SLOVENSKI PREDSTANDARD

oSIST prEN ISO 10456:2005

junij 2005

Gradbeni materiali in proizvodi - Higrotermalne lastnosti - Tabelirane računske vrednosti in postopki za določevanje nazivnih in računskih vrednosti toplotnih vrednosti (ISO/DIS 10456:2005)

Building materials and products - Hygrothermal properties -Tabulated design values and procedures for determining declared and design thermal values (ISO/DIS 10456:2005)

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ICS 91.100.01; 91.120.10

Referenčna številka
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN ISO 10456

April 2005

ICS 91.120.10

Will supersede EN ISO 10456:1999

English version

Building materials and products - Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values (ISO/DIS 10456:2005)

Matériaux et produits du bâtiment - Propriétés hygrothermiques - Tableaux des valeurs de conception et procédures pour la détermination des valeurs thermiques déclarées et de conception (ISO/DIS 10456:2005)

Baustoffe und -produkte - Wärme- und feuchtetechnische Eigenschaften - Tabellierte Bemessungswerte und Verfahren zur Bestimmung der wärmeschutztechnischen Nenn- und Bemessungswerte (ISO/DIS 10456:2005)

This draft European Standard is submitted to CEN members for parallel enquiry. It has been drawn up by the Technical Committee CEN/TC 89.

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Ref. No. prEN ISO 10456:2005: E

Foreword

This document (prEN ISO 10456:2005) has been prepared by Technical Committee ISO/TC 163 "Thermal insulation" in collaboration with Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN ISO 10456:1999.

Endorsement notice

The text of ISO/DIS 10456:2005 has been approved by CEN as prEN ISO 10456:2005 without any modifications.

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ISO/TC **163**/SC **2** Secretariat: **SN**

Voting begins on: **2005-04-07**

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Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values

Matériaux et produits du bâtiment — Propriétés hygrothermiques — Tableaux des valeurs de conception et procédures pour la détermination des valeurs thermiques déclarées et de conception

[Revision of second edition (ISO 10456:1999)]

ICS 91.120.10

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The CEN Secretary-General has advised the ISO Secretary-General that this ISO/DIS covers a subject of interest to European standardization. **In accordance with the ISO-lead mode of collaboration as defined in the Vienna Agreement, consultation on this ISO/DIS has the same effect for CEN members as would a CEN enquiry on a draft European Standard.** Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

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Contents

Page

1 Scope 1

2 Normative references 1

3 Terms, definitions, symbols and units 1
3.1 Terms and definitions 1
3.2 Symbols and units 2

4 Test methods and test conditions 3
4.1 Tests for thermal properties 3
4.2 Tests for moisture properties 3

5 Determination of declared thermal values 3

6 Determination of design thermal values 5
6.1 General 5
6.2 Design values derived from declared values 5
6.3 Design values derived from measured values 5

7 Conversion of thermal values 5
7.1 General 5
7.2 Conversion for temperature 5
7.3 Conversion for moisture 6
7.4 Age conversion 7
7.5 Natural convection 7

8 Tabulated design hygrothermal values 8
8.1 General 8
8.2 Design thermal values 8
8.3 Design moisture values 8

Annex A (normative) **Conversion coefficients for temperature** 20

Annex B (informative) **Examples of calculations** 24
B.1 Declared value determined from 10 measured samples 24
B.2 Determination of design value from declared value 25

Annex C (informative) **Statistical calculations** 27
C.1 Generation of fractile values 27
C.2 Conversion between mean and fractile values 27

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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.

ISO 10456 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*.

This third edition cancels and replaces the second edition (ISO 10456:1999). A summary of the principal changes to the clauses that have been technically revised is given below.

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Clause	Changes
Title; extension of scope	This standard now includes tabulated design values of thermal and moisture properties of materials. That has been envisaged as a separate standard, but because of the substantial cross-referencing that would be involved, it was decided to merge them.
Introduction	Introduction added.
1	Moisture coefficients valid only between 0°C and 30°C
4.2	New sub-clause.
7.2	Text extended with general information about climates.
7.4	Clarification that ageing factors are not applied if taken account of in declared values.
7.5	New sub-clause on convection in insulating materials
8	New clause giving tabulated design values (Tables 3, 4, 5). The data are from EN 12524.
Annex A	Data reviewed for XPS and PU. [Information awaited for PF.]

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Introduction

Heat and moisture transfer calculations require design values of thermal and moisture properties for materials used in building applications.

Design values can be derived from declared values that are based on measured data on the product concerned: that is usually the case for thermal insulation materials. Where the design conditions differ from those of the declared value, the data needs to be converted to the applicable conditions and this standard provides the methods and data for so doing.

For materials for which measured values are not available, design values can be obtained from tables. This standard provides such tabulated information based on the compilation of existing data (see Bibliography).

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Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values

1 Scope

This standard specifies methods for the determination of declared and design thermal values for thermally homogeneous building materials and products, together with procedures to convert values obtained under one set of conditions to those valid for another set of conditions. These procedures are valid for design ambient temperatures between -30 °C and +60 °C.

It gives conversion coefficients for temperature and for moisture. These coefficients are valid for mean temperatures between 0 °C and 30 °C.

It also gives design data in tabular form for use in heat and moisture transfer calculations, for thermally homogeneous materials and products commonly used in building construction.

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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.

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ISO 7345, *Thermal insulation - Physical quantities and definitions*

ISO 8301, *Thermal insulation — Determination of steady-state specific thermal resistance and related properties — Heat flow meter apparatus*

ISO 8302, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Guarded hot plate apparatus*

ISO 8990, *Thermal insulation — Determination of steady-state thermal transmission properties — Calibrated and guarded hot box*

ISO 9346, *Thermal insulation - Mass transfer - Physical quantities and definitions*

ISO 12572, *Hygrothermal properties of building materials and products – Determination of water vapour resistance properties*

3 Terms, definitions, symbols and units

3.1 Terms and definitions

For the purposes of this standard the terms and definitions in ISO 7345 apply, together with the following.

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3.1.1
declared thermal value
expected value of a thermal property of a building material or product

— assessed from measured data at reference conditions of temperature and humidity;

— given for a stated fraction and confidence level;

— corresponding to a reasonable expected service lifetime under normal conditions

3.1.2
design thermal value
design thermal conductivity or design thermal resistance

NOTE A given product can have more than one design value, for different applications or environmental conditions.

3.1.3
design thermal conductivity
value of thermal conductivity of a building material or product under specific external and internal conditions which can be considered as typical of the performance of that material or product when incorporated in a building component

3.1.4
design thermal resistance
value of thermal resistance of a building product under specific external and internal conditions which can be considered as typical of the performance of that product when incorporated in a building component

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3.1.5
material
piece of a product irrespective of its delivery form, shape and dimensions, without any facing or coating

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3.1.6
product
final form of a material ready for use, of given shape and dimensions and including any facings or coatings

3.2 Symbols and units

Symbol	Quantity	Unit
c_p	specific heat capacity at constant pressure	J/(kg·K)
F_a	ageing conversion factor	-
F_m	moisture conversion factor	-
F_T	temperature conversion factor	-
f_T	temperature conversion coefficient	K^{-1}
f_u	moisture conversion coefficient mass by mass[1)]	kg/kg
f_ψ	moisture conversion coefficient volume by volume[1)]	m^3/m^3
R	thermal resistance	$m^2·K/W$
s_d	water vapour diffusion-equivalent air layer thickness	m
T	temperature	K
u	moisture content mass by mass	kg/kg

1) For conversion of thermal properties

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