

EUROPEAN STANDARDS AND MARKINGS FOR FOOT AND LEG PROTECTION

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INTRODUCTION

Harmonized European Standards for Personal Protective Equipment (PPE) have been developed as the preferred means of demonstrating equipment conformity with the basic health and safety requirements (BHSRs) of the EC Personal Protective Equipment Directive (89/686/EEC). Only equipment which meets these BHSRs is entitled to carry the CE mark and to be sold for use in the EC. The alternative route to obtaining the CE mark involves the manufacturer producing a 'technical file' for the equipment which also demonstrates that it satisfies the BHSRs. In such cases, the equipment will carry the CE mark but may not display any Standard number. The manufacturer's information will contain the performance specification.

For Category III PPE (for use against "mortal danger"), the CE mark will be accompanied by a four-digit code number identifying the responsible Notified Body appointed to ensure that the manufactured product continues to satisfy the BHSRs.

Increasingly, European Standards (prefixed EN - European Norm) are being superseded or subsumed by International Standards (prefixed ISO). Where these are adopted in the UK, they will also be issued as British Standards and be prefixed BS. The British versions of standards (BS EN, BS ISO or BS EN ISO) may have minor differences from the original versions of the standard, usually in the form of a National Foreword or National Annex, to account for legislative or technical variations specific to the UK. If such a UK variation exists, this is flagged up in the attached listings below for the individual standards. BS versions may also differ slightly in the stated year of issue from the EN or ISO versions; the original EN or ISO issue dates are quoted here.

The Standards may contain design, performance and marking requirements for the different types of equipment. This document lists the Standards, and gives a brief explanation of the markings which they define.

ORGANIZATION OF THE INFORMATION

PPE Standards are separated into broad categories, depending on the type of protection intended, eg head protection, foot protection. Separate documents have been produced for each category.

Within a category, where possible, Standards have been further subdivided according to the hazard (eg mechanical hazards, heat and flame) or component type (eg filters; face pieces) as appropriate. Both current and recently superseded versions are listed, as equipment marked according to either version may be encountered in the field.

Standard number and date are given, with the title (sometimes abridged).

If a UK National variation applies to this standard, the nature of this variation is described.

Markings and classifications defined in the Standard for that class of equipment are listed and briefly described.

Related Standards, eg specific test methods which will not usually appear in the markings on equipment are listed separately at the end of each document.

Pictograms and symbols for each type of equipment are included at the rear of the relevant document.

STANDARDS FOR FOOT AND LEG PROTECTION

EN 345-1:1992 - Safety footwear for professional use - Specification

Superseded by EN ISO 20345:2004

Basic requirements - Safety footwear must have a 200J toecap. Other properties: (may not all apply to some designs of footwear)

	P - penetration resistance C - conductive A - antistatic HI - insulating against heat CI - insulating against cold E - energy absorbing seat region WRU - uppers resistant to water penetration / absorption HRO - outsole resistant to hot contact
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Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)

	SB - basic requirements for safety footwear met S1 - basic requirements plus closed and energy absorbing seat region, and antistatic S2 - as S1 plus water penetration and absorption S3 - as S2 plus penetration resistance and cleated sole
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Classification II - (all-rubber or all-polymeric types)

	SB - basic requirements for safety footwear met S4 - basic requirements plus energy absorbing seat region, antistatic S5 - as S4 plus penetration resistance and cleated sole
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EN 345-2:1996 - Safety footwear for professional use - Additional specifications

Superseded by EN ISO 20345, EN 17249 and EN 15090

	WR - water resistance for classification I footwear
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Chainsaw footwear - Pictogram - shield enclosing chainsaw (Fig.1)

	# - class of protection (0 , 1 , 2 or 3). Class 0 only applies to classification I footwear until December 1999, after which it will disappear
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Fire fighting footwear - Pictogram - Fig. 2 with a strip beneath bearing one of the following:

	F - basic requirements met FP - basic requirements plus penetration resistance FA - basic requirements plus antistatic FPA - basic requirements plus penetration resistance and antistatic
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Metatarsal protection - M - basic requirements plus metatarsal protection

