



SLOVENSKI STANDARD
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Toplotnoizolacijski proizvodi za stavbe - Proizvodi iz ekspandirane plute (ICB) - Specifikacija

Thermal insulation products for buildings - Factory made products of expanded cork (ICB) - Specification

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte Produkte aus expandiertem Kork (ICB) - Spezifikation

Produits isolants thermiques pour le bâtiment - Produits manufacturés en liège expansé (ICB) - Spécification

Ta slovenski standard je istoveten z: prEN 13170

ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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English Version

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 88.

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.

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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.

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Foreword

This document (prEN 13170:2010) has been prepared by Technical Committee CEN/TC 88 “Thermal insulating materials and products”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 13170:2008.

This standard 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.

This standard contains five Annexes:

- | | |
|------------------------|--|
| Annex A (normative) | Determination of the declared values of thermal resistance and thermal conductivity; |
| Annex B (normative) | Factory production control; |
| Annex C (normative) | ICB multilayered insulation products; |
| Annex D (informative) | Additional properties; |
| Annex E (informative) | Examples for the determination of the declared values of thermal resistance and thermal conductivity for a product or a product group; |
| Annex ZA (informative) | Clauses of this document addressing the provisions of the EU Construction Products Directive. |

This standard is one of a series of standards for insulation products used in buildings, but may be used in other areas where appropriate.

In pursuance of Resolution BT 20/1993 revised, CEN/TC 88 have proposed defining the standards listed below as a “package” of documents.

The package of standards comprises the following group of interrelated standards for the specifications of factory made thermal insulation products, all of which come within the scope of CEN/TC 88:

EN 13162, *Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification*

EN 13163, *Thermal insulation products for buildings — Factory made expanded polystyrene(EPS) products — Specification*

EN 13164, *Thermal insulation products for buildings — Factory made extruded polystyrene foam (XPS) products — Specification*

EN 13165, *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PU) products — Specification*

EN 13166, *Thermal insulation products for buildings — Factory made phenolic foam (PF) products — Specification*

EN 13167, *Thermal insulation products for buildings — Factory made cellular glass (CG) products — Specification*

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EN 13168, *Thermal insulation products for buildings — Factory made wood wool (WW) products — Specification*

EN 13169, *Thermal insulation products for buildings — Factory made expanded perlite board (EPB) products — Specification*

EN 13170, *Thermal insulation products for buildings — Factory made expanded cork (ICB) products — Specification*

EN 13171, *Thermal insulation products for buildings — Factory made wood fibre (WF) products — Specification*

The reductions in energy used and emissions produced during the installed life of insulation products exceeds by far the energy used and emissions made during the production and disposal processes

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SIST EN 13170:2013

<https://standards.iteh.ai/catalog/standards/sist/2cc6a6d4-c205-441b-a689-228580637a8f/sist-en-13170-2013>

1 Scope

This European Standard specifies the requirements for factory made products of expanded cork, which are used for the thermal insulation of buildings. The products are made with granulated cork agglomerated without additional binders and are delivered as boards without facings or coatings.

Products covered by this standard are also used in prefabricated thermal insulation systems and composite panels; the performance of systems incorporating these products is not covered.

This standard describes product characteristics and includes procedures for testing, evaluation of conformity, marking and labelling.

This standard does not specify the required level of a given property to be achieved by a product to demonstrate fitness for purpose in a particular application. The levels required for a given application are to be found in regulations or non-conflicting standards.

Products with a declared thermal resistance lower than 0,25 m²·K/W, or a declared thermal conductivity greater than 0,060 W/(m·K), at 10 °C, are not covered by this European Standard.

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.

