INTERNATIONAL STANDARD

ISO 17697

First edition
2003-10-15

Footwear — Test methods for uppers, lining and insocks — Seam strength

Chaussures — Méthodes d'essai relatives aux tiges, doublures et premières de propreté — Résistance des piqûres

Reference number
ISO 17697:2003(E)

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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 17697 was prepared by CEN (as EN 13572:2001) and was adopted, under a special “fast-track procedure”, by Technical Committee ISO/TC 216, *Footwear*, in parallel with its approval by the ISO member bodies.

For the purposes of international standardization, a list of corresponding International and European Standards for which equivalents are not given in EN 13572 has been added as Annex ZZ.

Contents

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of an identical text or by endorsement, at the latest by May 2002, and conflicting national standards shall be withdrawn at the latest by May 2002.

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.

EN 13572:2001 (E)

1 Scope

This European Standard specifies two test methods for determining the seam strength of uppers, lining or insocks, irrespective of the material, in order to assess the suitability for the end use.

These methods are :

Method A : Needle perforations. For determining the force required to pull a row of needles through an upper material, in a direction perpendicular to the row.

Method B : Stitched seams. For determining the breaking strength of stitched seams in shoe upper and lining materials. This method is applicable to seams cut from shoes or made up to simulate footwear constructions.

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 - Verification and calibration of the force-measuring system (ISO 7500-1:1999).*

3 Terms and definitions

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

3.1
seam strength
breaking strength of a stitched seam as determined under specified conditions using a tensile testing machine

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 made of underlying materials

3.3
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 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 Method A

4.1.1 Tensile testing machine with a jaw separation rate of 100 mm/min ± 10 mm/min, a force range appropriate to the specimen under test (this will usually be less than 500 N for footwear upper materials), capable of measuring forces to an accuracy greater than 2 % as specified by Class 2 in EN ISO 7500-1.

4.1.2 Needle holding jig, see Figure 1, including the following:

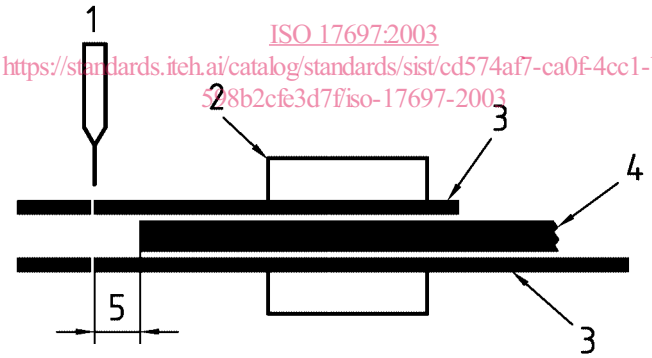
4.1.2.1 Two rectangular rigid plates each of minimum width 30 mm and maximum thickness 6 mm. Each of the two plates is drilled with seventeen holes of diameter 1,1 mm ± 0,1 mm. The holes shall be in a straight line parallel to and approximately 5 mm from one end of the plate. The holes should be evenly spaced so that the centres of the two extreme holes are 26,5 mm ± 0,5 mm apart.

4.1.2.2 One spacing plate of width similar to the drilled plates and of thickness 3,5 m ± 0,5 mm.

4.1.2.3 Means of securing the spacing plate to the surface of one of the drilled plates such that the distance between the end of the spacing plate and the centre line of the row of holes in the other plate can be adjusted and set at 3,0 mm ± 0,1 mm and 6,0 mm ± 0,2 mm. The combination will be referred to as the lower plate.

4.1.2.4 Means of securing the other drilled plate, which will be referred to as the upper plate, to the exposed surface of the spacing plate so that the holes in both of the drilled plates are aligned.

The end of one of the plates furthest from the row of holes should have means of attachment to one of the jaws of the tensile testing machine so that the rows of holes are perpendicular to the axis of the machine.



Key

1 Needle
2 Clamp
3 Drilled plate
4 Spacing plate
5 Distance (see 4.1.2.3)

Figure 1 — Schematic diagram of needle holding jig

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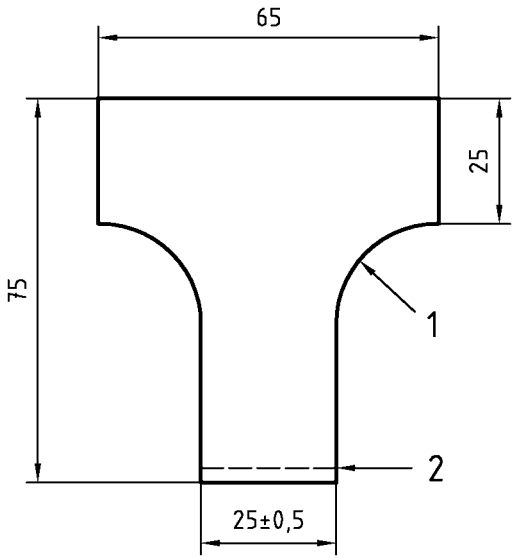
Dimensions in millimetres



Key

1 20 (radius)
2 Line of perforations

Figure 2 — Test specimen

4.1.3 **Seventeen needles**, round point, 16 x 1, metric size 90.

4.1.4 **Press knife** or other cutting device capable of cutting a T shaped test specimen of the dimensions shown in Figure 2.

4.2 Method B

4.2.1 **Tensile testing machine** with, a jaw separation rate of 100 mm/min ± 10 mm/min, a force range appropriate to the specimen under test (this will usually be up to 2 kN), capable of measuring forces to an accuracy greater than 2 % as specified by class 2 in EN ISO 7500-1.

4.2.2 **Small sharp hand knife or scissors** for cutting test specimens.

4.2.3 If made up seams are to be tested, **a press knife** capable of cutting test specimens, (50 mm ± 2 mm) x (50 mm ± 2 mm), is useful.

4.2.4 If made up seams are to be tested, **a sewing machine and accessories**.

5 Sampling and conditioning

5.1 Method A

5.1.1 Store the shoes or the uncut sheet material or uppers in a controlled standard atmosphere specified in EN 12222 for a minimum of 24 h prior to testing and carry out the test in this atmosphere.