Cut resistance - CR - basic requirements plus cut resistance

EN 346-1:1992 - Protective footwear for professional use - Specification

Superseded by EN ISO 20346:2004

Basic requirements - Protective footwear must have a 100J toecap. Other properties: markings as for EN 345-1

Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)





	PB - basic requirements for protective footwear met P1 - basic requirements plus closed and energy absorbing seat region, and antistatic P2 - as P1 plus water penetration and absorption P3 - as P2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	PB - basic requirements for protective footwear met P4 - basic requirements plus energy absorbing seat region, antistatic P5 - as P4 plus penetration resistance and cleated sole
EN 346-2:1996 - Protective footwear for professional use - Additional specification	
Superseded by EN ISO 20346:2004	
	WR - water resistance for classification I footwear
	M - basic requirements plus metatarsal protection
	CR - basic requirements plus cut resistance
EN 347-1:1992 - Occupational footwear for professional use - Specification	
Superseded by EN ISO 20347:2004	
Basic requirements - Occupational footwear is not required to have a protective toecap. Other properties: markings as for EN 345-1, plus:	
	ORO - outsole resistant to fuel oil
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	O1 - basic requirements plus oil resistant sole, closed and energy absorbing seat region, and antistatic O2 - as O1 plus water penetration and absorption O3 - as O2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	O4 - basic requirements plus oil resistant sole, energy absorbing seat region, antistatic O5 - as O4 plus penetration resistance and cleated sole
EN 347-2:1996 - Occupational footwear for professional use - Additional specification	
Superseded by EN ISO 20347:2004	
	WR - water resistance for classification I footwear
BS 4676:2005 - Protective clothing - footwear and gaiters for use in molten metal foundries - Requirements and test methods	
Superseded by EN ISO 20349:2010	
Footwear	<ul style="list-style-type: none"> - manufacturer - product code - size - Type - Type 1 - worn with gaiters for MM protection - Type 2 - worn on their own for MM protection - BS 4676:2005 - Al and/or Fe for molten metal resistance type - Pictogram (Fig 5) - see instructions (e.g. Fig 8) For Type 1 footwear: Warning: When working with molten metal always fit gaiters conforming to BS 4676 over this footwear
Gaiters	<ul style="list-style-type: none"> - manufacturer - product code - size and left/right orientation - Type - Type A - extend >295mm up leg - Type B - extend >145mm up leg - BS 4676:2005 - Al and/or Fe for molten metal resistance type - Pictogram (Fig 5) - see instructions (e.g. Fig 8) Warning: Wear only in conjunction with footwear conforming to BS 4676
EN 12568:1998 - Requirements and test methods for toecaps and metal penetration resistant inserts	
Superseded by EN 12568:2010	
Toecaps	<ul style="list-style-type: none"> - toecap size - left or right - manufacturers identification - type designation S - for 200 J safety toecap P - for 100 J protective toecap
Penetration inserts	<ul style="list-style-type: none"> - insert size - manufacturers identification - type designation
EN 12568:2010 - Foot and leg protectors - Requirements and test methods for toecaps and penetration resistant inserts	
Toecaps	<ul style="list-style-type: none"> - # (5-10) denoting toecap size (10 is largest) - left or right - manufacturers identification - type designation S - for 200 J safety toecap P - for 100 J protective toecap - number of the standard





