test A

10.1.1 Structural integrity assessment

Express the result by the type and extent of signs of deterioration (9.3). If delamination occurs, the specimen has failed.