INTERNATIONAL STANDARD

ISO 8782-3

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Safety, protective and occupational footwear for professional use —

Part 3:
Specification for protective footwear

Chaussures de sécurité, de protection et de travail à usage professionnel —

Partie 3: Spécifications pour chaussures de protection

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.

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.

International Standard ISO 8782-3 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment,* Subcommittee SC 3, *Foot protection*.

ISO 8782 consists of the following parts, under the general title *Safety, protective and occupational footwear for professional use*:

— *Part 1: Requirements and test methods*

— *Part 2: Specification for safety footwear*

— *Part 3: Specification for protective footwear*

— *Part 4: Specification for occupational footwear*

— *Part 5: Additional requirements and test methods*

— *Part 6: Additional specifications for safety footwear*

— *Part 7: Additional specifications for protective footwear*

— *Part 8: Additional specifications for occupational footwear*

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Safety, protective and occupational footwear for professional use —

Part 3:
Specification for protective footwear

1 Scope

This part of ISO 8782 specifies, by reference to ISO 8782-1, basic and additional (optional) requirements for protective footwear for professional use.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 8782. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8782 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8782-1:1998, *Safety, protective and occupational footwear for professional use — Part 1: Requirements and test methods.*

3 Definition

For the purposes of this part of ISO 8782, the following definition applies.

3.1
protective footwear for professional use
footwear incorporating protective features to protect the wearer from injuries which could arise through accidents in the working sectors for which the footwear was designed, fitted with toecaps designed to give protection against impact when tested at an energy level of 100 J

4 Design and classification

NOTE The designs of footwear covered by this part of ISO 8782 are illustrated in figure 1.

Footwear shall be classified in accordance with table 1.

Table 1 — Classification of footwear

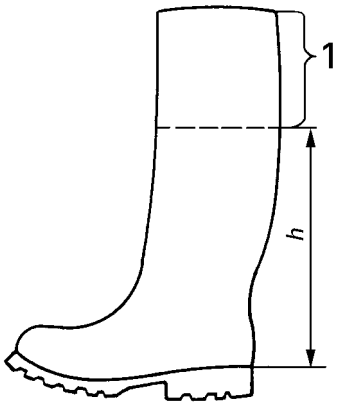
Code designation	Classification
I	Footwear made from leather and other materials, excluding all-rubber or all-polymeric footwear
II	All-rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear

a) Design A: low shoe

b) Design B: ankle boot

c) Design C: half-knee boot

d) Design D: knee-high boot



e) Design E: thigh boot

Key

1 Variable extension which can be adapted to the wearer

NOTE Design E is a knee-height boot (design D) equipped with a thin, impermeable material which extends the upper and which can be cut to adapt the boot to the wearer.

Figure 1 — Designs of footwear

5 Requirements for protective footwear

Protective footwear shall comply with the basic requirements given in table 2. Protective footwear for special applications shall additionally comply with the appropriate requirements given in table 3.

Table 2 — Basic requirements for protective footwear

Requirement	Subclause in ISO 8782-1:1998	Classification[1)]	
		I	II
Design			
Height of upper	4.2.1	X	X
Seat region	4.2.2		
Design A			X
B		X	X
C		X	X
D		X	X
E		X	X
Whole footwear			
Sole performance:			
Construction	4.3.1.1	X	
Upper/outsole bond strength	4.3.1.2	X	
Toe protection:			
General	4.3.2.1	X	X
Toecap length	4.3.2.2	X	X
Impact resistance	4.3.2.3.2	X	X
Compression resistance	4.3.2.4.2	X	
Corrosion resistance of metal toecaps	4.3.2.5	X	
Leakproof footwear	4.3.7		

Table 2 *(concluded)*

Requirement	Subclause in ISO 8782-1:1998	Classification[1)]	
		I	II
Quarter lining			
Tear strength	4.5.2	O	
Abrasion resistance	4.5.3	O	
Water vapour permeability and water vapour coefficient	4.5.4	O	
pH value	4.5.5	O	
Tongue			
Tear strength	4.6.1	O	
pH value	4.6.2	O	
Insole			
Thickness	4.7.1	X	
pH value	4.7.2	X	
Water absorption and water desorption	4.7.3	X	
Abrasion resistance	4.7.4	X	
Outsole			
Thickness	4.8.2	X	X
Tear strength	4.8.3	X	
Abrasion resistance	4.8.4	X	X
Flexing resistance	4.8.5	X	X
Hydrolysis	4.8.6	X	X
Interlayer bond strength	4.8.7	O	O
Resistance to fuel oil	4.8.9	X	X

1) The applicability of a requirement to a particular classification is indicated in this table as follows:

X means that protective footwear shall comply with the requirement in the quoted subclause of ISO 8782-1:1998.

O means that if the component part of the protective footwear exists, it shall comply with the requirement in the quoted subclause of ISO 8782-1:1998.

The absence of X or O indicates that there is no requirement.