Penetration inserts	<ul style="list-style-type: none"> - insert size - manufacturers identification - type designation - number of the standard
EN 13634:2002 - Footwear for professional motorcycle riders	
Superseded by EN 13634: 2010	
	<ul style="list-style-type: none"> - Abrasion and cut resistance level 1 or 2 of upper (2 is highest) - Pictogram (Fig. 4) - Indication of impact protected area
EN 13634:2010 - Protective footwear for motorcycle riders - requirements and test methods	
	<ul style="list-style-type: none"> - size - manufacturer information - type designation - year and at least quarter of manufacture - number and year of the standard - Pictogram (Fig 4) and levels for: <ul style="list-style-type: none"> - abrasion resistance (1 or 2) - impact cut resistance (1 or 2) - transverse rigidity (1 or 2) In each case, higher number denotes higher performance - Optional markings of: <ul style="list-style-type: none"> IPA - ankle impact protection IPS - shin impact protection WR - water penetration resistant FO - fuel oil resistant SRA, SRB, SRC - slip resistance as per EN 20345 B - breathable uppers
EN 13832-2:2006 - Footwear protecting against chemicals - Part 2: Requirements for footwear resistant to chemicals under laboratory conditions	
	<p>This footwear resists degradation by the stated chemicals (at least 2 from the list below).</p> <ul style="list-style-type: none"> - size - manufacturer - type designation - year and quarter of manufacture - code for tested chemical(s): <ul style="list-style-type: none"> B - acetone D - dichloromethane F - toluene G - diethylamine H - tetrahydrofuran I - ethyl acetate J - n-heptane K - 30% sodium hydroxide L - 95% sulphuric acid M - 65% nitric acid N - 99% acetic acid O - 25% ammonia solution P - 30% hydrogen peroxide solution Q - isopropanol R - 13% sodium hypochlorite - toecap strength (200J or 100J) - see instructions (e.g Fig. 8) - pictogram (Fig 6) optional
EN 13832-3:2006 - Footwear protecting against chemicals - Part 3: Requirements for footwear highly resistant to chemicals under laboratory conditions	
	<p>This footwear resists degradation (at least 3 stated chemicals) and resists permeation (at least Level 1 resistance for the three stated chemicals).</p> <p>Markings as for EN 13832-2. Not required to also be marked with chemical permeation resistance level, but this may appear:</p> <ul style="list-style-type: none"> Level 1 - 121 to 240 minutes Level 2 - 241 to 480 minutes Level 3 - 481 to 1440 minutes Level 4 - 1441 to 1920 minutes Level 5 - >1921 minutes
EN 15090:2006 Footwear for firefighters	
Superseded by EN 15090:2012	

	<ul style="list-style-type: none"> - size - manufacturer - type designation - F1 - Outdoor interventions without need for penetration, toe or chemical protection - F2 - Fire suppression and rescue with penetration and toe protection, without chemical protection - F3 - Fire suppression and rescue with penetration, toe and chemical protection - year and at least quarter of manufacture - number and year of the standard - additional features, if not included in Type: <ul style="list-style-type: none"> - HI - heat insulation - P - penetration resistance - T - toecap - R - rigid toepuff - I - electrical insulation - A - antistatic - CI - cold insulation - CH - chemical resistance - M - metatarsal - AN - ankle protection - pictogram (Figure 2) with appropriate footwear classification
EN 15090:2012 Footwear for firefighters	
	<ul style="list-style-type: none"> - size - manufacturer - type designation - F1 - Outdoor interventions without need for penetration, toe or chemical protection - F2 - Fire suppression and rescue with penetration and toe protection, without chemical protection - F3 - Fire suppression and rescue with penetration, toe and chemical protection - year and at least quarter of manufacture - number and year of the standard - additional features, if not included in Type: <ul style="list-style-type: none"> - HI - heat insulation - P - penetration resistance - T - toecap - R - rigid toepuff - I - electrical insulation - A - antistatic - CI - cold insulation - CH - chemical resistance - M - metatarsal - AN - ankle protection - pictogram (Figure 2) with appropriate footwear classification - F1 = mandatory F1 only - F1A = F1 plus antistatic - F1AP = F1A plus penetration resistance - F1I = F1 plus electrical insulation - F1PI = F1I plus penetration resistance - F2 = mandatory F2 only - F2A = F2 plus antistatic - F2I = F2 plus electrical insulation - F3 = mandatory F3 only - F3A = F3 plus antistatic - F3I = F3 plus electrical insulation
EN ISO 17249:2004 - Safety foot wear with resistance to chainsaw cutting Amended 2007	
	<ul style="list-style-type: none"> - Year and at least quarter of manufacture - Pictogram (Fig. 1) - Protection level - 1 chain speed up to 20 m/s - 2 chain speed up to 24 m/s - 3 chain speed up to 28 m/s - 4 chain speed up to 34 m/s - HRO - heat resistant outsole (optional) - FO - fuel oil resistant outsole (optional)
EN ISO 20345:2004 - Safety footwear	
Superseded by EN ISO 20345:2011	
Basic requirements - Safety footwear must have a 200J toecap. Other properties: (may not all apply to some designs of footwear). Amended 2007 to include slip resistance rating.	

