



SLOVENSKI STANDARD
SIST EN 15090:2006
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Obutev za gasilce

Footwear for firefighters

Schuhe für die Feuerwehr

Chaussures pour pompiers

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Ta slovenski standard je istoveten z: EN 15090:2006

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Footwear for firefighters

Chaussures pour pompiers

Schuhe für die Feuerwehr

This European Standard was approved by CEN on 19 June 2006.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 15090:2006) 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of an identical text or by endorsement, at the latest by January 2007, and conflicting national standards shall be withdrawn at the latest by July 2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 89/686/EEC.

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

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

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Introduction

The purpose of this standard is to provide minimum performance requirements and test methods for footwear for firefighters that is intended for use for fire fighting and associated activities. A risk assessment should be used to determine if the footwear covered by this standard is suitable for the intended use for the expected exposure. Firefighters should be trained in the use, care and maintenance of the footwear covered by this standard, including an understanding of its limitations.

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1 Scope

This standard specifies minimum requirements and test methods for the performance of three types of footwear for use by firefighters for general-purpose rescue, fire rescue and hazardous materials emergencies.

This standard does not cover special personal protective equipment used in high-risk situations (for example, the conditions described in ISO 15538).

NOTE 1 Selection of the type of footwear (see 4.3 and Tables 3 and 4) for firefighters should be made following a comprehensive risk assessment (see Annex A).

NOTE 2 Requirements for slip resistance are not given in the current (2004) edition of EN 13287. CEN TC 161 Working Group 3 is continuing its work to develop slip requirements and introduce them into standards for PPE footwear. It is expected that EN 15090 will be amended as soon as this work is finished.

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.

prEN 13832-3:2004, *Footwear protecting against chemicals and micro-organisms - Part 3: Footwear highly protective against chemicals*

EN ISO 6942:2002, *Protective clothing - Protection against heat and fire - Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat (ISO 6942:2002)*

EN ISO 15025:2002, *Protective clothing - Protection against heat and flame - Method of test for limited flame spread (ISO 15025:2000)*

EN ISO 20344:2004, *Personal protective equipment – Test methods for footwear (ISO 20344: 2004)*

EN ISO 20345:2004, *Personal protective equipment – Safety footwear - (ISO 20345: 2004)*

3 Terms and definitions

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

4 Classification, design and type

4.1 Classification

Footwear for firefighters shall be classified in accordance with Table 1.

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Table 1 — Classification of footwear

Code designation	Classification
I	Footwear made from leather and or other materials, excluding all rubber and all polymeric footwear
II	All-rubber (i.e. entirely vulcanised) and all-polymeric footwear (i.e. entirely moulded) footwear

4.2 Design

Footwear shall conform to one of designs B to E of Figure 3 of EN ISO 20345:2004.

4.3 Type

The types of footwear for firefighters shall be as follows:

- Type 1 Suitable for general-purpose rescue (example Type 1, HI₁), fire suppression (example Type 1, HI₂), firefighting suppression action involving a fire in vegetative fuels such as forest (example Type 1, HI₃), crops, plantations, grass or farmland.
- Type 2 Suitable for fire rescue (example Type 2, HI₂), fire suppression, and property conservation in buildings, enclosed structures (example Type 2, HI₃), vehicles, vessels, or like properties that are involved in a fire or emergency situation.
- Type 3 Hazardous materials emergencies, involving the release or potential release of hazardous chemicals into the environment that can cause loss of life, personnel injury, or damage to property and the environment. Suitable also for fire rescue, fire suppression, and property conservation in aircraft, buildings, enclosed structures, vehicles, vessels, or like properties that are involved in a fire or emergency situation.

5 Sampling and conditioning

The minimum number of samples shall be that specified in Clause 6 of EN ISO 20344:2004, together with the minimum number of test pieces taken from each sample, as given in Table 2.

Wherever possible, test pieces shall be taken from the whole footwear unless otherwise stated in this standard.

If it is not possible to obtain a large enough test piece from the footwear, then a sample of the material from which the component has been manufactured may be used instead and this shall be noted in the test report.

Where samples are required from each of three sizes, these shall comprise the largest, smallest and a middle size of the footwear under test.

All test pieces shall be conditioned in a standard atmosphere of $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ relative humidity for a minimum of 48 h before testing, unless otherwise stated in the test method.

The maximum time which shall elapse between removal from the conditioning atmosphere and the start of testing shall be not greater than 10 min, unless otherwise stated in the test method.

