
**Footwear — Test methods for outsoles —
Determination of split tear strength and
delamination resistance**

*Chaussures — Méthodes d'essai applicables aux semelles d'usure —
Détermination de la force de déchirure sur refente et résistance au
délaminage*



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Printed in Switzerland

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 20875 was prepared by the European Committee for Standardization (as EN 12774:1999) 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.

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of an identical text or by endorsement, at the latest by June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.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

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1 Scope

This European standard specifies a method for the determination of the split tear strength and delamination resistance for outsoles.

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.

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 definitions apply:

3.1

delamination resistance

the median force, required to propagate delamination of the adhesive layer or joint interface if a multilayer outsole is composed of an adhesive layer, divided by the width of the test pieces

3.2

split tear strength

the median force required to propagate a cut in a test piece by tearing into the adhesive layer

4 Apparatus and material

The following apparatus and material shall be used:

4.1 Tensile-testing machine

The tensile-testing machine shall comply with the requirements of EN 10002-2, to an accuracy corresponding to grade B, with a constant rate of traverse of 100 mm/min $\pm$ 10 mm/min. A low-inertia machine having autographic force recording facilities is essential.

4.2 A splitting jig and knife to use for making the initial cuts (see figure 1).

5 Sampling and conditioning

Test specimens shall be strips of 75 mm minimum length and 25 mm $\pm$ 0,2 mm width.

The test pieces to be tested shall be taken in accordance with prEN 13400:1998. All test pieces shall be conditioned in accordance with EN 12222 before testing, for a minimum of 24 h.

Minimum three pieces are necessary.

6 Test method

Using the splitting jig and knife (see 4.2), split one end of each test piece half-way between the top and bottom surfaces for a distance of approximately 15 mm. In cases of multilayer outsoles separate the layers of the sole for a length of 10 mm, inserting a heated knife in the adhesive layer. Fold back the two tongues at one end of the test piece and insert and clamp one in each jaw of the machine. Start the machine so that the jaws separate at 100 mm/min, and record a trace of the force as the test continues.

7 Expression of results

The delamination resistance D_s expressed in newton per millimetre of width is given by the formula:

$$D_s = F/d$$

where

F is the average force in newton

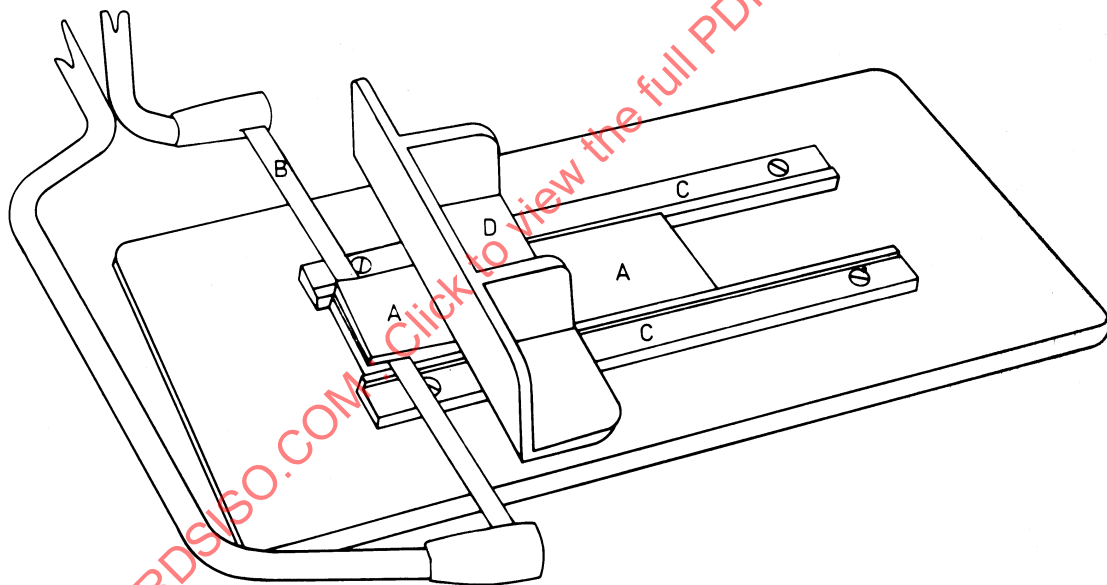
d is the width of the test piece in millimetres

The results will be the average of the three values obtained.

8 Test report

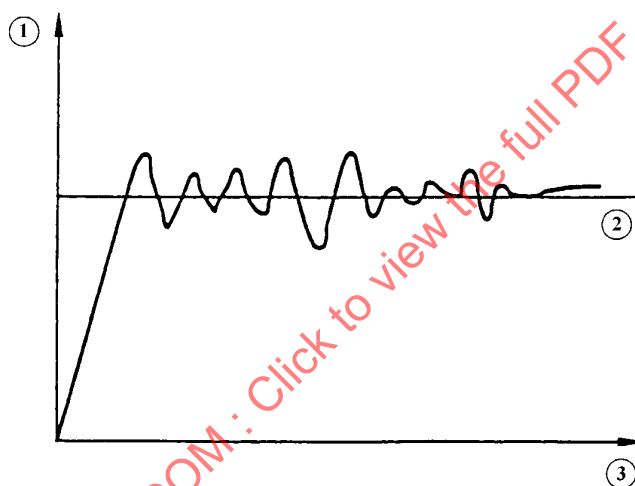
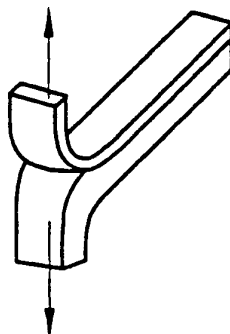
The test report shall include the following information:

- a) results, expressed in accordance with clause 7;
- b) full identification of the samples tested including styles codes, colours, nature, etc.;
- c) reference to this method of test;
- d) date of testing;
- e) details of any deviation from this standard test procedure.



- A test piece
- B straight-edged cutting blade
- C guide rails for blade B to produce the correct depth of cut
- D hand held guard which keeps the test piece stationary during cutting

Figure 1 - Example of knife and splitting jig



- 1 Delamination force, in N
- 2 Average
- 3 Deformation

Figure 2 - Example of diagram force/deformation

Bibliography

- EN 344 Requirements and test methods for safety, protective and occupational footwear for professional use.

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