



SLOVENSKI STANDARD
SIST EN 1963:1999

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Tekstilne talne obloge - Preskusi z uporabo Lissonovega Tretrad aparata

Textile floorcoverings - Tests using the Lisson Tretrad Machine

Textile Bodenbeläge - Prüfungen mit dem Tretradgerät System Lisson

Revetements de sol textiles - Essais utilisant la machine Lisson

Ta slovenski standard je istoveten z: EN 1963:1997

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ICS:

59.080.60 Tekstilne talne obloge Textile floor coverings

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ICS

Descriptors: textiles, floor coverings, textile floor coverings, physical tests, wear tests, determination, wear, appearance, test equipment

English version

Textile floor coverings - Tests using the Lisson Tretrad Machine

Revêtements de sol textiles - Essais utilisant la machine
Lisson

Textile Bodenbeläge - Prüfungen mit dem Tretradgerät
System Lisson

This European Standard was approved by CEN on 26 September 1997.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 1998, and conflicting national standards shall be withdrawn at the latest by April 1998.

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 four methods of test of textile floor coverings (with or without an underlay, see clause 9) using the Lisson Tretrad machine.

Test A : Determination of mass loss of textile floor coverings, also used to assess fibre bind of synthetic cut pile carpets.

Test B : Determination of stair nosing appearance change of textile floor coverings.

Test C : Determination of fibre bind on synthetic loop pile carpets.

Test D : Determination of fibre bind (hairiness) on needled floor coverings.

2 Normative references

This European Standard incorporates by dated or undated reference, 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.

EN 984	Determination of the mass per unit area of the use surface of needled floorcoverings
EN 1307	Textile floor coverings - Classification of pile carpets
EN 1470	Textile floorcoverings - Classification of needled floor coverings except for needled pile floor covering
EN 1471	Textile floor coverings - Assessment of changes in appearance
EN 20139	Textiles - Standard atmospheres for conditioning and testing (ISO 139:1973)
ISO 1765	Machine-made textile floor coverings - Determination of thickness
ISO 1766	Textile floor coverings - Determination of thickness of pile above the substrate
ISO 1957	Machine-made textile floor coverings - Sampling and cutting specimens for physical tests
ISO 2424	Textile floor coverings - Vocabulary
ISO 4919	Textile floor coverings - Determination of tuft withdrawal force
ISO 8543	Textile floor coverings - Methods for determination of mass

3 Definitions

For the purpose of this European Standard, the following definitions, in addition to those in ISO 2424, apply :

3.1 mass loss per unit area, m_v : The difference between the sample mass before and after the test, related to the tested area, (see clause 10).

3.2 relative mass loss m_{rv} , for pile carpets : The ratio of the mass loss per unit area m_v as a percentage of the mass of pile per unit area above the substrate (according to ISO 8543).

3.3 relative mass loss m_{rv} for homogeneous needed floor coverings with or without pile : The ratio of the mass loss per unit area m_v as a percentage of the total mass per unit area (according to ISO 8543).

3.4 relative mass loss m_{rv} for heterogeneous needed floor coverings without pile : The ratio of the mass loss per unit area m_v as a percentage of the use surface mass per unit area (according to EN 984).

3.5 relative mass loss m_{rv} for heterogeneous needed floor coverings with pile : The ratio of the mass loss per unit area m_v as a percentage of the use surface mass per unit area).¹

3.6 I_{TR} : An index calculated according to the following equation :

$$I_{TR} = 0,19\sqrt{m_{AP}} \times \left(\frac{100 - m_{rv}}{100} \right) \text{ where :}$$

m_{AP} is the mass per unit area above the substrate in grams per metre squared, determined according to ISO 8543;

m_{rv} is the relative fibre loss in percentage.

3.7 stair suitability : The suitability of a textile floor covering for use on stair nosings in different use classes (as described in EN 1307 and 1470).

3.8 fibre bind : Anchorage of the fibres of the use surface of a textile floor covering by mechanical or chemical means. A poor fibre bind leads to the protrusion of fibres above the normal level after testing on the Lisson Tretrad (hairiness, fuzzing, mass loss, etc.).

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4 Principle

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

⁽¹⁾ see the classification of needed pile floor coverings (under preparation)

5 Apparatus

5.1 Lisson Tretrad machine, comprising a bed plate, a vacuum cleaning system and two Tretrad assemblies (see figure 1).

5.1.1 Bed plate

The bed plate faces are parallel to the track travelled by the Tretrad feet and the front edge of the plate is rounded with a 10mm radius to simulate a stair nosing.

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

Two clamps mounted at each end of the bed plate are used to hold each specimen under tension. The tension is applied by means of a weighted third clamp, each specimen being subjected to a force of (200 ± 10) N.

5.1.2 Tretrad assemblies

The Lisson Tretrad apparatus has two Tretrad assemblies each of which comprises a Tretrad mounted in a frame that is free to rotate around an axis that is 135 mm to 140 mm above the upper surface of the bed plate.

Each Tretrad comprises four equally spaced legs with rigidly attached feet platforms.

The surface of the foot platform has a radius of curvature of $(112,5 \pm 1)$ mm a circumferential length of (100 ± 1) mm and a width of $(55 \pm 0,5)$ mm. The ends of the contact surfaces of the platforms are rounded with a radius of $(4,0 \pm 0,5)$ mm.