Each test piece shall individually satisfy the specific requirement, unless otherwise stated in the test method.

Table 2 - Minimum number of samples and test specimens or test pieces

Property to be determined ^{a)}	Reference	Number of samples	Number of test pieces from each sample	Test only on the final footwear
Radiant heat	6.3.2 of this document	1 pair	see 7.2 of this document	yes
Flame	6.3.3 of this document	1 pair	See 7.3 of this document	yes
Rigidity of footwear forepart	6.4 of this document	1 pair from each of 3 sizes	1 pair	yes
Zipper puller attachment strength	6.8.2 of this document	3 zippers		no
Zipper lateral strength	6.8.3 of this document	3 zippers		no

^{a)} Table 1 of EN ISO 20344:2004 also applies

6 Requirements

6.1 Types and classifications

The permitted combinations of types of footwear for firefighters (see 4.3) and classifications I and II (see 4.1) shall be as given in Table 3. As specified in 4.2, design A shall not be used

Table 3 - Relationship between footwear classification and types

Footwear type	Classification I of Table 1	Classification II of Table 1
1	allowed	allowed
2	allowed	allowed
3	not allowed	allowed

NOTE Type 3 footwear for firefighters can be suitable to be used with chemical protective clothing in accordance with EN 943-2 where appropriate.

6.2 General requirements

Footwear for firefighters shall conform to the requirements specified in Table 4 and one of the 5 options given in Table 5.

Table 4 - General requirements

		Requirements	Reference		Type 1		Type 2		Type 3	Marking Symbol
			EN ISO 20345:2004	EN 15090	Classification I	Classification II	Classification I	Classification II	Classification II	
General	Footwear construction	Types and Classifications		4 and 6.1	X	X	X	X	X	
		Height of upper	5.2.1		X	X	X	X	X	
		Specific ergonomic features	5.3.4		X	X	X	X	X	
		Leakproofness	5.3.3		N/A	X	N/A	X	X	
		Water resistance	6.2.5		X	N/A	X	N/A	N/A	
	Seat region	Design B Figure 3 EN ISO 20345:2004	5.2.2		X	X	-	-	-	
		Design C and D Figure 3 EN ISO 20345: 2004	5.2.2		X	X	X	X	X	
		Design E Figure 3 EN ISO 20345:2004	5.2.2		N/A	X	N/A	X	X	
	Whole footwear	Sole performance	Construction	5.3.1.1		X	N/A	X	N/A	N/A
Upper/outsole bond strength			5.3.1.2		X	N/A	X	N/A	N/A	
Insulation against heat			6.3.1		X At least HI ₁	X At least HI ₁	X At least HI ₂	X At least HI ₂	X At least HI ₂	HI ₁ or HI ₂ or HI ₃
Slip resistance			Note 2 of scope							
Energy absorption of seat region			6.2.4		X	X	X	X	X	
Flame resistance			6.3.3		X	X	X	X	X	
Penetration resistance			6.2.1		O	O	X	X	X	P
Toe Protection		General	5.3.2.1		O	O	X	X	X	T
		Internal length of toe cap	5.3.2.2		O	O	X	X	X	T
		Impact resistance	5.3.2.3		O	O	X	X	X	T
		Rigidity of the toepuff	6.4		*	*	N/A	N/A	N/A	R
		Compression resistance	5.3.2.4		O	O	X	X	X	
		Corrosion resistance of metal toe caps	5.3.2.5.1		O	O	X	X	X	
Electrical properties		Electrically insulating footwear ▲	6.6.2							I
		Antistatic footwear ▲	6.6.3		X	X	X	X	X	A
		High electrical resistance outsoles ▲	6.6.4							IS
Resistance to inimical environment		Insulation against cold			*	*	*	*	*	CI
		Chemical resistance	6.5		N/A	*	N/A	*	X	CH
Accessories		Zipper	6.8		O	N/A	O	N/A	N/A	
		Metatarsal protection	6.2.6		*	*	*	*	*	M