In some cases, the requirement relates only to particular materials within the classification, for example the pH value of leather components. This does not mean that other materials are precluded from use. A clear indication of any limits or exclusions is given in ISO 8782-1, to which reference should be made at all times.

Table 3 — Additional requirements for special applications with appropriate designations for marking

Requirement	Subclause in ISO 8782-1:1998	Classification[1)]		Designation
		I	II	
Whole footwear				
Penetration resistance	4.3.3	+	+	P
Electrical resistance:				
Conductive footwear	4.3.4.1	+	+	C
Antistatic footwear	4.3.4.2	+	+	A
Resistance to harsh environments:				
Heat insulation	4.3.5.1	+	+	HI
Cold insulation	4.3.5.2	+	+	CI
Energy absorption of seat region	4.3.6	+	+	E
Upper				
Water penetration and water absorption	4.4.5	+		WRU
Outsole				
Cleated outsole:				
Cleated area	4.8.1.1	+	+	
Thickness	4.8.1.2	+	+	
Height	4.8.1.3	+	+	
Resistance to hot contact	4.8.8	+	+	HRO

1) The applicability of a requirement is indicated in this table as follows:
+ means that if the property is claimed, the protective footwear shall comply with the requirement in the quoted subclause of ISO 8782-1:1998.

6 Marking

Each item of protective footwear shall be clearly and permanently marked, for example by embossing or branding, with the following:

a) size;

b) manufacturer's identification mark;

c) manufacturer's type designation;

d) date of manufacture (at least quarter and year);

e) country of manufacture;

f) the number of this International Standard, i.e. ISO 8782-3;

g) the designation(s) from table 3 appropriate to the protection provided.

7 Information to be supplied

7.1 Conductive footwear

Each pair of conductive footwear shall be supplied with a leaflet worded as follows.

Electrically conductive footwear should be used if it is necessary to minimize electrostatic build-up by dissipating electrostatic charges in the shortest possible time, for example when handling explosives, and if risk of electric

shock from any electrical apparatus or live parts has been completely eliminated. In order to ensure that this footwear is conductive, it has been specified to have an upper limit of resistance of 100 kΩ in its new state.

During service, the electrical resistance of footwear made from conductive material may be changed significantly, due to flexing and contamination. It is necessary to ensure that the conductive footwear is capable of fulfilling its designed function of dissipating electrostatic charges throughout the whole of its life. Where necessary, the user is therefore recommended to establish an in-house test for electrical resistance and to use this test at regular intervals. This test and those mentioned below should be a routine part of the accident prevention programme of the workplace.

If the footwear is worn in conditions where the soling material becomes contaminated with substances that may increase the electrical resistance of the footwear, wearers should always check the electrical properties of their footwear before entering a hazard area.

Where conductive footwear is in use, the resistance of the flooring should be such that it does not invalidate the protection provided by the footwear.

In use, no insulating elements, with the exception of normal hose, should be introduced between the inner sole of the footwear and the foot of the wearer. If any insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties.

7.2 Antistatic footwear

Each pair of antistatic footwear shall be supplied with a leaflet worded as follows.

Antistatic footwear should be used if it is necessary to minimize electrostatic build-up by dissipating electrostatic charges, thus avoiding the risk of spark ignition of, for example flammable substances and vapours, and if the risk of electric shock from any electrical apparatus or live parts has not been completely eliminated. It should be noted, however, that antistatic footwear cannot guarantee an adequate protection against electric shock as it introduces only a resistance between foot and floor. If the risk of electrical shock has not been completely eliminated, additional preventive measures are essential. Such measures, as well as the additional tests mentioned below, should be a routine part of the accident prevention programme of the workplace.

Experience has shown that, for antistatic purposes, the discharge path through a product should normally have an electrical resistance of less than 1 000 MΩ at any time throughout its useful life. A value of 100 kΩ is specified as the lowest limit of resistance of a product when new, in order to ensure some limited protection against dangerous electric shock or ignition in the event of any electrical apparatus becoming defective when operating at voltages up to 250 V. However, under certain conditions, users should be aware that the footwear might give inadequate protection and additional provisions to protect the wearer should be taken at all times.

The electrical resistance of this type of footwear can be changed significantly by flexing, contamination or moisture. The footwear will not perform its intended function if worn in wet conditions. It is, therefore, necessary to ensure that the antistatic footwear is capable of fulfilling its designed function of dissipating electrostatic charges and also of giving some protection throughout the whole of its life. The user is recommended to establish an in-house test for electrical resistance and use it at regular and frequent intervals.

If the footwear is worn in conditions where the soling material becomes contaminated, wearers should always check the electrical properties of the footwear before entering a hazard area.

Where antistatic footwear is in use, the resistance of the flooring should be such that it does not invalidate the protection provided by the footwear.

In use, no insulating elements, with the exception of normal hose, should be introduced between the inner sole of the footwear and the foot of the wearer. If any insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties.