

## EN ISO 20345:2012

**Table ZA.1 – Clauses of this European Standard addressing Essentials Requirements or other provisions of EU Directives**

Clauses of this European Standard	Essential requirements (ERs) of EU Directive 89/686/EEC Annex II
	1. General requirements applicable to all PPE
5.3.4	1.1.1 Ergonomics
5.3.4	1.1.2.1 Highest level of protection possible
	1.2 Innocuousness of PPE
5.3.2.2; 5.4.8; 5.8.5; 6.2.1.2; 6.2.1.3; 6.2.5; 6.3.1	1.2.1 Absence of risks and other inherent nuisance factors
5.4.7; 5.4.9; 5.5.4; 5.5.5; 5.6.2; 5.6.3; 5.7.2; 5.7.5	1.2.1.1 Suitable constituent materials
5.3.4	1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user
5.3.4	1.2.1.3 Maximum user impediment
	1.3 Comfort and efficiency
5.3.1.2; 5.3.2.5.1; 5.3.2.5.2; 5.4.3; 5.4.4; 5.4.5; 5.5.1; 5.5.2; 5.6.1; 5.7.4; 5.8.2; 5.8.3; 5.8.4; 5.8.6; 6.2.1.4; 6.2.1.5.1; 6.4.1; 6.4.2	1.3.2 Lightness and design strength
8	1.4 Information supplied by the manufacturer
5.4.6; 5.5.3	2.2 PPE enclosing the parts of the body to be protected
6.2.2.1; 6.2.2.2	2.6 PPE for use in explosive atmospheres
6.1; 7	2.12 PPE bearing one or more identification or recognition marks directly indirectly or relating to health and safety
	3.1 Protection against mechanical impact
5.3.2.3; 6.2.4; 6.2.6; 6.2.7	3.1.1 Impact caused by falling objects and collision of parts of the body with an obstacle
5.3.5	3.1.2 Prevention of falls due to slipping
5.3.2.4	3.2 Protection against (static) compression of part of the body
6.2.1.1; 6.2.1.5.2; 6.2.8	3.3 Protection against physical injury (abrasion, perforation, cuts, bites)
6.2.3.1	3.6 Protection against heat and/or fire
6.2.3.2	3.7 Protection against cold
6.2.2.3	3.8 Protection against electric shock

WARNING – Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

Each item of safety footwear shall be clearly and permanently marked, e.g. by embossing or branding, with the following:

- a) size;
- b) manufacturer's identification mark;
- c) manufacturer's type designation;
- d) year and at least quarter of manufacture;
- e) reference to this International Standard, i.e. ISO 20345:2011;
- f) symbol(s) from Table 2 and 18 appropriate to the protection provided and/or, where applicable, the appropriate category (SB, S1 to S5), as described in Tables 20 and 21.

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

**Table 20 – Marking categories of safety footwear**

Category	Basic requirements (Table 2 and Table 3)	Additional requirements
SB	I or II	
S1	I	Closed seat region Antistatic properties Energy absorption of seat region Resistance to fuel oil
S2	I	As S1, plus: Water penetration and absorption
S3	I	As S2, plus: Penetration resistance Cleated outsole
S4	II	Closed seat region Antistatic properties Energy absorption of seat region Resistance to fuel oil
S5	II	As S4, plus: Penetration resistance Cleated outsole
NOTE For ease of marking, this table categorizes safety footwear with the most widely used combinations of basic and additional requirements		

**Table 21 – Marking categories of safety hybrid footwear**

Category	Basic requirements	Additional requirements
SBH	Hybrid footwear	

For any additional marking on the footwear related to safety, the manufacturer shall provide evidence to support the claim and an explanation in the user notice. For example, if "acid resistant" marking appears, the sole shall be at least tested according to EN 13832-1 (degradation) and shall meet the requirements of EN 13832-3:2006, 6.2.2.3.

## **8 Information to be supplied**

### **8.1 General**

Safety footwear shall be supplied to the customer with information written at least in the official language(s) of the country of destination. All information shall be unambiguous and shall include the following.

- a) Name and full address of the manufacturer and/or his authorized representative.
- b) Notified body involved in type examination; for category III products, the notified body involved with Article 11 of EU Directive 89/686/EEC.
- c) Reference to this International Standard, i.e. ISO 20345:2011.
- d) Explanation of any pictograms, markings and levels of performance.
- e) Basic explanation of the tests that have been applied to the footwear, if applicable.
- f) Instructions or use:
  - 1) tests to be carried out by the wearer before use, if required;
  - 2) fitting and how to put on and take off the footwear, if relevant;
  - 3) application (basic information on possible uses and, where detailed information is given, the source);
  - 4) limitations of use (e.g. temperature range);
  - 5) instructions for storage and maintenance, with maximum periods between maintenance checks (if important, drying procedures to be defined);
  - 6) instructions for cleaning and/or decontamination;
  - 7) obsolescence deadline or period of obsolescence;
  - 8) if appropriate, warnings against problems likely to be encountered (modifications can invalidate the type approval, e.g. orthopaedic footwear);
  - 9) if helpful, additional illustrations, part numbers, ect.
- g) Reference to accessories and spare parts, if relevant.
- h) Type of packaging suitable for transport, if relevant.