		Requirements	Reference		Type 1		Type 2		Type 3	Marking Symbol
			EN ISO 20345:2004:	EN 15090	Classification I	Classification II	Classification I	Classification II	Classification II	
		Ankle protection	6.2.7		*	*	*	*	*	AN
Upper		Thickness	5.4.2		N/A	X	N/A	X	X	
		Tear strength	5.4.3		X	X	X	X	X	
		Tensile properties	5.4.4		X	X	X	X	X	
		Flexing resistance	5.4.5		N/A	X	N/A	X	X	
		Water vapour permeability & coefficient	5.4.6		X	N/A	X	N/A	N/A	
		pH value	5.4.7		X	N/A	X	N/A	N/A	
		Hydrolysis	5.4.8		N/A	X	N/A	X	X	
		Chromium VI	5.4.9		X	N/A	X	N/A	N/A	
		Water penetration & water absorption	6.3.1		X	N/A	X	N/A	N/A	
		Construction	6.3.2		X	N/A	X	N/A	N/A	
		Radiant heat		6.3.2	X	X	X	X	X	
		Flame resistance		6.3.3	X	X	X	X	X	
Lining	Vamp	Tear strength	5.5.1		X	N/A	X	N/A	N/A	
		Abrasion resistance	5.5.2		X	N/A	X	N/A	N/A	
		Water vapour permeability and coefficient	5.5.3		X	N/A	X	N/A	N/A	
		pH value	5.5.4		X	N/A	X	N/A	N/A	
		Chromium VI	5.5.5		X	N/A	X	N/A	N/A	
	Quarter	Tear strength	5.5.1		O	N/A	O	N/A	N/A	
		Abrasion resistance	5.5.2		O	N/A	O	N/A	N/A	
		Water vapour permeability and coefficient	5.5.3		O	N/A	O	N/A	N/A	
		pH value	5.5.4		O	N/A	O	N/A	N/A	
		Chromium VI	5.5.5		O	N/A	O	N/A	N/A	
Tongue		Tear strength	5.6.1		O	N/A	O	N/A	N/A	
		pH value	5.6.2		O	N/A	O	N/A	N/A	
		Chromium VI	5.6.3		O	N/A	O	N/A	N/A	
Insole/insocks				See Table 5	X	O	X	O	O	
Outsole		Thickness	5.8.1		X	X	X	X	X	
		Tear strength	5.8.2		X	X	X	X	X	
		Abrasion resistance	5.8.3		X	X	X	X	X	
		Flexing resistance	5.8.4		X	X	X	X	X	
		Hydrolysis	5.8.5		X	X	X	X	X	
		Interlayer bond strength	5.8.6		O	O	O	O	O	
		Resistance to fuel oil	5.8.7		X	X	X	X	X	
	Cleated area	6.4.1		X	X	X	X	X		

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	Requirements	Reference		Type 1		Type 2		Type 3	Marking Symbol
		EN ISO 20345:2004:	EN 15090	Classification I	Classification II	Classification I	Classification II	Classification II	
	Thickness of cleated outsoles	6.4.2		X	X	X	X	X	
Outsole	Cleat design		6.7.1	X	X	X	X	X	
	Cleat height		6.7.2	X	X	X	X	X	
	Cleat height in the waist area		6.7.3	X	X	X	X	X	
	Heel breast		6.7.4	X	X	X	X	X	
	Resistance to hot contact	6.4.4		X	X	X	X	X	

NOTE The applicability of a requirement to a particular classification is indicated in the table by the following.

X means that the requirement has to be met. In some cases the requirement relates only to particular materials within the classification – e.g. pH value of leather components. This does not mean that other materials are precluded from use.

O means that if the component part exists, the requirement shall be met.

- means not allowed

* means that if the property is claimed, the requirement given in the appropriate clause shall be met.

▲ means it is obligatory that one of the three requirements shall be chosen

N/A means the requirement is not applicable

The absence of **X**, -, or **O** means that no requirement is made.

Table 5 - Basic requirements for insoles and/or insocks

Options			Component to be assessed	Requirements to fulfil in EN ISO 20345:2004					
				Thickness 5.7.1	pH a) 5.7.2	Water absorption desorption 5.7.3	Insole Abrasion 5.7.4.1	Insock abrasion 5.7.4.2	Chromium VI 5.7.5 a)
1	No insole or if present not fulfilling the requirements	Non removable insock	Insock	X	X	X		X	X
2		No insock	Insole	X	X	X	X		X
		Seat sock present							
3		Full insock, non removable	Insock and insole together	X		X			
			Insock						
4		Full insock, removable and water permeable ^{b)}	Insole	X	X	X	X		X
			Insock						
5		Full insock, removable, not water permeable ^{b)}	Insole	X	X	X	X		X
			Insock						

NOTE 1: For removable insocks see 9 i).

NOTE 2: X means that the requirement shall be met.

a) these requirements are only for leather

b) a water permeable insock is one that, when tested in accordance with EN ISO 20344:2004, 7.2, lets water through in 60 s or less