SLOVENSKI STANDARD
SIST EN 12568:2010

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Nadomešča:
SIST EN 12568:1999

Ščitniki nog in stopal - Zahteve in preskusne metode za zaščitne kapice in vložke, odporne proti prediranju

Foot and leg protectors - Requirements and test methods for toecaps and penetration resistant inserts

Fuß- und Beinschutz - Anforderungen und Prüfverfahren für durchtrittsichere Einlagen und Zehenkappen

Protecteurs du pied et de la jambe - Exigences et méthodes d'essais des embouts et des inserts antiperforation

Ta slovenski standard je istoveten z: **EN 12568:2010**

ICS:

13.340.50	Varovanje nog in stopal	Leg and foot protection

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EUROPEAN STANDARD

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English Version

Foot and leg protectors - Requirements and test methods for toecaps and penetration resistant inserts

Protecteurs du pied et de la jambe - Exigences et méthodes d'essais des embouts et des inserts anti-perforation

Fuß- und Beinschutz - Anforderungen und Prüfverfahren für durchtrittsichere Einlagen und Zehenkappen

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Foreword

This document (EN 12568:2010) has been prepared by Technical Committee CEN/TC 161 “Foot and leg protectors”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by November 2010, and conflicting national standards shall be withdrawn at the latest by November 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12568:1998.

Products described by this standard are not personal protective equipment (PPE) and cannot be "CE" marked.

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Introduction

EN ISO 20345, EN ISO 20346 and EN ISO 20347 relate to safety, protective and occupational footwear which define the performance and required properties of the footwear. On introducing these standards all national standards relating to safety toecaps and penetration resistant inserts were withdrawn leaving the manufacturers of these items with no means of demonstrating the performance of their products. This European Standard has been prepared to allow manufacturers to demonstrate the performance level of the toecaps and penetration resistant inserts before being inserted into the footwear.

1 Scope

This European Standard specifies requirements and test methods for toe caps and inserts with resistance against mechanical penetration, intended to function as components of PPE footwear (e.g. as described by EN ISO 20345, EN ISO 20346 and EN ISO 20347).

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 ISO 20345:2004, *Personal protective equipment — Safety footwear (ISO 20345:2004)*

EN ISO 20346:2004, *Personal protective equipment — Protective footwear (ISO 20346:2004)*

EN ISO 20347:2004, *Personal protective equipment — Occupational footwear (ISO 20347:2004)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 20345:2004, EN ISO 20346:2004 and EN ISO 20347:2004 and the following apply.

3.1
internal toe cap
toe cap intended to be incorporated underneath the upper of footwear intended to provide protection against mechanical impact and compression

3.2
external toe cap
toe cap intended to be incorporated on top of the footwear upper forepart intended to provide protection against mechanical impact and compression

3.3
penetration resistant insert
footwear component placed (or intended to be placed) in the sole complex in order to provide protection against mechanical penetration

4 Requirements for toe caps

4.1 General

Table 1 — Summary of requirements for toecaps and number of tests

Property	Subclause	Metal toe cap	Non-metal toecap	Number of tests for type approval
Finishing	4.2.1	X	X	1 sample each size right and left
Internal length	4.2.2.1	X	X	1 sample each size right and left
Width of flange	4.2.2.2	X	X	1 sample each size right and left
Impact resistance	4.2.3	X	X	1 sample each size right and left
Compression resistance	4.2.4	X	X	1 sample each size right and left
Corrosion resistance	4.3	X	-	3 samples of different sizes
Impact resistance after five environmental treatments	4.4	-	X	2 samples for each treatment [a]

"X" means "Test shall be carried out"; "-" means "Test need not be carried out".

NOTE 1 For details, see 4.2 to 4.4.

NOTE 2 "Worst performing" sample is where the smallest gap between required and measured clearance has been found.

[a] Select worst performing sample sizes of test 4.2.3.

Each single test result shall comply with the applicable requirement, otherwise the overall result of the whole lot is deemed to be "fail". In case of different single results obtained with the same test on equal samples, the worst value shall be stated as test result ("worst case principle" to be applied).

4.2 Requirements for all types of toe caps

4.2.1 Finishing

Toe caps shall be finished so as to be free from surface marks or defects and shall be free from burrs and sharp edges and defects of splitting or delaminating between material layers.

4.2.2 Dimensions

4.2.2.1 Internal length

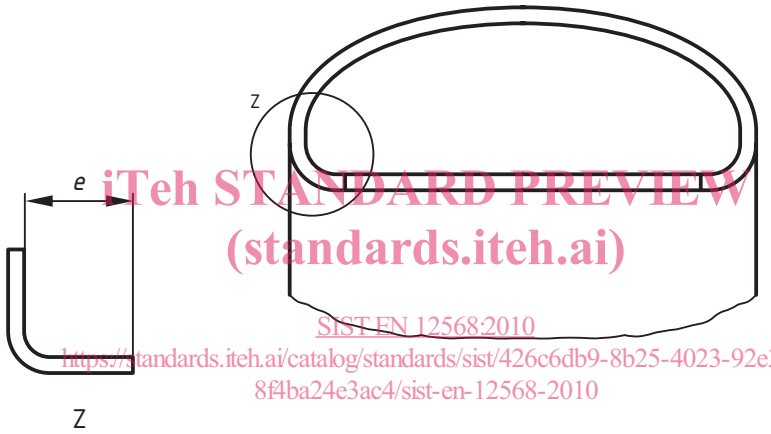
When measured in accordance with the method described in 5.2.1, the internal length of toe caps shall be not less than the appropriate value given in Table 2.

