SLOVENSKI STANDARD
SIST EN ISO 20864:2005

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Obutev - Preskusne metode za ojaļ itve v petnem in prstnem delu ļ evlja - Mehanske znaļ ilnosti (ISO 20864:2004)

Footwear - Test methods for stiffeners and toepuffs - Mechanical characteristics (ISO 20864:2004)

Schuhe - Prüfverfahren für Hinterkappen und Vorderkappen - Mechanische Kenngrößen (ISO 20864:2004)

Chaussures - Méthodes d'essai des contreforts et des bouts durs - Caractéristiques mécaniques (ISO 20864:2004)

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61.060	Obuvala	Footwear

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EUROPEAN STANDARD

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English version

Footwear - Test methods for stiffeners and toepuffs - Mechanical characteristics (ISO 20864:2004)

Chaussures - Méthodes d'essai des contreforts et des bouts durs - Caractéristiques mécaniques (ISO 20864:2004)

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Foreword

This document (EN ISO 20864:2004) has been prepared by Technical Committee CEN/TC 309 "Footwear", the secretariat of which is held by AENOR, in collaboration with Technical Committee 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of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

This document includes a Bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 Scope

This document specifies three methods for determining the shape retention properties and compression strength of a domed test specimen. These methods are the following and they are applicable to footwear toepuff and stiffener:

Method 1: Applicable to heat activated materials

Method 2: Applicable to solvent activated materials

Method 3: Applicable to non-thermoplastic fibreboard

NOTE Although it is usual to determine both the shape retention properties and the compression strength of a domed test specimen, either can be determined alone by carrying out the procedures relating to the respective property.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1:2004).*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
shape retention
aptitude of the material to maintain the original shape (dome) after loading the test piece several times

3.2
compression strength
force required to deform the test piece in determined extent

4 Apparatus and material

4.1 General

The following apparatus and material shall be used.

4.2 Methods 1 and 2

4.2.1 A dome forming tool made of a rigid heat and solvent resistant material and consisting of:

4.2.1.1 A dome capped piston of diameter 47,5 mm ± 0,5 mm and dome of curvature radius 35,0 mm ± 0,5 mm. This will produce a dome of height 9,3 mm ± 0,2 mm.

4.2.1.2 A metal cylinder with:

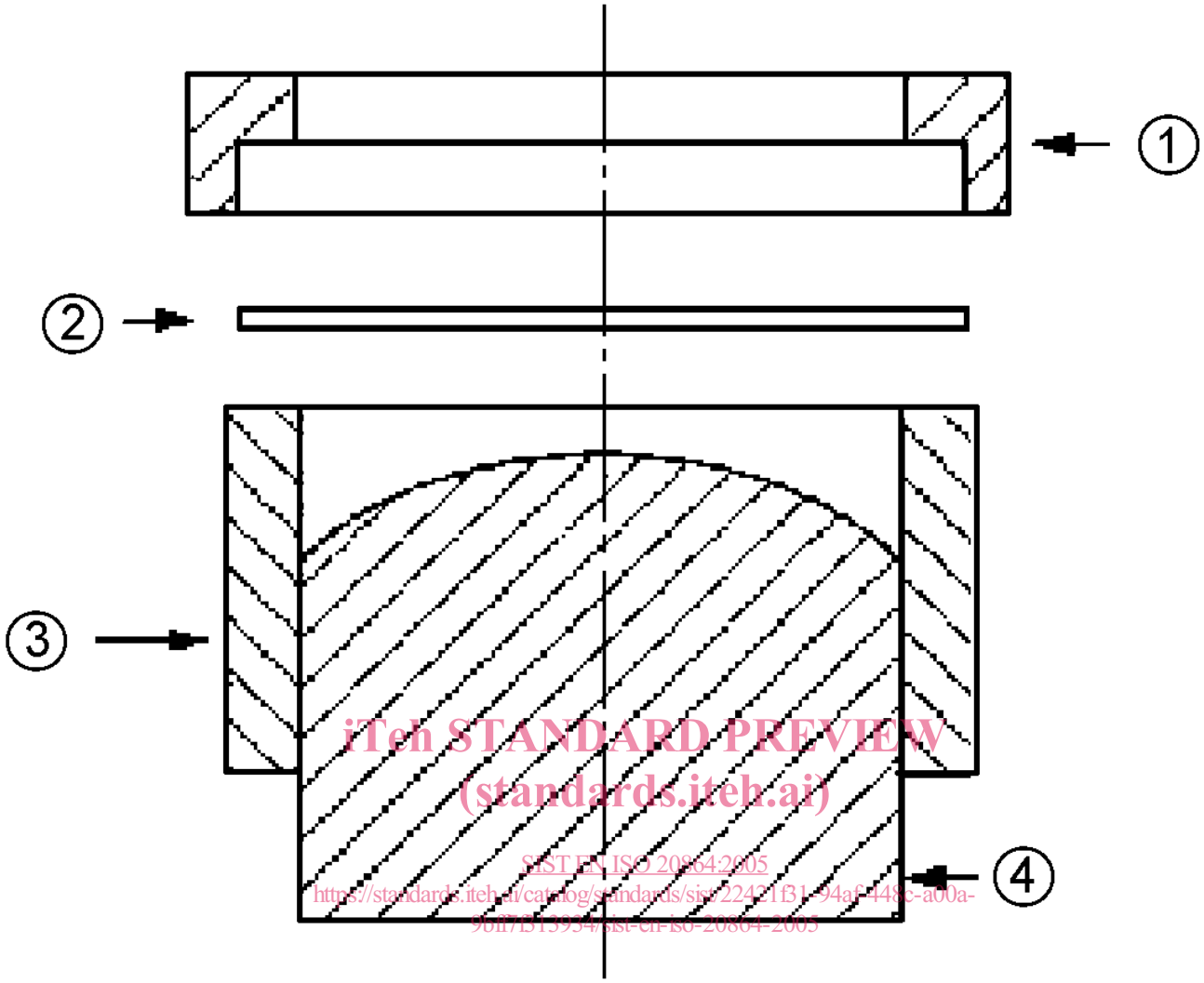
- an internal diameter less than 48 mm but large enough to allow the piston (4.2.1.1) to move freely within it;
- a length of at least 25 mm;
- a clamping ring flange on one end to take the clamping ring as specified (4.2.1.4).

