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**Guidance for the selection, use and  
maintenance of safety, protective  
and occupational footwear**

*Lignes directrices pour la sélection, l'utilisation et l'entretien des  
chaussures de protection d'usage professionnel*

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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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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.

ISO/TR 18690 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 3, *Foot protection*. [ISO/TR 18690:2006](#)

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# Guidance for the selection, use and maintenance of safety, protective and occupational footwear

## 1 Scope

This Technical Report provides guidance for selection, use and maintenance of safety, protective and occupational footwear for professional use. It is designed for footwear manufacturers, suppliers, employers and self-employed people, safety engineers and users. This Technical Report also provides guidance for preparing national guidance in this area.

## 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 20345:2004, *Personal protective equipment — Safety footwear*

ISO 20346:2004, *Personal protective equipment — Protective footwear*

ISO 20347:2004, *Personal protective equipment — Occupational footwear*

## 3 Terms and definitions

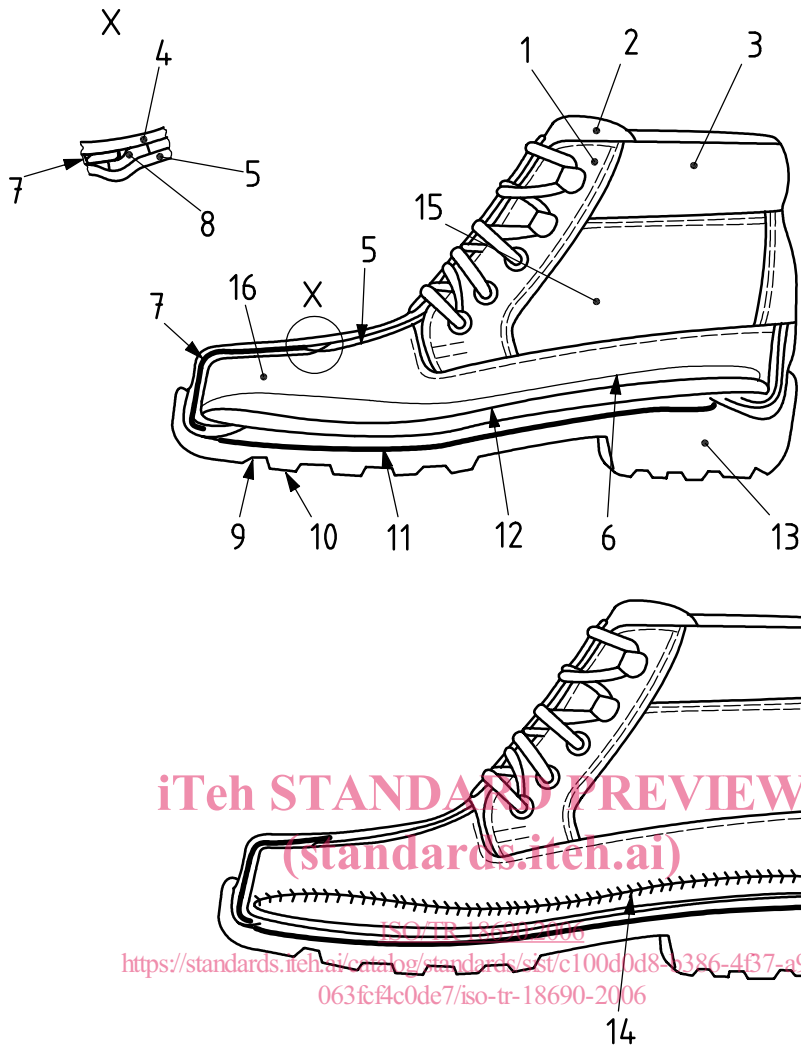
For the purposes of this document, the terms and definitions given in ISO 20345, ISO 20346 and ISO 20347 apply.

## 4 Design, construction and classification

Construction of safety, protective and occupational footwear is exemplified in Figure 1. Design and classification have been defined in ISO 20345, ISO 20346 and ISO 20347. Classification is presented in Table 1. Designs of footwear are illustrated in Figure 2. Protective elements should be incorporated in the footwear in such a way that they cannot be removed without damaging it.

