



BSI Standards Publication

Protective clothing for users of hand-held chainsaws

Part 2: Performance requirements and test methods for leg protectors

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National foreword

This British Standard is the UK implementation of EN ISO 11393-2:2019. It is identical to ISO 11393-2:2018. It supersedes BS EN 381-2:1995 and BS EN 381-5:1995, which are withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PH/3/5, Mechanical Impact Personal Protective Equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2019
Published by BSI Standards Limited 2019

ISBN 978 0 580 94181 8

ICS 13.340.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 September 2019.

Amendments/corrigenda issued since publication

Date	Text affected
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EUROPÄISCHE NORM

September 2019

ICS 13.340.10

Supersedes EN 381-2:1995, EN 381-5:1995

English Version

Protective clothing for users of hand-held chainsaws - Part 2: Performance requirements and test methods for leg protectors (ISO 11393-2:2018)

Vêtements de protection pour utilisateurs de scies à chaîne tenues à la main - Partie 2: Exigences de performance et méthodes d'essai pour protège-jambes (ISO 11393-2:2018)

Schutzkleidung für die Benutzer von handgeführten Kettensägen - Teil 2: Leistungsanforderungen und Prüfmethoden für Beinschützer (ISO 11393-2:2018)

This European Standard was approved by CEN on 24 April 2019.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN ISO 11393-2:2019) has been prepared by Technical Committee ISO/TC 94 "Personal safety -- Personal protective equipment" in collaboration with Technical Committee CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 381-2:1995 and EN 381-5:1995.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA which is an integral part of this document.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 11393-2:2018 has been approved by CEN as EN ISO 11393-2:2019 without any modification.

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Annex ZA (informative)

Relationship between this European Standard and the essential requirements of REGULATION (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment aimed to be covered

This European Standard has been prepared under a Commission's standardization request to provide one voluntary means of conforming to essential requirements of Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment.

Once this standard is cited in the Official Journal of the European Union under that Regulation (EU) 2016/425, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Regulation (EU) 2016/425 and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Regulation (EU) 2016/425

Essential Requirements of Regulation (EU) 2016/425	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.1.1. Ergonomics	4.4; 4.8.2	
1.1.2.1. Optimum level of protection	4.4; 4.8.2	
1.1.2.2. Classes of protection appropriate to different levels of risk	4.7.1	
1.2.1. Absence of inherent risks and other nuisance factors	4.4; 4.5; 4.6; 4.8.2	
1.2.1.1. Suitable constituent materials	4.2	
1.2.1.2 Satisfactory surface condition of all PPE parts in contact with the user	4.4	
1.2.1.3 Maximum permissible user impediment	4.4	
1.3.1. Adaptation of PPE to user morphology	4.4; 4.8.2	
1.3.2. Lightness and strength	4.8.	
1.4. Manufacturer's instructions and information	9; 7.	
2.1 PPE incorporating adjustment systems	4.4; 4.8.2	
2.4. PPE subject to ageing	9	

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2.12. PPE bearing one or more identification markings or indicators directly or indirectly relating to health and safety	8.	
3.3. Protection against mechanical injuries	4.7.2	

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

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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.

This document was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 162, *Protective clothing including hand and arm protection and lifejackets*, in collaboration with ISO Technical Committee TC 94, *Personal safety — Personal protective equipment*, Subcommittee SC 13, *Protective clothing*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 11393-2:1999), which has been technically revised. The main changes compared to the previous edition are as follows:

- in the Introduction, the term “hand-held chainsaws primarily constructed for cutting wood” has been added;
- the normative references have been updated;
- the terms and definitions [3.1](#), [3.2](#), [3.3](#), [3.4](#), [3.5](#), [3.6](#), [3.7](#), [3.9](#), [3.10](#), [3.12](#), [3.14](#) and [3.17](#) have been added;
- in [Clause 4](#), subclauses have been added, PPE for users of left-handed chainsaws has been added, the previous “design B” has been deleted, a new “design B” has been added to describe chaps, the definition for trousers has been specified and a definition valid for chaps has been added;
- in [Clause 5](#), the definition has been specified;
- in [Clause 6](#), the clause has been completely revised, pre-treatment regulation for testing has been changed; the definitions in [6.2](#), [6.3](#), [6.5](#) and [6.7](#) have been specified, a definition valid for chaps has been added, cuts of the smallest and largest sizes have been added, measuring of chaps has been added, a test method ergonomic testing has been added;
- in [Clause 7](#), marking requirements have been revised;
- in [Clause 9](#), information requirements have been revised;
- in [Clause 9](#), the definition has been specified.

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A list of all parts in the ISO 11393 series can be found on the ISO website.

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.

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Introduction

This document forms part of a series concerned with personal protective equipment (PPE) designed to protect against the risks arising from the use of hand-held chainsaws primarily constructed for cutting wood.

No PPE can ensure a 100 % protection against cutting from a hand-held chainsaw. Nevertheless, experience has shown that it is possible to design PPE that offers a certain degree of protection.

Different functional principles may be applied in order to give protection. These include:

- a) chain slipping: on contact the chain does not cut the material;
- b) clogging: fibres are drawn by the chain into the drive sprocket and block chain movement;
- c) chain braking: fibres have a high resistance to cutting and absorb rotational energy, thereby reducing the chain speed.

Often more than one principle is applied.

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Protective clothing for users of hand-held chainsaws —

Part 2: Performance requirements and test methods for leg protectors

1 Scope

This document specifies the performance requirements, test methods, design requirements, identification and marking information for leg protectors that offer protection against cutting by hand-held chainsaws.

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 5077, *Textiles — Determination of dimensional change in washing and drying*

ISO 7000, *Graphical symbols for use on equipment — Registered symbols*

ISO 11393-1:2018, *Protective clothing for users of hand-held chainsaws — Part 1: Test rig for testing resistance to cutting by a chainsaw*

ISO 13688:2013, *Protective clothing — General requirements*

ISO 13935-2, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 2: Determination of maximum force to seam rupture using the grab method*

ISO 17249, *Safety footwear with resistance to chain saw cutting*

ISO 20345, *Personal protective equipment — Safety footwear*

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:

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

3.1

attachment

connection (usually stitching) between the protective insert and the outer or lining fabric

3.2

attachment force

force that the connection between the protective insert and any structural fabric can withstand, independent of the way the protective insert is attached to the outer fabric