	P - penetration resistance C - conductive A - antistatic I - electrically insulating HI - insulating against heat CI - insulating against cold E - energy absorbing seat region WR - whole footwear resistant to water penetration / absorption M - metatarsal protection AN - ankle protection WRU - water resistant upper only CR - cut resistant upper HRO - outsole resistant to hot contact Slip resistance rating - one of: SRA - on ceramic surface with "soap" SRB - on steel with glycerol SRC - both of the above
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	SB - basic requirements for safety footwear met S1 - basic requirements plus closed and energy absorbing seat region, and antistatic S2 - as S1 plus water penetration and absorption S3 - as S2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	SB - basic requirements for safety footwear met S4 - basic requirements plus energy absorbing seat region, antistatic S5 - as S4 plus penetration resistance and cleated sole
EN ISO 20345:2011 - Personal safety equipment - Safety footwear	
Basic requirements - Safety footwear must have a 200J toecap. Other properties: (may not all apply to some designs of footwear)	
	P - penetration resistance C - conductive A - antistatic I - electrically insulating HI - insulating against heat CI - insulating against cold E - energy absorbing seat region WR - whole footwear resistant to water penetration / absorption M - metatarsal protection AN - ankle protection WRU - water resistant upper only CR - cut resistant upper HRO - outsole resistant to hot contact FO - fuel oil resistant sole Slip resistance rating - one of: SRA - on ceramic surface with "soap" SRB - on steel with glycerol SRC - both of the above
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	SB - basic requirements for safety footwear met S1 - basic requirements plus closed and energy absorbing seat region, and antistatic S2 - as S1 plus water penetration and absorption S3 - as S2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	SB - basic requirements for safety footwear met S4 - basic requirements plus energy absorbing seat region, antistatic S5 - as S4 plus penetration resistance and cleated sole
Safety hybrid footwear	
	SBH - Class II (polymeric) footwear with another material that extends the upper
EN ISO 20346:2004 - Protective footwear Corrected 2007, Amended 2007	
Note: It is anticipated that EN ISO 20346 will be withdrawn for new products in the next few years. There is no demand for these items.	
Basic requirements - Protective footwear must have a 100J toecap. Other properties: markings as for EN ISO 20345, except the reference to "hybrid footwear".	
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	PB - basic requirements for protective footwear met P1 - basic requirements plus closed and energy absorbing seat region, and antistatic P2 - as P1 plus water penetration and absorption P3 - as P2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	PB - basic requirements for protective footwear met P4 - basic requirements plus energy absorbing seat region, antistatic P5 - as P4 plus penetration resistance and cleated sole
EN ISO 20347:2004 - Occupational footwear Replaced by EN ISO 20347:2012	

