



## DRAFT INTERNATIONAL STANDARD ISO/DIS 17699

ISO/TC 216

Secretariat: **AENOR**

Voting begins on:  
**2008-04-03**

Voting terminates on:  
**2008-09-03**

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

# Footwear — Test methods for uppers and lining — Water vapour permeability and absorption

*Chaussures — Méthodes d'essai des tiges et des doublures — Perméabilité à la vapeur d'eau et absorption de la vapeur d'eau*

[Revision of first edition (ISO 17699:2003)]

ICS 61.060

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

[ISO/DIS 17699](https://standards.iteh.ai/en/standards/iso/17699-17-513-49ac-a66b-4d38-9903-2008-04-03)

<https://standards.iteh.ai/en/standards/iso/17699-17-513-49ac-a66b-4d38-9903-2008-04-03>  
**ISO/CEN PARALLEL ENQUIRY**

This draft International Standard is a draft standard developed within the European Committee for Standardization (CEN) and processed under the CEN-lead mode of collaboration as defined in the Vienna Agreement. The document has been transmitted by CEN to ISO for circulation for ISO member body voting in parallel with CEN enquiry. Comments received from ISO member bodies, including those from non-CEN members, will be considered by the appropriate CEN technical body. Should this DIS be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

**To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.**

**Pour accélérer la distribution, le présent document est distribué tel qu'il est parvenu du secrétariat du comité. Le travail de rédaction et de composition de texte sera effectué au Secrétariat central de l'ISO au stade de publication.**

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

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.

**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)**

[ISO/DIS 17699](https://standards.iteh.ai/catalog/standards/sist/2f0015d2-5dd3-49ac-a66b-a2d0908687ce/iso-dis-17699)

<https://standards.iteh.ai/catalog/standards/sist/2f0015d2-5dd3-49ac-a66b-a2d0908687ce/iso-dis-17699>

**Copyright notice**

This ISO document is a Draft International Standard and is copyright-protected by ISO. Except as permitted under the applicable laws of the user's country, neither this ISO draft nor any extract from it may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission being secured.

Requests for permission to reproduce should be addressed to 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)

Reproduction may be subject to royalty payments or a licensing agreement.

Violators may be prosecuted.

## Contents

Page

Foreword .....	iv
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Apparatus and material.....	2
4.1 Water vapour permeability test method.....	2
4.2 Water vapour absorption test method (see Figure 4).....	3
5 Sampling and conditioning .....	5
5.1 Water vapour permeability test method.....	5
5.2 Water vapour absorption test method.....	6
6 Test method .....	6
6.1 Water vapour permeability test method.....	6
6.1.1 Principle.....	6
6.1.2 Procedure .....	6
6.2 Water vapour absorption test method.....	7
6.2.1 Principle.....	7
6.2.2 Procedure .....	7
7 Expression of results .....	8
7.1 Water vapour permeability test method.....	8
7.2 Water vapour absorption test method.....	8
8 Test report .....	9
8.1 Water vapour permeability test method.....	9
8.2 Water vapour absorption test method.....	9

## 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 17699 was prepared by Technical Committee ISO/TC 216, *Footwear*, and by Technical Committee CEN/TC 309, *Footwear* in collaboration.

This edition cancels and replaces the first edition (EN 13515:2001), which has been technically revised.

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

<https://standards.iteh.ai/catalog/standards/sist/2f0015d2-5dd3-49ac-a66b-a2d0908687ce/iso-dis-17699>

# Footwear — Test methods for uppers and lining — Water vapour permeability and absorption

## 1 Scope

This standard specifies two test methods for assessing, respectively, the water vapour permeability and the water vapour absorption of uppers or complete upper assembly irrespective of the material, in order to assess the suitability for the end use.

