



**International  
Standard**

**ISO 20344**

**Personal protective equipment —  
Test methods for footwear**

**AMENDMENT 1**

*Équipement de protection individuelle — Méthodes d'essai pour  
les chaussures*

*AMENDEMENT 1*

**Third edition  
2021-10**

**AMENDMENT 1  
2024-01**

STANDARDSISO.COM : Click to view the full PDF of ISO 20344:2021/Amd 1:2024

STANDARDSISO.COM : Click to view the full PDF of ISO 20344:2021/Amd 1:2024



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

## 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 document 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](http://www.iso.org/directives)).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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

For an explanation of 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

STANDARDSISO.COM : Click to view the full PDF of ISO 20344:2021/Amd 1:2024

# Personal protective equipment — Test methods for footwear

## AMENDMENT 1

### 4.2

Replace the 2<sup>nd</sup> paragraph by:

"If the test requires a defined condition (temperature  $(23 \pm 2)$  °C and/or  $(50 \pm 5)$  % RH), it is mentioned in the test method. Where the testing in conditioned atmosphere is not required, the maximum time which shall elapse between removal from the conditioning atmosphere and the start of testing shall not be greater than 10 min, unless otherwise stated in the test method."

Table 1

Replace the text of the 4<sup>th</sup> line by:

Toecap dimensions	B	No	5.3	3 pairs of footwear or toe-caps in sizes S-M-L	1 pair of toecaps
-------------------	---	----	-----	--	-------------------

Replace the text of the 23<sup>th</sup> line by:

Ankle protection	A	Yes	5.22	3 footwear in sizes S-M-L	For each footwear 1 test piece (outer) and 1 test piece inner (if claimed)
------------------	---	-----	------	---------------------------	---

Replace the text of the 28<sup>st</sup> line by:

Height of the upper	B	Yes	6.2.2	3 pairs of footwear in sizes S-M-L	Item of footwear
Area for non-water vapor permeable materials	B	Yes	6.2.3	1 item of footwear size M	1 test piece

Replace the text of the 31<sup>st</sup> line by:

Flexing resistance	B	Yes	6.5	3 items of footwear in different sizes	1 test piece
--------------------	---	-----	-----	--	--------------

Replace the text of the 37<sup>th</sup> line by:

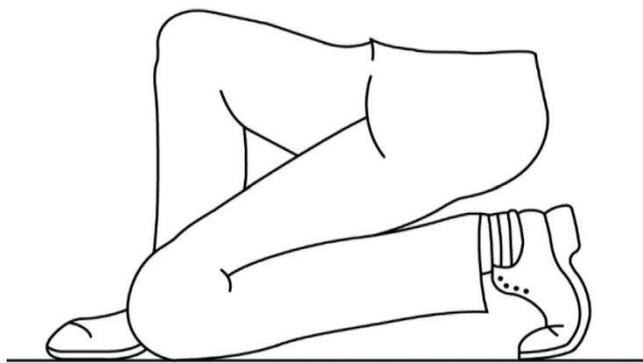
Abrasion resistance of lining	B	No	6.12	footwear or materials	2 test pieces, wet 2 test pieces, dry
-------------------------------	---	----	------	-----------------------	--

Replace the text of the 44<sup>th</sup> line by:

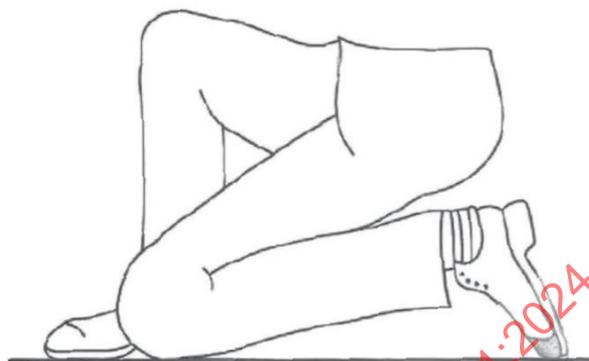
Abrasion resistance of insock	B	No	6.12	3 items of footwear in different sizes or 3 samples of the relevant components	1 test piece, wet 1 test piece, dry
-------------------------------	---	----	------	--	--

Figure 1

Replace Figure 1 by:



a) Position to adopt during the kneel/crouch down test



b) Position to adopt during the kneeling for scuff cap checking

Figure 1 — Position to adopt during the kneel/crouch down test

5.1.2, Table 2

Add the following line at the end of the existing table:

	4.4 During kneeling, the scuff cap prevents the contact of the upper with the ground	YES	NO
--	--	-----	----

5.1.3

Replace the text of 5.1.3 by:

"The following results shall be reported:

- see 4.4;
- for each tested size, either all positive answers or any failing result.

The determination of measurement uncertainty is not applicable."

5.2.4.3

Replace text of the 2<sup>nd</sup> sentence of the 1<sup>st</sup> paragraph by:

"All sole materials in this area shall be tested, see Figure 2."

5.5.3.3

Replace text of the 1<sup>st</sup> paragraph by:

"Position a cylinder (5.4.1.3) on one of its ends inside the test piece as shown in Figure 13 and 14. Place the test piece in the clamping device (5.4.1.2) and adjust to align the test axis of the test piece with the centre line marked on the clamping device."

5.7.4

Replace the text of 5.7.4 by:

"The following results shall be reported:

- see 4.4;
- for each tested size, detection of air leakage.

