
Toplotne karakteristike gradbenih materialov in proizvodov - Ugotavljanje toplotne upornosti z zaščiteno vročo ploščo in/ali merilniki toplotnih tokov – Suhi ali vlažni proizvodi s srednjo ali nizko toplotno upornostjo

Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Dry and moist products of medium and low thermal resistance

Wärmetechnisches Verhalten von Baustoffen und Bauprodukten - Bestimmung des Wärmedurchlasswiderstandes nach dem Verfahren mit dem Plattengerät und dem Wärmestrommessplatten-Gerät - Trockene und feuchte Produkte mit mittlerem und niedrigem Wärmedurchlasswiderstand

Performance thermique des matériaux et produits pour le bâtiment - Détermination de la résistance thermique par la méthode de la plaque chaude gardée et la méthode fluxmétrique - Produits secs et humides de moyenne et basse résistance thermique

Ta slovenski standard je istoveten z: prEN 12664

ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
91.120.10	Toplotna izolacija stavb	Thermal insulation of buildings

oSIST prEN 12664:2025

en,fr,de

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 12664

October 2025

ICS 91.100.01; 91.120.10

Will supersede EN 12664:2001

English Version

**Thermal performance of building materials and products -
Determination of thermal resistance by means of guarded
hot plate and heat flow meter methods - Dry and moist
products of medium and low thermal resistance**

Performance thermique des matériaux et produits
pour le bâtiment - Détermination de la résistance
thermique par la méthode de la plaque chaude gardée
et la méthode fluxmétrique - Produits secs et humides
de moyenne et basse résistance thermique

Wärmetechnisches Verhalten von Baustoffen und
Bauprodukten - Bestimmung des
Wärmedurchlasswiderstandes nach dem Verfahren mit
dem Plattengerät und dem Wärmestrommessplatten-
Gerät - Trockene und feuchte Produkte mit mittlerem
und niedrigem Wärmedurchlasswiderstand

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

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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-CENELEC Management Centre has the same status as the official versions.

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

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	5
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbol and units	7
3.1 Terms and definitions	7
3.1.1 thermal conductivity, λ , at a point P	7
3.1.2 thermally homogeneous medium	7
3.1.3 porosity	7
3.1.4 homogeneous porous medium	7
3.1.5 thermally isotropic medium	7
3.1.6 thermally stable medium	8
3.1.7 mean thermal conductivity	8
3.1.8 transfer factor of a specimen	8
3.1.9 hygrothermal transmissivity of a material	8
3.1.10 thermal transmissivity of a material	8
3.1.11 steady state heat transfer property	9
3.1.12 settling time	9
3.1.13 rigid specimen	9
3.1.14 room temperature	9
3.1.15 ambient temperature	9
3.1.16 operator	9
3.1.17 data user	9
3.1.18 designer	9
3.1.19 hygroscopic material	9
3.2 Symbols and units	9
4 Principle	11
4.1 Apparatus	11
4.2 Measuring the density of heat flow rate	11
4.3 Measuring the temperature difference	11
4.4 Deriving the thermal resistance or transfer factor	11
4.5 Computing thermal conductivity, thermal transmissivity or hygrothermal transmissivity	11
4.6 Apparatus limits	11
4.7 Specimen limits	12
5 Apparatus	12
5.1 General	12
5.2 Guarded hot plate apparatus	12
5.2.1 General	12
5.2.2 Two specimen apparatus	13
5.2.3 Single specimen apparatus	13
5.2.4 Heating unit	14
5.2.5 Metering area	14
5.2.6 Edge insulation and auxiliary guards	14
5.2.7 Cooling units	14
5.2.8 Accuracy and repeatability	14
5.3 Heat flow meter apparatus	14
5.3.1 General	15
5.3.2 Heat flow meters	16
5.3.3 Calibration principle	16
5.3.4 Limitations due to the calibration	16
5.3.5 Accuracy and repeatability	16
6 Test specimens	17

6.1	General	17
6.2	Selection and size	17
6.3	Specimen preparation and instrumentation	17
6.3.1	Conformity with product standards	17
6.3.2	All specimens except loose-fills	17
6.3.3	Loose-fill materials	20
7	Testing procedure	20
7.1	General	20
7.2	Conditioning	20
7.2.1	General	20
7.2.2	Conditioning for measurements on dry materials	20
7.2.3	Conditioning for measurements on moist materials	21
7.3	Measurements	29
7.3.1	Mass	29
7.3.2	Thickness and density	29
7.3.3	Temperature difference selection	29
7.3.4	Ambient conditions	30
7.3.5	Heat flow rate measurements	30
7.3.6	Cold surface control (for two-specimen guarded hot plate apparatus)	30
7.3.7	Temperature difference detection	30
7.3.8	Settling time and measurement interval	30
7.3.9	Final mass and thickness measurements	31
8	Calculations	31
8.1	Density and mass changes	31
8.1.1	Densities	31
8.1.2	Mass changes	31
8.2	Heat transfer properties	32
8.2.1	General	32
8.2.2	Guarded hot plate apparatus measurements	32
8.2.3	Heat flow meter apparatus measurements	32
9	Test report	33
Annex A	(normative) Limitations to the implementation of the measurement principle and on measurable properties	36
A.1	Considerations on heat transfer and measured properties	36
A.2	Limitations due to the implementation of the principle	37
A.2.1	General	37
A.2.2	Specimen homogeneity	37
A.2.3	Maximum specimen thickness	37
A.2.4	Minimum specimen thickness	39
A.2.5	Maximum limits for the thermal resistance	40
A.2.6	Flatness and contact resistances	40
A.2.7	Parallelism	43
A.2.8	Limits to temperature difference	43
A.2.9	Maximum operating temperature	43
A.2.10	Warping	44
A.2.11	Settling time and measurement interval	44
A.3	Limitations on measurable heat transfer properties	45
A.3.1	General	45
A.3.2	Thermal resistance, thermal conductance or transfer factor	45
A.3.3	Mean thermal conductivity, thermal transmissivity or hygrothermal transmissivity of a specimen	45
A.3.4	Thermal conductivity, thermal transmissivity or hygrothermal transmissivity of a material	45
A.4	Preliminary decisions	46

Annex B (normative) Limits for equipment performance and test conditions - Guarded hot plate	48
B.1 General	48
B.2 Accuracy and repeatability, stability, uniformity	48
B.3 Suggested apparatus sizes	49
B.4 Equipment design requirements	49
B.5 Acceptable specimen characteristics	51
B.6 Acceptable testing conditions	52
Annex C (normative) Limits for equipment performance and test conditions - Heat flow meter	55
C.1 General	55
C.2 Accuracy and repeatability, stability, uniformity	55
C.3 Equipment design requirements	56
C.4 Acceptable specimen characteristics	58
C.5 Acceptable testing conditions	59
Annex D (informative) Equipment design	61
D.1 General	61
D.2 Guarded hot plate apparatus	61
Annex E (informative) Procedures related to measurements at moisture equilibrium	70
E.1 General	70
E.2 Calculation of λ^* at moisture equilibrium	73
E.3 Theoretical estimation of the moisture distribution	73
E.4 Determination of the moisture distribution by parallel tests with the same material and the same boundary conditions	74
Annex F (informative) Conditioning to a specified moisture content in a specified atmosphere	76
F.1 Introductory considerations	76
F.2 Definitions	76
F.2.1 atmosphere 23/xx:	76
F.2.2 hygroscopic range	76
F.3 Principles of conditioning	76
Annex G (informative) Estimation of effects of condensation	78
Annex H (informative) Theoretical background	79
H.1 Introduction	79
H.2 Description of heat and mass transfers	79
H.2.1 Qualitative description of mass transfer phenomena in a simple case	79
H.2.2 Vapour mass transfer	80
H.2.3 Qualitative description of mass transfer phenomena in a simple case	81
H.2.4 Total mass transfer	81
H.2.5 Heat transfer equations	81
Bibliography	82

European foreword

This document (prEN 12664:2025) has been prepared by 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 CEN Enquiry.

This document will supersede EN 12664:2001

In comparison with the previous edition, the following technical modifications have been made:

- revision of all document to be compliant with CEN rules;
- revision Scope;
- revision of Clause 3;
- revision of Clause 7.2.3 with reference to [CEN/TR 14613:2003\[1\]](#) clauses and [ISO 10051:1996\[2\]](#);
- revision of Annex A;
- revision of Annex E;
- new Annex H Theoretical background.

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[oSIST prEN 12664:2025](#)

<https://standards.itih.ai/catalog/standards/sist/b4e2c095-6f08-4c2e-b4c1-8aea55e2f59a/osist-pren-12664-2025>