Basic requirements - Occupational footwear is not required to have a protective toecap. Other properties: markings as for EN ISO 20345 except:	
	(M - metatarsal protection is not on option)
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	OB - basic requirements for occupational footwear met O1 - basic requirements plus oil resistant sole, closed and energy absorbing seat region, and antistatic O2 - as O1 plus water penetration and absorption O3 - as O2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	OB - basic requirements for occupational footwear met O4 - basic requirements plus oil resistant sole, energy absorbing seat region, antistatic O5 - as O4 plus penetration resistance and cleated sole
EN ISO 20347:2012 - Personal protective equipment - Occupational footwear	
Basic requirements - Occupational footwear is not required to have a protective toecap. Other properties: markings as for EN ISO 20345 except:	
	(M - metatarsal protection is not on option)
Classification I - (made from leather and other materials, but not all-rubber or all- polymeric types)	
	OB - basic requirements for occupational footwear met O1 - basic requirements plus oil resistant sole, closed and energy absorbing seat region, and antistatic O2 - as O1 plus water penetration and absorption O3 - as O2 plus penetration resistance and cleated sole
Classification II - (all-rubber or all-polymeric types)	
	OB - basic requirements for occupational footwear met O4 - basic requirements plus oil resistant sole, energy absorbing seat region, antistatic O5 - as O4 plus penetration resistance and cleated sole
Occupational hybrid footwear	
	OBH - Class II (polymeric) footwear with another material that extends the upper
EN ISO 20349: 2010 - PPE - Footwear protecting against thermal risks and molten metal splashes as found in foundries and welding - Requirements and test methods	
	- identification of the manufacturer - product code - size - number and date of the standard - any relevant marking as in EN ISO 20345 - Al if the footwear passes aluminium splash - Fe if the footwear passes iron splash - "heat and flame" (Fig 5) and "see information" (Fig 8) pictograms
EN 50321:2000 - Electrically insulating footwear for working on low voltage installations	
	In addition to that required by EN 345, 346 or 347: - symbol for live working (Fig 3) - class: 00 - installations up to 500V ac and 750V dc (beige) 0 - Installations up to 1000V ac and 1500V dc (red) - serial or batch number - month and year of manufacture - Provision for marking the date of first use, and dates of periodic examination / inspection
Leg protection	
EN 381-5:1995 - Chainsaw protection - Requirements for leg protectors	
	Pictogram - a shield containing a chainsaw (Fig 1)
Design	A - gives front and right side rear protection to both legs B - additionally gives rear left side protection to the right leg C - gives all-round protection to both legs
Chain speed	Class 1 - 0 m/s, given below the pictogram Class 2 - 24 m/s, given below the pictogram Class 3 - 28 m/s, given below the pictogram
EN 381-9:1997 - Chainsaw protection - Requirements for protective gaiters	
Chain speed	Class 0 - given below the pictogram (16 m/s) Class 1 - given below the pictogram (20 m/s) Class 2 - given below the pictogram (24 m/s) Class 3 - given below the pictogram (28 m/s) Class 0 only applies to classification I footwear until December 1999, after which it will disappear.
EN 14404:2004 - Knee protectors for work in the kneeling position. Amended 2010	

	<ul style="list-style-type: none"> - manufacturer identification - Type designation and model <ul style="list-style-type: none"> - Type1: independent of other clothing and fasten around leg - Type 2: in pocket in trouser leg - Type 3: not attached to the body or clothing - Type 4: built into devices with other functions - size - number of the standard - performance level: <ul style="list-style-type: none"> Level 1 for use on flat floor surfaces without projecting objects more than 1 cm high Level 2 for use in severe conditions, eg kneeling on broken rocks in mining and quarry work. - identification of the inner / outer surface of Type 2 protectors - "see information" indication (e.g. Fig 8) Plus where practical: <ul style="list-style-type: none"> - intended use - any kneeling hazards not covered - textile / material types in the protector - care labeling - if resists penetration, pictogram (Fig 7) and level (1 or 2, 2 being higher performance)
OTHER STANDARDS RELEVANT TO FOOTWEAR AND LEG PROTECTION Occupational equipment is unlikely to be marked with these Standard numbers, but they may contain useful information on equipment performance or test methods.	
EN 381-2:1995	Chainsaw protection - Test methods for leg protectors
EN 381-3:1996	Chainsaw protection - Test methods for footwear
EN 381-8:1997	Chainsaw protection -Test method for protective gaiters
EN 13287:2012	Personal protective equipment - Footwear - Test method for slip resistance
EN 13832-1:2006	Footwear protecting against chemicals - Part 1: Terminology and test methods
CEN/ISO TR 18690: 2006	Guidance for the selection use and maintenance of safety, protective and occupational footwear
EN ISO 20344:2011	Personal protective equipment - Test methods for footwear
BS 7971	Protective clothing and equipment for use in violent situations and in training. Part 4:2002 - Limb protectors Part 5:2004 - Footwear Part 11:2006 - Foot and ankle protectors
	Fig. 1 Chainsaw protection
	Fig. 2 Firefighters protection.
	Fig. 3 Live working
	Fig. 4 Motorcyclist protection

	<p>Fig. 5 Heat and flame</p>
	<p>Fig. 6 Chemicals</p>
	<p>Fig. 7 Mechanical hazards</p>
	<p>Fig. 8 See Information</p>