



**SLOVENSKI STANDARD**  
**SIST EN ISO 15831:2004**  
**01-julij-2004**

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Clothing - Physiological effects - Measurement of thermal insulation by means of a thermal manikin (ISO 15831:2004)

Bekleidung - Physiologische Wirkungen - Messung der Wärmeisolation mittels einer Thermopuppe (ISO 15831:2004)

Vetements - Effets physiologiques - Mesurage de l'isolation thermique a l'aide d'un mannequin thermique (ISO 15831:2004)

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**Ta slovenski standard je istoveten z: EN ISO 15831:2004**

**ICS:**

61.020 Uà|æ ãæ Clothes

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ICS 61.020

English version

Clothing - Physiological effects - Measurement of thermal  
insulation by means of a thermal manikin (ISO 15831:2004)

Vêtements - Effets physiologiques - Mesurage de l'isolation  
thermique à l'aide d'un mannequin thermique (ISO  
15831:2004)

Bekleidung - Physiologische Wirkungen - Messung der  
Wärmeisolation mittels einer Thermopuppe (ISO  
15831:2004)

This European Standard was approved by CEN on 5 January 2004.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Foreword

This document (EN ISO 15831:2004) has been prepared by Technical Committee ISO/TC 38 "Textiles" 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 August 2004, and conflicting national standards shall be withdrawn at the latest by August 2004.

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 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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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### Endorsement notice

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The text of ISO 15831:2004 has been approved by CEN as EN ISO 15831:2004 without any modifications.

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## ANNEX ZA (informative)

### Relationship between this European Standard and the Essential Requirements of EU Directive 89/686

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 89/686.

Once this standard is cited in the Official Journal of the European Communities under that Directive and has been implemented as a national standard in at least one Member State, 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 Directive and associated EFTA regulations.

**WARNING:** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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**Clothing — Physiological effects —  
Measurement of thermal insulation by  
means of a thermal manikin**

*Vêtements — Effets physiologiques — Mesurage de l'isolation  
thermique à l'aide d'un mannequin thermique*

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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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15831 was prepared by Technical Committee ISO/TC 38, *Textiles*.

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# Clothing — Physiological effects — Measurement of thermal insulation by means of a thermal manikin

## 1 Scope

This International Standard describes the requirements of the thermal manikin and the test procedure used to measure the thermal insulation of a clothing ensemble, as it becomes effective for the wearer in practical use in a relatively calm environment, with the wearer either standing or moving.

NOTE This thermal insulation, among other parameters, can be used to determine the physiological effect of clothing on the wearer in specific climate/activity scenarios.

## 2 Terms and definitions

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

### 2.1

#### clothing ensemble

group of garments worn together on the body at the same time

### 2.2

#### thermal insulation of clothing

temperature difference between the wearer's skin surface and ambient atmosphere divided by the resulting dry heat flow per unit area in the direction of the temperature gradient where the dry heat flow consists of conductive, convective and radiant components

NOTE Depending on the end use of the clothing, different thermal insulation values can apply.

#### 2.2.1

##### total thermal insulation of clothing

$I_t$

total thermal insulation from skin to ambient atmosphere, including clothing and boundary air layer, under defined conditions measured with a stationary manikin

#### 2.2.2

##### resultant total thermal insulation of clothing

$I_{tr}$

total thermal insulation from skin to ambient atmosphere, including clothing and boundary air layer, under defined conditions measured with a manikin moving its legs and arms