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Safety, protective and occupational footwear for professional use —

Part 5: Additional requirements and test methods

Chaussures de sécurité, de protection et de travail à usage professionnel —

Partie 5: Exigences additionnelles et méthodes d'essai

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 8782 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 8782-5 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 3, *Foot protection*.

ISO 8782 consists of the following parts, under the general title *Safety, protective and occupational footwear for professional use*:

— *Part 1: Requirements and test methods*

— *Part 2: Specification for safety footwear*

— *Part 3: Specification for protective footwear*

— *Part 4: Specification for occupational footwear*

— *Part 5: Additional requirements and test methods*

— *Part 6: Additional specifications for safety footwear*

— *Part 7: Additional specifications for protective footwear*

— *Part 8: Additional specifications for occupational footwear*

Introduction

During the preparation of ISO 8782-1, it became apparent that there were a number of requirements and test methods which were needed for certain types of footwear for professional use, but which were not then at a sufficiently advanced stage for inclusion in that standard. Some of those items have now been included in this part of ISO 8782, which is intended to supplement the contents of ISO 8782-1 and to be used with it, in conjunction with parts 6, 7 and 8 of ISO 8782, as appropriate. Further work is still being undertaken with respect to slip resistance properties, protection against chemical hazards and the development of a mechanical method for the determination of water resistance. A separate standard for insulating footwear is also being prepared.

Safety, protective and occupational footwear for professional use —

Part 5: Additional requirements and test methods

1 Scope

This part of ISO 8782 specifies requirements and test methods relating to properties of footwear for professional use additional to those specified in ISO 8782-1. It covers water resistance, protection against cutting by hand held chain saws, resistance to fire fighting hazards (footwear for fire fighters), metatarsal protection and cut resistance.

This part of ISO 8782 can only be used in conjunction with parts 6, 7 and 8 of ISO 8782, which specify requirements for footwear relating to specific levels of risk.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 8782. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 8782 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6940, *Textile fabrics — Burning behaviour — Determination of ease of ignition of vertically oriented specimens.*

ISO 6942, *Protective clothing — Protection against heat and fire — Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat.*

ISO 8782-1:1998, *Safety, protective and occupational footwear for professional use — Part 1: Requirements and test methods.*

ISO 8782-2:1998, *Safety, protective and occupational footwear for professional use — Part 2: Specification for safety footwear.*

ISO 8782-3, *Safety, protective and occupational footwear for professional use — Part 3: Specification for protective footwear.*

ISO 8782-4, *Safety, protective and occupational footwear for professional use — Part 4: Specification for occupational footwear.*

ISO 8782-6, *Safety, protective and occupational footwear for professional use — Part 6: Additional specifications for safety footwear.*

ISO 8782-7, *Safety, protective and occupational footwear for professional use — Part 7: Additional specifications for protective footwear.*

ISO 8782-8, *Safety, protective and occupational footwear for professional use — Part 8: Additional specifications for occupational footwear.*

ISO 11393-3, *Protective clothing for users of hand-held chain-saws — Part 3: Test methods for footwear.*

EN 388:1994, *Protective gloves against mechanical risks.*

3 Terms and definitions

For the purposes of this part of ISO 8782, the terms and definitions given in ISO 8782-1 apply.

4 Requirements for whole footwear

4.1 Sampling and conditioning

The minimum number of samples (i.e. separate items of footwear) to be tested in order to check compliance with the requirements specified in this clause, together with the minimum number of test pieces taken from each sample, is given in Table 1.

Wherever possible, test pieces shall be taken from the whole footwear 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 can be used instead and this should be noted in the test report.

Where samples are required from each of three sizes, these shall comprise the largest, smallest and a middle size of the footwear under test.

All test pieces shall be conditioned in a standard atmosphere of (20 ± 2) °C and (65 ± 5) % relative humidity for a minimum of 48 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.

Each test piece shall individually satisfy the specified requirement, unless otherwise stated in the test method.

Table 1 — Minimum number of samples and test pieces

Requirements	Clause reference	Number of samples	Number of test pieces from each sample
Water resistance	4.2	3 pairs	1 pair
Resistance to chain saw cutting	4.3.3	3 pairs size 42	1 pair
Flex resistance of metal penetration resistant inserts	4.3.4 4.4.3	1 pair from each of three sizes	1 pair
Contact heat	4.4.5.1	1 pair	1 pair
Radiant heat	4.4.5.2	1 pair	two from 1 pair
Flame	4.4.5.3	1 pair	two from 1 pair
Impact resistance of metatarsal protective device	4.5.2	1 pair from each of three sizes	1 pair
Resistance to cutting	4.6.3	1 pair from each of three sizes	4 from each pair

4.2 Water resistance

When tested in accordance with the method described in 5.1, the total area of water penetration after 100 trough lengths shall be not greater than 3 cm^2.

4.3 Protection against cutting by a hand-held chain saw

4.3.1 Design

Only footwear of design C, with an upper of height greater than 195 mm, and designs D and E, as described in 4.2.1 of ISO 8782-1:1998 shall be used.

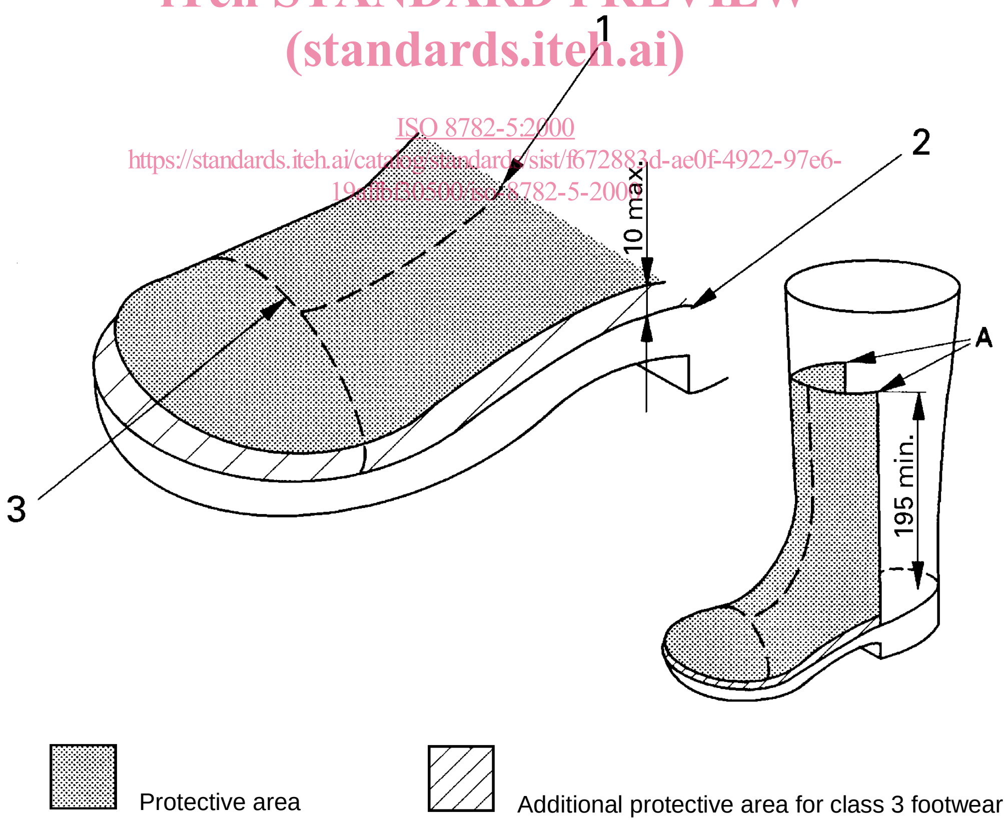
4.3.2 Construction

Footwear shall have a continuous protective area, as shown in Figure 1, comprising the vamp, tongue and toe area of the footwear. This includes the following:

a) the safety toecap;

b) the area immediately behind the toecap back edge, up to two vertical lines 70 mm on either side of the footwear centre line, measured at points A as shown in Figure 1, and vertically a maximum of 10 mm above the feather line to 195 mm above the insole, measured between the insole top edge in the middle of the seat at points A as shown in Figure 1.

Dimensions in millimetres



Key

1 Footwear centre line

2 Feather line

3 Toecap back edge

Figure 1 — Minimum protective area

For class 3 footwear (see 4.3.3) there shall be no gap between the protective area and the feather edge.

NOTE The feather line is the line of a shoe where the upper meets the bottom, the part of the bottom involved being the welt, rand or sole, depending on the method of shoe construction.

There shall be no gaps between the toecaps and the protective material.

All chain-saw protective material shall be permanently attached to the footwear. If different chain-saw protective materials are used, either they shall be fixed to each other or there shall be an overlap.

If the footwear is designed to provide protection over a larger area than that specified, all parts shall have the same protective quality.

4.3.3 Resistance to cutting by a chain saw

When tested in accordance with the method described in ISO 11393-3, using the test chain speed specified in Table 2 for the appropriate class of footwear, no cut-through shall occur.

Table 2 — Test chain speeds

Class of footwear	Test chain speed m/s
0	16
1	20
2	24
3	28

4.3.4 Flex resistance of metal penetration-resistant inserts

When metal penetration-resistant inserts in all types of footwear are tested in accordance with the method described in C.2.2 of ISO 8782-1:1998, they shall show no visible signs of cracking after being subjected to 10^6 flexes.

4.4 Resistance to fire fighting hazards (footwear for fire fighters)

4.4.1 Design

Footwear shall not be of design A, as described in 4.2.1 of ISO 8782-1:1998.

4.4.2 Construction

In classification I footwear (see clause 4 of ISO 8782-2:1998), the upper shall be made of grain leather.

4.4.3 Flex resistance of metal penetration-resistant inserts

When metal penetration-resistant inserts in all types of footwear are tested in accordance with the method described in C.2.2 of ISO 8782-1:1998, they shall show no visible signs of cracking after being subjected to 10^6 flexes.

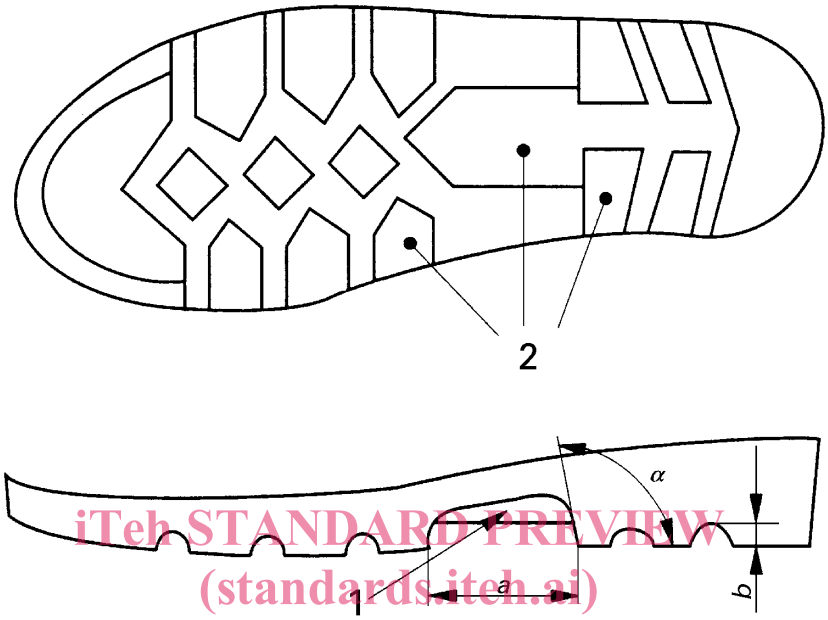
4.4.4 Outsole

4.4.4.1 The cleating design shall be such that there are no continuous linear transverse valleys across the sole.

4.4.4.2 The outsole shall have a cleat height of at least 1,5 mm in the waist area.

4.4.4.3 The outsole shall have an inclined-breast heel. Distance a shall be at least 35 mm, angle α shall be greater than 90° and less than 120°, and dimension b shall be at least 10 mm. (See Figure 2.)

4.4.4.4 Footwear shall have a steel shank unless it is provided with a metal penetration resistant insert.



Key

1 Cleat profile
2 Cleats

Figure 2 — Outsole dimensions

4.4.5 Thermal behaviour

4.4.5.1 Contact heat

When tested in accordance with the method described in 5.2.1, the bottom shall display no signs of serious damage.

4.4.5.2 Radiant heat

When tested in accordance with the method described in 5.2.2, the upper shall display no signs of serious damage.

4.4.5.3 Flame

When tested in accordance with the method described in 5.2.3, the upper shall display no signs of serious damage, nor shall the specimen be permitted to flame more than 2 s (afterflame time) or to glow more than 5 s (afterglow time) after removal of the flame.