

<b>STN</b>	<b>Osobné ochranné prostriedky Bezpečnostná obuv (ISO 20345: 2021)</b>	<b>STN EN ISO 20345</b>  83 2506
------------	--	--

Personal protective equipment - Safety footwear (ISO 20345:2021)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 06/22

Obsahuje: EN ISO 20345:2022, ISO 20345:2021

Oznámením tejto normy sa od 31. 03. 2023 ruší  
STN EN ISO 20345 (83 2506) z júla 2012

**134859**

EUROPEAN STANDARD

**EN ISO 20345**

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2022

ICS 13.340.50

Supersedes EN ISO 20345:2011

English Version

**Personal protective equipment - Safety footwear (ISO  
20345:2021)**Équipement de protection individuelle - Chaussures de  
sécurité (ISO 20345:2021)Persönliche Schutzausrüstung - Sicherheitsschuhe (ISO  
20345:2021)

This European Standard was approved by CEN on 30 December 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN ISO 20345:2022 (E)**

<b>Contents</b>	<b>Page</b>
<b>European foreword.....</b>	<b>3</b>
<b>Annex ZA (informative) Relationship between this European Standard and the essential requirements of PPE Regulation (EU) 2016/425 aimed to be covered.....</b>	<b>4</b>

## **European foreword**

This document (EN ISO 20345:2022) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective equipment" in collaboration with 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 September 2022, and conflicting national standards shall be withdrawn at the latest by March 2023.

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

This document supersedes EN ISO 20345:2011.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For the relationship with EU Directive(s) / Regulation(s), see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

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

## **Endorsement notice**

The text of ISO 20345:2021 has been approved by CEN as EN ISO 20345:2022 without any modification.

**EN ISO 20345:2022 (E)****Annex ZA**  
(informative)**Relationship between this European Standard and the essential requirements of PPE Regulation (EU) 2016/425 aimed to be covered**

This European Standard has been prepared under a Commission's standardization request M/571 to provide one voluntary means of conforming to essential requirements of REGULATION (EU) 2016/425 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC.

Once this standard is cited in the Official Journal of the European Union under that REGULATION (EU) 2016/425, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Regulation, and associated EFTA regulations.

**Table ZA.1 — Correspondence between this European Standard and Annex II of REGULATION (EU) 2016/425**

<b>ESSENTIAL HEALTH AND SAFETY REQUIREMENTS of REGULATION (EU) 2016/425</b>	<b>Clause(s)/sub-clause(s) of this EN ISO</b>	<b>Remarks/Notes</b>
General requirements applicable to all PPE		
1.1.1 Ergonomics	5.3.4	
1.1.2.1 Optimum level of protection	5.3.4	
1.2.1 Absence of inherent risks and other nuisance factors	5.3.4	
1.2.1.1 Suitable constituent materials	5.3.6	
1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user	5.3.4	
1.2.1.3 Maximum permissible user impediment	5.3.4	
1.3.1 Adaptation of PPE to user morphology	5.3.4	
1.3.2 Lightness and strength	5.3.1.2, 5.4.3, 5.4.4, 5.4.5, 5.5.2, 5.6.2, 5.8.3, 5.8.4, 5.8.6, 6.2.7, 6.2.8	
1.4 Manufacturer's instructions and information	Clause 8	
2.2 PPE enclosing the parts of the body to be protected	5.4.6, 5.5.4, 5.7.3	
2.4 PPE subject to ageing	Clause 7 and Clause 8	
2.6 PPE for use in potentially explosive Atmospheres	6.2.2.1; 6.2.2.2	
2.12 PPE bearing one or more	6.1 Table 16, Clause 7	

	identification markings or indicators directly or indirectly relating to health and safety		
2.14	Multi-risk PPE	5.3.5 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5, 6.2.6, 6.2.7, 6.2.8, 6.2.10, 6.4.1, 6.4.2	
3.1.1	Impact caused by falling or ejected objects and collisions of parts of the body with an obstacle	5.3.2.6, 6.2.6, 6.2.7	
3.1.2.1	Prevention of falls due to slipping	5.3.5, 5.8.2, 6.4.3, 6.2.10,	
3.2	Protection against static compression of part of the body	5.3.2.7, 6.2.4	
3.3	Protection against mechanical injuries	5.5.2, 5.8.3, 6.2.1, 6.2.8, 6.2.9	
3.6	Protection against heat and/or fire	6.2.3.1; 6.4.1	
3.7	Protection against cold	6.2.3.2	

**WARNING 1** — Presumption of conformity stays valid only, as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

**WARNING 2** — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

# INTERNATIONAL STANDARD

# ISO 20345

Third edition  
2021-12

---

---

## Personal protective equipment — Safety footwear

*Équipement de protection individuelle — Chaussures de sécurité*



Reference number  
ISO 20345:2021(E)

© ISO 2021

**ISO 20345:2021(E)****COPYRIGHT PROTECTED DOCUMENT**

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland



# Contents

	Page
<b>Foreword</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Classification and designs</b> .....	<b>8</b>
<b>5 Basic requirements for safety footwear</b> .....	<b>9</b>
5.1 General.....	9
5.2 Design.....	12
5.2.1 General.....	12
5.2.2 Height of upper.....	12
5.2.3 Heel area.....	12
5.3 Whole footwear.....	13
5.3.1 Constructional performance.....	13
5.3.2 Toe protection.....	13
5.3.3 Leak proofness.....	15
5.3.4 Specific ergonomic features.....	15
5.3.5 Slip resistance.....	15
5.3.6 Innocuousness.....	16
5.3.7 Seam strength.....	16
5.4 Upper.....	16
5.4.1 General.....	16
5.4.2 Thickness.....	17
5.4.3 Tear strength.....	17
5.4.4 Tensile properties.....	18
5.4.5 Flexing resistance.....	18
5.4.6 Water vapour permeability and coefficient.....	18
5.4.7 Resistance to hydrolysis.....	18
5.5 Lining.....	19
5.5.1 General.....	19
5.5.2 Tear strength.....	19
5.5.3 Abrasion resistance.....	19
5.5.4 Water vapour permeability and coefficient.....	19
5.6 Tongue.....	19
5.6.1 General.....	19
5.6.2 Tear strength.....	20
5.7 Insole, insock and footbed.....	20
5.7.1 Thickness.....	20
5.7.2 Water permeability.....	20
5.7.3 Water absorption and desorption.....	20
5.7.4 Abrasion resistance.....	20
5.8 Outsole.....	20
5.8.1 General.....	20
5.8.2 Design.....	21
5.8.3 Tear strength.....	21
5.8.4 Abrasion resistance.....	21
5.8.5 Flexing resistance.....	22
5.8.6 Resistance to hydrolysis.....	22
5.8.7 Interlayer bond strength.....	22
<b>6 Additional requirements for safety footwear</b> .....	<b>22</b>
6.1 General.....	22
6.2 Whole footwear.....	24
6.2.1 Perforation resistance.....	24

**ISO 20345:2021(E)**

6.2.2	Electrical properties.....	26
6.2.3	Resistance to inimical environments.....	26
6.2.4	Energy absorption of seat region.....	26
6.2.5	Water resistance.....	27
6.2.6	Metatarsal protection.....	27
6.2.7	Ankle protection.....	27
6.2.8	Cut resistance.....	28
6.2.9	Scuff cap abrasion.....	28
6.2.10	Slip resistance.....	28
6.3	Upper — Water penetration and absorption.....	29
6.4	Outsole.....	29
6.4.1	Resistance to hot contact.....	29
6.4.2	Resistance to fuel oil.....	29
6.4.3	Ladder grip.....	29
<b>7</b>	<b>Marking.....</b>	<b>29</b>
<b>8</b>	<b>Manufacturer's instructions and information.....</b>	<b>31</b>
8.1	General.....	31
8.2	Electrical properties.....	31
8.2.1	Partially conductive footwear.....	31
8.2.2	Antistatic footwear.....	32
8.3	Insocks.....	33
8.4	Perforation resistance.....	33
8.5	Date of obsolescence.....	33
	<b>Annex A (normative) Customized safety footwear (safety footwear adapted to fit an individual user or a single unit to fit an individual user).....</b>	<b>34</b>
	<b>Annex B (informative) Assessment of the footwear by the wearer.....</b>	<b>38</b>
	<b>Annex C (informative) Slip resistance.....</b>	<b>40</b>
	<b>Bibliography.....</b>	<b>43</b>

## 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)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

ISO 20345 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 161, *Foot and leg protectors*, in collaboration with 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 20345:2011), which has been technically revised. The main changes compared to the previous edition are as follows:

- revision of the terms and definitions in [Clause 3](#);
- [Figure 1](#) to [Figure 4](#) revised;
- [Tables 1, 2](#) and [3](#) revised;
- heel area defined ([5.2.3](#));
- toe protection, depending on ISO 22568-1 and ISO 22568-2, exchanging EN 12568:2010;
- requirement on slip resistance revised ([5.3.5](#) and [6.2.10](#)); marking “SRA, SRB and SRC” deleted; marking “SR” and “Ø” introduced;
- pH value and chromium VI tests added in [5.3.6](#); former separate clauses under upper, lining, tongue and insole/insock deleted;
- 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 ([5.7.4](#));
- outsole requirements revised ([5.8](#));
- outsole thickness revised ([5.8.2.1](#));

**ISO 20345:2021(E)**

- flexing resistance of outsole clarified ([5.8.5](#));
- perforation resistant insert, depending on ISO 22568-3 and ISO 22568-4, exchanging EN 12568:2010;
- tolerance added ([6.2.3.1](#));
- former [Annex A](#) Hybrid footwear included in the general text ([Table 2](#), [5.4.1.2](#));
- optional requirement of metatarsal protection revised ([6.2.6](#));
- optional requirement on ankle protection clarified ([6.2.7](#));
- optional requirement for “SC” scuff cap abrasion added ([6.2.9](#));
- water penetration and absorption, symbol “WRU” deleted, symbol “WPA” introduced;
- optional requirement for “LG” Ladder grip of outsoles added ([6.4.3](#));
- marking revised ([Table 16](#) and [Table 20](#));
- two new categories added, S6 and S7 ([Table 20](#));
- information on obsolescence date added ([8.5](#));
- [Annex A](#) with requirements for customized safety footwear added;
- [Annex B](#) added;
- [Annex C](#) added;
- requirement for electrically insulating footwear (EN 50321) deleted.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Personal protective equipment — Safety footwear

## 1 Scope

This document specifies basic and additional (optional) requirements for safety footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. It also specifies requirements for safety footwear equipped with customized insoles, customized safety footwear or individual manufactured customized safety 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.

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*

EN 13832-3:2018, *Footwear protecting against chemicals — Part 3: Requirements for footwear highly resistant to chemicals under laboratory conditions*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**