



**SLOVENSKI STANDARD**  
**SIST EN 12801:2002**  
**01-januar-2002**

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**Footwear - Test methods for insoles, lining and insocks - Perspiration resistance**

Footwear - Test methods for insoles, lining and insocks - Perspiration resistance

Schuhe - Prüfverfahren für die Brandsohlen, Schufutter und Decksohlen - Widerstand gegen Fußschweiß

Chaussures - Méthodes d'essai applicables aux premières de montage, doublures et premières de propreté - Résistance à la transpiration

**Ta slovenski standard je istoveten z: EN 12801:2000**  
<https://standards.itech.ai/catalog/standards/sist/e620ad12-9b99-467b-8e32-548fbce89442/sist-en-12801-2002>

**ICS:**

61.060            Obuvala    Footwear

**SIST EN 12801:2002**    **en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN 12801

February 2000

ICS 61.060

English version

## Footwear – Test methods for insoles, lining and insocks – Perspiration resistance

Chaussures – Méthodes d'essai applicables aux premières  
de montage, doublures et premières de propreté –  
Résistance à la transpiration

Schuhe – Prüfverfahren für die Brandsohlen, Schuhfutter  
und Decksohlen – Widerstand gegen Fußschweiß

This European Standard was approved by CEN on 1 January 2000.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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COMITÉ EUROPÉEN DE NORMALISATION  
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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 309, Footwear, the Secretariat of which is held by AENOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2000, and conflicting national standards shall be withdrawn at the latest by August 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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## 1 Scope

This European Standard specifies a method for the determination of the ageing of insoles, lining or insocks, caused by human sweat.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated into it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 12222                      *Footwear – Standard atmospheres for conditioning and testing of footwear and components for footwear.*

prEN 13400:1998          *Footwear – Sampling location of components for footwear.*

## 3 Definitions

For the purposes of this standard the following definition applies.

### 3.1

#### **perspiration resistance**

resistance to the action of an artificial sweat solution, measured by the change in size and appearance of the component tested

## 4 Apparatus and material

The following apparatus and material shall be used.

**4.1 Oven**, for heating the test piece to  $35\text{ °C} \pm 1\text{ °C}$  and  $40\text{ °C} \pm 1\text{ °C}$ .

**4.2 Measuring devices, Vernier calipers or similar**, capable of measuring to an accuracy of 0,1 mm.

**4.3 Glasses**, or flat bottomed containers of an adequate size such that the test pieces can be placed in the bottom.

**4.4 Artificial sweat solution**, with the following composition per litre of solution:

- 10 g sodium chloride NaCl
- 6 g ammonium carbonate  $(\text{NH}_4)_2\text{CO}_3$
- 2 g potassium phosphate  $\text{K}_2\text{HPO}_4$

With ammonia hydroxide the pH of the solution is adjusted to 9,0. Fill in with distilled water to 1 000 g.

## 5 Sampling and conditioning

Cut a test piece of dimensions  $(60 \text{ mm} \pm 20 \text{ mm}) \times (60 \text{ mm} \pm 20 \text{ mm})$  from the shoe, cut component or component as supplied. According to the given dimensions, cut the test pieces as big as the sample will allow.

Minimum two test pieces are necessary.

If the test piece is taken from the shoe or cut component, sampling shall be done according to prEN 13400:1998.

Condition the test pieces according to EN 12222, for a minimum of 24 h.

## 6 Test method

6.1 On the conditioned test piece parallel lines are traced 5 mm in from each side (see Figure 1).

6.2 With a measuring device (see 4.2) measure distances A-B, C-D, E-F and G-H.

6.3 Place the test piece in the container with the artificial sweat solution (see 4.4). The test piece shall be placed so that the sweat solution can reach the upper part of the test piece through the addition of a small weight. Then the whole collection is placed in a drying oven (see 4.1) at  $35 \text{ }^\circ\text{C}$  for 24 hours.

6.4 The test piece is taken out of the sweat solution, washed with distilled water and put in the oven at  $40 \text{ }^\circ\text{C}$  for 24 hours.

6.5 Take the test piece out of the drying oven and leave for 24 hours in a normalized atmosphere according to EN 12222.

6.6 Repeat steps 6.3, 6.4 and 6.5 five times.

6.7 Measure distances A-B, C-D, E-F and G-H.

During measurement unfold test piece if folded.

6.8 If desired, the mechanical strength of the material can be determined (tensile strength or tear resistance) before and after treatment.

## 7 Expression of results

7.1 Calculate the linear shrinking (lengthways and widthways) following the equations:

$$k_a = \frac{L_{1a} - L_{2a}}{L_{1a}} \times 100$$

where:

- $k_a$  is the shrinking in direction a, expressed as a percentage;
- $L_{1a}$  is the average initial length of A-B and C-D (see 6.2);
- $L_{2a}$  is the average length of A-B and C-D after treatment described (see 6.7);

and

$$k_b = \frac{L_{1b} - L_{2b}}{L_{1b}} \times 100$$

where:

- $k_b$  is the shrinking in direction b, expressed as a percentage;
- $L_{1b}$  is the average initial length of E-F and G-H (see 6.2);
- $L_{2b}$  is the average length of E-F and G-H after treatment described (see 6.7).

Express the results to the nearest 0,5 %.

**7.2** If the test for tensile strength or tear strength has been carried out, express this result in pascals or newtons per square metre for each of the directions.

## 8 Test report

The test report shall include the following information:

- a) the results, expressed in accordance with 7.1 and 7.2;
- b) full description of the samples tested including commercial styles, codes, colours, nature, etc.;
- c) description of sampling procedure, where relevant;
- d) reference to the method of test;
- e) details of any deviation from the standard test procedure;
- f) date of testing.

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