**Table 2 (continued)**

Requirement		Subclause	Classification	
			I	II
<b>Quarter lining</b>	Tear strength	5.5.1	O	O
	Abrasion resistance	5.5.2	O	O
	Water vapour permeability and coefficient	5.5.3	O	
	pH value	5.5.4	O	O
	Chromium VI content	5.5.5	O	O
<b>Insole/insock</b>		See Table 3	X	O
<b>Tongue</b>	Tear strength	5.6.1	O	
	pH value	5.6.2	O	
	Chromium VI content	5.6.3	O	
<b>Outsole</b>	Design	5.8.1	X	X
	Tear strength	5.8.2	X	X
	Abrasion resistance	5.8.3	X	X
	Flexing resistance	5.8.4	X	X
	Hydrolysis	5.8.5	X	X
	Interlayer bond strength	5.8.6	O	O

NOTE 1 The applicability of a requirement to a particular classification is indicated by X or O. X means the requirement shall 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. The absence of X or O indicates that there is no requirement.

NOTE 2 For class II footwear, it is usual to have no insole present. However, if a removable insock is used, Table 3 is not applicable; only chromium VI and pH requirements are fulfilled for leather material.

NOTE 3 Stockings covering the last before the moulding process are not considered a lining.

<sup>a</sup> One of the three slip resistance requirements shall be met.

<sup>a</sup> Marking symbol "SRA".

<sup>b</sup> Marking symbol "SRB".

<sup>c</sup> Marking symbol "SRC".

**Table 18 — Additional requirements for special applications with appropriate symbols for marking**

Requirement		Clause	Class		Symbol
			I	II	
Whole footwear	Penetration resistance	6.2.1	X	X	P
	Electrical properties:	6.2.2			
	— conductive footwear	6.2.2.1	X	X	C
	— antistatic footwear	6.2.2.2	X	X	A
	— electrically insulating footwear	6.2.2.3		X	See EN 50321
	Resistance to inimical environments:	6.2.3			
	— heat insulation of sole complex	6.2.3.1	X	X	HI
	— cold insulation of sole complex	6.2.3.2	X	X	CI
	Energy absorption of seat region	6.2.4	X	X	E
	Water resistance	6.2.5	X		WR
	Metatarsal protection	6.2.6	X	X	M
Ankle protection	6.2.7	X	X	AN	
Cut resistance	6.2.8	X	X	CR	
Upper	Water penetration and absorption	6.3	X		WRU
Outsole	Resistance to hot contact	6.4.1	X	X	HRO
	Resistance to fuel oil	6.4.2	X	X	FO

NOTE The applicability of a requirement to a particular classification is indicated in this table by an X.

## 8.2 Electrical properties

### 8.2.1 Conductive footwear

Each pair of conductive footwear shall be supplied with a leaflet containing the following wording.

“Electrically conductive footwear should be used if it is necessary to minimize electrostatic charges in the shortest possible time, e.g. when handling explosives. **Electrically conductive footwear should not be used if the risk of shock from any electrical apparatus or live parts has not been completely eliminated.** In order to ensure that this footwear is conductive, it has been specified to have an upper limit of resistance of 100kΩ in its new state.

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

If the footwear is worn in conditions where the soling material becomes contaminated with substances that can 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 should be introduced between the inner sole of the footwear and the foot of the wearer. If an insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties.”

### 8.2.2 Antistatic footwear

Each pair of antistatic footwear shall be supplied with a leaflet containing the following wording.

“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 adequate protection against electric shock as it only introduces a resistance between foot and floor.** If the risk of electric shock has not been completely eliminated, additional measures to avoid this risk are essential. Such measure, as well as the additional tests mentioned below, should be a routine part of the accident prevention programme at the workplace.

Experience has shown that, for antistatic purposes, the discharge path through a product should normally have an electric resistance of less than 1000 k $\Omega$  at any time throughout its useful life. A value of 100k $\Omega$  is specified as the lowest resistance limit of a product, with 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 of 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. This footwear might not perform its intended function if worn in wet conditions. It is, therefore, necessary to ensure that the product is capable of fulfilling its designed function of dissipating electrostatic charges and also of giving some protection during its entire life. It is recommended that the user establish an in-house test for electrical resistance, which is carried out at regular and frequent intervals.

Class I footwear can absorb moisture and can become conductive if worn for prolonged periods in moist and wet conditions.

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 should be introduced between the inner sole of the footwear and the foot of the wearer. If an insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties.”

### 8.3 Insocks

If the footwear is supplied with a removable insock, it should be made clear in the leaflet that testing was carried out with the insock in place. A warning shall be given that the footwear shall only be used with the insock in place and that the insock shall only be replaced by a comparable insock supplied by the original footwear manufacturer.

If the footwear is supplied without an insock, it should be made clear in the leaflet that testing was carried out with no insock present. A warning shall be given that fitting an insock can affect the protective properties of the footwear.