Table 2 — Minimum internal length of toe caps

Toe cap number	5 and below	6	7	8	9	10 and above
Minimum internal length in millimetres	34	36	38	39	40	42
NOTE The above numbering system for toecaps is not identical to any numbering system for footwear.						

4.2.2.2 Width of flange

If toe caps are formed with a flange, the inside width of the flange (*e*) shall be not greater than 10 mm, as shown in Figure 1.



Key

e Width of the toe cap flange

Figure 1 — Illustration of width "e" of the toe cap flange

4.2.3 Impact resistance

When toe caps are tested in accordance with the method described in 5.2.2 at an energy level of either (100 ± 2) J (toe caps intended for protective footwear), or (200 ± 4) J (toe caps intended for safety footwear), the clearance under the cap at the moment of impact shall be not less than the appropriate value given in Table 3. In addition the toe cap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen).

4.2.4 Compression resistance

When toe caps are tested in accordance with the method described in 5.2.3, the clearance under the toe cap at a compression load of either (10 ± 0,1) kN (toe caps intended for protective footwear) or (15 ± 0,15) kN (toe caps intended for safety footwear) shall not be less than the appropriate value given in Table 3. In addition the toe cap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen).

NOTE The provisions of 4.2, 4.3 and 4.4 do not exclude a toe cap design incorporating perforations.

Table 3 — Minimum clearance under toe caps at impact and compression

Toe cap number	5 and below	6	7	8	9	10 and above
Internal toe cap minimum clearance (mm)	19,5	20,0	20,5	21,0	21,5	22,0
External toe cap minimum clearance (mm)	24,5	25,0	25,5	26,0	26,5	27,0

4.3 Special requirements for metal toe caps − Corrosion resistance

Both before and after testing metal toe caps in accordance with the method described in 5.3, they shall exhibit not more than three areas of corrosion, none of which shall measure more than 2 mm in any direction.

4.4 Special requirements for non-metal toe caps − Stability against ageing and environmental influence

When non-metal toe caps are subject to each single one of the treatments described in 5.4 and thereafter tested in accordance with the method described in 5.2.2 at an energy level of either (100 ± 2) J (caps intended for protective footwear) or (200 ± 4) J (caps intended for safety footwear), the clearance under the cap at the moment of impact shall be not less than the appropriate value given in Table 3. In addition, the toe cap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen).

5 Test methods for toe caps

5.1 General

One pair of samples of each size shall be tested. Exceptions are made for some properties, as specified in Table 1. Where repetitions lead to different results on equal samples, the worst value shall be reported as test result.

If samples of only one size are available, two pairs shall be tested.

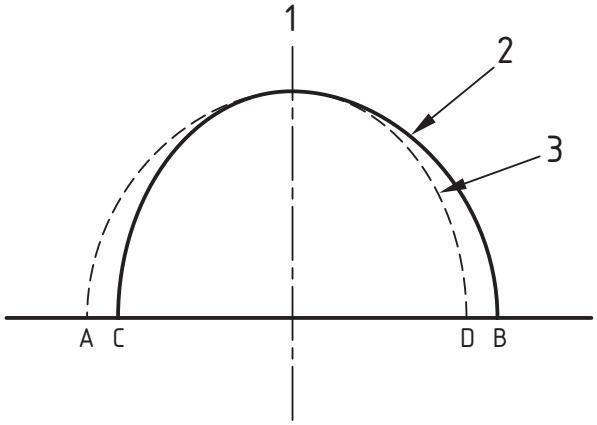
Each one of the environmental treatments of 5.4 shall be applied to new samples.

5.2 Test methods for all types of toe caps

5.2.1 Determination of internal toe cap length

5.2.1.1 Determination of the test axis

Position the left toe cap with its rear edge in line with a base line and draw its outline. Repeat the exercise with the right toe cap of the pair, positioning it at the same base line in such a manner that the outlines at the toe end of the toe caps coincide (see Figure 2).



Key

1 Test axis
2 Right cap
3 Left cap
A, B, C, D Points where the outlines of the right and left toe caps intersect on the base line

Figure 2 — Determination of test axis (schematic illustration)

Mark the four points A, B, C and D where the outlines of the right and left toe caps intersect on the base line. Construct the perpendicular from the base line at the mid point of AB or CD. This constitutes the test axis of both toe caps.

5.2.1.2 Procedure

Place the toe cap, open side down, on a flat surface. With an appropriate gauge, measure the internal length *l*, along the test axis from the front inside to the vertical projection of the back edge between 3 mm and 10 mm above and parallel to the surface upon which the toe cap rests, taking the longest distance as the length *l* (see Figure 3).