4.2.1.3 Means of holding the piston to the cylinder in a position such that the edge of the domed cap is aligned with the outer surface of the clamping ring flange.

4.2.1.4 A clamping ring with:

- an internal diameter of less than 48 mm but large enough to allow the piston (4.2.1.1) to move freely within it;
- an external diameter and design of any surface pattern that should ensure that the test specimen does not slip during the test, and should neither stretch nor compress the central area of the test specimen as it is clamped;
- a method of tightening the clamping ring to the clamping flange on the end of the cylinder (4.2.1.2).

A diagram of the apparatus is given in Figure 1.



Key

1 Clamping ring (4.2.1.4)
2 Test specimen
3 Metal cylinder (4.2.1.2)
4 Piston

Figure 1 — Dome forming tool

4.2.1.5 A device, such as a press, for forcing the piston (4.2.1.1) into the metal cylinder (4.2.1.2).

4.2.2 A device, such as a press knife, for cutting circular test specimens of diameter to fit the dome forming tool (4.2.1).

4.2.3 Thin polyethylene sheet material.

4.2.4 A device, such as a press knife, for cutting circular polyethylene rings of suitable diameter for the dome forming tool (4.2.1).

4.2.5 An electric fan.

4.3 Method 1 (only)

4.3.1 A fan assisted oven capable of maintaining a temperature of 80 °C ± 5 °C.

4.3.2 Heat resistant gloves.

4.4 Method 2 (only)

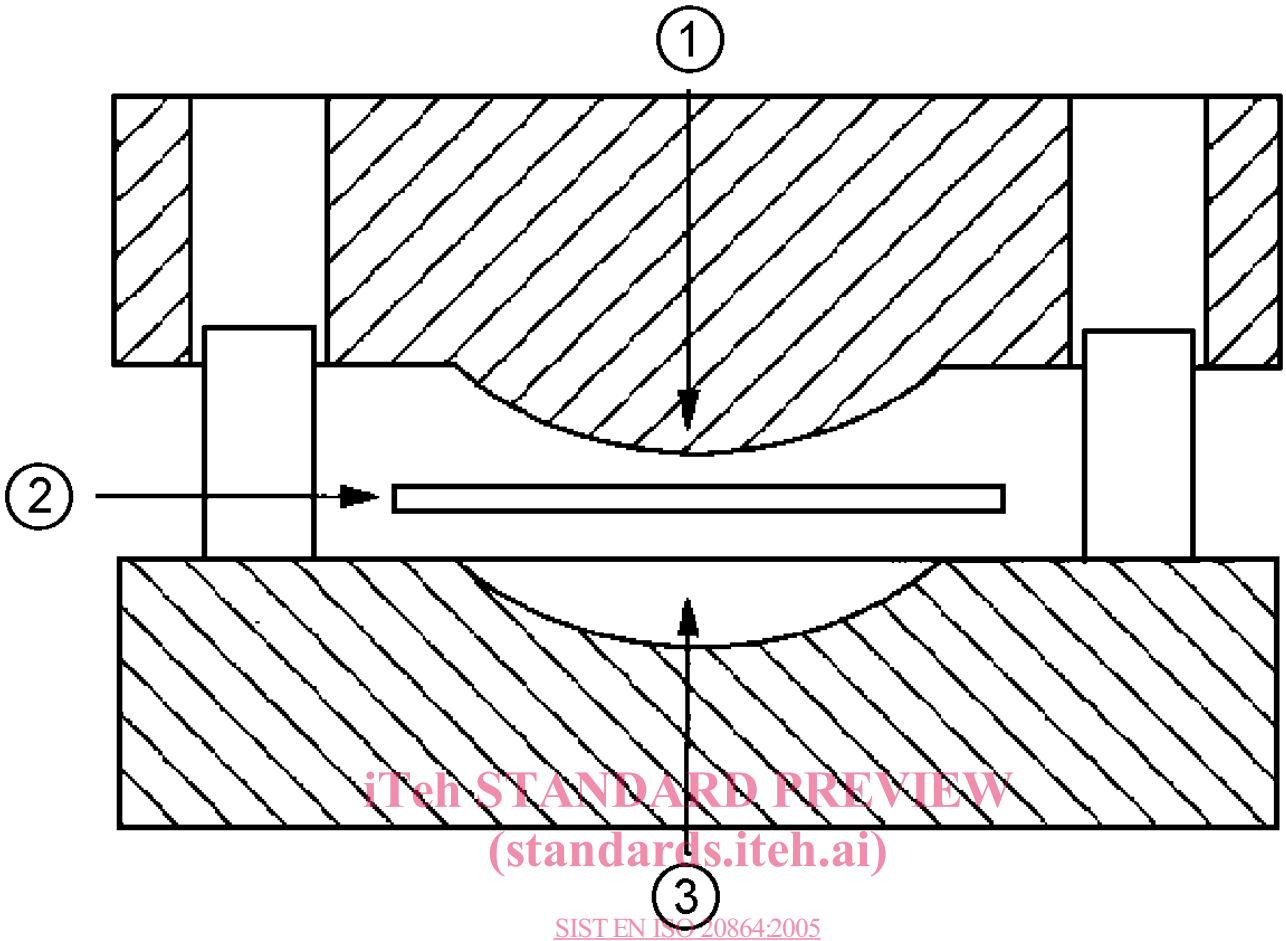
4.4.1 Acetone or other solvent recommended by the material manufacturer.

4.4.2 Silicone based release agent in the form of a spray.

4.5 Method 3

4.5.1 A two part metal mould (see Figure 2) with:

