SLOVENSKI STANDARD
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Laminatne talne obloge - Preskusne metode za ugotavljanje odpornosti proti mikropraskam

Laminate floor coverings - Test method for the determination of micro-scratch resistance

Laminatböden - Prüfverfahren zur Bestimmung der Mikrokratzbeständigkeit

Revêtements de sol stratifiés - Méthode d'essai pour la détermination de la résistance aux micro-rayures

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Laminate floor coverings - Test method for the determination of micro-scratch resistance

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Foreword

This document (EN 16094:2012) has been prepared by Technical Committee CEN/TC 134 “Resilient, textile and laminate 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of an identical text or by endorsement, at the latest by July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

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1 Scope

This European Standard specifies a test method for the micro-scratch resistance which can be used for all types of laminate floor coverings.

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.

EN ISO 2813, *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85° (ISO 2813)*

EN ISO 12945-2, *Textiles — Determination of fabric propensity to surface fuzzing and to pilling — Part 2: Modified Martindale method (ISO 12945-2)*

EN ISO 12947-1, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method — Part 1: Martindale abrasion testing apparatus (ISO 12947-1)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
cycle
completion of all the translational movements tracing a Lissajous figure comprising 16 rubs

NOTE This comprises of 16 revolutions of the two outer drives and 15 revolutions of the inner drive of the Martindale tester.

3.2
Lissajous figure
figure created by movement which changes from a circle gradually narrowing ellipses, until it becomes a straight line, from which progressively widening ellipses develop, in a diagonally opposite direction before the pattern is repeated

3.3
rub
one revolution of the two outer drives of the Martindale tester

4 Principle

The sample is fixed on a horizontal table. A circular scrub material fixed on a holder impacts on the sample with a defined load. Table and holder are moved perpendicular to each other in a translational movement, with defined frequencies, tracing a Lissajous figure. The holder is additionally freely rotatable around its own axis perpendicular to the horizontal plane.

The sample is exposed to the scrub material for a predetermined number of rubs. The changes of the surface are determined by gloss measurement and visual assessment.

5 Apparatus and materials

5.1 Martindale tester: The Martindale tester shall be as described in EN ISO 12947-1 with the following exceptions:

— the “abrading table” is the table for the sample;

— the “clamping ring and mechanism” is not necessary;

— the “specimen holder” is the holder for the scrub material;

— the “loading pieces” are not necessary.

5.2 Holder for scrub material: The holder for scrub material shall be as described in EN ISO 12945-2, with the following exceptions:

— version 1: the rubber retaining ring is not required. This assembly consists of spindle, scrub holder and small ring weight. The total mass of this assembly is (413 ± 2) g (nominally called 4N);

— version 2: the assembly according to version 1, however the small ring weight is replaced by the large weight. The total mass of this assembly is (612 ± 2) g (nominally called 6N).

5.3 Diffuse light source: Light source providing evenly diffused light giving an illumination on the test surface of (1 200 ± 400) lx. This may be either diffuse daylight or diffuse artificial daylight.

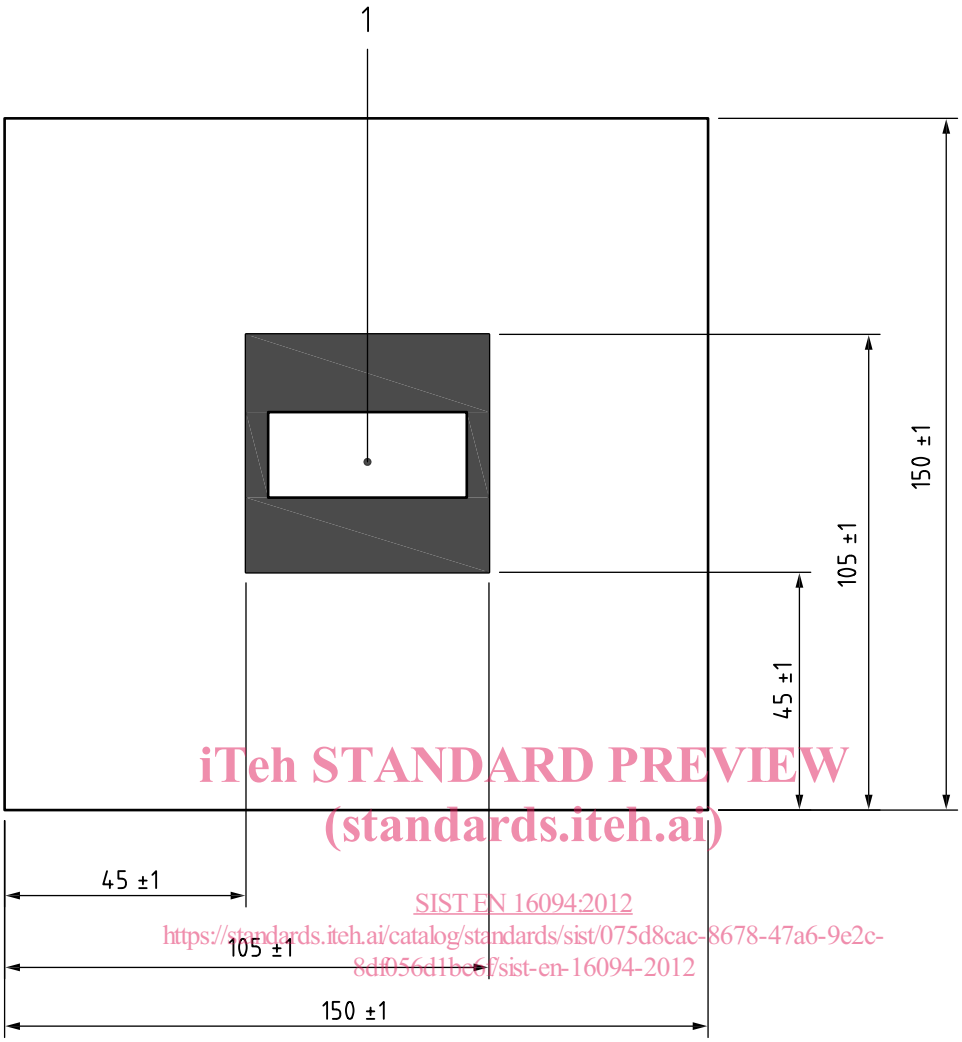
The daylight should be unaffected by surrounding trees, etc. When artificial daylight is used, it is recommended that it should have a correlated colour temperature of (6 500 ± 50) K and an R_a greater than 92, by using a colour matching booth in accordance with EN ISO 3668:2001 [1].

5.4 Reflectometer: For gloss measurement with 3 angle measurement geometry as described in EN ISO 2813.

5.5 Positioning device: For gloss measurement on the same position before and after the test with 4 measurement points.

An example of a positioning device is shown in Figure 1.

Dimensions in millimetres



Reflectometer – direction of movement for the measurement

Key

1 measurement area

Figure 1 — Sample with measurement area for the 4 gloss measurement points

5.6 Scrub materials: The scrub material shall be a nylon web imbedded with alumina abrasive. Two types of scrub materials (very fine and medium fine) are to use. The scrub materials shall be cut or stamped on a diameter of (89 ± 1) mm.

NOTE Scotch Brite fleece SB 7447 (very fine) and SB 7440 (medium fine) are examples of a suitable product available commercially. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of this product.

5.7 Double-sided tape: The double-sided tape is to attach the scrub material on the guide plate of the holder and the sample on the table.

5.8 Soft cotton cloth: The soft cotton cloth is for cleaning of the samples before and after the test.

6 Assembly and maintenance of the Martindale tester

The assembly of the tester shall be carried out in accordance with the instructions of the apparatus manufacturer. For the described test, the outer position C shall be used for both axes to create the larger Lissajous figure as explained in EN ISO 12947-1 or the manufacture guidebook.

The checking of the Lissajous figure shall be done according to Annex A.

7 Preparation and conditioning

7.1 Preparation

Six samples with the dimensions of 150 mm × 150 mm shall be prepared. The surface of the samples shall be substantially flat.

If the panel width is smaller than 150 mm, assemble a sample of two parts with length joint in the middle.

7.2 Test surface

Conditioning of test surface shall begin at least one week before testing and shall be carried out in air at a temperature of (23 ± 2) °C and relative humidity of (50 ± 5) %.

8 Test procedure

8.1 General

Two different procedures (A / B) are described. All the necessary parameters (scrub material, load, speed factor, number of cycles) are shown in Table 1.

Table 1 — Test procedures for determination of resistance to micro scratches

Test parameter	Procedure A	Procedure B
Scrub material	Very fine	Medium fine
Holder for scrub material	Version 2 (Sample holder plus large weight)	Version 1 (Sample holder plus small weight)
Speed factor	1	1
Number of rubs	80 rubs (= 5 Lissajous movements)	160 rubs (= 10 Lissajous movements)
Assessment	Gloss change	Visual according to Annex B