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Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler tester

Revêtements de sol textiles — Production de changements d'aspect au moyen d'essais au tambour Vettermann et au tambour pour hexapode

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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 electro technical standardization.

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This document was prepared by Technical Committee ISO/TC 219, *Floor coverings*.

This third edition cancels and replaces the second edition (ISO 10361:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

- The main changes in this document were made regarding the material of the studs. In this standard we propose to replace the current used materials rubber or PU into stainless steel to avoid problems with consistency of the raw materials and abrasion of studs during the test.

A list of all parts in the ISO 10361- series can be found on the ISO website.

Introduction

This International Standard describes two instruments used for fatiguing textile floor covering specimens and producing changes in appearance in a laboratory simulation of wear.

This International Standard was originally published as a type 2 Technical Report. ISO/TC 219 decided to revise the document for publication as an International Standard.

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Textile floor coverings — Production of changes in appearance by means of Vettermann drum and hexapod tumbler tester

1 Scope

This International Standard describes procedures that use the mechanical action of a Vettermann drum or a hexapod tumbler tester to produce changes in appearance (surface structure and colour) to all types of textile floor coverings. It does not include pilling or colour changes due to other actions.

Changes produced by these drum testers are assessed in accordance with the applicable assessment standard.

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.

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

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

ISO 2424, *Textile floor coverings — Vocabulary*

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

3 Terms and definitions

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

4 Principle

A steel ball or a hexapod with studs rolls randomly inside a rotating drum which is lined with the textile floor covering specimens.

After fatiguing, the change in appearance of the specimens is assessed in accordance with the applicable assessment standard.

5 Method A — Vettermann drum method

5.1 Apparatus

5.1.1 Vettermann drum tester

with a metal drum of the following dimensions (see [Figure 2](#)):

- internal diameter: (730 ± 10) mm;
- internal depth: (270 ± 5) mm;
- effective depth: (240 ± 7) mm;

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— thickness of curved surface: $(8 \pm 0,5)$ mm.

The drum shall be capable of rotating at a speed of (16 ± 1) r/min and shall have facilities for reversing the direction of rotation every 300 ± 30 seconds with 2 ± 1 s stationary time stationary time. The drum system shall incorporate a revolution counter, and specimens shall be held in place by four adjustable retaining segments [thickness (15 ± 1) mm] on each side wall of the drum.

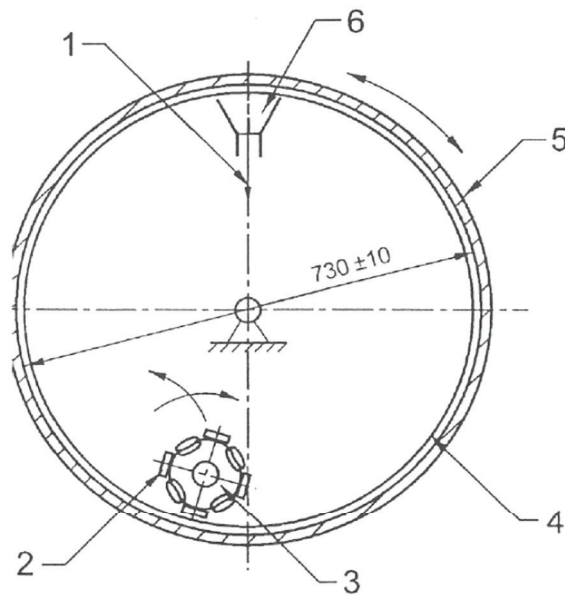
Loose pile fibres shall be extracted by a vacuum cleaner. [Figure 2](#) illustrates the drum in cross-section.

A vulcanized fibre backing sheet of size $2\,320\text{ mm} \times 270\text{ mm} \times 1,5\text{ mm}$ thick and of density $1,1\text{ g/cm}^3$ to $1,3\text{ g/cm}^3$ at 20 °C is loosely laid inside the drum shell on the working side. The sheet remains permanently in the drum.

To avoid damage on metal studs and internal elements of the drum please protect the wooden side plates with a resilient/soft material (see [Figure 1](#)).



Figure 1 — Example of resilient/ soft material for protection of the drum (vettermann drum tester)

**Key**

- 1 extraction of fibres
- 2 Stainless steel stud
- 3 steel ball
- 4 vulcanized-fibre backing sheet
- 5 metal drum
- 6 vacuum cleaner

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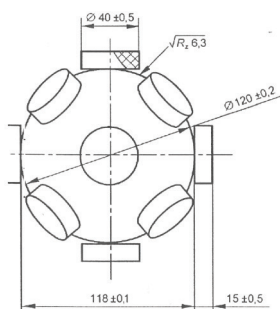
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Figure 2 — Vettermann drum tester

5.1.2 Steel ball

fitted with 14 stainless steel studs located so as to be equally spaced on the ball surface. The studs shall be replaceable and screwed into flat faces machined into the surface of the ball (Figure 3).

- diameter of the ball: $(120 \pm 0,2)$ mm
- distance between diametrically opposed flat stud-mounting faces: $(118 \pm 0,1)$ mm
- mass without studs: $(6\ 800 \pm 100)$ g
- mass with 14 studs: $(8\ 000 \pm 100)$ g



a)



b)

Figure 3 — schematic view (a) and photograph (b) of steel ball