SLOVENSKI STANDARD
SIST EN ISO 11079:2008

01-april-2008

Ergonomija toplotnega okolja - Ugotavljanje in razlaga obremenitev zaradi mraza ob uporabi zahtevanih zaģļ itnih oblaļ il (IREQ) in zaradi uļ inkov lokalnega ohlajevanja (ISO 11079:2007)

Ergonomics of the thermal environment - Determination and interpretation of cold stress when using required clothing insulation (IREQ) and local cooling effects (ISO 11079:2007)

Ergonomie der thermischen Umgebung - Bestimmung und Interpretation der Kältebelastung bei Verwendung der erforderlichen Isolation der Bekleidung (IREQ) und lokalen Kühlwirkungen (ISO 11079:2007)

Ergonomie des ambiances thermiques - Détermination et interprétation de la contrainte liée au froid en utilisant l'isolement thermique requis du vetement et les effets du refroidissement local (ISO 11079:2007)

Ta slovenski standard je istoveten z: **EN ISO 11079:2007**

ICS:

13.180	Ergonomija	Ergonomics

SIST EN ISO 11079:2008 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11079

December 2007

ICS 13.180

Supersedes ENV ISO 11079:1998

English Version

Ergonomics of the thermal environment - Determination and interpretation of cold stress when using required clothing insulation (IREQ) and local cooling effects (ISO 11079:2007)

Ergonomie des ambiances thermiques - Détermination et interprétation de la contrainte liée au froid en utilisant l'isolement thermique requis du vêtement (IREQ) et les effets du refroidissement local (ISO 11079:2007)

Ergonomie der thermischen Umgebung - Bestimmung und Interpretation der Kältebelastung bei Verwendung der erforderlichen Isolation der Bekleidung (IREQ) und lokalen Kühlwirkungen (ISO 11079:2007)

This European Standard was approved by CEN on 14 December 2007.

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 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 Management Centre has the same status as the official versions.

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

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

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

Contents

Page

Foreword.....3

Foreword

This document (EN ISO 11079:2007) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 “Ergonomics” 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 June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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

This document supersedes ENV ISO 11079:1998.

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

Endorsement notice

The text of ISO 11079:2007 has been approved by CEN as a EN ISO 11079:2007 without any modification.

INTERNATIONAL STANDARD

ISO 11079

First edition
2007-12-15

Ergonomics of the thermal environment — Determination and interpretation of cold stress when using required clothing insulation (IREQ) and local cooling effects

Ergonomie des ambiances thermiques — Détermination et interprétation de la contrainte liée au froid en utilisant l'isolement thermique requis du vêtement (IREQ) et les effets du refroidissement local

Reference number
ISO 11079:2007(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword ... iv
Introduction ... v
1 Scope ... 1
2 Normative references ... 1
3 Terms, definitions and symbols ... 2
4 Principles of methods for evaluation ... 4
5 General cooling ... 4
6 Local cooling ... 10
7 Practical assessment of cold environments and interpretation ... 11
Annex A (normative) **Computation of thermal balance** ... 13
Annex B (informative) **Physiological criteria in cold exposure** ... 16
Annex C (informative) **Metabolic rate and thermal properties of clothing** ... 18
Annex D (informative) **Determination of wind cooling** ... 21
Annex E (informative) **Examples of evaluation of IREQ** ... 23
Annex F (informative) **Computer program for calculating IREQ** ... 33
Bibliography ... 34

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 11079 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*.

This first edition of ISO 11079 cancels and replaces the ISO/TR 11079:1993, of which it constitutes a technical revision.

Introduction

Wind chill is commonly encountered in cold climates, but it is low temperatures that first of all endanger body heat balance. By proper adjustment of clothing, human beings can often control and regulate body heat loss, to balance a change in the ambient climate. The method presented here is based therefore on the evaluation of the clothing insulation required to maintain the thermal balance of the body in equilibrium. The heat balance equation used takes into account the most recent scientific findings concerning heat exchanges at the surface of the skin as well as the clothing.

Ergonomics of the thermal environment — Determination and interpretation of cold stress when using required clothing insulation (IREQ) and local cooling effects

1 Scope

This International Standard specifies methods and strategies for assessing the thermal stress associated with exposure to cold environments. These methods apply to continuous, intermittent as well as occasional exposure and type of work, indoors and outdoors. They are not applicable to specific effects associated with certain meteorological phenomena (e.g. precipitation), which are assessed by other methods.

2 Normative references

The following referenced documents are indispensable for the application 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 7726, *Ergonomics of the thermal environment — Instruments for measuring physical quantities*

ISO 8996, *Ergonomics of the thermal environment — Determination of metabolic rate*

ISO 9237, *Textiles — Determination of permeability of fabrics to air*

ISO 9920, *Ergonomics of the thermal environment — Estimation of thermal insulation and water vapour resistance of a clothing ensemble*

ISO 13731, *Ergonomics of the thermal environment — Vocabulary and symbols*

ISO 13732-3, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 3: Cold surfaces*

ISO 15831, *Clothing — Physiological effects — Measurement of thermal insulation by means of a thermal manikin*

EN 511, *Protective gloves against cold*