



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 22568-1:2017**  
**01-september-2017**

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**Ščitniki nog in stopal - Zahteve in preskusne metode za oceno sestavnih delov obutve - 1. del: Kovinske zaščitne kapice (ISO/DIS 22568-1:2017)**

Foot and leg protectors - Requirements and test methods for footwear components assessment - Metallic toecaps (ISO/DIS 22568-1:2017)

Fuß- und Beinschutz - Anforderungen und Prüfverfahren für Schuhkomponenten - Teil 1: Metallische Zehenkappen (ISO/DIS 22568-1:2017)

Protecteurs du pied et de la jambe - Exigences et méthodes d'essais pour l'évaluation de composants de chaussure - Partie 1: Embouts métalliques (ISO/DIS 22568-1:2017)

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**ICS:**

13.340.50      Varovanje nog in stopal      Leg and foot protection

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## Foot and leg protectors — Requirements and test methods for footwear components assessment —

### Part 1: Metallic toecaps

*Protecteurs du pied et de la jambe — Exigences et méthodes d'essais pour l'évaluation de composants de chaussure —*

*Partie 1: Embouts métalliques*

ICS: 13.340.50

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## ISO/DIS 22568-1:2017(E)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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The committee responsible for this document is ISO/TC 94/SC 3

ISO 22568 *Foot and leg protectors – Requirements and test methods for footwear components* consists of the following parts.

Part 1: *Metallic toecaps*

Part 2: *Non-metallic toecaps*

Part 3: *Metallic perforation resistant inserts*

Part 4: *Non-metallic perforation resistant inserts*

## Introduction

ISO 20345, ISO 20346 and 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 were withdrawn leaving the manufacturers of these items with no means of demonstrating the performance of their products. This International Standard has been prepared to allow manufacturers to demonstrate the performance level of the toecaps before being inserted into the footwear.

This standard is a part of a series of 4 standards dealing with toecaps and anti-perforation inserts.

- ISO 22568 part1 Foot and leg protectors — Requirements and test methods for footwear components- metallic toecaps
- ISO 22568 part2 Foot and leg protectors — Requirements and test methods for footwear components - non-metallic toecaps
- ISO 22568 part3 Foot and leg protectors — Requirements and test methods for footwear components - metallic perforation resistant insert
- ISO 22568 part4 Foot and leg protectors — Requirements and test methods for footwear components- non-metallic perforation resistant insert

Metallic toecap complying with the requirements of this standard are suitable components of “PPE footwear”. They do not guarantee the suitability of the readymade footwear which must be proven to the requirements of the relevant harmonized footwear standards.

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# Foot and leg protectors — Requirements and test methods for footwear components assessment —

## Part 1: Metallic toecaps

### 1 Scope

This international Standard specifies requirements and test methods for metallic toecaps, intended to function as components of PPE footwear (e.g. as described by ISO 20345, and ISO 20346).

### 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.

ISO 20345:2011, *Personal protective equipment — Safety footwear*

ISO 20346:2014, *Personal protective equipment — Protective footwear*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20345:2011, ISO 20346:2014 and the following apply.

#### 3.1

##### internal metallic toecap

metallic toecap intended to be incorporated underneath the upper of footwear intended to provide protection against mechanical impact and compression

#### 3.2

##### external metallic toecap

metallic toecap intended to be incorporated on top of the footwear upper forepart intended to provide protection against mechanical impact and compression

### 4 Requirements for metallic toecaps

#### 4.1 General

Table 1 — Summary of requirements and number of samples

Property	Sub clause	Number of samples
Finishing	<a href="#">4.2.</a>	1 sample each size right and left
Internal length	<a href="#">4.3.1</a>	1 sample each size right and left
Width of flange	<a href="#">4.3.2</a>	1 sample each size right and left
NOTE For details, see <a href="#">4.2</a> to <a href="#">4.6</a> .		

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Table 1 (continued)

Property	Sub clause	Number of samples
Impact resistance	<a href="#">4.4</a>	1 sample each size right and left
Compression resistance	<a href="#">4.5</a>	1 sample each size right and left
Corrosion resistance	<a href="#">4.6</a>	3 samples of different sizes
NOTE For details, see <a href="#">4.2</a> to <a href="#">4.6</a> .		

NOTE The provisions of [4.2](#), [4.3](#), [4.4](#), [4.5](#) and [4.6](#) do not exclude a metallic toecap design incorporating perforations.

For each of the required measurements performed in accordance with this standard, a corresponding estimate of the uncertainty of measurement should be evaluated. One of the following approaches shall be used:

- a statistical method, e.g. that given in ISO 5725-2 [2];;
- a mathematical method, e.g. that given in ISO/IEC Guide 98-3 [3];
- uncertainty and conformity assessment as given in ISO/IEC Guide 98-4 [4]
- JCGM 100:2008[5]

## 4.2 Finishing

Metallic toecaps shall be finished so as to be free from surface marks or defects and shall be free from burrs and sharp edges.

## 4.3 Dimensions

### 4.3.1 Internal length

When measured in accordance with the method described in [5.2.1](#), the internal length of metallic toecaps shall be not less than the appropriate value given in Table 2.

Table 2 — Minimum internal length of metallic toecaps

Metallic 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 sizing system for footwear.

### 4.3.2 Width of flange

If metallic toecaps are formed with a flange, the inside width of the flange ( $e$ ) shall be not greater than 10 mm using the test method given in [5.2.2](#).

## 4.4 Impact resistance

When metallic toecaps are tested in accordance with the method described in [5.3](#) at an energy level of either  $(100 \pm 2)$  J (metallic toecaps intended for protective footwear), or  $(200 \pm 4)$  J (metallic toecaps intended for safety footwear), the clearance under the cap during the impact shall be not less than the appropriate value given in Table 3. In addition the metallic toecap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen). Metallic toecap designed with perforations does not have to follow the last requirement.

**Table 3 — Minimum clearance under metallic toecaps at impact and compression**

<b>Metallic toecap number</b>	<b>5 and below</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10 and above</b>
Internal metallic toecap minimum clearance (mm)	19,5	20,0	20,5	21,0	21,5	22,0
External metallic toecap minimum clearance (mm)	24,5	25,0	25,5	26,0	26,5	27,0

#### 4.5 Compression resistance

When metallic toecaps are tested in accordance with the method described in 5.4, the clearance under the metallic toecap at a compression load of either  $(10 \pm 0,1)$  kN (metallic toecaps intended for protective footwear) or  $(15 \pm 0,15)$  kN (metallic toecaps intended for safety footwear) shall not be less than the appropriate value given in Table 3. In addition the metallic toecap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen). Metallic toecap designed with perforations does not have to follow the last requirement.

#### 4.6 Corrosion resistance

Both before and after testing metallic toecaps in accordance with the method described in 5.5, they shall exhibit not more than three areas of corrosion, none of which shall measure more than 2 mm in any direction.

### 5 Test methods for metallic toecaps

#### 5.1 General

One pair of samples of each size shall be tested. Exceptions are made for some properties, as specified in Table 1.

#### 5.2 Determination of dimensions

##### 5.2.1 Internal metallic toecap length

###### 5.2.1.1 Determination of the test axis

Position the left metallic toecap with its rear edge in line with a base line and draw its outline. Repeat the exercise with the right metallic toecap of the pair, positioning it at the same base line in such a manner that the outlines at the toe end of the metallic toecaps coincide (see Figure 1).