



SLOVENSKI STANDARD
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Osebna varovalna oprema - Varovalna obutev (ISO/DIS 20346:2020)

Personal protective equipment - Protective footwear (ISO/DIS 20346:2020)

Persönliche Schutzausrüstung - Schutzschuhe (ISO/DIS 20346:2020)

Équipement de protection individuelle - Chaussures de protection (ISO/DIS 20346:2020)

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Équipement de protection individuelle — Chaussures de protection

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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).

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For an explanation on the voluntary nature of standards, 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.

ISO 20346 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 161, *Foot and leg protectors*, in collaboration with ISO Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 3, *Foot protection*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 20346:2014), which has been technically revised.

Changes between this edition and the 2014 version are as follows:

- revision of terms (3.)
- [Figures 1](#) to [4](#) revised
- [Tables 1](#), [2](#) and [3](#) revised
- heel area defined ([5.2.3](#))
- toe protection, depending on ISO 22568 Part 1 and 2, exchanging EN 12568:2010
- requirement on slip resistance revised ([5.3.5](#) and [6.2.10](#)); marking “SR” introduced
- requirement for seam strength of hybrid footwear added ([5.3.7](#))
- requirement for upper materials not fulfilling WVP explained ([5.4.6](#))
- abrasion of insoles revised ([5.7.5](#))
- outsole requirements revised ([5.8](#))
- outsole thickness revised ([5.8.1.1](#))
- flexing resistance of outsole clarified ([5.8.4](#))

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- perforation resistant insert, depending on ISO 22568 Part 3 and 4, exchanging EN 12568:2010
- tolerance added ([6.2.3.1](#))
- former [Annex A](#) Hybrid Footwear included in the general text ([Table 2](#), 6.2.5.2, [Table 16](#))
- optional requirement of metatarsal protection revised ([6.2.6](#))
- optional requirement on ankle protection clarified ([6.2.7](#))
- optional requirement for “SC” scuff caps added ([6.2.9](#))
- optional requirement for “LG” Ladder grip of outsoles added ([6.4.3](#))
- marking revised ([Table 16](#) and [21](#))
- information on obsolescence date added ([8.5](#))
- normative [Annex A](#) with requirements for customized protective footwear added
- informative [Annex B](#) assessment of the footwear by the wearer added
- informative [Annex C](#) Slip resistance added
- requirement for electrically insulating footwear (EN 50321) deleted
- [Annex ZA](#) revised

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Personal protective equipment — Protective footwear

1 Scope

This International Standard specifies basic and additional (optional) requirements for protective footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. It also specifies requirements for orthopaedic customized or individual manufactured orthopaedic protective footwear. This standard does not cover the property of high visibility because of interaction with the clothing (e.g. trousers cover the footwear) and work area conditions (e.g. dirt, mud).

Special risks are covered by complementary job-related standards (e.g. footwear for firefighters, electrical insulating footwear, protection against chain saw injuries, protection against chemicals and molten metal splash, protection for motorcycle riders).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

The following referenced documents are indispensable for the application of this document.

ISO 20344:2021, *Personal protective equipment — Test methods for footwear*

ISO 22568-1:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 1: Metallic toecaps*

ISO 22568-2:2019, *Foot and leg protectors — Requirements and test methods for footwear component — Part 2: Non-metallic toecaps*

ISO 22568-3:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 3: Metallic perforation resistant inserts*

ISO 22568-4:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 4: Non-metallic perforation resistant inserts*

ISO 21064:2017, *Prosthetics and orthotics — Foot orthotics — Uses, functions classification and description*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

Note 1 to entry The component parts of footwear are illustrated in [Figure 1](#), [2](#) and [3](#).

Note 2 to entry Further terms and definitions can be found in ISO 19952:2005.

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3.1 protective footwear
 footwear incorporating protective features to protect the wearer from injuries that could arise through accidents

Note 1 to entry: Items of protective footwear are fitted with toecaps designed to give protection against impact of at least 100 J and against compression of at least 10 kN.