## 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 18454 *Footwear - Standard atmospheres for conditioning and testing of footwear and components for footwear.*

ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987).*

ISO 17694, *Footwear - Test methods for uppers and lining - Flex resistance.*

## 3 Terms and definitions

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

### 3.1

#### **water vapour permeability**

amount of water vapour a material will transmit through its structure expressed as mass of water transmitted per area of material per hour

### 3.2

#### **water vapour absorption**

amount of water vapour a material will absorb in a specified time expressed as mass of water per area of material

### 3.3

#### **upper**

material forming the outer face of the footwear which is attached to the sole assembly and covers the upper dorsal surface of the foot. In case of boots, this also includes the outer face of the material covering the leg. Only the materials that are visible are included, no account should be taken of underlying materials

### 3.4

#### **complete upper assembly**

finished upper, fully seamed, joined or laminated as appropriate, comprising the centre material and any lining(s) together with all components such as interlinings, adhesives, membranes, foams or reinforcements, but excluding toe puffs and stiffeners

NOTE The complete upper assembly may be flat, 2-dimensional or comprise lasted upper in the final footwear.

## 4 Apparatus and material

The following apparatus and material shall be used:

### 4.1 Water vapour permeability test method

**4.1.1 Cylindrical test pots** (see Figure 2) each with an internal height of 80 mm  $\pm$  10 mm and internal volume of 100 cm<sup>3</sup>  $\pm$  20 cm<sup>3</sup>, and including the following:

**4.1.1.1 One circular open end** with an internal diameter of  $D = 30 \text{ mm} \pm 1 \text{ mm}$  and is known to the nearest 0,1 mm.

**4.1.1.2 A clamping ring** with an internal diameter  $D$ .

**4.1.1.3 Means of tightly clamping a test specimen** between the clamping ring and the open end so that the pot is sealed by the test specimen.

**4.1.2 Test machine** (see Figure 1) including the following:

**4.1.2.1 Vertically mounted turntable** which:

a) has at least three test stations, each of which is capable of holding a test pot so that its axis is parallel to, and 67 mm  $\pm$  2 mm from the axis of rotation of the turntable (see Figure 3);

b) is rotated at 7,8 rad/s  $\pm$  0,5 rad/s<sup>1)</sup>

**4.1.2.2 Paddle type fan** which:

a) has three flat blades inclined at 120° to one another. The blades shall be flat with approximate dimensions 90 mm x 75 mm;

b) is mounted so that its axle is coaxially aligned with the axis of the turntable (see 4.1.2.1) and the blades pass within a distance of 10 mm  $\pm$  5 mm of the open ends of test pots (see 4.1.1) mounted on the turntable;

c) is rotated at 146 rad/s  $\pm$  10 rad/s<sup>1)</sup> in a direction opposite to the direction of rotation of the turntable.

---

1) 1 rad  $\approx$  0,16 rev. 7.8 rad/s is approx 75 revs per minute. 146 rad/s is approx 1400 revs per minutes

Dimensions in millimetres

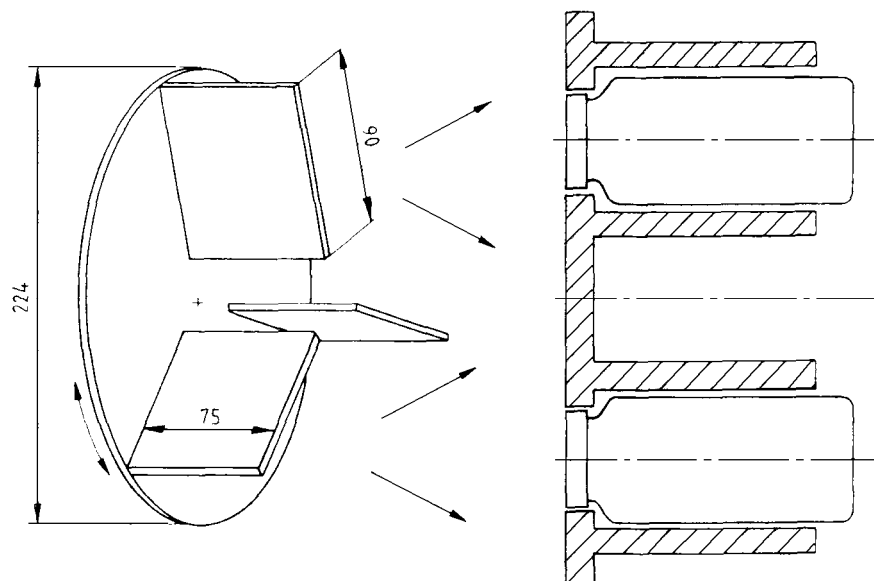


Figure 1 — Schematic diagram of apparatus to be used in the water vapour permeability test

4.1.3 **Analytical balance** capable of measuring mass up to 200 g to the nearest 1 mg.

4.1.4 **Silica gel** with a particle size greater than 2 mm.

Freshly dry the silica gel in a ventilated oven at  $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for at least 16 h and cool in a sealed container for at least 6 h. Once dried the silica gel will remain dry for many days if kept in air tight containers.

4.1.5 **Press knife**, or similar cutting device, capable of cutting test specimens with a diameter which is sufficiently larger than  $D$  to enable a good seal to be made around the open end (see 4.1.1.1) of the pot.

## 4.2 Water vapour absorption test method (see Figure 4)

4.2.1 **Two round test pots** each with a volume of  $100\text{ cm}^3 \pm 20\text{ cm}^3$ , and including the following:

4.2.1.1 **One open end** with a flat annular surface of internal diameter of  $35,0\text{ mm} \pm 0,5\text{ mm}$  and external diameter of at least 20 mm larger. The external diameter can be provided by a flange of minimum width 10 mm or by a cylinder of minimum wall thickness 10 mm.

4.2.1.2 **A metal disk** of diameter greater than 55 mm.

4.2.1.3 Means of tightly clamping a test specimen and a piece of impermeable material (see 4.2.5) between the open end and the disk so that the pot is sealed by the test specimen.

4.2.2 **Analytical balance** capable of measuring mass up to 100 g to the nearest 1 mg.

4.2.3 **Device** capable of measuring time up to 8 h to the nearest 0,1 h, e.g., a stopwatch.

4.2.4 **Distilled or deionised water** complying with ISO 3696.

4.2.5 **Two circular pieces** of impermeable material of minimum diameter 55 mm.

4.2.6 **Cutting device** such as a press knife, capable of cutting test specimens of diameter  $41\text{ mm} \pm 2\text{ mm}$ .

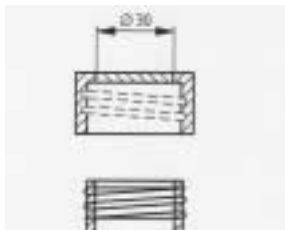


Figure 2 – Jar to be used in WVP test

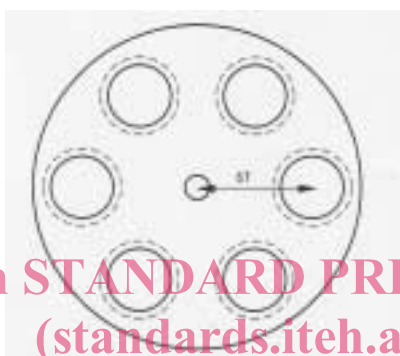


Figure 3 – Holder for jars used in WVP test

<https://standards.iteh.ai/catalog/standards/sist/2f0015d2-5dd3-49ac-a66b-a2d0908687ce/iso-dis-17699>



Dimensions in millimetres

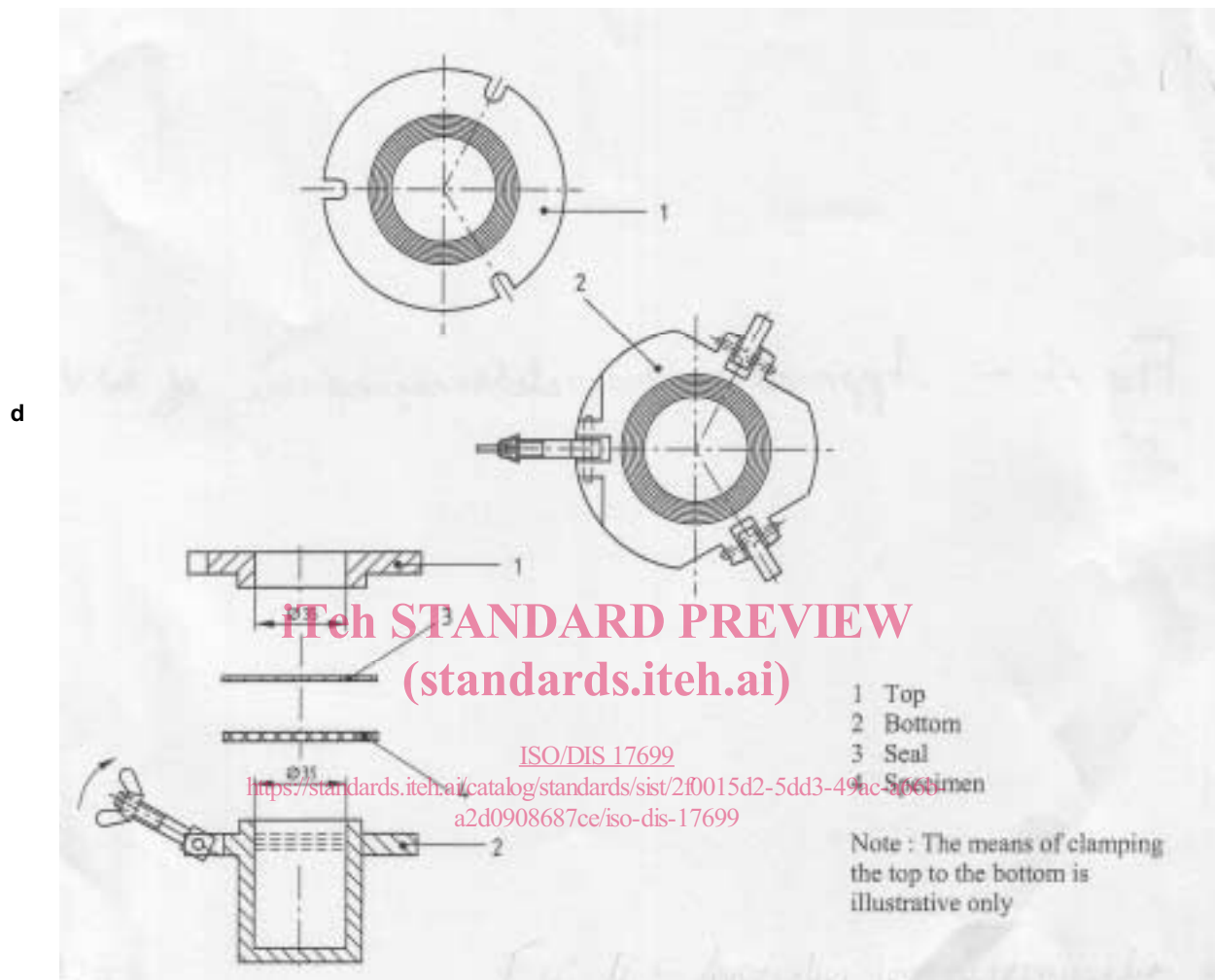


Figure 4 — Apparatus for determination of water vapour absorption

## 5 Sampling and conditioning

### 5.1 Water vapour permeability test method

5.1.1 Unless otherwise specified, cut three samples of dimensions 70 mm x 45 mm.

5.1.2 For sheet materials cut test specimens from a range of positions across the full usable width and length of the sheet material. For a material with a woven structure this should prevent any two specimens containing the same warp or weft threads. Prepare test pieces from complete upper assemblies when the lining material is permanently attached to the upper material. Otherwise, either test each component separately (e.g. lining and outer) or make up an assembly to replicate that used in the actual product.

5.1.3 For test specimens cut from footwear uppers avoid any areas containing seams or perforations and any other design features which mean that the test specimen will not be of uniform thickness across its entire surface area.