



DRAFT INTERNATIONAL STANDARD ISO/DIS 19955

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

Footwear — Test methods for whole shoe — Wear simulation by flex resistance

Chaussures — Méthodes d'essai s'appliquant à la chaussure entière — Simulation d'usure par résistance à la flexion

ICS 61.060

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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 309 (AENOR, C.Génova, 6, E-28004 Madrid) 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.

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ICS

English version

**Footwear - Test methods for whole shoe - Wear simulation by
flex resistance (ISO/DIS 19955:2001)**

Chaussures - Méthodes d'essai s'appliquant à la chaussure
entière - Simulation de portée par résistance à la flexion
(ISO/DIS 19955:2001)

Schuhe - Prüfverfahren für fertige Schuhe - Simulation der
Abnutzung durch Knickbeanspruchung (ISO/DIS
19955:2001)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 309.

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.

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Foreword

This document has been prepared by CEN /TC 309, "Footwear".

This document is currently submitted to the Parallel Enquiry.

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1 Scope

This draft standard specifies a test method for determining the resistance of whole shoe to repeated flexing.

This test method is intended to simulate the wear of footwear and it is applicable to all types of footwear.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this European Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this European Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

prEN 13400:2000, *Footwear. Sampling location, preparation and duration of conditioning of samples and test pieces.*

prEN ISO 17707:2000, *Footwear. Test methods for outsoles. Flex resistance.*

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3 Apparatus and material

The following apparatus and material shall be used :

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3.1 Rigidity test apparatus

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The rigidity test apparatus shall comply with the requirement of prEN ISO 17707:2000.

3.2 Flexing machine

It shall include the following:

3.2.1 Means of firmly clamping any type of footwear at the heel or/and toe. The number of toe clamps shall be sufficient to ensure all sizes of footwear can be clamped securely.

3.2.2 Means of flexing the footwear (see Figure 1) about its flexing line (see 5.2.2.4), of at a constant rate of flexing of 135 cycles/min to 150 cycles/min and operating through a range of flexing angles α_2 (see 5.2.2.5).

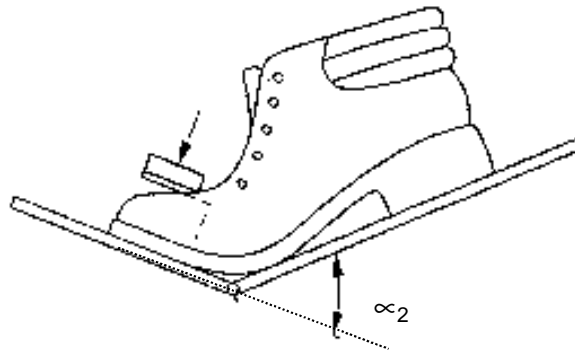


Figure 1 — Flexion

3.2.3 Means of recording either the number of flexes or the duration of the test, providing the speed of the machine is constant and known.

4 Sampling and conditioning

4.1 The sample shall be one pair of shoes.

4.2 Place the sample in an standard controlled environment complying with EN 12222 for 24 h prior to the test. This is specially important if the footwear has previously been subjected to an accelerated ageing process.

5 Test methods

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5.1 Principle

The test piece is repeatedly flexed through a specified angle, about its natural flexing, line by a test machine. After a predetermined time or number of flexes, the test piece is assessed for signs of damage. The number of flexes or the time between assessments, and the angle through which the test piece is flexed, are all determined by the type of footwear being tested.

5.2 Procedure

5.2.1 Rigidity test

Measure the bending angle, α_1 , according to prEN ISO 17707:2000.

5.2.2 Wear simulation by flex resistance

5.2.2.1 Use the complete item of footwear as the test piece.

Mark the longitudinal axis of the test piece, XY (see Figure 2), according to the method described in prEN 13400:2000.

The flexing line is defined as the line passing through point A (see Figure 2), which is at 90° to the longitudinal axis, and it is drawn according to the following:

5.2.2.1.1 Measure, to the nearest millimetre, along the line XY drawn according to 5.2.2.1, the appropriate distance from the heel, given in Table 1, and mark this point. This one corresponds to the typical position of the ball joint (see Figure 3) of a wearers foot.