The vertical force applied by the Tretrad feet, in the stationary state, shall be (150 ± 2) N measured without the soles in position.

NOTE : A ring dynamometer may be used to check this force.

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

At the front edge of the bed plate the Tretrad runs beyond the bed and is held horizontal by a height adjustable stopper in such a way that the lower edge of the foot (without sole material) can be adjusted between 5 mm below and 5 mm above the level of the surface of the bed plate.

At the points of reversal the Tretrad remains stationary for approximately 1 s; during this stoppage at the forward point of reversal, the Tretrad is rotated through an angle to ensure that the feet walk over different parts of the test specimens, thereby evenly distributing the action.

5.1.3 Vacuum cleaning system

Suction nozzles follow the horizontal movement of the Tretrad assemblies. The nozzles are flexibly mounted and are equipped on their undersides with slides that rest on the edges of the test specimens thereby not imposing any wear on the specimens.

Each nozzle has the dimensions shown in figure 2 and is connected to the vacuum cleaner to extract the abraded fibre.

The vacuum cleaner performance shall be such as to produce an airflow of at least 30 l/s measured at the connection point of the nozzles by an appropriate anemometer in order to remove loose fibre from the surface of the specimens.

5.2 Sole ²⁾

The soles are made from vulcanised styrene butadiene rubber (SBR) with silicic acid-based white filler additives. The soles have a wave profile on one face, and their slip resistance is controlled to ensure standard behaviour in the Lisson Tretrad test.

Size (mm)	:	minimum 190 ± 2 long by 55 ± 0,5 wide
Thickness (mm)	:	2,5 ± 0,3
Density (g/cm ³)	:	1,32 ± 0,03
Hardness (Shore A)	:	90 ± 3
Wave length (mm)	:	13,0 ± 0,5
Amplitude (mm)	:	4,0 ± 0,3
Profile height (mm)	:	0,6 ± 0,1

5.3 Balance, capable of weighing the test specimens to the nearest 0,01 g.

5.4 Standard photographs, for assessment of fibre bind of loop pile carpets ³⁾.

5.5 Standard photographs, for assessment of fibre bind on needled floor coverings ⁴⁾.

5.6 External vacuum cleaner, with a rotating brush, with or without beaters.

6 Sampling and selection of test specimens

Select the specimens in accordance with ISO 1957, the number of specimens per test are indicated below :

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Test A, B and C : At least four specimens each 1500 mm in the direction of manufacture (machine direction) by 100 mm in the across machine direction.

²⁾ Certified soles are available from TFI of suppliers - Deutsches Teppich-forschungsinstitut - Charlottenburger Allee 41 52068 Aachen - Germany.

³⁾ These standard photographs are available from TFI - Deutsches Teppich-forschungsinstitut - Charlottenburger Allee 41 52068 Aachen - Germany

⁴⁾ These Standard photographs are available from CSTB - 84 Avenue Jean Jaurès - BP 02 - Champs Sur Marne - 77421 Marne La Vallée - France.

This information is given for the convenience of users of the standard and does not constitute an endorsement by CEN of the product. equivalent products may be used if they can be shown to lead to the same results.

Tests D : Two specimens each 1500 mm in the machine direction by 100 mm in the across machine direction, and two specimens each 100 mm in the machine direction by 1500 mm in the across machine direction.

Tiles shall be cut and assembled into the appropriate dimensions of the required specimens.

Where appropriate, unsealed cut edges shall be sealed to prevent edge tuft loss during the test.

7 Atmosphere for conditioning and testing

The specimens shall be conditioned for at least 48 hours in the standard atmosphere for testing textiles specified in EN 20139, prior to testing in the same atmosphere. The specimens shall be laid out singly, use-surface uppermost.

8 Calibration of the apparatus

The test apparatus shall be checked with a calibration carpet⁵⁾ and calibrated by adjusting the set number of to and fro traverse cycles.

9 Procedure

9.1 General

Prior to testing clean the specimen with the vacuum cleaner (5.6) giving four passes in each direction.

Fit the test specimen over the leading 10 mm radius rounded edge of the Lisson Tretrad base plate (5.1.1) to the forward mount and clamp on the table under a tension of (200 ± 10) N.

Test specimens that may become distorted during the test shall be further stabilised by being adhered to the bed plate. To carry this out, initially fix single sided tape to the underside of the specimens then attach the specimens to the bed plate by means of double sided tape, this allows for removal of the specimens without weight change. (In this case omit the pretensioning).

Specimens with a distinct pile lay shall be fitted to the bed plate with the pile lay in the direction of the bed plate leading edge.

9.2 Test A

Weigh the test specimens individually to determine m_1 (see 10.1) to the nearest 0,01 g and then mount them on the bed plate as described in 9.1.

If the material is usually fitted with an underlay then the specimen shall be mounted over the underlay it is intended to be used with.

Adjust the height of each Tretrad in relation to the bed plate in accordance with table 1.

⁵⁾ A standard carpet, supplied with calibration details is available from TFI - Deutsches Teppichforschungsinstitut - Charlottenburger Allee 41 52068 Aachen - Germany .
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