INTERNATIONAL STANDARD

ISO 20876

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Footwear — Test methods for insoles — Resistance to stitch tear

Chaussures — Méthodes d'essai applicables aux premières de montage — Résistance au déchirement des points de couture

Reference number
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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 20876 was prepared by the European Committee for Standardization (as EN 12782:1999) 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.

Annex A of this International Standard is given for information only.

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of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.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.

1 Scope

This European standard describes a method for evaluating the ability of an insole, irrespective of the material, to hold stitches, or to take clenched metal fastenings. The method has become accepted as a general quality criterion for insole materials even where attachment is by means of adhesives.

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 10002-2	*Metallic materials – Tensile testing – Part 2: Verification of the force measuring system of the tensile testing machines*
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 Terms and definitions

For the purposes of this standard the following definition applies:

3.1
resistance to stitch tear
force required to pull a loop of wire of specified dimensions through a test specimen of insole material

4 Apparatus and material

The following apparatus and material shall be used:

4.1 Drill, fitted with a twist drill bit, with diameter of 1,60 mm ± 0,01 mm.

4.2 Drilling jig, to ensure accurate spacing of 8,0 mm ± 0,2 mm between the centres of each pair of holes (see figure 1) in the test piece.

4.3 Steel wire, 150 mm in length, with a diameter of 0,90 mm ± 0,01 mm (20 SWG). This is formed over a 7 mm diameter mandrel into a loop with parallel arms of equal length by applying a force of 1,5 kN to 2 kN to each end of the wire so that the shape of the loop conforms to that of the mandrel.

NOTE Loops which have become mis-shapen by use can be reused, provided that the irregularities are removed, over the forming mandrel.

4.4 Tensile testing machine, The tensile testing machine shall comply with the requirement of EN 10002-2, to an accuracy corresponding to class 2, with a constant rate of transverse of 100 mm/min ± 20 mm/min. Autographic recording of force or a maximum force pointer is recommended.

4.5 Attachment to the tensile testing machine, consisting of the following two parts:

4.5.1 Upper jaw, consisting of a rigid supporting plate for the test piece, with a rectangular aperture 12,0 mm ± 0,5 mm by 6,0 mm ± 0,5 mm and a means of attachment to the force-measuring system so that the line of action of the force passes through the centre of the aperture and is perpendicular to the plate.

4.5.2 Lower jaw, containing a means of attaching the steel wire loop to the drive system so that the two arms of the loop are held parallel by two guide holes 8 mm apart and equidistant from the line of action of the force applied during the test.

The attachment is designed to ensure that in the test the loop is drawn through the centre of the aperture in the rigid supporting plate for the test piece, with the plane of the loop parallel to the longer side of the aperture.

4.6 Dial micrometer gauge, standing on a firm base and loaded with a dead weight such that the presser foot applies a pressure of 49 kPa ± 5 kPa[1]. The gauge has a presser foot which is flat, circular and 10,0 mm in diameter.

The gauge has scale divisions of 0,01 mm.

5 Sampling and conditioning

From the footwear insole, cut insole or from the component as supplied, cut two rectangular test pieces approximately 75 mm x 25 mm, one test piece perpendicular to the other. Mark both test pieces to show their orientation.

If the test pieces are taken from the shoe or from the cut component, sampling shall be done in accordance with prEN 13400:1998.

Condition the test pieces, in accordance with EN 12222, for a minimum of 24 h.

6 Test method

6.1 Measure the thickness (in millimetres) of each test piece at three points equally spaced along the centreline parallel to the 75 mm side, using the dial micrometer gauge (see 4.6).

6.2 Using the drill fitted with a 1,6 mm twist drill bit (see 4.1), drill each test piece from the face side with three pairs of holes along the centreline and parallel to the 75 mm side. Use the drilling jig (see 4.2) to ensure that the holes of each pair are accurately spaced 8,0 mm ± 0,2 mm apart. Drill one pair of holes in the centre and the other two pairs midway between the centre pair and the ends of the test specimen as shown in figure 1.

6.3 Thread the wire loop (see 4.3) through a pair of holes in one test piece from the face side.

Keeping the arms of the loop parallel, pass them through the aperture in the test piece supporting plate (see 4.5.1), and through the guide holes (8 mm apart) in the lower jaw attachment (see 4.5.2). Clamp the ends firmly in position.

Operate the tensile testing machine (see 4.5) until the insole material fails.

Note the maximum force (in newtons) exerted. If the mass of the stitch-tear attachment contributes to the recorded force, correct this value to obtain the net force exerted on the test piece.

[1] 1 Pa= 1 N/m^2

6.4 Repeat the method on the remaining two pairs of holes in the test piece. Carry out this procedure similarly on the second test piece.

7 Expression of results

7.1 For each test piece calculate the mean of the three maximum forces noted. Report these two values as the stitch-tear resistances for the principal directions, in newtons to the nearest 0,1 N.

The results will be the average of the three values.

7.2 For each test piece calculate the mean value of three thickness measurements.

8 Test report

The test report shall include the following information:

a) stitch-tear resistance, for each principal direction, expressed in accordance with 7.1;
b) thickness of each test piece, expressed in accordance with 7.2;
c) full description of shoe samples tested including commercial styles codes, colours, nature, etc.;
d) description of sampling procedure, where relevant;
e) reference to this standard test method;
f) details of any deviation from the standard test method;
g) date of testing;
h) any deviation from this test method.

Dimensions in millimetres

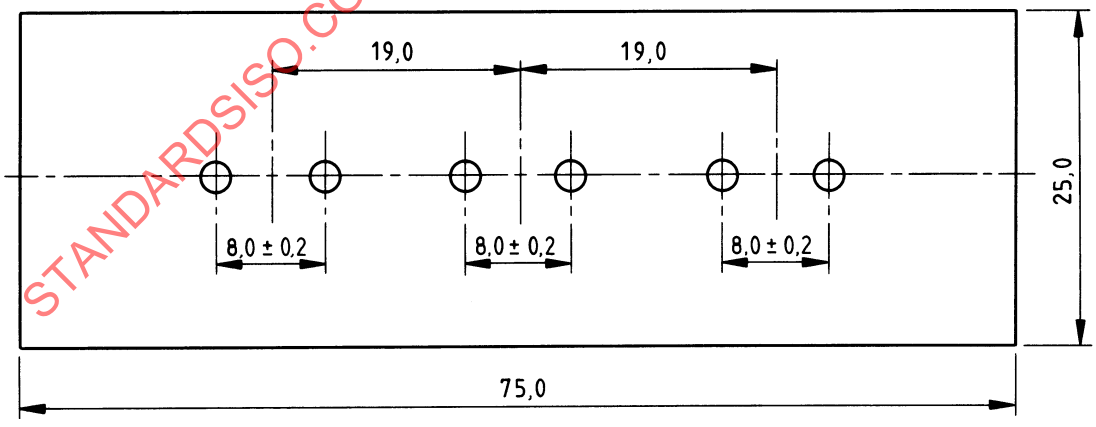

Figure 1 – Test piece