3.2 upper
 part or parts of a shoe that cover the toes, the top of the foot, the sides of the foot, and the back of the heel; it is attached to the outsole of a footwear.

3.3 leather
 hide or skin tanned to be imperishable

3.3.1 leather split
 flesh or middle part of a hide or skin, obtained by splitting a thick leather, which is tanned to be imperishable

3.4 rubber
 vulcanized elastomers

3.5 polymeric materials
 large molecules composed of repeating structural units (monomers) typically connected by chemical bond

EXAMPLE Polyurethane (PU) or polyvinylchloride (PVC).

3.6 insole
 non-removable component used to form the base of the shoe to which the upper is usually attached during lasting

3.7 insock, seat sock, footbed
 Insock: removable or non-removable footwear component used to cover completely the insole
 seat sock: removable or non-removable footwear component used to cover the insole in the heel area
 footbed: removable or non-removable footwear component used to cover completely the insole; shaped according to the sole of the foot

Note 1 to entry: "Non-removable" means that the component cannot be removed without any damage.

Note 2 to entry: "Removable" means, that the component can be removed, but it must be placed in the footwear while wearing to maintain all protective features

3.8 lining
 material covering the inner surface of the upper

Note 1 to entry: The wearer's foot is in direct contact with the lining.

Note 2 to entry: Where an upper is split at the forepart to house the toecap, or if an external piece of material is stitched to the upper to form a pocket to house the toecap, the material under the toecap acts as a lining.

3.9 cleat
 protruding part of the outer surface of the sole

3.10**rigid outsole**

outsole which cannot be bent through an angle of 45° under a load of 30 N

3.11**perforation resistant insert**

component, placed in the outsole complex or used as an insole simultaneously in order to provide protection against perforation

3.12**protective toecap**

built-in footwear component designed to protect the toes of the wearer from impacts and compression

3.13**scuff caps**

abrasion resistant materials or component to protect against scuff of the upper external toe region

3.14**heel area**

counter(stiffener) area, rear part of the footwear

3.15**dissipative footwear**

footwear with low resistance between the wearer and the ground, able to dissipate some static electricity

3.16**antistatic footwear**

footwear maintaining some resistance between the wearer and the ground, able to dissipate some static electricity

3.17**fuel oil**

aliphatic hydrocarbon constituent of petroleum

3.18**specific job-related footwear**

occupational footwear relating to a specific profession

EXAMPLE Footwear for firefighters

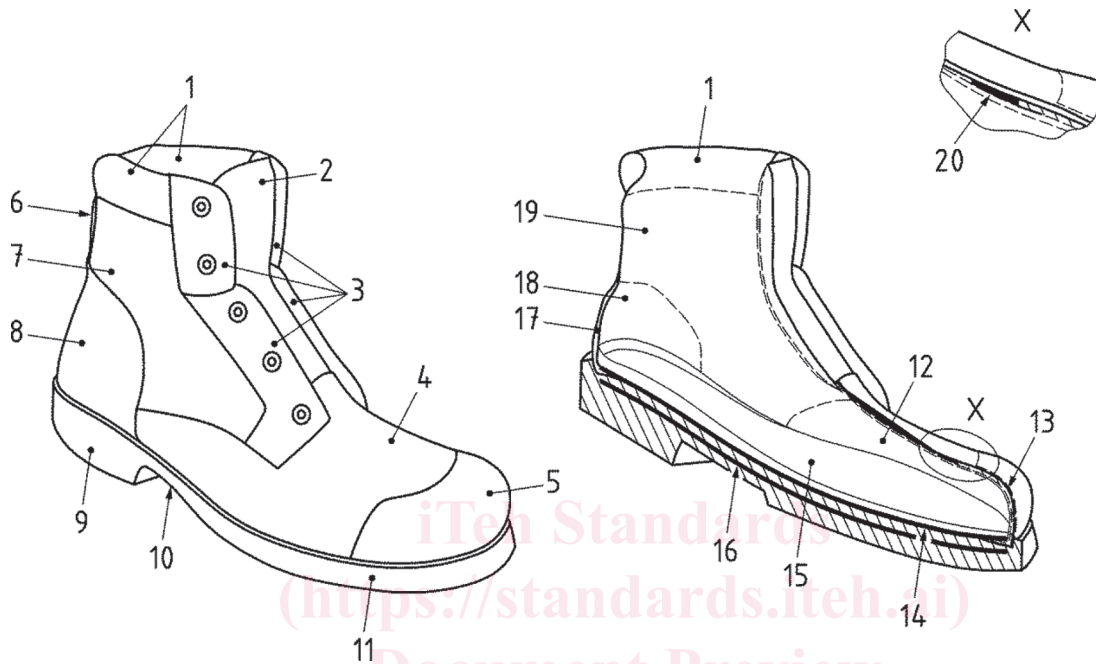
3.19**customized protective footwear (adapted to fit an individual user or a single unit to fit an individual user)**

