DRAFT INTERNATIONAL STANDARD

ISO/DIS 20347

ISO/TC **94**/SC **3**	Secretariat: **BSI**
Voting begins on: **2020-04-13**	Voting terminates on: **2020-07-06**

Personal protective equipment — Occupational footwear

Équipement de protection individuelle — Chaussures de travail

ICS: 13.340.50

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/DIS 20347:2020(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 20347 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 161, *Foot and leg protectors*, in collaboration with Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 3, *Foot protection*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 20347:2012), which has been technically revised.

Changes between this edition and the 2012 version are as follows:

— revision of terms (Clause 3.)

— Figures 1 to 4 revised

— Tables 1, 2 and 3 revised

— heel area defined (5.2.3)

— requirement on slip resistance revised (5.3.5 and 6.2.10); marking “SR” introduced

— requirement for seam strength of hybrid footwear added (5.3.7)

— requirement for upper materials not fulfilling WVP explained (5.4.6)

— abrasion of insoles revised (5.7.5)

— outsole requirements revised (5.8)

— outsole thickness revised (5.8.1.1)

— flexing resistance of outsole clarified (5.8.4)

— perforation resistant insert, depending on ISO 22568 Part 3 and 4 exchanging EN 12568:2010

— tolerance added (6.2.3.1)
— former Annex A Hybrid Footwear included in the general text (Table 2, 6.2.5.2, Table 15)
— optional requirement on ankle protection clarified (6.2.6)
— optional requirement for “SC” scuff caps added (6.2.9)
— optional requirement for “LG” Ladder grip of outsoles added (6.4.3)
— marking revised (Table 15 and 16)
— information on obsolenscence date added (8.5)
— normative Annex A with requirements for customized occupational footwear added
— informative Annex B assessment of the footwear by the wearer added
— informative Annex C Slip resistance added
— requirement for electrically insulating footwear (EN 50321) deleted
— Annex ZA revised

Personal protective equipment — Occupational footwear

1 Scope

This International Standard specifies basic and additional (optional) requirements for occupational footwear used for general purpose. It includes, for example, mechanical risks, slip resistance, thermal risks, ergonomic behaviour. It also specifies requirements for orthopaedic customized or individual manufactured orthopaedic occupational footwear. This standard does not cover the property of high visibility because of interaction with the clothing (e.g. trousers cover the footwear) and work area conditions (e.g. dirt, mud). ....

Special risks are covered by complementary job-related standards (e.g. footwear for firefighters, electrical insulating footwear, protection against chain saw injuries, protection against chemicals and against molten metal splash, protection for motorcycle riders).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 20344:2021, *Personal protective equipment — Test methods for footwear*

ISO 22568-3:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 3: Metallic perforation resistant inserts*

ISO 22568-4:2019, *Foot and leg protectors — Requirements and test methods for footwear components — Part 4: Non-metallic perforation resistant inserts*

ISO 21064:2017, *Prosthetics and orthotics — Foot orthotics — Uses, functions classification and description*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

NOTE 1 The component parts of footwear are illustrated in Figures 1, 2 and 3.

NOTE 2 Further terms and definitions can be found in ISO 19952:2005.

3.1
occupational footwear
footwear incorporating features to protect the wearer from injuries which could arise through accidents

3.2
upper
part or parts of a footwear that cover the toes, the top of the foot, the sides of the foot, and optionally the back of the heel; it is attached to the outsole of a footwear

3.3
leather
hide or skin tanned to be imperishable

3.3.1
leather split
flesh or middle part of a hide or skin, obtained by splitting a thick leather, which is tanned to be imperishable

3.4
rubber
vulcanized elastomers

3.5
polymeric materials
large molecules composed of repeating structural units (monomer) typically connected by chemical bond

EXAMPLE Polyurethane (PU) or polyvinylchloride (PVC).

3.6
insole
non-removable component used to form the base of the shoe to which the upper is usually attached during lasting

3.7
insock, seat sock, footbed

Insock: removable or non-removable footwear component used to cover completely the insole

Seat sock: removable or non-removable footwear component used to cover the insole in the heel area

footbed: removable or non-removable footwear component used to cover completely the insole; shaped according to the sole of the foot

Note 1 to entry: “Non-removable” means that the component cannot be removed without any damage.

