BRITISH STANDARD

BS EN ISO
19953:2004

Footwear — Test methods for heels — Resistance to lateral impact

The European Standard EN ISO 19953:2004 has the status of a British Standard

ICS 61.060

BSI
British Standards

National foreword

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The UK participation in its preparation was entrusted to Technical Committee TCI/69, Footwear and leather, which has the responsibility to:

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Summary of pages

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Footwear - Test methods for heels - Resistance to lateral impact (ISO 19953:2004)

Chaussures - Méthodes d'essai relatives aux talons - Résistance aux chocs latéraux (ISO 19953:2004)

Schuhe - Prüfverfahren für Absätze - Widerstand gegen seitlichen Schlag (ISO 19953:2004)

This European Standard was approved by CEN on 10 December 2003.

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Contents

Foreword

This document (EN ISO 19953:2004) has been prepared by Technical Committee CEN /TC 309, "Footwear", the secretariat of which is held by AENOR, in collaboration with ISO/TC 216 "Footwear".

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of an identical text or by endorsement, at the latest by January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

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1 Scope

This European Standard specifies a test method for determining the impact strength of the heels of ladies' shoes. The result provides an assessment of the liability to failure under the occasional heavy blows received during wear.

NOTE While the test method is applicable to all types of high heels, of whatever construction, it is particularly useful for injection-moulded plastics heels which incorporate a steel dowel reinforcement, giving information on the suitability of the dowels' hardness or softness. Normally, heels which by virtue of their shape have a high lateral impact resistance do not need to be tested in this way.

2 Apparatus and material

2.1 General

The following apparatus and material shall be used.

2.2 Lateral impact tester

2.2.1 General

An example of a suitable apparatus is being shown in Figure 1. The apparatus is clamped either onto a solid built-in bench, or onto a rigid free-standing frame anchored to the floor.

The lateral impact tester shall include the following.

2.2.2 Pendulum, consisting of a circular steel bob of diameter (108 ± 1) mm and thickness (49 ± 2) mm, which is fixed by a circular steel shaft of diameter (25 ± 0,5) mm to a hub, on the bearing axle of diameter (75 ± 1) mm. The distance from the centre of the bob to the centre of the hub is (432 ± 2) mm. The moment of the pendulum when it is held horizontally is (17,3 ± 0,2) N·m.

