



SLOVENSKI STANDARD

SIST EN 31092:1999

01-marec-1999

Tekstilije - Ugotavljanje fizioloških lastnosti - Merjenje toplotne in parne upornosti pri ustaljenih pogojih (preskus s pred izgubo zaščiteno vročo ploščo)

Textiles - Determination of physiological properties - Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded - hotplate test) (ISO 11092:1993)

Textilien - Prüfung bekleidungsphysiologischer Eigenschaften - Prüfung des Wärme- und Wasserdampfdurchgangswiderstandes unter stationären Bedingungen (sweating guarded - hotplate test) (ISO 11092:1993)

Textiles - Détermination des propriétés physiologiques - Mesure des résistances thermiques et évaporatives en régime stationnaire (essai de la plaque chaude transpirante gardée) (ISO 11092:1993)

Ta slovenski standard je istoveten z: EN 31092:1993

ICS:

59.080.01 Tekstilije na splošno Textiles in general

SIST EN 31092:1999 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 31092:1999

<https://standards.iteh.ai/catalog/standards/sist/9ea2c1cf-5081-4c57-82f9-10aaba8c6f27/sist-en-31092-1999>

EUROPEAN STANDARD

EN 31092

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1993

UDC 677.074/.077:620.1:677.017.87

Descriptors: Textiles, woven fabrics, physiological properties, thermal comfort, measurements, thermal resistance, water vapor tests

English version

**Textiles - Determination of physiological properties
- Measurement of thermal and water-vapour
resistance under steady-state conditions
(sweating guarded - hotplate test)
(ISO 11092:1993)**

Textiles - Détermination des propriétés
physiologiques - Mesure des résistances
thermiques et évaporatives en régime
stationnaire (essai de la plaque chaude
transpirante gardée) (ISO 11092:1993)

Textilien - Prüfung bekleidungsphysiologischer
Eigenschaften - Prüfung des Wärme- und
Wasserdampfdurchgangs widerstandes unter
stationären Bedingungen (sweating guarded -
hotplate test)(ISO 11092:1993)

SIST EN 31092:1999

<https://standards.iteh.ai/catalog/standards/sist/9ea2c1cf-5081-4c57-82f9-10aaba8c6f27/sist-en-31092-1999>

This European Standard was approved by CEN on 1993-12-16. 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.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Page 2
EN 31092:1993

Foreword

This European Standard is the endorsement of ISO 11092. Endorsement of ISO 11092 was recommended by CEN/TC 248 "Textiles and textile products" under whose competence this European Standard will henceforth fall.

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 June 1994, and conflicting national standards shall be withdrawn by June 1994.

The standard was approved and in accordance with the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Endorsement notice

The text of the International Standard ISO 11092:1993 was approved by CEN as a European Standard without any modification.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 31092:1999

<https://standards.iteh.ai/catalog/standards/sist/9ea2c1cf-5081-4c57-82f9-10aaba8c6f27/sist-en-31092-1999>

INTERNATIONAL
STANDARD

ISO
11092

First edition
1993-10-15

**Textiles — Physiological effects —
Measurement of thermal and water-vapour
resistance under steady-state conditions
(sweating guarded-hotplate test)**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

*Textiles — Effets physiologiques — Mesurage de la résistance thermique
et de la résistance à la vapeur d'eau en régime stationnaire (essai de la
plaque chaude gardée transpirante)*

<https://standards.iteh.ai/catalog/standards/sist/31092-1999>
10aaba8c6f27/sist-en-31092-1999



Reference number
ISO 11092:1993(E)

ISO 11092:1993(E)**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.

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 11092 was prepared by Technical Committee ISO/TC 38, *Textiles*.

Annexes A and B form an integral part of this International Standard.

ITeH STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 31092:1999
<https://standards.iteh.ai/catalog/standards/sist/31092-1999/31092-1999>
10aaba8c6f27/sist-en-31092-1999

© ISO 1993

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Introduction

ISO 11092 is the first of a number of standard test methods in the field of clothing comfort.

The physical properties of textile materials which contribute to physiological comfort involve a complex combination of heat and mass transfer. Each may occur separately or simultaneously. They are time-dependent, and may be considered in steady-state or transient conditions.

Thermal resistance is the net result of the combination of radiant, conductive and convective heat transfer, and its value depends on the contribution of each to the total heat transfer. Although it is an intrinsic property of the textile material, its measured value may change through the conditions of test due to the interaction of parameters such as radiant heat transfer with the surroundings.

Several methods exist which may be used to measure heat and moisture properties of textiles, each of which is specific to one or the other and relies on certain assumptions for its interpretation.

The sweating guarded-hotplate (often referred to as the "skin model") described in this International Standard is intended to simulate the heat and mass transfer processes which occur next to human skin. Measurements involving one or both processes may be carried out either separately or simultaneously using a variety of environmental conditions, involving combinations of temperature, relative humidity, air speed, and in the liquid or gaseous phase. Hence transport properties measured with this apparatus can be made to simulate different wear and environmental situations in both transient and steady states. In this standard only steady-state conditions are selected.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This page intentionally left blank

SIST EN 31092:1999

<https://standards.iteh.ai/catalog/standards/sist/9ea2c1cf-5081-4c57-82f9-10aaba8c6f27/sist-en-31092-1999>

Textiles — Physiological effects — Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded-hotplate test)

1 Scope

This International Standard specifies methods for the measurement of the thermal resistance and water-vapour resistance, under steady-state conditions, of e.g. fabrics, films, coatings, foams and leather, including multilayer assemblies, for use in clothing, quilts, sleeping bags, upholstery and similar textile or textile-like products.

The application of this measurement technique is restricted to a maximum thermal resistance and water-vapour resistance which depend on the dimensions and construction of the apparatus used (e.g. $2 \text{ m}^2 \cdot \text{K}/\text{W}$ and $700 \text{ m}^2 \cdot \text{Pa}/\text{W}$ respectively, for the minimum specifications of the equipment referred to in this International Standard).

The test conditions used in this standard are not intended to represent specific comfort situations, and performance specifications in relation to physiological comfort are not stated.

2 Definitions

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

2.1 thermal resistance, R_{ct} : Temperature difference between the two faces of a material divided by the resultant heat flux per unit area in the direction of the gradient. The dry heat flux may consist of one or more conductive, convective and radiant components.

Thermal resistance R_{ct} , expressed in square metres kelvin per watt, is a quantity specific to textile materials or composites which determines the dry heat flux across a given area in response to a steady applied temperature gradient.

2.2 water-vapour resistance, R_{et} : Water-vapour pressure difference between the two faces of a material divided by the resultant evaporative heat flux per unit area in the direction of the gradient. The evaporative heat flux may consist of both diffusive and convective components.

Water-vapour resistance R_{et} , expressed in square metres pascal per watt, is a quantity specific to textile materials or composites which determines the "latent" evaporative heat flux across a given area in response to a steady applied water-vapour pressure gradient.

2.3 water-vapour permeability index, i_{mt} : Ratio of thermal and water-vapour resistances in accordance with equation (1):

$$i_{mt} = S \cdot \frac{R_{ct}}{R_{et}} \quad \dots (1)$$

where S equals $60 \text{ Pa}/\text{K}$

i_{mt} is dimensionless, and has values between 0 and 1. A value of 0 implies that the material is water-vapour impermeable, that is, it has infinite water-vapour resistance, and a material with a value of 1 has both the thermal resistance and water-vapour resistance of an air layer of the same thickness.