Note 2 to entry: “Removable” means that the component can be removed, but it must be obligatory placed into the footwear while wearing to maintain the protection features.

3.8
lining
material covering the inner surface of the upper

Note 1 to entry: The wearer’s foot is in direct contact with the lining.

Note 2 to entry: Where an upper is split at the forepart to house the toecap, or if an external piece of material is stitched to the upper to form a pocket to house the toecap, the material under the toecap acts as a lining.

3.9
cleat
protruding part of the outer surface of the outsole

3.10
rigid outsole
sole which cannot be bent through an angle of 45° under a load of 30 N

3.11
perforation-resistant insert
footwear component placed in the outsole complex or used as an insole simultaneously in order to provide protection against perforation

3.12
scuff caps
abrasion resistant materials or component to protect against scuff of the upper external toe region

3.13
heel area
counter (stiffener) area, rear part of the footwear

3.14
dissipative footwear
footwear able to dissipate some static electricity but with low resistance between the wearer and the ground

3.15
antistatic footwear
footwear able to dissipate some static electricity but maintaining some resistance between the wearer and the ground

3.16
fuel oil
aliphatic hydrocarbon constituent of petroleum

3.17
specific job-related footwear
occupational footwear relating to a specific profession

EXAMPLE Motorcycle riders footwear

3.18
customized safety footwear (adapted to fit an individual user or a single unit to fit an individual user)

covering all individual orthotic footwear according to ISO 21064:2017, 3.2 and other specific conditions of a foot. They integrate in their design the recipient's own physiognomy and the specific arrangements aimed at modifying, correcting, compensating, curing, preventing, relieving a pathology, e.g. overweight, diabetes, hyperhidrosis …

Several types of customized safety footwear and footwear adaptions exist:

Type 1 — equipped with customized insocks

Occupational footwear (complying ISO 20345:2021) incorporating a customized insocks adapted to the wearers needs.

Type 2 — modified occupational footwear

Occupational footwear (complying ISO 20345:2021) modified from its original construction to fit to an individual user.

See examples in ISO 21064/6.4

Type 3 — Bespoke occupational footwear

Occupational footwear (complying ISO 20345:2021) constructed as a single unit to fit an individual user.

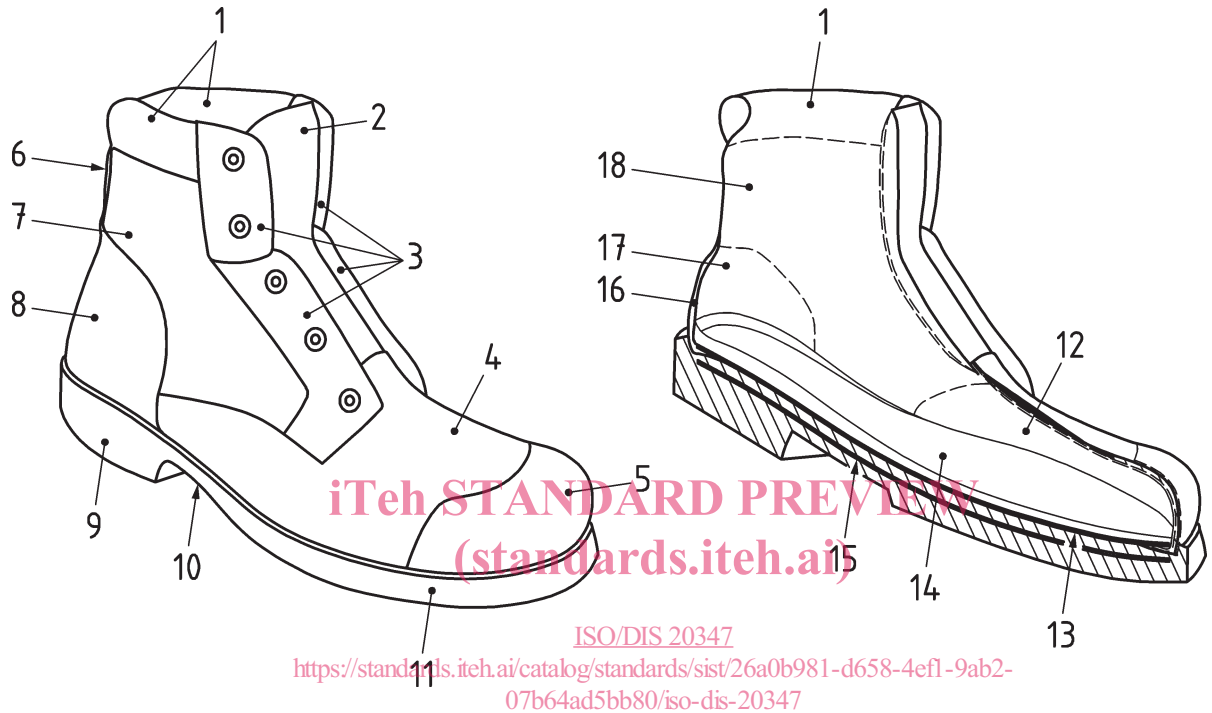
See examples in ISO 21064:2017, 6.3.2 and 6.3.3

