

---

---

**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*

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 10361:2015](https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015)

[https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-  
808981ae4fc7/iso-10361-2015](https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015)



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 10361:2015

<https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2015

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

|                                                      |           |
|------------------------------------------------------|-----------|
| <b>Foreword</b> .....                                | <b>iv</b> |
| <b>Introduction</b> .....                            | <b>v</b>  |
| <b>1 Scope</b> .....                                 | <b>1</b>  |
| <b>2 Normative references</b> .....                  | <b>1</b>  |
| <b>3 Terms and definitions</b> .....                 | <b>1</b>  |
| <b>4 Principle</b> .....                             | <b>1</b>  |
| <b>5 Method A — Vettermann drum method</b> .....     | <b>1</b>  |
| 5.1 Apparatus.....                                   | 1         |
| 5.2 Atmosphere for conditioning and testing.....     | 4         |
| 5.3 Selection and preparation of test specimens..... | 4         |
| 5.3.1 Selection.....                                 | 4         |
| 5.3.2 Number and dimensions.....                     | 5         |
| 5.3.3 Preparation.....                               | 5         |
| 5.4 Procedure.....                                   | 5         |
| <b>6 Method B — Hexapod method</b> .....             | <b>5</b>  |
| 6.1 Apparatus.....                                   | 5         |
| 6.2 Atmosphere for conditioning and testing.....     | 8         |
| 6.3 Selection and preparation of test specimens..... | 8         |
| 6.4 Procedure.....                                   | 9         |
| <b>7 Test report</b> .....                           | <b>10</b> |

ISO 10361:2015  
<https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015>

## 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 electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 219, *Floor coverings*.

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

<https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015>

## 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.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO 10361:2015](https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015)

<https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015>

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

ISO 10361:2015

<https://standards.iteh.ai/catalog/standards/sist/1a1b48a1-a289-4cd5-b570-808981ae4fc7/iso-10361-2015>

# 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 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

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*

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

## 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 1](#)):

— internal diameter:  $(730 \pm 10)$  mm;

- internal depth:  $(270 \pm 5)$  mm;
- effective depth:  $(240 \pm 7)$  mm;
- thickness of curved surface:  $(8 \pm 0,5)$  mm.

The drum shall be capable of rotating at a speed of  $(16 \pm 1)$  r/min and shall have facilities for reversing the direction of rotation every 5 min with approximately 1 s stationary time. The drum system shall incorporate a revolution counter, and specimens shall be held in place by four adjustable retaining segments [thickness  $(15 \pm 1)$  mm] on each side wall of the drum.

Loose pile fibres shall be extracted by a vacuum cleaner. [Figure 1](#) 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  $20\text{ }^\circ\text{C}$  is loosely laid inside the drum shell on the working side.

The sheet remains permanently in the drum.

**5.1.2 Steel ball**, fitted with 14 cylindrical rubber 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 (see [Figure 2](#)).

- 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:  $(7\,600 \pm 100)$  g

Each stud shall consist of a light grey natural rubber disc attached to a steel backing plate having an integral mounting screw.

Specification of the studs:

- thickness of metal plate: 3 mm
- diameter:  $(40 \pm 0,5)$  mm
- height (without spiral drill):  $(15 \pm 0,5)$  mm
- spiral drill: metric 8
- hardness of studs: shore A  $(48 \pm 3)$  measured according to ISO 7619-1, reading after 3 s

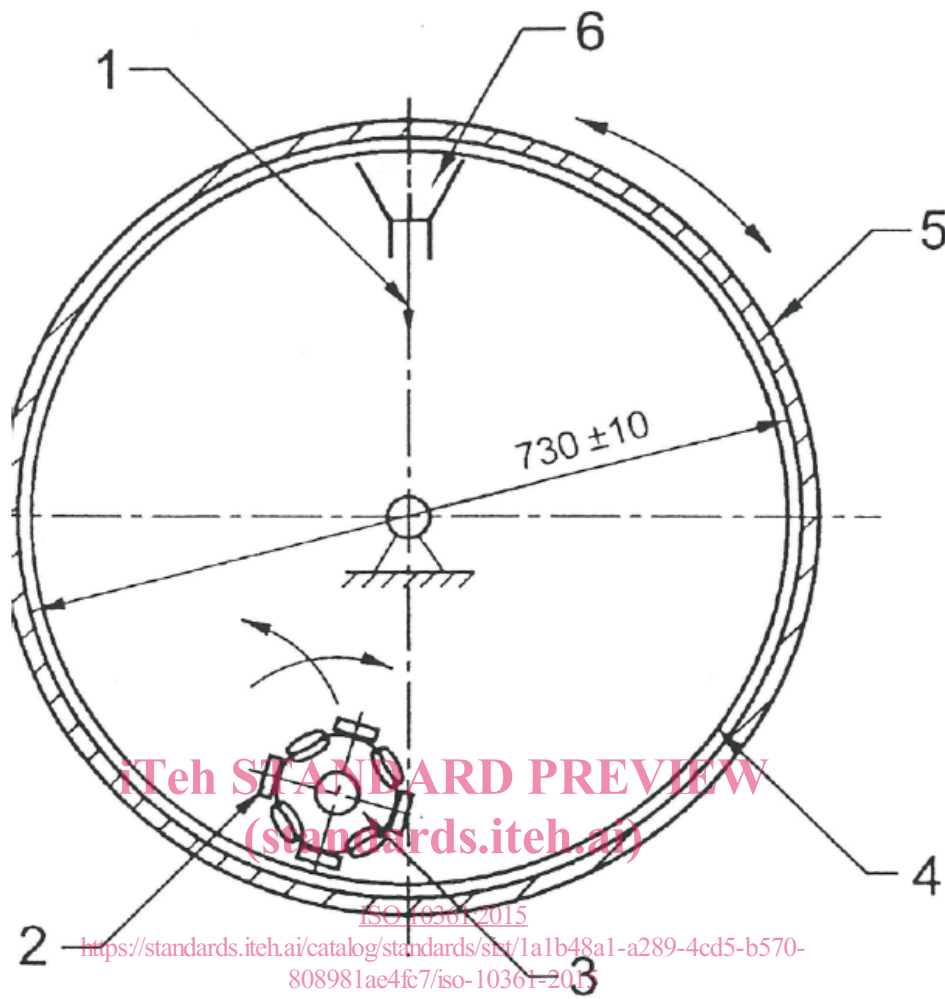
After each test (20 000 revolutions), replace two opposite studs with new ones.<sup>1)</sup> The two studs that have been used longest shall be replaced first. The studs shall be stored in a dark room at between  $18\text{ }^\circ\text{C}$  and  $23\text{ }^\circ\text{C}$ , but not longer than 18 months.

**5.1.3 Vacuum cleaner**, having a suction head width at least equal to the width of the specimens.

---

1) Replacement studs for the Vettermann drum tester can be obtained from TFI Charlottenburger Allee 41 52068 Aachen Germany (postmaster@tfi-online.de) This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.



**Key**

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

**Figure 1 — Vettermann drum tester**