# INTERNATIONAL STANDARD



First edition 2007-12-15

# Resilient floor coverings — Determination of density

Revêtements de sol résilients — Détermination de la masse volumique

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

<u>ISO 23996:2007</u> https://standards.iteh.ai/catalog/standards/sist/3638f2cd-fc86-4b86-9e88cb111262e06a/iso-23996-2007



Reference number ISO 23996:2007(E)

#### PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

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

<u>ISO 23996:2007</u> https://standards.iteh.ai/catalog/standards/sist/3638f2cd-fc86-4b86-9e88cb111262e06a/iso-23996-2007



#### COPYRIGHT PROTECTED DOCUMENT

#### © ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing 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 Web www.iso.org Published in Switzerland

### 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 23996 was prepared by Technical Committee ISO/TC 219, Floor coverings.

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

# iTeh STANDARD PREVIEW (standards.iteh.ai)

### **Resilient floor coverings — Determination of density**

#### 1 Scope

This International Standard describes two methods for determining the density of homogeneous resilient floor coverings and solid layers of other resilient 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.

ISO 24342, Resilient and textile floor-coverings — Determination of side length, edge straightness and squareness of tiles

ISO 24346, Resilient floor coverings — Determination of overall thickness (standards.iteh.ai)

#### 3 Terms and definitions

ISO 23996:2007

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

#### 3.1

density

quotient of mass divided by volume

#### 4 Sampling

Take three tiles or a sample of at least 1 000 mm  $\times$  1 000 mm for sheet material.

#### 5 Atmosphere for conditioning and testing

Condition the samples at a temperature of  $(23 \pm 2)$  °C and a relative humidity of  $(50 \pm 5)$  % for a minimum of 24 h. Maintain these conditions when conducting the test.

#### 6 Method A

#### 6.1 Principle

A test piece of known mass is immersed in a liquid and reweighed, and its density is calculated.

#### 6.2 Apparatus

6.2.1 Balance, with a sensitivity of 1 mg.

- 6.2.2 Pad straddle, or other stationary support.
- 6.2.3 Beaker, of 200 ml capacity.
- 6.2.4 Thin wire, of maximum diameter 0,125 mm.

**6.2.5** Freshly distilled water, containing not more than 0,1 % of wetting agent (to help in removing air bubbles) at a temperature of  $(23 \pm 2)$  °C.

#### 6.3 Selection of specimens

Take three test specimens at equal distances from the sample, the distance between the outer edge of the sample and the nearest edge of the test piece being at least 100 mm, or from individual tiles. Each test specimen should have minimum dimensions of 30 mm  $\times$  30 mm or a diameter of 36 mm.

#### 6.4 Test procedure

Weigh the test specimen with the thin wire suspended around it. Record the mass,  $m_1$ . Immerse the test specimen, still suspended by the wire, in the distilled water contained in the beaker on the pan straddle or other stationary support. Remove adhering bubbles with a fine wire. Mark the level of immersion and record the mass of the immersed test specimen,  $m_2$ . Immerse the remaining test specimen at the same level.

### 6.5 Calculation and expression of (esuits dards.iteh.ai)

Calculate the density,  $\rho$ , in kilograms per cubic metres of the test specimen from the following equation:

https://standards.iteh.ai/catalog/standards/sist/3638f2cd-fc86-4b86-9e88- $\rho = (m_1 \times \rho H_2 O)/(m_1 - m_2)$  cb111262e06a/iso-23996-2007

where

 $m_1$  is the initial weight of the test specimen, in kilograms;

- $m_2$  is the weight of the immersed test specimen, in kilograms;
- $\rho$ H<sub>2</sub>O is the density of water, at the temperature specified in 6.2.5, in kilograms per cubic metre.

Calculate the mean result for the three test specimens and express the result to the nearest 1 kg/m<sup>3</sup>.

#### 6.6 Precision statement

A round-robin test will be conducted to determine the precision of this method.

#### 7 Method B

#### 7.1 Principle

A test piece of known dimensions is weighed and its density calculated from the quotient of mass and volume. This method cannot be used if the surface and/or back side has a texture.

#### 7.2 Apparatus

**7.2.1** Apparatus described in ISO 24342, for measuring the side length and width of the rectangular sample.

- 7.2.2 Apparatus described in ISO 24346, for measuring the thickness of the sample.
- 7.2.3 Balance, with a sensitivity of 1 mg.

#### 7.3 Selection of specimens

Cut three test specimens of at least 100 mm  $\times$  100 mm using a rectangular shape. From the sample, cut the test specimens at equal distances from each other. The distance between the outer edge of the sample and the nearest edge of the test specimens shall be at least 100 mm.

In the case of tiles, take the three individual tiles.

#### 7.4 Test procedure

For each test, measure and record the thickness and the dimensions to the nearest 0,1 mm. Weigh each test specimen separately and record the mass to the nearest 10 mg.

#### 7.5 Calculation and expression of results

Calculate the density, p, in kilograms per-cubic metre, using the following equation and round off to the nearest 0,01.

```
\rho = 10^6 \times M/V
```

where

ISO 23996:2007

(standards.iteh.ai)

https://standards.iteh.ai/catalog/standards/sist/3638f2cd-fc86-4b86-9e88-

- M is the mass of the test specimen, in grams: 0.23996-2007
- *V* is the volume of the test specimen, in cubic millimetres.

Calculate the mean value of the three test specimen and round off to the nearest 0,1 kg/m<sup>3</sup>.

#### 7.6 Precision statement

A round-robin test will be conducted to determine the precision of this method.

#### 8 Test report

The test report shall contain the following information:

- a) a statement that the tests were performed in accordance with this International Standard (ISO 23996), method A or B;
- b) date(s) on which the tests were carried out;
- c) complete identification of the product tested, including type, source, colour and manufacturers' reference numbers;
- d) previous history of the sample;
- e) any deviation from this International Standard which may have affected the results;
- f) mean value of the density.

### Bibliography

- [1] ISO 1183 (all parts), Plastics Methods for determining the density of non-cellular plastics
- [2] EN 436, Resilient floor coverings Determination of density

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

# iTeh STANDARD PREVIEW (standards.iteh.ai)