The determination of measurement uncertainty is not applicable."

5.10.4.1

Replace text of the 2<sup>nd</sup> paragraph by:

"If the non-metallic perforation-resistant insert type PL is not used as an insole (e.g. in a Strobel), the test shall be conducted in accordance 5.9.3."

5.10.5

Replace the text of 5.10.5 by:

"The following results shall be reported:

- see 4.4;
- for each tested size, left and right, results of 5.10.4.2.1 or 5.10.4.2.2
- Note any "tent effect";
- The measurement uncertainty for PS (when requested by the customer).

The determination of measurement uncertainty for PL is not applicable."

5.11.3

Replace the text of 5.11.3 by:

"The following results shall be reported:

- see 4.4;
- all results as defined in the relevant used standard.

The determination of measurement uncertainty is not applicable."

5.12.3

Replace the text of 5.12.3 by:

"The following results shall be reported:

- see 4.4;
- all results as defined in the relevant used standard.

The determination of measurement uncertainty is not applicable."

5.15.4

Replace the text of the 7<sup>th</sup> hyphen by:

"— the description of any damage that can seriously affect the functionality of the footwear (e.g. beginning of separation of upper and sole) applying Annex A or any other requirement of other standard (for example ISO 20349-2:2017+Amd 1:2020);"

5.18.1

Replace the 2<sup>nd</sup> sentence of the 1<sup>st</sup> paragraph by:

"The water penetration is determined by examination."

5.18.4.2

Replace the 1<sup>st</sup> paragraph by:

"With the empty trough, position the turning platforms so that the tester takes 11 paces walking from one to the other with a normal length stride (i.e. so that each foot is placed on the floor of the trough five times). Fill the trough up to a depth of  $(30 \pm 3)$  mm with water for class I footwear. Fill the trough for hybrid footwear up to a height of 10 mm above  $H$  (as defined in ISO 20345:2021 Figure 6 and Table 8)."

#### 5.18.5

Replace the text of 5.18.5 by:

"The following results shall be reported:

- see 4.4;
- for each tested size, left and right, any water penetration.

The determination of measurement uncertainty is not applicable."

#### 5.19.4.2.7

Replace the text of the 2<sup>nd</sup> hyphen by:

"— For hybrid footwear, up to a height of 10 mm above  $H$  (as defined in ISO 20345:2021 Figure 6 and Table 8)."

#### 5.19.5

Replace the text of 5.19.5 by:

"The following results shall be reported:

- see 4.4;
- for each tested size, left and right, any water penetration.

The determination of measurement uncertainty is not applicable."

#### 5.20.1.4.3

Replace the full text by:

**5.20.1.4.3** Production of wax forms using footwear involves a 2 stages operation, the first of which is to produce a plaster of Paris cast of the inside of the footwear, followed by the production of moulds and casts as described in 5.20.1.4.2. It requires one extra item of footwear, which will be destroyed during the production of the plaster of Paris mould.

Stage 1: Coat with petroleum jelly or releasing agent the inside of an item of footwear the same size as that to be tested. Secure the fastening system and fill to the top of the opening with a mixture of plaster of Paris and water. Leave until set and then remove by cutting away the footwear. After removal, place in an oven at about 80 °C to dry.

Stage 2: Continue as for stage 1 in 5.20.1.4.2 using the plaster of Paris cast in the place of making last.

Continue as for stage 2 in 5.20.1.4.2."

#### 5.21.3

Replace the text of 5.21.3 by:

"The following results shall be reported:

- see 4.4;
- if the ankle protection fully covers the minimum protection area (yes/no).

The determination of measurement uncertainty is not applicable."

5.22.3

Replace the 3<sup>rd</sup> paragraph by:

"A sample shall be taken from each of three items of footwear (small, medium and large sizes) to enable impact tests to be performed on outer protectors.

If inner ankle protection is claimed, a further sample shall also be taken from each of three items of footwear (small, medium and large sizes) to enable impact tests to be performed on inner protectors."

5.22.4.2

Replace the text of 5.22.4.2 by:

"The strike point shall be within the zone of protection marked on the specimen and not less than 10 mm from the edge.

The test piece is positioned outer surface upwards on the anvil in such a way that a part of the test area covers the centre point of the anvil. The test piece may be fixed in the selected position by covering with a suitably thin net or fabric with a centre hole of 20 mm to 25 mm diameter to avoid influencing the result. This auxiliary device should be pulled down, by means of elastic straps, with an overall force of 5 N to 10 N, which can easily be controlled by the force measuring system itself.

The drop striker is then released. The transmitted force, as well as damage or breakage of the test piece, is recorded.

The test piece shall be tested once only at each point.

For outer side protection, the test result is the average of the 3 measurements and the highest transmitted force.

If inner ankle protection has been tested, the results shall be reported independently and in the same way as outer protection."

6.2.3.1

Replace 6.2.3.1 by:

"6.2.3.1 Sampling

Use only one complete item of footwear of medium size as the test piece."

6.2.3.2

Add a 7<sup>th</sup> hyphen in the second paragraph:

"Dismantle the footwear in order to be able to put the upper flat and exclude the area corresponding to

- upper material above the drawn line  $H_1$ ,
- the toecap,
- the lacing system (eyelet support, hook attachment),
- collar,
- stiffener/counter,
- contact with the upper/sole bounding.
- the tongue"

6.5.2.2.1.2

Replace the 3<sup>rd</sup> paragraph by: