DRAFT INTERNATIONAL STANDARD ISO/DIS 18691

ISO/TC **94**/SC **3** Secretariat: **BSI**

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Safety, protective, occupational and specific job-related footwear for professional use — Shoe laces

Sécurité — Articles chaussants de protection à usage professionnel spécifique — Lacets de chaussures

ICS 13.340.50

ISO/CEN PARALLEL ENQUIRY

This draft International Standard is a draft European Standard developed within the European Committee for Standardization (CEN) in accordance with subclause 5.2 of the Vienna Agreement. The document has been transmitted by CEN to ISO for circulation for ISO member body voting in parallel with CEN enquiry. Comments received from ISO member bodies, including those from non-CEN members, will be considered by the appropriate CEN technical body. **Accordingly, ISO member bodies who are not CEN members are requested to send *a copy* of their comments on this DIS directly to CEN/TC 161** (BSI, 389, Chiswick High Road, GB-London W4 4AL) **as well as returning their vote and comments in the normal way to the ISO Central Secretariat.** Should this DIS be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

EUROPEAN STANDARD

NORME EUROPÉENNE

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English version

Safety, protective, occupational and specific job-related footwear for professional use - Shoe laces (ISO/DIS 18691:2002)

Sécurité - Articles chaussants de protection à usage professionnel spécifique - Lacets de chaussures (ISO/DIS 18691:2002)

Sicherheits-, Schutz- und Berufsschuhe sowie spezielle, tätigkeitsbezogene Schuhe für den gewerblichen Gebrauch - Schnürsenkel (ISO/DIS 18691:2002)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 161.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

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COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Foreword

This document (prEN ISO 18691:2002) has been prepared by Technical Committee CEN/TC 161 "Foot and leg protectors", the secretariat of which is held by BSI, in collaboration with Technical Committee ISO/TC 94 "Personal safety - Protective clothing and equipment".

This document is currently submitted to the parallel Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

1 Scope

This standard specifies the relevant safety requirements and test methods for shoe laces for safety, protective, occupational and specific, job-related footwear for professional 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 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*

3 Requirements

3.1 Breaking force

When tested in accordance with the method described in 4.1, shoe laces shall have an average breaking force of not less than 400 N, and no individual value shall be less than 350 N.

3.2 Breaking force after abrasion

When tested in accordance with the method described in 4.1 after 10.000 abrasion cycles in accordance with the method described in 4.2, shoe laces shall have an average breaking force of not less than 200 N, and no individual value shall be less than 150 N.

4 Test methods

4.1 Determination of the breaking force of laces

4.1.1 Apparatus

The tensile-testing machine shall comply with the requirements of EN 10002-2 to an accuracy corresponding to class 2, with a constant rate of traverse of 100 mm/min ± 10 mm/min.

The machine shall have means for gripping the laces securely (either jaws or bollard-type grips). Where jaws are used, they shall not be of a type which causes an undue number of jaw breaks.

4.1.2 Test pieces

Cut three lengths of lace sufficient to allow for a test length of 200 mm between the bollards or jaws. If the test material is supplied as made-up laces, cut each test piece from a different lace.

4.1.3 Conditioning and test atmosphere

Condition the test pieces for 24 h at 23°C ± 2°C and (50 ± 5)% relative humidity. Carry out the test in the same atmosphere.

4.1.4 Procedure

Clamp a test piece in the bollards or jaws so that there is a distance of 200 mm between the centres of the bollards or the edges of the jaws. Run the machine at a constant rate of traverse of 100 mm/min and record the force required to break the test pieces.

If any of the test pieces break at the jaws, reject these results and carry out further tests on new test pieces.

4.1.5 Expression of results

Calculate the arithmetic mean of the three measurements, and record this result as the breaking force of the sample, in Newton.

4.2 Abrasion of shoe laces

4.2.1 Abrasion resistance apparatus

Machine capable of abrading laces, as illustrated in Figure 1.

The machine is designed so that one piece of the lace under test can be formed into a loop and held in a clamp A (3) which can be moved horizontally backwards and forwards with a stroke of 35 ± 2 mm by means of a crank worked by a wheel rotating at a uniform speed of 60 ± 5 rev/min. One end of a second piece of the lace is fixed in a clamp B (4) which is 310 ± 10 mm away from clamp A when they are at their nearest point. The other end is passed through the fixed loop and over a support (2). A 250 ± 10 g weight (5) is suspended from the end of the lace so that the piece of lace is held under tension for the whole of the abrasion cycle. Each test position is fitted with a counter which stops when the test piece breaks. The machine is also fitted with a pre-set counter switch so that when desired the machine can be set to stop after a pre-determined number of cycles.

4.2.2 Conditioning and test atmosphere

Condition the laces for 24 h at 23°C ± 2°C and (50 ± 5) % relative humidity. Carry out the test in the same atmosphere.

4.2.3 Test pieces

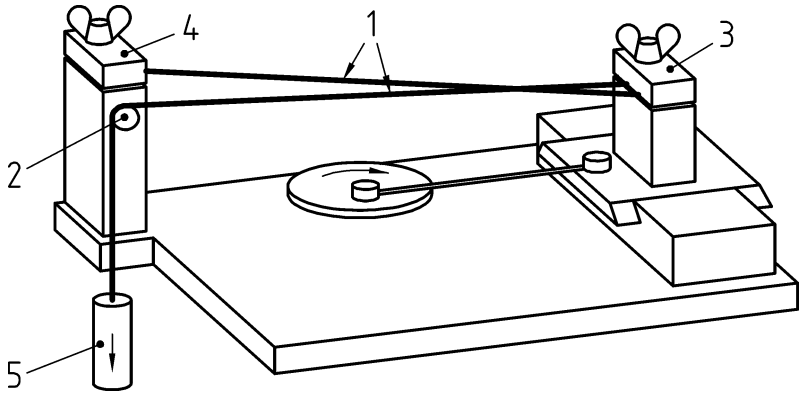
From the conditioned laces, cut six pairs of test pieces, one of each pair being about 200 mm long and the other about 500 mm long. If sufficient laces are available, cut each test piece from a separate lace.

4.2.4 Procedure

Subject each of the six pairs of test pieces in turn to the following procedure. Before clamping the test pieces, turn the driving mechanism by hand until clamps A and B are at their nearest position. Clamp a pair of test pieces in the test machine as described in 4.2.1. When all the stations of the machine have been loaded, turn the machine through one cycle by hand to check that one test piece is being rubbed by the other for the whole cycle.

Start the machine and leave it to run continuously for 10.000 abrasion cycles.

Remove the laces from the machine.



1 shoe lace

2 deflecting roller

3 clamp A

4 clamp B

5 weight

Figure 1 — Lace-abrading machine