



# SLOVENSKI STANDARD

## SIST EN 13571:2004

01-januar-2004

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### Footwear - Test methods for uppers, lining and insoles - Tear strength

Footwear - Test methods for uppers, lining and insoles - Tear strength

Schuhe - Prüfverfahren für Obermaterialien, Futter und Decksohlen - Reißfestigkeit

Chaussure - Méthodes d'essai relatives aux tiges, doublures et premières de propreté - Résistance à la déchirure

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Ta slovenski standard je istoveten z: **EN 13571:2001**

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#### **ICS:**

61.060

Obuvala

Footwear

**SIST EN 13571:2004**

**en**

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EUROPEAN STANDARD

**EN 13571**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2001

ICS 61.060

English version

**Footwear - Test methods for uppers, lining and insoles - Tear strength**

Chaussure - Méthodes d'essai relatives aux tiges, doublures et premières de propreté - Résistance à la déchirure

Schuhe - Prüfverfahren für Schäfte, Futter und Decksohlen - Reißfestigkeit

This European Standard was approved by CEN on 4 October 2001.

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 Management Centre 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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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of an identical text or by endorsement, at the latest by May 2002, and conflicting national standards shall be withdrawn at the latest by May 2002.

This European Standard is based on the IULTCS/IUP 8 method (ISO 3377:1975 "Leather - Determination of tearing load").

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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**EN 13571:2001 (E)****1 Scope**

This European Standard specifies a test method for assessing the tear strength of upper, linings and insoles or complete upper assembly, irrespective of material, in order to assess the suitability for the end use.

**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 in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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

EN 13400, *Footwear - Sampling location, preparation and duration of conditioning of samples and test pieces.*

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines (ISO 7500-1:1999).*

**3 Terms and definitions**

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

**3.1  
tear strength**

median force required to propagate a cut in a specified test specimen

**3.2  
upper**

materials forming the outer face of the footwear which is attached to the sole assembly and covers the upper dorsal surface of the foot. In the 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

**3.3  
complete upper assembly**

finished upper, fully seamed, joined or laminated together 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 can 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 Tensile testing machine** with a jaw separation rate of 100 mm/min  $\pm$  10 mm/min, a force range appropriate to the specimen under test (range of 0 N to 500 N is usually suitable for specimens of footwear upper materials).

**4.2 Means of continuously recording the force** to an accuracy greater than 2 % as specified by class 2 in EN ISO 7500-1.

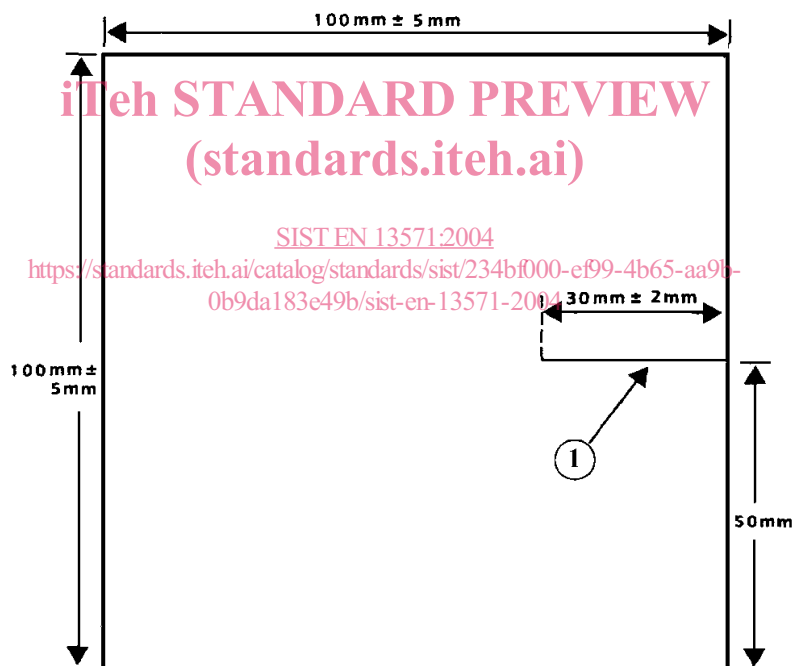
4.3 A **press knife**, or other cutting device, capable of cutting a test specimen of the dimensions shown in Figure 1, for non-leather sheet materials and Figure 2 for cutting samples from shoe uppers or leathers.

## 5 Sampling and conditioning

5.1 Test specimens can be cut from materials likely to be used for uppers or insoles or from made-up uppers or finished footwear. Prepare test pieces from complete upper assemblies when the lining material is permanently attached to the upper material.

5.2 Cut six test specimens from either the sheet material or shoe upper. If testing fabric shoe uppers, the test specimen dimensions shown in Figure 2 are to be considered minimum dimensions and a larger test specimen should be cut where possible to prevent yarn slippage.

5.3 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 will prevent any two specimens containing the same warp or weft threads.

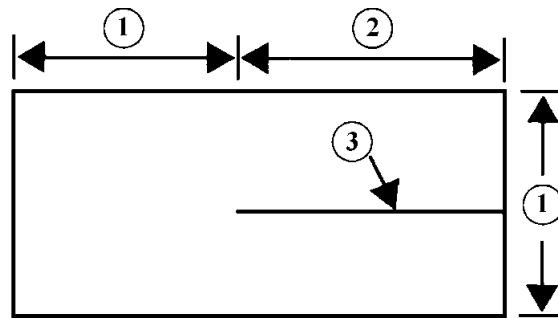


### Key

1 Slit

Figure 1 — Test specimen for non-leather sheet materials

## EN 13571:2001 (E)

**Key**

- 1 25 mm or more
- 2 30 mm ± 2 mm
- 3 Slit

**Figure 2 — Test specimen for leather and shoe uppers**

**5.4** Cut three test specimens with the slit parallel to the along direction of the material (backbone direction for leather and selvedge (warp) or machine direction for non-leather materials) and three with the slit perpendicular to this. In the case of woven fabrics, use the warp directions as the along direction and the weft direction as the across even if these are not at 90° to each other. For shoe uppers, the along direction is the X-axis as defined in EN 13400.

**5.5** For shoe uppers, cut six test specimens through the full thickness of the upper taking care not to dislodge any lining or interlining which has been laminated to the outer material. Take similar care not to dislodge any lining material throughout the testing procedure. Cut three with the slit parallel to the along direction (X-axis) and three with the slit perpendicular to this.

**5.6** Mark the along direction on all the test specimens.

**5.7** Test specimens shall be conditioned in a standard atmosphere as specified in EN 12222 for 24 h prior to test.

**6 Test method****6.1 Principle**

A test specimen, which has a single slit to produce two legs, is loaded into a tensile testing machine so that the slit is parallel to the axis of the machine and one leg is clamped in each jaw. The jaws are moved apart to tear the material until the tear has propagated to an edge of the test specimen. The initial force required to initiate tear, the median force required to continue the tear, the maximum force required to continue the tear and the type of tear are recorded.

**6.2 Procedure**

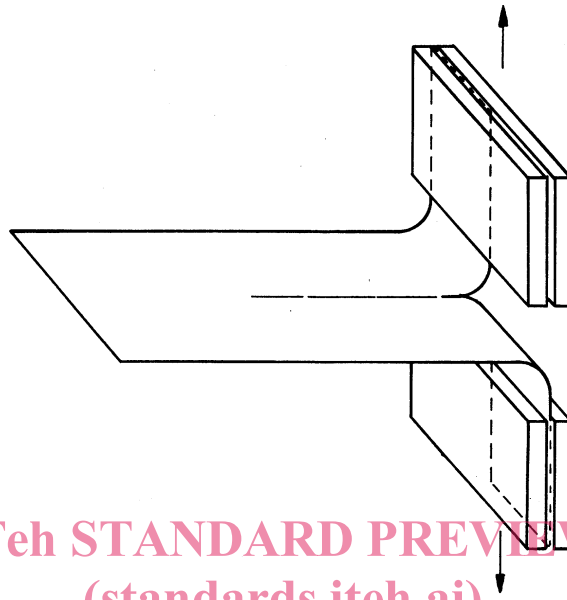
**6.2.1** All tests shall be conducted in a conditioned atmosphere as specified in EN 12222. Where this is not possible, tests shall be carried out within 15 min of removing the samples from the conditioned atmosphere.

**6.2.2** Zero the tensile tester force measuring system and move the jaws together to enable the test specimen to be fitted.



**6.2.3** Hold the test specimen flat between the jaws of the tensile testing machine so that the slit is aligned and parallel with the axis of the machine.

**6.2.4** Clamp one of the legs in the lower jaw and then fold the other leg upwards through 180° and clamp it into the upper jaw (see Figure 3). In each case ensure that the end of the leg is parallel with the clamping edge of the jaw and that the slit is positioned in the axis of the tensile tester.



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**Figure 3 — Method of fixing test specimens in grips**

**6.2.5** Operate the tensile testing machine so that the jaws separate at a speed of 100 mm/min  $\pm$  10 mm/min and note the type of tear that occurs as:

- Normal failure: Clean tear in approximate direction of the slit
- Abnormal failures:
  - Separate tearing of coating and base fabric
  - Fabric yarns pulling out instead of tearing
  - Tearing to the side of the test specimen

**6.2.6** Stop the test when the tear has propagated to an edge of the test specimen.

**6.2.7** From the trace of force versus extension produced by the tensile testing machine:

**6.2.7.1** If there is a peak corresponding with the initiation of tearing, record this force value as '**Initial peak force**' to the nearest 1 N.

**6.2.7.2** Record the maximum force applied to continue the tear once it had started as '**Maximum tear force**' to the nearest 1 N.

**6.2.7.3** Record the average force (see Figure 4) required to continue the tear as '**Median force**' to the nearest 1 N.