



SLOVENSKI STANDARD
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Tekstilne talne obloge - Ocenitev sprememb videza

Textile floor coverings - Assessment of changes in appearance

Textile Bodenbeläge - Beurteilung der Aussehensveränderung

Revêtements de sol textiles - Evaluation des changements d'aspect

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English Version

Textile floor coverings - Assessment of changes in appearance

Revêtements de sol textiles - Evaluation des changements
d'aspect

Textile Bodenbeläge - Beurteilung der
Aussehensveränderung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 134.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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Foreword

This document (prEN 1471:2014) has been prepared by Technical Committee CEN/TC 134 “Resilient, textile and laminate floor coverings”, the secretariat of which is held by NBN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1471:1996.

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Introduction

In 1980, a number of areas of work for improving the methods of assessing changes in appearance of textile floor coverings were agreed, including experiments aimed at developing the use of sets of fatigued specimens as reference scales to assist in the assessment of the changes. Conclusions drawn from the results of inter-laboratory trials indicated that carefully selected reference scales aided the assessment of appearance changes in textile floor coverings. However, members expressed concern over the widespread introduction of procedures based on reference scales because of possible problems such as constancy of production and stability in use.

Further work was requested before the method was to be published as a full International Standard and a Technical Report (type 2) describing the procedures for using reference scales to assist in the overall assessment of appearance change was published in 1990. Subsequently a modified version of the assessment procedure was adopted by CEN and has been published as EN 1471.

In 1996 ISO/TC 38 SC 12 decided to develop TR 9405 into a full International Standard describing the best available method of subjective visual assessment of appearance retention testing. The first Draft International Standard (DIS) reflected the progress made by both the CEN and ISO committees and the DIS.2 reflected further progress in that it introduced the option of using digital image reference scales as an alternative to the carpet sample reference scales.

Following assessments of the digital image reference scales by a number of laboratories in Europe and North America, ISO/TC 38 SC 12 decided, in its meeting in November 1999 to issue for approval a Final Draft International Standard (FDIS) in which the digital images were the only reference scales.

Assessments of the digital image reference scales by a number of laboratories in Europe, ISO/TC 219 WG1 decided, in its meeting in February 2012 to issue for approval a Draft International Standard (DIS) in which the digital images were the only reference scales, only 3 scales will be used.

Nowadays we have seen that the evaluations we evolve with a new method, because of the use of the digital scales.

1 Scope

This European Standard describes the procedures for assessing the overall change in appearance of textile floor coverings caused by any device.

2 Normative references

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

EN 20105 A02:1994, *Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

ISO 105-A01, *Textiles — Tests for colour fastness — Part A01: General principles of testing*

ISO 2424, *Textile floor coverings — Vocabulary*

ISO 10361:2012, *Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler tester*

3 Terms and definitions

For the purpose of this standard, the relevant definitions of the change in appearance given in ISO 2424 apply, in addition to the following definitions:

3.1

overall change in surface appearance

the difference between a fatigued and a non-fatigued specimen, expressed by a single overall grade (grade 5 representing no change and grade 1 an extreme change). The degree of change is expressed by reference to standard digital image reference scales and by reference to large grey scales. Changes in structure, roughness, thickness, colour and/or pattern of a textile floor covering may contribute to the overall change in appearance. It is not always possible to distinguish clearly between these factors since there may be interaction between them

3.2

change in structure; textural change

visible change in configuration of loops and tufts and/or fibres at the use-surface of a textile floor covering

3.3

loss of tuft definition

bursting, opening and untwisting of the pile yarn, and/or decrimping of the fibres, in the use surface of a textile floor covering. This can cause a decrease of the pile definition

3.4

crushing, flattening

loss of thickness of a textile floor covering under the action of a static or dynamic load

3.5

felting, matting

loss of pile definition of a textile floor covering due to entanglement and compression of pile fibres

3.6

surface roughening

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3.7 hairiness, filamentation
the protrusion of fibres above the normal level of the use-surface of a textile floor covering and not removable by brushing or suction

3.8 cobwebbing
an extreme form of hairiness/filamentation in which the fibres are entangled to form an interlaced web attached to the use surface

3.9 pilling
an extreme form of hairiness/filamentation in which the fibres are entangled to form small aggregates, attached to the use-surface, which may or may not include fibres from other sources

3.10 sprouting
the release and appearance during use of extra-long tuft legs which were accidentally trapped within the pile of a textile floor covering during manufacture

3.11 change of pattern definition
change in the colour appearance of patterned textile floor coverings due to mechanical action. A change of pattern definition may be caused by a change in the clarity of the contour lines

3.12 colour change
change or apparent change in colour – as assessed by a large grey scale – that may result from one or more of the following:

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- change in orientation of the pile (shading);
 - whitening/chalking;
 - fading;
 - glossing;
 - colour bleeding;
 - staining;
 - soiling

NOTE It is not always possible to distinguish clearly between the above factors since each has an interaction with the others.