covering all individual orthotic footwear according to ISO 21064:2017, 3.2 and other specific conditions of a foot. They integrate in their design the recipient's own physiognomy and the specific arrangements aimed at modifying, correcting, compensating, curing, preventing, relieving a pathology, e.g. overweight, diabetes, hyperhidrosis. Several types of customized protective footwear and footwear adaptations exist: **Type 1 — equipped with customized insoles** Protective footwear (complying ISO 20345:2021) incorporating a customized insoles adapted to the wearers needs. **Type 2 — modified protective footwear** protective footwear (complying ISO 20345:2021) modified from its original construction to fit to an individual user. See examples in ISO 21064:2017, 6.4 **Type 3 — Bespoke protective footwear** Protective footwear (complying ISO 20345: 2021) constructed as a single unit to fit an individual user. See examples in ISO 21064:2017, 6.3.2 and 6.3.3

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3.20
hybrid footwear

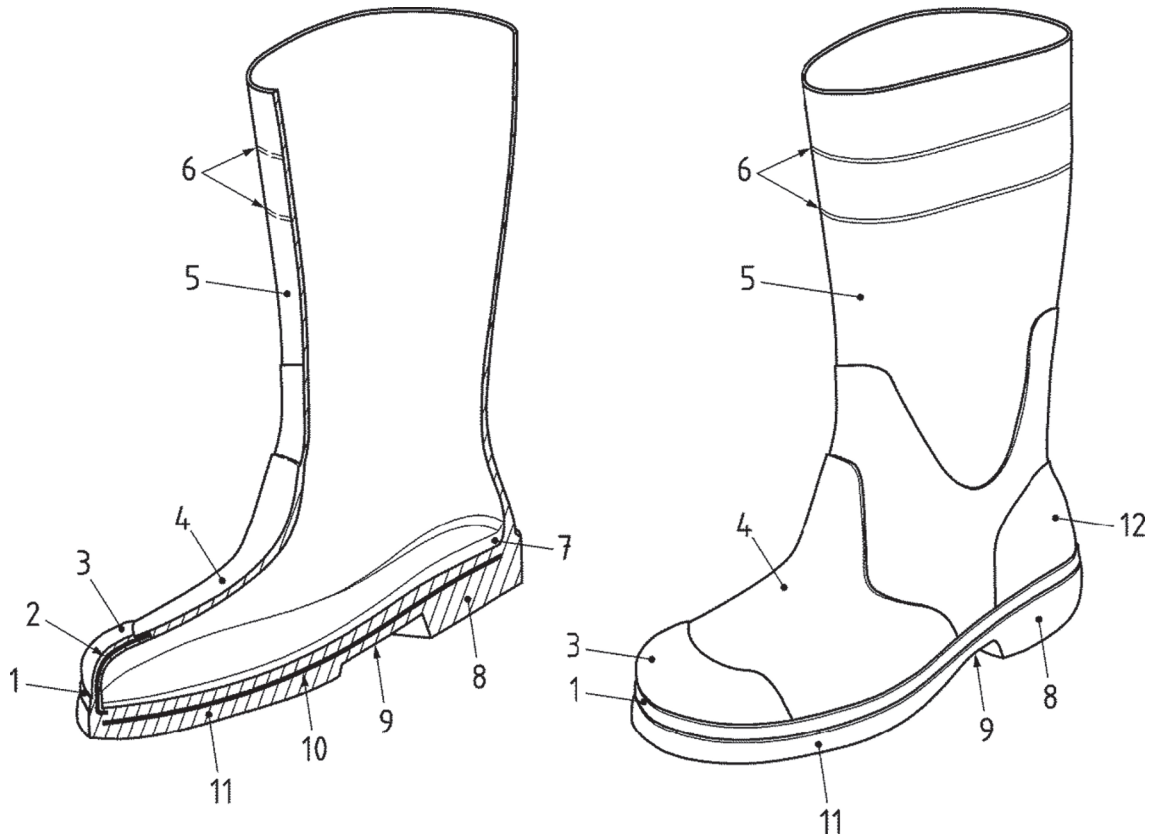
product with a vulcanized rubber or moulded polymeric lower foot section to the upper with a leather and/or fabric leg shaft. Hybrid footwear does not fully meet the classifications I or II as described in [Clause 4](#) Two Hybrid footwear product types exist: **Hybrid “moulded” footwear** — with a vulcanized rubber or all moulded polymeric foot section integrally moulded around the toecap and often including the outsole. The foot area of this product type is unlined and usually does not incorporate an insole. **Hybrid “constructed” footwear** — with a foot section of vulcanized rubber or all moulded polymeric that is manufactured separately and then constructed around a conventionally lasted lining/insole construction and often with a separately attached outsole.



Key

- | | |
|--------------------|---------------------------------|
| 1 collar | 11 outsole — forepart |
| 2 tongue | 12 vamp lining |
| 3 facing | 13 protective toecap |
| 4 upper — vamp | 14 insole board |
| 5 scuff cap | 15 insock/seat sock/footbed |
| 6 back strap | 16 perforation-resistant insert |
| 7 upper — quarter | 17 counter stiffener |
| 8 upper — counter | 18 counter lining |
| 9 outsole — heel | 19 quarter lining |
| 10 outsole — waist | 20 toe cap back edge covering |

Figure 1 — Example parts of class I protective footwear

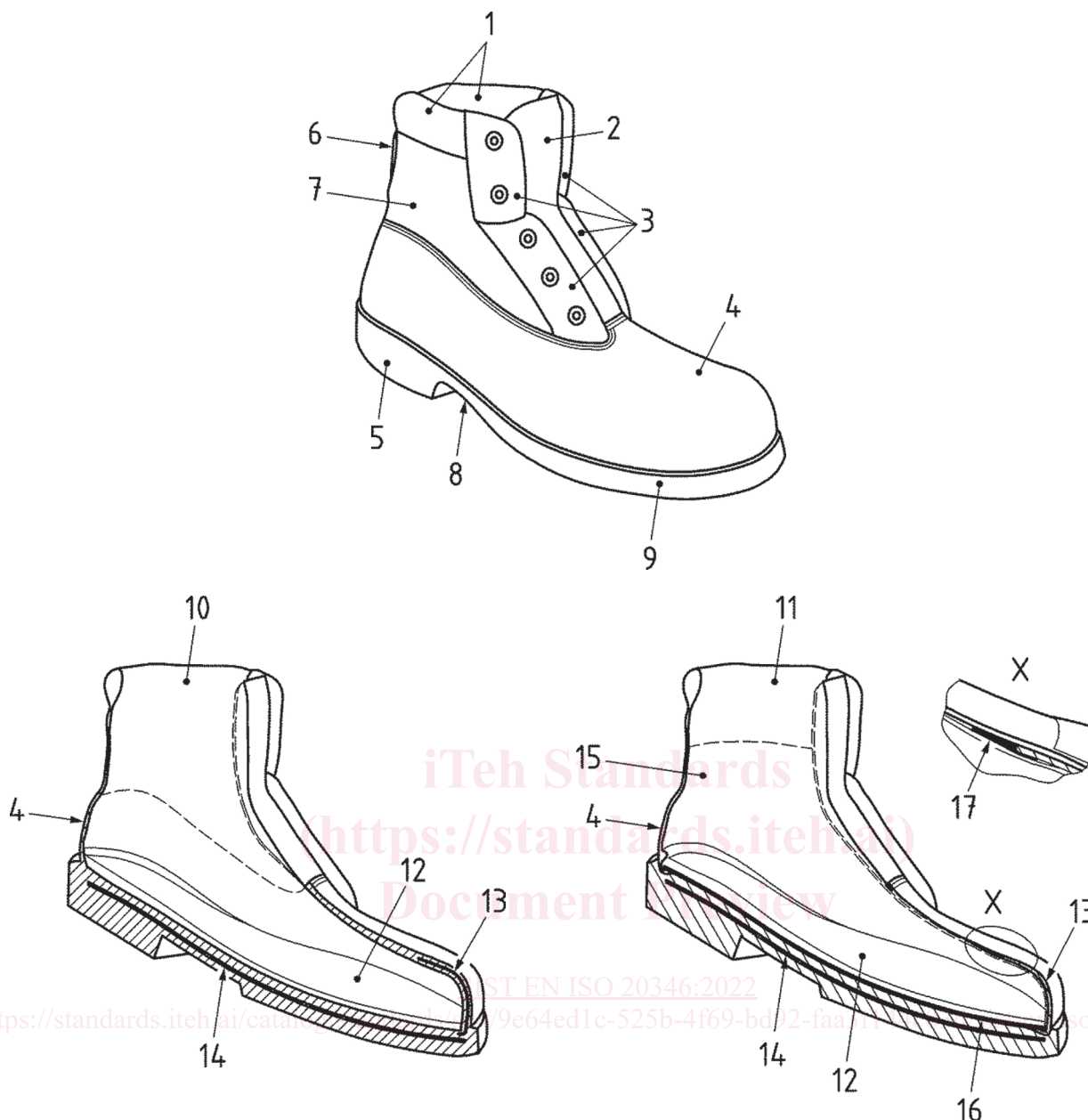


Key

- | | | | |
|---|-------------------|----|------------------------------|
| 1 | Foxing strip | 7 | Insock/seat sock/Footbed |
| 2 | Protective toecap | 8 | Outsole — Heel |
| 3 | Scuff cap | 9 | Outsole — Waste |
| 4 | Upper — vamp | 10 | Perforation resistant insert |
| 5 | Upper — Shaft | 11 | Outsole — Forepart |
| 6 | Trim marks | 12 | Upper — counter |

Figure 2 — Example parts of Class II protective footwear

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Hybrid moulded (Entirely moulded lower section) Hybrid constructed (seperately attached sole unit)

Key

- | | |
|--|---------------------------------|
| 1 Collar | 10 lining |
| 2 Tongue | 11 Collar lining |
| 3 Facings | 12 insock/seat sock/footbed |
| 4 Moulded rubber or polymeric upper part | 13 protective toecap |
| 5 Outsole — Heel | 14 Perforation resistant insert |
| 6 backstrap | 15 Foot section lining |
| 7 Upper leather or fabric section | 16 insole board |
| 8 Outsole — Waist | 17 Toecap back edge covering |
| 9 Outsole — forepart | |

Figure 3 — Example parts of hybrid protective footwear