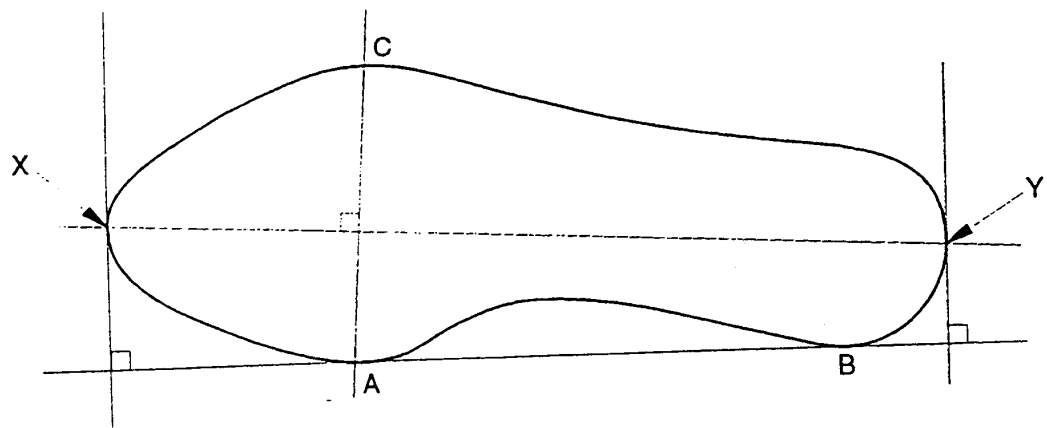


Figure 2 — Position of flexing line

- 5.2.2.1.2 Mark a second point (see Figure 3) on the line XY which is 5 mm ± 1 mm closer to the heel than the point marked according to 5.2.2.1.1.
- 5.2.2.1.3 Draw a line across the width of the insole passing through the second point marked according to 5.2.2.1.2 and at 90° to the line XY. This new line (CA) is regarded as the flexing line of the test piece (see Figure 3).

Table 1 — Average distance from the heel end of the insole to the ball joint position of the foot

Children			Men and women		
size		heel/ball length	size		heel/ball length
Paris point.	English	on insole (mm)	Paris point.	English	on insole (mm)
20	4	85	33	1	143
21	5	91	34	2	149
23	6	97	35	3	155
24	7	102	37	4	160
25	8	108	38	5	166
27	9	114	39	6	172
28	10	120	40	7	178
29	11	126	42	8	184
30	12	131	43	9	189
32	13	137	44	10	195
--	--	--	45	11	201
--	--	--	47	12	207

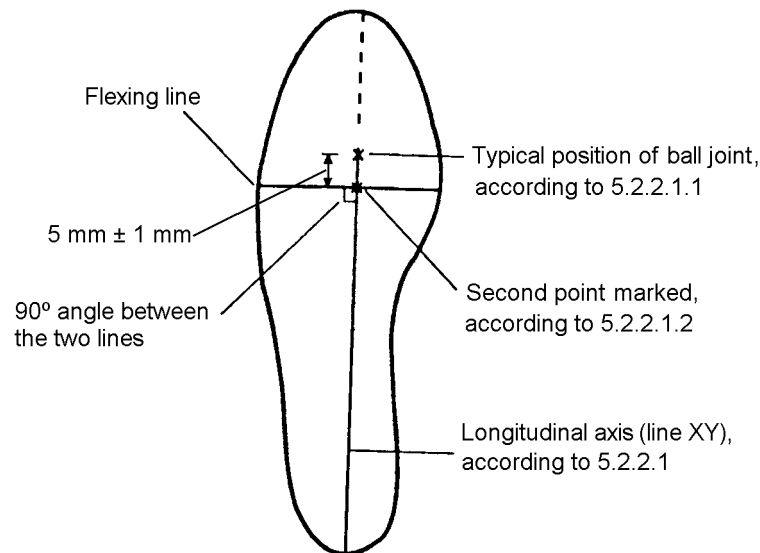


Figure 3 — Marked insole

5.2.2.2 Set the flexing machine (3.2) to flex the test piece through an angle α_2 . This angle α_2 can be established by using α_1 (see 5.2.1)

$$\alpha_2 = 0,8 \times \alpha_1$$

α_2 shall not be greater than 45°.

5.2.2.3 Secure the test piece into the flexing machine so that it is flexed about the flexing line (see 5.2.2.1.3). The test piece should be aligned so that the flexing line passes under the centre of both holes in the toe clamp.

5.2.2.4 Start the flexing machine. After about 500 cycles, stop the machine and check that the test piece is still securely clamped.

5.2.2.5 Run the machine until the first defined inspection stage is reached, see annex A.

5.2.2.6 Stop the machine and inspect the test piece for any sign of damage. To assess certain types of damage, such as breakdown of the insole, it will be necessary to first remove the test piece from the machine. If the test piece is removed for inspection, it should be replaced in the machine using the procedure described in 5.2.2.3 and 5.2.2.4.

5.2.2.7 Record the type of damage at each inspection stage. If possible, quantify the failure, for example, if the sole to upper bond has failed, record the length of the failure, in mm.

5.2.2.8 Repeat the procedure described in 5.2.2.6 and 5.2.2.7 at number of suitable intervals throughout the test (see annex A).

5.2.2.9 Conclude the test when either the test piece has failed or it has been subjected to a total of 500 000 flexing cycles (approximately 59,5 h for a flexing speed of 140 cycles/min).

6 Test report

The test report shall include the following information:

- a) reference to this standard, EN ISO 19955;
- b) the constructional details of the footwear tested and, if applicable, details of any previous wear or accelerated ageing processes;
- c) at each inspection stage record:
 - the number of cycles flexed,
 - the types of failure, if any,
 - a quantified measure of the failure, if possible;
- d) any deviations from this test method;
- e) date of testing

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