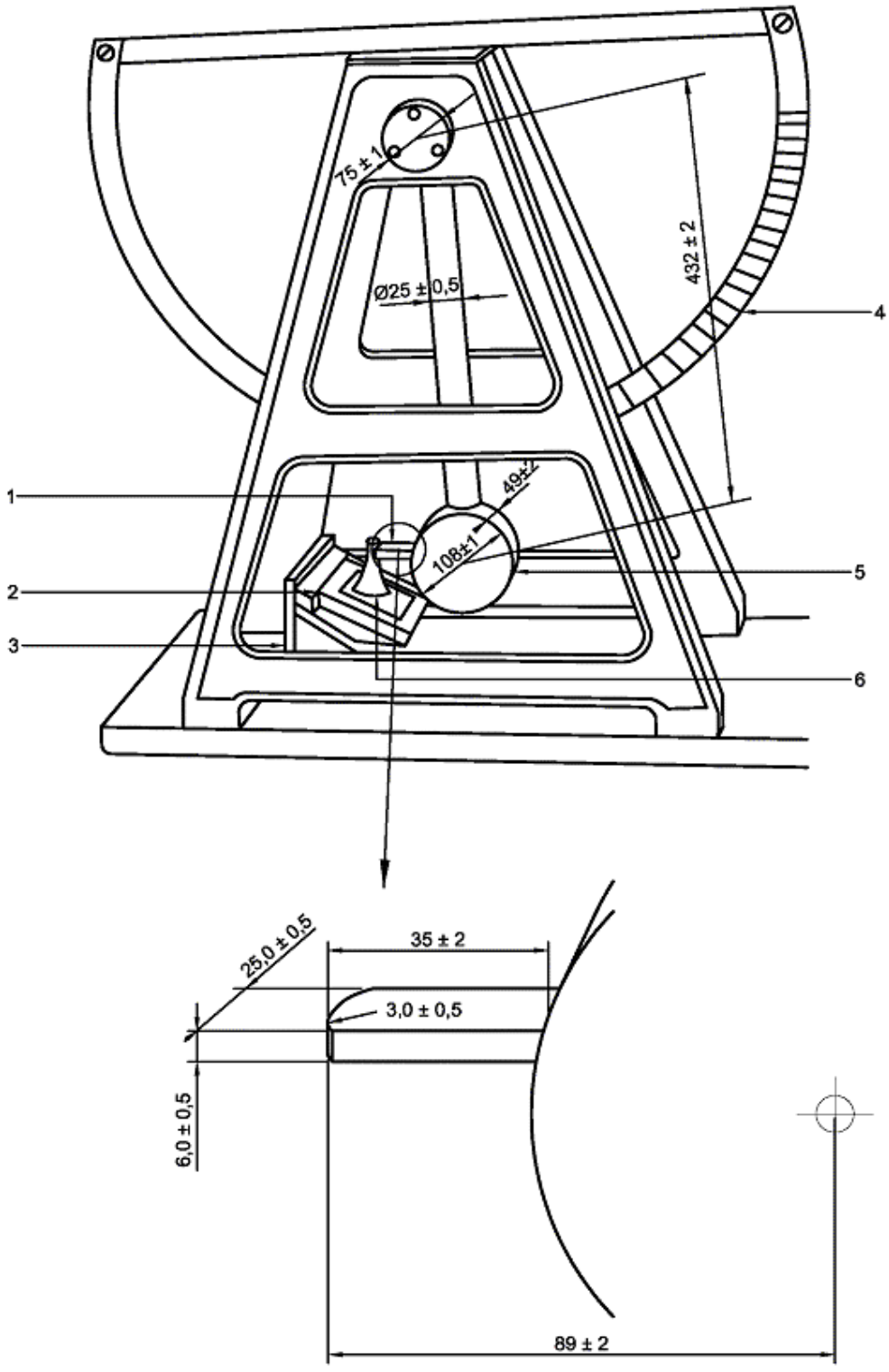
2.2.3 Striker head, consisting of a strip of metal (6,0 ± 0,5) mm thick, (25,0 ± 0,5) mm wide and (35 ± 2) mm long with the striking edge rounded to a radius of (3,0 ± 0,5) mm. The head is fixed rigidly to the pendulum bob so that the striker tip and centre of the bob lie on the same circle of swing of the pendulum and are (89 ± 2) mm apart.

2.2.4 Energy scale for the pendulum, calibrated in increment of 0,68 J, from 0 J to 18,3 J. A marker attached to the pendulum moves over this scale and enables the pendulum to be set up to the desired energy of blow.

2.2.5 Base clamp, for holding the metal mounting tray (3.2) and for adjusting it vertically and horizontally to achieve correct allignment of the heel tip.

NOTE If the apparatus is not firmly mounted there is partial loss of energy on impact, thereby producing false results.

Dimensions in millimetres



Key

1	Striker head	4	Energy scale
2	Heel tray	5	Pendulum
3	Base clamp	6	Test specimen

Figure 1 — Lateral impact tester

2.3 Metal mounting trays

An example of a suitable apparatus is shown in Figure 2. Each to contain a heel set in metal alloy of melting point between 100° C and 150° C.

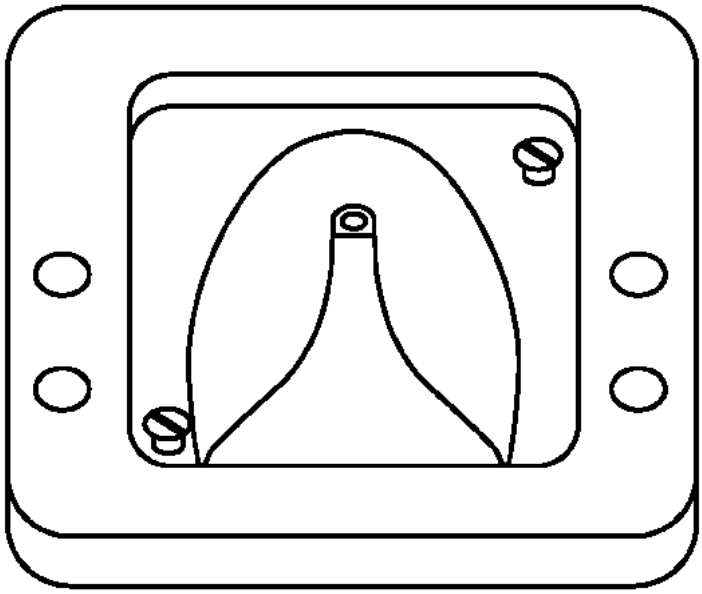


Figure 2 — Metal mounting tray with heel in position before addition of molten alloy

2.4 Metal alloy

Melting point between 100° C and 150° C.

3 Sampling and conditioning

3.1 Take free heels and set each heel in a dry metal mounting tray (3.2), using the procedure described in 3.2 or, for very short heel (usually those below 40 mm in height), the procedure described in 3.3, to obtain a test specimen assembly.

3.2 Place the heel centrally in the tray so that the seat breast edge is against a flat end of the tray and the heel tip points upwards (see Figure 2). Heat the metal alloy (3.3) until it is at the lowest temperature at which it will flow into all parts of the tray, filling the space around the heel to within 3 mm from the top. Allow the alloy to cool and set thereby providing a rigid mounting for the heel.

3.3 Since some very short heels cannot be struck correctly by the striker if mounted in accordance with 4.2 (because the bottom of the pendulum catches the base clump assembly), a different method of mounting is necessary. In such cases mount the heel with the rear of the heel seat against a flat end of the tray. Cut a small amount from the rear of the heel so as to set the heel further towards the rear of the mounting tray if this allows the striker to strike the heel correctly.

4 Test method

4.1 Principle

A heel, clamped with the tip uppermost and the stem approximately vertical, is subjected repeatedly to measured blows from a pendulum striker, the energy of the blows increasing successively until the heel fails.

4.2 Procedure

4.2.1 Position the test specimen assembly in the lateral impact tester (2.2) sliding the assembly up the inclined plane of the base clamp (2.1.5) as far as possible and locking into position with the back of the heel facing the pendulum. Set the test specimen assembly at a suitable angle to the horizontal so that the blow will be applied at right angles to the heel stem. Adjust the clamp so that the heel just contacts the striker when the pendulum is vertical, with the tip of the heel 6 mm above the striker tip.

4.2.2 Lift the pendulum to the 0,68 J position and release, so that the striker (2.1.3) falls against the heel stem. Catch the pendulum on its rebound to prevent a second blow. Repeat this procedure, increasing the impact energy at each blow by 0,68 J either until the heel stem breaks, until it bends and the pendulum jams, or until an impact energy of 18,3 J has been applied. Record total number of blows delivered.

4.2.3 Damage involving fracture or cracking of the heel at the point of impact of the striker is regarded as invalid in this test, since it is due to the effect of the striker acting as a chisel rather than fracture of the heel due to impact of the heel as in wear. If such damage occurs, report it together with this explanation.

4.2.4 Repeat the test with the other two test specimen assemblies by following the same procedure.

5 Expression of results

Express the result for each test specimen assembly as follows:

a) the number of blows to failure (or that no failure occurred after 27 blows) and the energy, in J, of the last blow;

b) the type of failure, as described in 4.2.2, or the fact that damage involving fracture or cracking of the heel at the point of the impact occurred, as described in 4.2.3.

6 Test report

The test report shall include the following information:

a) result for each heel, expressed in accordance with clause 5;

b) full description of the samples tested, including commercial styles codes, colours, nature, etc.;

c) reference to this method of test;

d) date of testing;

e) any deviation from this test method.

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