3.19
hybrid footwear
product with a vulcanized rubber or moulded polymeric lower foot section to the upper with a leather and/or fabric leg shaft. Hybrid footwear does not fully meet the classifications I or II as described in Clause 4

Two Hybrid footwear product types exist:

Hybrid "moulded" footwear — with a vulcanized rubber or all moulded polymeric foot section, often including the outsole. The foot area of this product type is unlined and usually does not incorporate an insole.

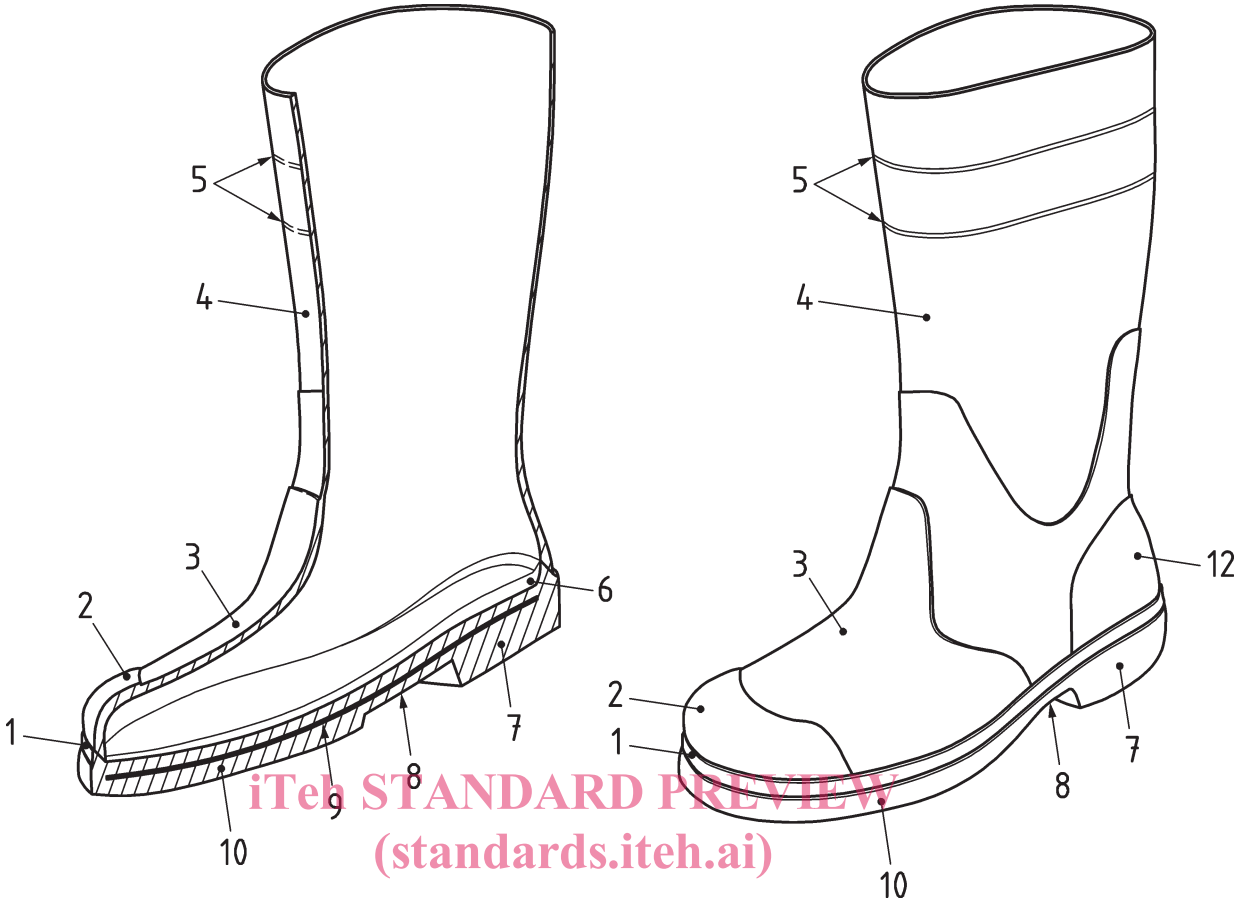
Hybrid "constructed" footwear — with a foot section of vulcanized rubber or all moulded polymeric that is manufactured separately and then constructed around a conventionally lasted lining/insole construction and often with a separately attached outsole.



