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BSI Group Headquarters

389 Chiswick High Road London W4 4AL

Tel: +44 (0)20 8996 9000

Fax: +44 (0)20 8996 7400

www.bsigroup.com

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Responsible committee: PH/1 Safety, protective and occupational footwear

Interested committees:

Title: BS EN 13832-1 Draft Footwear protecting against chemicals. Part 1: Terminology and test methods.

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Responsible Committee Secretary: Committee Service Centre (BSI)

Direct tel: 020 8996 7009

E-mail: csc@bsigroup.com

Full document details: 25/30511879 DC

Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/ Figure/Table/Note	Type of comment	Comment (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

English Version

Footwear protecting against chemicals - Part 1: Terminology and test methods

Chaussures protégeant contre les produits chimiques -
Partie 1 : Terminologie et méthodes d'essais

Schuhe zum Schutz gegen Chemikalien - Teil 1:
Terminologie und Prüfverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 161.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 13832-1:2025) has been prepared by Technical Committee CEN/TC 161 “Foot and leg protection”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13832-1:2018.

EN 13832, *Footwear protecting against chemicals*, is published in three parts:

- *Part 1: Terminology and test methods*
- *Part 2: Requirements for limited contact with chemicals*
- *Part 3: Requirements for prolonged contact with chemicals*

Overview of major technical changes compared to the previous edition:

- reference to the new standards EN ISO 20345:2022, EN ISO 20346:2022 and EN ISO 20347:2022;
- new examination in 4.2.2 k) and l);
- change in Table 2, new test for upper seams;
- safety precautions in 4.1.1;
- new Figure 5;
- change in Table 2 (reference to ISO 37);
- new subclause 4.3.5;
- new drawing in Figure 1.

1 Scope

This document specifies test methods for the determination of the resistance of footwear against selected chemicals for the following circumstances: splashing, degradation, and permeation.

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.

EN 16523-1:2015+A1:2018, *Determination of material resistance to permeation by chemicals — Part 1: Permeation by liquid chemical under conditions of continuous contact*

EN ISO 868:2003, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868:2003)*

EN ISO 17697:2016, *Footwear — Test methods for uppers, lining and insoles — Seam strength (ISO 17697:2016)*

EN ISO 20344:2021,¹ *Personal protective equipment — Test methods for footwear (ISO 20344:2021)*

EN ISO 20345:2022,² *Personal protective equipment — Safety footwear (ISO 20345:2021)*

EN ISO 20346:2022,³ *Personal protective equipment — Protective footwear (ISO 20346:2021)*

EN ISO 20347:2022,⁴ *Personal protective equipment — Occupational footwear (ISO 20347:2021)*

ISO 37:2024, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 23529:2016, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 20344:2021 and EN 16523-1:2015+A1:2018 and the following apply.

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1 degradation

deleterious change in one or more properties of a footwear material due to contact with a chemical

Note 1 to entry: These changes may include, e.g. flaking, swelling, disintegration, embrittlement, discoloration, dimensions, appearance, hardening and softening.

¹ As impacted by EN ISO 20344:2021/A1:2024.

² As impacted by EN ISO 20345:2022/A1:2024.

³ As impacted by EN ISO 20346:2022/A1:2024.

⁴ As impacted by EN ISO 20347:2022/A1:2024.

3.2

permeation

process by which a chemical move through a footwear material at a molecular level

Note 1 to entry: Permeation involves the following:

- absorption of molecules of the chemical into the contacted (outside) surface of a material;
- diffusion of the absorbed molecules into the material;
- desorption of the molecules from the opposite (inside) surface of the material.

3.3

splashing

contact after pouring of chemical on the footwear

3.4

test chemical

chemical that is used to assess the behaviour of a footwear or a footwear material after a defined contact under the laboratory test conditions

Note 1 to entry: The chemical can cause adverse effects to the human body by contact with the skin.

4 Test methods

4.1 General

4.1.1 Laboratory safety

Safety precautions — Person using this document should be familiar with normal laboratory practice. This document does not purport to address all the safety problems, if any, associated with its use. It is the responsibility of the user to apply established Health and Safety practices and to ensure compliance with the applicable regulations.

4.1.2 Sampling and conditioning

The minimum number of samples, i.e. separate items of footwear, to be tested in order to verify compliance with the requirements specified in EN ISO 20344:2021, together with the minimum number of test pieces to be taken from each sample, are given in Table 1.

Wherever possible, test pieces shall be taken from the whole footwear item unless otherwise stated.

If it is not possible to obtain a large enough test piece from the footwear, then a sample of the material from which the component has been manufactured may be used instead and this should be noted in the test report.

Table 1 — Minimum number of samples and test specimens or test pieces for one chemical

Tests	Number of test pieces from each sample	Test only on the final footwear
Table 1 of EN ISO 20344:2021 is applicable		
Splashing test (4.2)	1 pair of shoes (the medium size of the range) per chemical	yes
Degradation test (4.3)	— 2 discs for outsole (one before and one after each chemical exposure), one pair at least — 2 discs for upper (one before and one after each chemical exposure) one pair at least	If possible
Permeation test (4.4)	3 discs from the weakest part of the upper for each chemical	yes

All test pieces shall be conditioned in a standard atmosphere of $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ relative humidity for a minimum of 24 h before testing, unless otherwise stated in the test method.

The maximum time which shall elapse between removal from the conditioning atmosphere and the start of testing shall be not greater than 10 min, unless otherwise stated in the test method.

For each of the required measurements performed in accordance with this document, a corresponding estimate of the uncertainty of measurement should be evaluated. One of the following approaches should be used:

- a statistical method, e.g. as given in ISO 5725-2:2019 [9];
- a mathematical method, e.g. as given in ISO/IEC Guide 98-3:2014 [10];
- uncertainty and conformity assessment as given in ISO/IEC Guide 98-4:2012 [11];
- JCGM 100:2008 [12].

4.2 Splashing test

4.2.1 Principle

The whole footwear samples are exposed in standardized conditions for several periods of time, by pouring of a limited volume of specific liquid chemicals.

Damage to the materials and structure of the footwear including ingress through seams and manufactured structure is assessed at specified step of the test method.

4.2.2 Method

A pair of shoes shall be evaluated per chemical to be applied. If several chemicals have to be chosen, it is necessary to use a new pair of footwear for each chemical:

- a) clean the footwear with a dry absorbent paper to remove any productions residues;