- a lower block having a spherical recess of diameter 47,5 mm ± 0,5 mm, depth 9,3 mm ± 0,2 mm and radius of curvature 35,0 mm ± 0,5 mm;
- an upper block having a downward facing spherical dome of the same dimensions as the spherical recess in the lower block, such that the dome will fit into the recess;
- a mechanism for holding together the two halves of the mould.



Key

1 Spherical dome
2 Test specimen
3 Spherical recess

Figure 2 — Two part metal mould

4.5.2 A hydraulic press capable of applying a force of up to 120 kN ± 10 kN to the mould.

4.5.3 A device, such as a press knife, for cutting circular test specimens of diameter to fit the mould (4.5.1).

4.5.4 A source of steam, such as an electric kettle which can be kept boiling.

4.5.5 Thongs or similar apparatus for holding test specimens in a jet of steam.

4.6 All methods

4.6.1 A height gauge (see Figure 3), consisting of:

4.6.1.1 A flat plate with:

– a clamping ring meeting the requirements of (4.2.1.4) fitted on its lower surface;

– means of supporting the plate so that:

  - it is horizontal;

- the clamping ring is lowermost;
- there is at least 20 mm of clearance below the plate.

– a hole through the plate which is at the centre of the clamping ring and of diameter less than the clamping ring but large enough to allow the spindle of the thickness gauge (4.6.1.2) to move freely within it.

4.6.1.2 A thickness gauge which:

– has a spindle with a spherical lower surface of radius 1,5 mm ± 0,2 mm.

– applies a force of 0,55 N ± 0,10 N to the spindle.

– is capable of measuring to the nearest 0,05 mm.

– is mounted so that the spindle passes vertically through the hole in the flat plate (4.6.1.1).