



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 22568-2:2017**  
**01-september-2017**

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**Ščitniki nog in stopal - Zahteve in preskusne metode za oceno sestavnih delov obutve - 2. del: Nekovinske zaščitne kapice (ISO/DIS 22568-2:2017)**

Foot and leg protectors - Requirements and test methods for footwear component assessment - Part 2: Non-metallic toecaps (ISO/DIS 22568-2:2017)

Fuß- und Beinschutz - Anforderungen und Prüfverfahren für Schuhkomponenten - Teil 2: Nichtmetallische Zehenkappen (ISO/DIS 22568-2:2017)

Protecteurs du pied et de la jambe - Exigences et méthodes d'essais pour l'évaluation de composants de chaussure - Partie 2: Embouts non métalliques (ISO/DIS 22568-2:2017)

**Ta slovenski standard je istoveten z: prEN ISO 22568-2**

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**ICS:**

13.340.50	Varovanje nog in stopal	Leg and foot protection
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**oSIST prEN ISO 22568-2:2017**

**en**



# DRAFT INTERNATIONAL STANDARD

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

#### Part 2: Non-metallic toecaps

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

*Partie 2: Embouts non métalliques*

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## ISO/DIS 22568-2:2017(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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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/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

Non-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 component assessment —

## Part 2: Non-metallic toecaps

### 1 Scope

This International Standard specifies requirements and test methods for non-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 non-metallic toecap**

toe cap produced from material other than metal and intended to be incorporated underneath the upper of footwear intended to provide protection against mechanical impact and compression

#### 3.2

##### **external non-metallic toecap**

toecap produced from material other than metal intended to be incorporated on top of the footwear upper forepart intended to provide protection against mechanical impact and compression

### 4 Requirements for non-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="#">4.4</a> .		

**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
Impact resistance after three environmental treatments	<a href="#">4.6</a>	1 pair (right and left) for each treatment
NOTE For details, see <a href="#">4.2</a> to <a href="#">4.4</a> .		

NOTE The provisions of [4.2](#), [4.3](#), [4.4](#), [4.5](#) and [4.6](#) do not exclude a non-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

Non-metallic toecaps 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.

## 4.3 Dimensions

### 4.3.1 Internal length

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

**Table 2 — Minimum internal length of non-metallic toecaps**

Non-metallic toecap 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.						

### 4.3.2 Width of flange

If non-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 non-metallic toecaps are tested in accordance with the method described in [5.3](#) at an energy level of either  $(100 \pm 2)$  J (non-metallic toecaps intended for protective footwear), or  $(200 \pm 4)$  J (non-metallic toecaps 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 non-metallic toecap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be

seen) or delamination. Non-metallic toecap designed with perforations does not have to follow the last requirement.

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

Non-metallic toecap number	5 and below	6	7	8	9	10 and above
Internal non-metallic toecap minimum clearance (mm)	19,5	20,0	20,5	21,0	21,5	22,0
External non-metallic toecap minimum clearance (mm)	24,5	25,0	25,5	26,0	26,5	27,0

#### 4.5 Compression resistance

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

#### 4.6 Stability against ageing and environmental influence

When non-metallic toecaps are subject to each single one of the treatments described in 5.5 and thereafter tested in accordance with the method described in 5.3 at an energy level of either  $(100 \pm 2)$  J (caps intended for protective footwear) or  $(200 \pm 4)$  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 non-metallic toecap shall not develop sharp edges or any cracks passing through the material (i.e. through which light can be seen) or delamination.

### 5 Test methods for non-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 Determination of internal non-metallic toecap length

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

Position the left non-metallic toecap with its rear edge in line with a base line and draw its outline. Repeat the exercise with the right non-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 non-metallic toecaps coincide (see Figure 1).