4 Principle

The change in appearance of a specimen after a process of fatiguing is assessed by visual comparison with standard digital image scales. The degree of change is expressed by a single grade. The dominant factors (change in surface appearance, colour and/or pattern) of the change are observed and recorded.

5 General apparatus

5.1 Viewing Cabinet

A viewing cabinet (minimum width 1,3 m, minimum height 0,9 m and minimum depth 0,5 m), as described in ISO 105-A01, shall be used. The surfaces of the viewing stand shall be uniformly grey. The surface on which the specimens are presented shall have an inclination of $(45 \pm 5)^\circ$, the light source shall be a D65 light source. The light intensity shall be 600 lx or more at the surface on which the specimens are presented and recorded.

5.2 Digital image

Two sets of five scales (see Table 1) showing reference levels of change in appearance from grade 5,0 (no change) to grade 1,0 (extreme change) shall be used ¹. Each scale consists of two zones:

- an “original” zone (grade 5,0);
- a “fatigued” zone representing the defined grade of change in appearance.

Table 1 — Digital image scales

Scale	Description
ISO cut	Cut
ISO loop	Loop

5.3 Large grey scales

Large grey scales comprising five pairs of grey references (200 mm x 150 mm) each representing a contrast corresponding to grade 5,0; 4,0; 3,0; 2,0 or 1,0 (see ISO 105-A02). These scales are used for assessing changes in colour.

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Normal grey scales (35 mm x 28 mm) should not be used as they may lead to an incorrect assessment.

6 Selection and preparation of specimens

Select specimens for fatiguing and assessment that are representative of the carpet. Select also a corresponding area of at least 20 cm x 20 cm (the borders can be used as reference) of the unfatigued sample.

Mark the specimens with a reference direction for aligning them for the assessment. This may be the direction of production, if known.

7 Assessment of change

7.1 Assessors

The assessments shall be made by at least three experienced assessors. Each assessor shall grade the specimens independently from the other assessors. Should the difference between the individual results within an assessor team be greater than one grade, the number of assessors shall be extended to five.

The assessment shall be done by observing the specimens from a distance of 0,5 to 1,0 m at an angle of $(90 \pm 10)^\circ$.

¹) Available from Universiteit Gent, Department of Textiles, 9052 Zwijnaarde, Belgium. This information is given for the convenience of users of the standard and does not constitute an endorsement by CEN of these products.

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7.2 Procedure

Ensure that the specimens have been vacuum cleaned and conditioned following treatment for production of changes in appearance (see ISO 10361).

Select an appropriate digital image reference scale set that most nearly resembles the construction of the textile floor covering being assessed (see Table 1).

Arrange the fatigued and the non-fatigued specimens side-by-side, in the same reference direction, on the viewing stand, centrally under the illumination device. Lay the selected scale alongside the specimens with the reference direction the same. If specimens of one article are tested in steps of increasing intensity (e.g. by a castor chair test) they shall be assessed together.

Always evaluate the specimens with the pile lay (upwards) in the direction of the lamps.

Assess the level of visual contrast, or differences, between the fatigued and non-fatigued specimens and select the grade with most similar level of contrast in the chosen reference scale.

During the assessment consider the change in surface appearance as defined in Clause 3.1, assigning the final grade as the integrated average of all the factors.

The appearance retention rating of the specimen is the number of the grade in the five-grade reference scale which most closely corresponds to the contrast.

Half-grades can be assigned if the contrast between the fatigued and non-fatigued specimens is judged to be nearer to the (non-existent) half-grade or mid-way, between the two nearest whole grades in the reference scale. Only full and half-grade assessments are permitted.

A rating of 5 is given only when there is no difference between the tested specimen and the original material.

One or more of the factors, as defined in Clause 3, may have an overriding influence in the final grade. If so, each assessor shall record the factor(s) for information.

7.3 Change of colour

In addition to including influence of colour in the above assessment, a separate assessment of colour change shall be made. Each assessor shall assess the colour change with the large grey scale as defined in ISO 105-A02 for each specimen. Only the large grey scale shall be used.

7.4 Test report

The report shall include the following information:

- a) all details necessary for identification of the specimens;
- b) that the assessment was carried out in accordance with this Standard;
- c) the date the test was completed;
- d) the reference scale selected from Table 1;
- e) the grade for the change in appearance for each assessor individually;
- f) median of the grades for the change in appearance of all assessors
- g) average of the grades for the change in appearance of all assessors