



SLOVENSKI STANDARD SIST EN ISO 14460:2000

01-februar-2000

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Protective clothing for automobile racing drivers - Protection against heat and flame -
Performance requirements and test methods (ISO 14460:1999)

Schutzkleidung für Autofahrer - Schutz gegen Hitze und Flammen -
Leistungsanforderungen und Prüfverfahren (ISO 14460:1999)

Vêtements de protection pour pilotes automobiles - Protection contre la chaleur et le feu
- Exigences de performance et méthodes d'essai (ISO 14460:1999)

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Ta slovenski standard je istoveten z: EN ISO 14460:1999

ICS:

13.340.10 Varovalna obleka Protective clothing

SIST EN ISO 14460:2000 en

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English version

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14460:1999)

This European Standard was approved by CEN on 22 March 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard ISO 14460:1999 has been prepared by Technical Committee ISO/TC 94 "Personal safety - Protective clothing and 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 October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

This European Standard 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 relationship with EU Directive(s), see informative Annex ZB, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 14460:1999 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

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**Protective clothing for automobile racing
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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.

International Standard ISO 14460 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 13, *Protective clothing*.

Annex ZA forms a normative part of this International Standard. Annex A is for information only.

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Protective clothing for automobile racing drivers — Protection against heat and flame — Performance requirements and test methods

1 Scope

This International Standard specifies test methods, performance requirements and design parameters for clothing for protection against heat and flame intended for drivers in automobile competitions. This International Standard concerns outer garments, under garments, socks, gloves and balaclava hoods. Shoes and helmets are excluded.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 3175-1:1998, *Textiles — Dry-cleaning and finishing — Part 1: Method for assessing the cleanability of textiles and garments.*

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ISO 3758:1991, *Textiles — Care labelling code using symbols.*

ISO 4675:1990, *Rubber- or plastics-coated fabrics — Low-temperature bend test.*

ISO 5077:1984, *Textiles — Determination of dimensional change in washing and drying.*

ISO 6330:—¹⁾, *Textiles — Domestic washing and drying procedures for textile testing.*

ISO 9151:1995, *Protective clothing against heat and flame — Determination of heat transmission on exposure to flame.*

ISO 13688:1998, *Protective clothing — General requirements.*

ISO 13935-1:1999, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 1: Determination of maximum force to seam rupture using the strip method.*

ISO 15025:—²⁾, *Protective clothing — Protection against heat and flame — Method of test for limited flame spread.*

3 Terms and definitions

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

¹⁾ To be published. (Revision of ISO 6330:1984)

²⁾ To be published.

3.1**garment**

single item of clothing which may consist of a single or multiple layers

3.2**outer garment**

one-piece garment which is worn as an outermost layer over an under garment and which is designed to entirely cover the wearer except for the head, hands and feet

3.3**under garment**

garment which is designed to be worn between an outer garment and the wearer's body

3.4**component assembly**

combination of materials of a multilayer garment, presented exactly as in the finished garment construction

3.5**innermost layer**

lining found on that face of the component assembly which is intended to be nearest to the wearer's skin

3.6**closure system**

method of fastening openings in the garment including combinations of more than one method of achieving a secure closure

EXAMPLE

A slide fastener covered by an overflap fastened down with a touch and close fastener.

3.7**seam**

junction of two edges of material which are permanently attached in the garment by sewing or any other method

3.8**structural seam**

seam which holds the outer garment together and which if broken would expose the under garments and reduce the protection

3.9**balaclava hood**

one-piece garment designed to fit closely over the entire head and to extend downwards to cover the neck

4 Design**4.1 Outer garment**

The outer garment shall be constructed as one piece. It shall extend to cover the neck and be close-fitting at the wrists and ankles.

Closure systems shall be constructed so as to fulfil the performance requirements of the garment and shall be covered by an overflap of the same materials as in the component assembly.

All structural seams shall be constructed so as to maintain the integrity of the garment.

Straps intended for lifting the wearer shall be incorporated in the garment in the following places:

- on top of each shoulder;
- on each side, at waist level, forward of the median line between the armpit and hip.

Straps shall be placed so as not to make contact with the car seat.

4.2 Under garments

Under garments for the upper body shall be designed to cover the wearer's neck and upper arm, and shall have a polo neck. Under garments for the lower body shall consist of boxer shorts, with a minimum inner leg measurement of 50 mm, or long underpants.

4.3 Balaclava hoods

All the part of the balaclava hood seen in frontal projection when the garment is worn, shall consist of at least two layers and shall have not more than two apertures, no larger than is necessary for normal vision. The mass per area of the two layers together shall be $\geq 360 \text{ g/m}^2$. The lower part shall be designed to extend inside the outer or inner garment all around the neck so that it will not come free whichever way the head is moved.

4.4 Socks

Socks shall be half-hose (to mid-calf) and the materials shall have a mass per area $\geq 180 \text{ g/m}^2$.

4.5 Gloves

The back of the glove shall be composed of at least two layers. The mass per area of the two layers together shall be $\geq 360 \text{ g/m}^2$. Seam stitching shall be invisible. The glove shall be fitted at the wrist, and shall be designed to normally cover at least 2 cm above the wrist joint. Gloves shall cover the cuffs of the wearer's outer garment.

5 Sampling and pretreatment

5.1 Samples submitted for testing shall consist of at least one new complete garment. Additional garments or material samples may be required and these shall be to the same specifications as the appropriate component assemblies (see 3.4).

5.2 If all regions of the garment are not composed of the same materials, each different region shall be sampled and tested.

5.3 The number and size of specimens for the different tests shall be in accordance with the respective standards.

5.4 In all surface tests the outermost surface shall be exposed.

5.5 All tests shall be carried out on materials as received. Tests 6.1 and 6.2 shall also be carried out on materials which have been pretreated. The pretreatment shall consist of 15 washing cycles in accordance with ISO 6330, using the procedure specified by the manufacturer or procedure 2A if not otherwise specified, and 15 dry cleaning cycles in accordance with ISO 3175-1. Materials, such as leather, which are unsuitable for dry cleaning should be washed only.

6 Testing

6.1 The flame resistance properties of materials shall be tested in accordance with ISO 15025:—, Procedure A (surface ignition), both before and after the pretreatment specified in 5.5.

6.2 The heat transmission of component assemblies on exposure to flame shall be tested in accordance with ISO 9151, both before and after the pretreatment specified in 5.5.

6.3 The mechanical resistance of component assemblies after exposure to flame shall be tested in accordance with the following mechanical resistance test.

Mount centrally face downwards on the ISO 9151 test apparatus, a component assembly specimen, 100 mm by 60 mm. Apply the flame for $(11 \pm 0,2) \text{ s}$. Within 1 min following the removal of the flame, mount the specimen on the bending jig as specified in ISO 4675, with the outer surface in contact with the jig. As soon as the test specimen is in position, release the trigger and permit the flexing plate to make a free fall.