**Table 1 — Classification of footwear**

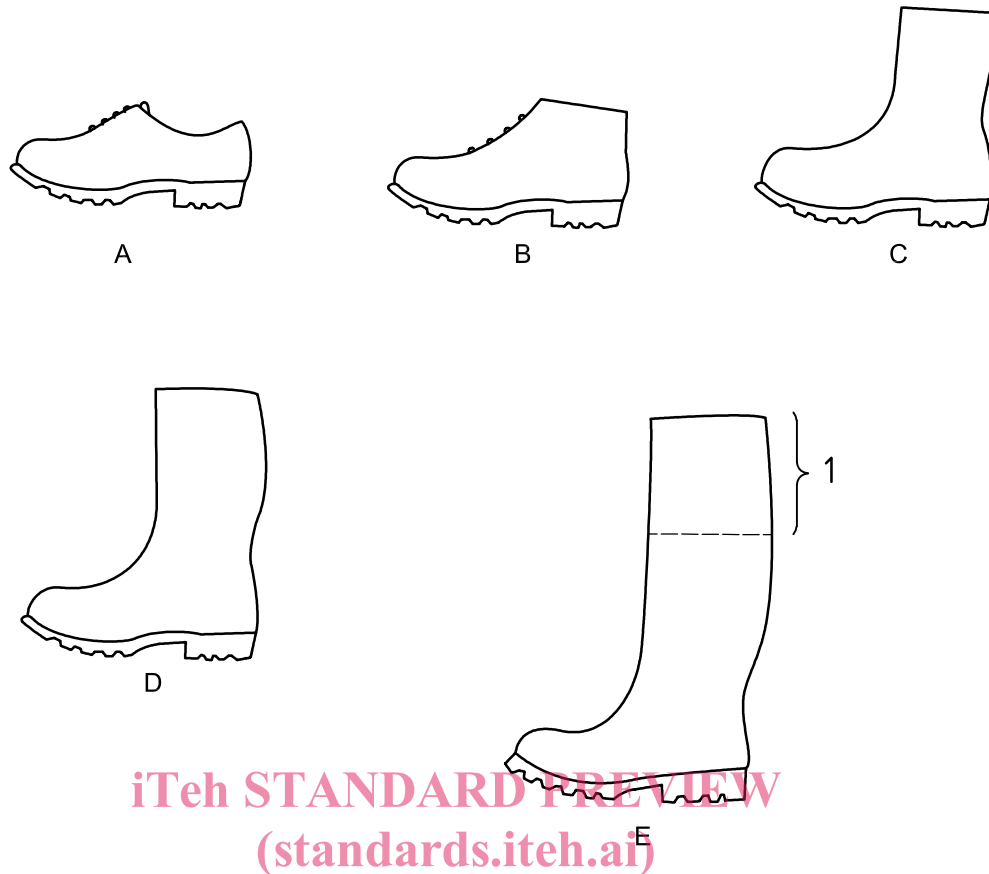
Code designation	Classification
I	Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear
II	All-rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear



**Key**

- |               |                                 |
|---------------|---------------------------------|
| 1 facing      | 9 outsole                       |
| 2 tongue      | 10 cleat                        |
| 3 collar      | 11 penetration-resistant insert |
| 4 upper       | 12 insole                       |
| 5 vamp lining | 13 heel                         |
| 6 insock      | 14 Strobil stitching            |
| 7 toe puff    | 15 quarter                      |
| 8 foam strip  | 16 vamp                         |

**Figure 1 — Example of construction of safety, protective and occupational footwear**

**Key**

Type A	low shoe	Type D	knee-height boot
Type B	ankle boot	Type E	high boot
Type C	half-knee boot	1	variable extension which can be adapted to the wearer

**Figure 2 — Designs of footwear****5 Marking of categories****5.1 Safety footwear for professional use****5.1.1 Basic requirements**

Safety footwear is fitted with safety toecaps and complies with the basic requirements given in Table 2 of ISO 20345:2004. It can incorporate one or more additional protective features to protect the wearer from injuries that could arise through accidents in the working sectors for which the footwear is designed. Safety toecaps meet the requirements of impact resistance at an energy level of 200 J and the requirements of compression resistance at a compression load of 15 kN.

Marking symbol for basic requirements is SB.

**5.1.2 Additional requirements**

Additional protective features are presented in Table 2.

**Table 2 — Additional symbols for safety, protective and occupational footwear**

Requirement	Symbol in footwear
Penetration resistance	P
Electrical resistance	No symbol
Conductive footwear	C
Antistatic footwear	A
Resistance to inimical environments	No symbol
Insulation against heat	HI
Insulation against cold	CI
Energy absorption of seat region	E
Resistance to water (footwear of Classification I)	WR
Metatarsal protection	M
Ankle protection	AN
Water penetration and water absorption of upper (footwear of Classification I)	WRU
Cut resistance	CR
Cleated outsole	No symbol
Resistant to hot contact of outsole	HRO
Resistance to fuel oil of outsole (occupational footwear)	FO

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**5.1.3 Marking of categories of safety footwear**

Tables 3 and 4 categorize safety footwear with the most widely used combinations of basic and additional requirements.