Key

1 collar
2 tongue
3 facing
4 upper — vamp
5 scuff cap
6 back strap
7 upper — quarter
8 upper — counter
9 outsole — heel
10 outsole — waist
11 outsole — forepart
12 vamp lining
13 insole board
14 insock/seat sock/footbed
15 perforation resistant insert
16 counter stiffener
17 counter lining
18 quarter lining

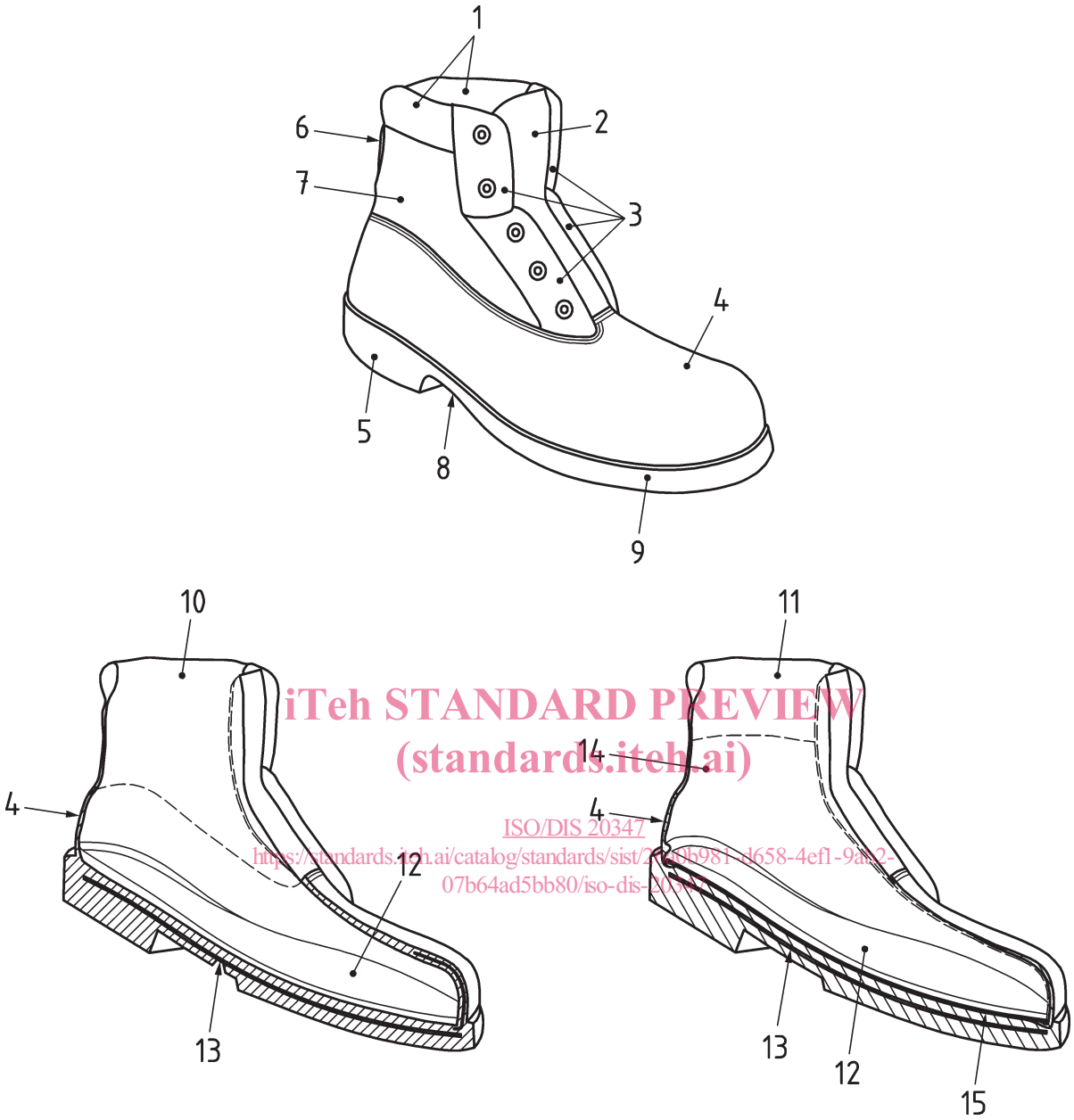
Figure 1 — Example parts of class I occupational footwear