**Table 3 — Classification I (footwear made from leather)**

Category	Additional requirements
SB	
S1	Closed seat region Antistatic footwear Energy absorption of seat region
S2	As S1 plus Water penetration and water absorption
S3	As S2 plus Penetration resistance Cleated outsole



**Table 4 — Classification II** (all-rubber or all-polymeric footwear)

Category	Additional requirements
SB	
S4	Antistatic footwear Energy absorption of seat region
S5	As S4 plus Penetration resistance Cleated outsole

## 5.2 Protective footwear for professional use

### 5.2.1 Basic requirements

Protective footwear is fitted with protective toecaps and complies with the basic requirements given in Table 2 of ISO 20346:2004. It can incorporate additional protective features to protect the wearer from injuries that could arise through accidents in the working sectors for which the footwear is designed. Protective footwear meets the requirements of impact resistance at an energy level of 100 J and the requirements of compression resistance at a compression load of 10 kN.

Marking symbol for basic requirements is PB.

### 5.2.2 Additional requirements (standards.iteh.ai)

Additional protective features are presented in Table 2.

### 5.2.3 Marking of categories of protective footwear

Tables 5 and 6 categorize protective footwear with the most widely used combinations of basic and additional requirements.

**Table 5 — Classification I** (footwear made from leather)

Category	Additional requirements
PB	
P1	Closed seat region Antistatic footwear Energy absorption of seat region
P2	As P1 plus Water penetration and water absorption
P3	As P2 plus Penetration resistance Cleated outsole

**Table 6 — Classification II** (all-rubber or all-polymeric footwear)

Category	Additional requirements
PB	
P4	Antistatic footwear Energy absorption of seat region
P5	As P4 plus Penetration resistance Cleated outsole

**5.3 Occupational footwear for professional use**

**5.3.1 Basic requirements**

Occupational footwear complies with the basic requirements given in Table 2 of ISO 20347:2004 and it should incorporate one or more protective features to protect the wearer from injuries that could arise through accidents in the working sectors for which the footwear is designed. The additional protective requirements are presented in Table 2.

NOTE Occupational footwear is not fitted with safety or protective toecaps.

**5.3.2 Marking of categories of occupational footwear**

Tables 7 and 8 categorize protective footwear with the most widely used combinations of basic and additional requirements.

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**Table 7 — Classification I** (footwear made from leather)

Category	Additional requirements
OB	Plus one or more of the following from Table 2: P, C, A, I, HI, CI, E, WR, AN
O1	Closed seat region Antistatic footwear Energy absorption of seat region
O2	As O1 plus Water penetration and water absorption
O3	As O2 plus Penetration resistance Cleated outsole

**Table 8 — Classification II** (all-rubber or all-polymeric footwear)

Category	Additional requirements
OB	Plus one or more of the following from Table 2: P, C, A, I, HI, CI, E, AN
O4	Antistatic footwear Energy absorption of seat region
O5	As O4 plus Penetration resistance Cleated outsole

## 5.4 Other markings

All safety, protective and occupational footwear should be marked with:

- a) size;
- b) manufacturer's identification mark;
- c) manufacturer's type designation;
- d) year of manufacture and at least quarter;
- e) number of the International Standard, e.g. ISO 20345:2004;
- f) symbol(s) from Table 2 appropriate to the protection provided or, where applicable, the appropriate category.

The markings for e) and f) should be adjacent to one another.

## 6 Selection of professional footwear

### 6.1 Risk assessment

#### 6.1.1 General

Employers and self-employed people should assess the risks from their work activities. If risks cannot be eliminated by other methods, personal protective equipment should be used. It is important to select a correct type of professional footwear in respect of the risk. A need of protection in the work place determines the type of footwear to be chosen.

Prior to the selection and use of professional footwear or leg protector the employer should assess the working conditions, which especially include type and extent of the hazards, duration of the hazard and personal requisites of the wearer.

#### 6.1.2 Aid for risk assessment

The use of every footwear and leg protection should depend on the type of expected hazard (see Table 9). Although the types of hazard are known it cannot be predicted when they actually occur.

Prior to selection and use the employer should perform an assessment of the footwear and leg protection he/she has in mind to determine whether they:

- a) are type-examined (labelled with the appropriate symbol and other markings);