Key

1 Foxing strip
2 Scuff cap
3 Upper — vamp
4 Upper — Shaft
5 Trim marks
6 insock/seat sock/footbed
7 Outsole — Heel
8 Outsole — Waste
9 Perforation resistant insert
10 Outsole — Forepart
11 Upper — counter

Figure 2 — Example parts of Class II occupational footwear



Hybrid moulded (Entirely moulded lower section) Hybrid constructed (seperately attached sole unit)

Key

1 Collar
2 Tongue
3 Facings
4 Moulded rubber or polymeric upper part
5 Outsole — Heel
6 backstrap
7 Upper leather or fabric section
8 Outsole — Waist
9 Outsole — forepart
10 lining
11 Collar lining
12 insock/seat sock/footbed
13 Perforation resistant insert
14 Foot section lining
15 insole board

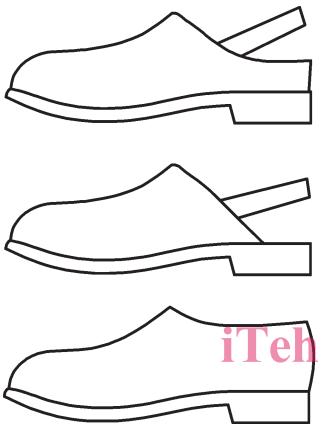
Figure 3 — Example parts of hybrid occupational footwear

4 Classification and designs

Occupational footwear shall be classified in accordance with Table 1. Designs of footwear are illustrated in Figure 4.

Table 1 — Classification of occupational footwear

Classification	Description
Class I	made from leather and other materials, excluding all-rubber or all-polymeric footwear (see Figure 1)
Class II	All-rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded) footwear
Hybrid footwear	See 3.20 (see figures 3)

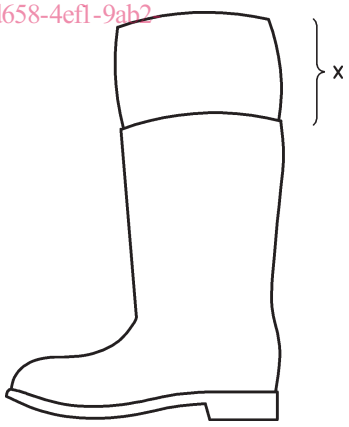


Design A — LOW SHOE

Design B — ANKLE BOOT

Design C — HALF KNEE BOOT

Design D — KNEE BOOT



Design E- THIGH BOOT

× = Variable extension which can be adapted to the wearer.

NOTE Design E of class I and II occupational footwear can be a knee-height boot (design D) equipped with a thin impermeable material which extends the upper which can be cut to adapt the boot height to the wearer. This design does not constitute hybrid footwear.

Figure 4 — Example designs of occupational footwear