EN 822, *Thermal insulating products for building applications — Determination of length and width*

EN 823, *Thermal insulating products for building applications — Determination of thickness*

EN 824, *Thermal insulating products for building applications — Determination of squareness*

EN 825, *Thermal insulating products for building applications — Determination of flatness*

EN 826, *Thermal insulating products for building applications — Determination of compression behaviour*

EN 1602, *Thermal insulating products for building applications — Determination of the apparent density*

EN 1603, *Thermal insulating products for building applications — Determination of dimensional stability under constant normal laboratory conditions (23 °C/50 % relative humidity)*

EN 1604, *Thermal insulating products for building applications — Determination of dimensional stability under specified temperature and humidity conditions*

EN 1605, *Thermal insulating products for building applications — Determination of deformation under specified compressive and temperature conditions*

EN 1606, *Thermal insulating products for building applications — Determination of compressive creep*

EN 1607, *Thermal insulating products for building applications — Determination of tensile strength perpendicular to faces*

EN 1609, *Thermal insulating products for building applications — Determination of short term water absorption by partial immersion*

EN 12086, *Thermal insulating products for building applications — Determination of water vapour transmission properties*

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- EN 12089, *Thermal insulating products for building applications — Determination of bending behaviour*
- EN 12090, *Thermal insulating products for building applications — Determination of shear behaviour*
- EN 12105, *Resilient floor coverings — Determination of moisture content of agglomerated composition cork*
- EN 12430, *Thermal insulating products for building applications — Determination of behaviour under point load*
- EN 12431, *Thermal insulating products for building applications — Determination of thickness for floating floor insulating products*
- EN 12667, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Products of high and medium thermal resistance*
- EN 12939, *Thermal performance of building materials and products — Determination of thermal resistance by means of guarded hot plate and heat flow meter methods — Thick products of high and medium thermal resistance*
- EN 13172, *Thermal insulating products — Evaluation of conformity*
- EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire test*
- EN 13823, *Reaction to fire test for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*
- EN 29052-1, *Acoustics — Determination of dynamic stiffness — Part 1: Materials used under floating floors in dwellings*
- EN 29053, *Acoustics — Materials for acoustical applications - Determination of air flow resistance*
- EN ISO 354, *Acoustics — Measurement of sound absorption in a reverberation room*
- EN ISO 1182, *Reaction to fire tests for building products — Non-combustibility test*
- EN ISO 1716, *Reaction to fire tests for building products — Determination of the heat of combustion*
- EN ISO 9229, *Thermal insulation — Vocabulary*
- EN ISO 10456, *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*
- EN ISO 11654, *Acoustics — Sound absorbers for use in buildings — Rating of sound absorption*
- EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame – Part 2: Single-flame source test*
- ISO 16269-6:2005, *Statistical interpretation of data – Part 6: Determination of statistical tolerance intervals*

3 Terms, definitions, symbols, units and abbreviated terms**3.1 Terms and definitions**

For the purpose of this standard, the definitions given in EN ISO 9229 apply with exception or in addition of the following:

3.1.1**cork**

protective layer of the cork oak tree (*Quercus suber* L.) which may be periodically removed from its trunk and branches to provide the raw material for cork products

3.1.2**granulated cork**

fragments of cork obtained by grinding and/or milling raw or manufactured cork

NOTE Usually, the size of granules is between 4 mm and 22 mm.

3.1.3**insulation cork board (cork board)**

pre-formed product made from ground granulated cork expanded and bonded exclusively with its own natural binder exuded from cork cell walls by heating under pressure

3.1.4**level**

value which is the upper or lower limit of a requirement and given by the declared value of the characteristic concerned

3.1.5**class**

combination of two levels of the same property between which the performance shall fall

3.1.6**boards; slabs**

rigid or semi-rigid (insulation) product of rectangular shape and cross section in which the thickness is uniform and substantially smaller than the other dimensions

NOTE Boards are usually thinner than slabs. They may also be supplied in tapered form.

3.1.7**facings**

functional or decorative surface materials with a thickness of less than 3 mm, e.g. paper, plastic film, fabric or metal foil, which are not considered as separate thermal insulation layers to be added to the thermal resistance of the product

3.1.8**coatings**

functional or decorative surface layers with a thickness of less than 3 mm usually applied by painting, spraying, pouring or trowelling, which are not considered as separate thermal insulation layers to be added to the thermal resistance of the product

3.1.9**composite insulation product**

product which can be faced or coated made from two or more layers bonded together by chemical or physical adhesion consisting of at least one factory made thermal insulation material layer

3.1.10**multi-layered insulation product**

product which can be faced or coated made from two or more layers of a thermal insulation material from the same EN standard, which are bonded together by chemical or physical adhesion either horizontally and/or vertically

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3.2 Symbols, units and abbreviated terms

Symbols and units used in this standard:

α_p	is the practical sound absorption coefficient	—
α_w	is the weighted sound absorption coefficient	—
B	is the width	mm
C	is the compressibility	mm
d	is the thickness under a load of $(2,5 \pm 0,5)$ kPa	mm
d_B	is the thickness under a load of 2 kPa after removal of an additional load of 48 kPa	mm
d_L	is the thickness under a load of 250 Pa	mm
d_N	is the nominal thickness of the product	mm
d_S	is the thickness of the test specimen	mm
$\Delta\varepsilon_b$	is the relative change in width	%
$\Delta\varepsilon_d$	is the relative change in thickness	%
$\Delta\varepsilon_l$	is the relative change in length	%
$\Delta\varepsilon_s$	is the relative change in flatness	mm/m
ε	is the deformation under specified compressive load and temperature	mm
ε_{ct}	is the compressive creep	%
ε_t	is the total relative thickness reduction	%
F_p	is the compressive force at critical point	kN
H	is the moisture content	%
k	is a factor related to the number of test results available	—
l	is the length	mm
$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m·K)
λ_D	is the declared thermal conductivity	W/(m·K)
λ_i	is one test result of thermal conductivity	W/(m·K)
λ_{mean}	is the mean thermal conductivity	W/(m·K)
λ_U	is the design thermal conductivity	W/(m·K)
n	is the number of test results	—
$R_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal resistance	m ² ·K/W
R_D	is the declared thermal resistance	m ² ·K/W
R_i	is one test result of thermal resistance	m ² ·K/W
R_{mean}	is the mean thermal resistance	m ² ·K/W
R_U	is the design thermal resistance	m ² ·K/W
ρ_a	is the apparent density	kg/m ³
S_b	is the deviation from squareness on length and width	mm/m
S_d	is the deviation from squareness on thickness	mm
S_{max}	is the deviation from flatness	mm

s_R	is the estimate of the standard deviation of the thermal resistance	$m^2 \cdot K/W$
s_λ	is the estimate of the standard deviation of the thermal conductivity	$W/(m \cdot K)$
s'	is the dynamic stiffness	MN/m^3
σ_{10}	is the compressive stress at 10 % deformation	kPa
σ_b	is the bending strength	kPa
σ_c	is the declared compressive stress (for compressive creep)	kPa
σ_{mt}	is the tensile strength perpendicular to faces	kPa
W_p	is the short-term water absorption	kg/m^2
τ	is the shear strength	kPa
Z	is the water vapour resistance	$m^2 \cdot h \cdot Pa/mg$
AF_i	is the symbol of the declared level of air flow resistivity*	
AP_i	is the symbol of the declared level of practical sound absorption coefficient*	
AW_i	is the symbol of the declared level of weighted sound absorption coefficient*	
$CC(i_1/i_2 \%, y) \sigma_c$	is the symbol of the declared level for compressive creep*	
CP	is the symbol of the declared level for compressibility	
$CS(1\%y)_i$	is the symbol of the declared level for compressive stress at 10 % deformation*	
DS(TH)	is the symbol of the level for dimensional stability under specified temperature and humidity conditions	
DS(T+)	is the symbol of the declared value for dimensional stability at specified temperature	
DLT	is the symbol of the declared value for the deformation under specified load and temperature	
L	is the symbol of the declared class for length tolerances	
PL(P)	is the symbol of the declared level of point load at the critical point	
SDi	is the symbol of the declared level for dynamic stiffness*	
Ti	is the symbol of the declared class for thickness tolerances*	
TRi	is the symbol of the declared level for tensile strength perpendicular to faces*	
W	is the symbol of the declared class for width tolerances	
WS	is the declared value for short term water absorption	
Zi	is the symbol of the declared value for water vapour resistance*	
i	is the symbol used in the designation code to indicate the relevant class or level of a declared property	
σ_c	is the symbol used in the designation code to indicate the declared compressive stress for compressive creep	
y	is the symbol used in the designation code to indicate the number of years for extrapolation (compressive creep)	

* "i" is the relevant class or level, " σ_c " is the compressive stress, and "y" is the number of years

Abbreviated terms used in this standard:

ICB	is Expanded (Insulation) C ork B oard
ITT	is Initial T ype T est
FPC	is F actory P roduction C ontrol

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4 Requirements

4.1 General

Product properties shall be assessed in accordance with Clause 5. To comply with this standard, products shall meet the requirements of 4.2 and of 4.3, as appropriate.

NOTE 1 For multilayered products additional requirements are given in Annex C.

NOTE 2 Information on additional properties is given in Annex D.

One test result for a product property is the average of the measured values on the number of test specimens given in Table 9.

4.2 For all applications

4.2.1 Thermal resistance and thermal conductivity

Thermal resistance and thermal conductivity shall be based upon measurements carried out in accordance with EN 12667 or EN 12939 for thick products.

The thermal resistance and thermal conductivity shall be determined in accordance with procedures given in Annex A and declared by the manufacturer according to the following:

- the reference mean temperature shall be 10 °C;
- the measured values shall be expressed with three significant figures;
- for products of uniform thickness, the thermal resistance, R_D , shall always be declared. The thermal conductivity, λ_D , shall be declared where possible. Where appropriate, for products of non-uniform thickness (e.g for sloped and tapered products) only the thermal conductivity, λ_D , shall be declared;
- the declared thermal resistance, R_D , and the declared thermal conductivity, λ_D , shall be given as limit values representing at least 90 % of the production, determined with a confidence level of 90 %;
- the statistical value of thermal conductivity, $\lambda_{90/90}$, shall be rounded upwards to the nearest 0,001 W/(m·K) and declared as λ_D in levels with steps of 0,001 W/(m·K);
- the declared thermal resistance, R_D , shall be calculated from the nominal thickness, d_N , or d_L in case of products with declared compressibility (see 4.3.10.3) and the corresponding thermal conductivity, $\lambda_{90/90}$, unless measured directly.
- the statistical value of thermal resistance, $R_{90/90}$, when calculated from the nominal thickness, d_N , or d_L in case of products with declared compressibility (see 4.3.10.3) and the corresponding thermal conductivity, $\lambda_{90/90}$, shall be rounded downwards to the nearest 0,05 m²·K/W, and declared as R_D in levels with steps of 0,05 m²·K/W;
- the statistical value of thermal resistance $R_{90/90}$, for those products for which only the thermal resistance is measured directly, shall be rounded downwards to the nearest 0,05 m²·K/W and declared as R_D in levels with steps of 0,05 m²·K/W.

Examples of determination of declared values of thermal resistance, R_D , and thermal conductivity, λ_D , are given in Annex E.

NOTE λ_U and R_U (design values) may be determined with reference to EN ISO 10456.

4.2.2 Length and width

Length, l , and width, b , shall be determined in accordance with EN 822. No test result shall deviate from the nominal values by more than the tolerances given in Table 1 and Table 2 for the declared classes.

Table 1 — Classes for length tolerances

Class	Tolerances
	mm
L1	± 3
L2	± 5

Table 2 — Classes for width tolerances

Class	Tolerances
	mm
W1	± 2
W2	± 3

4.2.3 Thickness

Thickness, d , shall be determined in accordance with EN 823, method B.2, under a pressure of $(2,5 \pm 0,5)$ kPa. No test result shall deviate from the nominal thickness, d_N , by more than the tolerances given in Table 3 for the declared class.

Table 3 — Classes for thickness tolerances

Class	Thickness	Tolerances
T1	$20 \text{ mm} \leq d \leq 50 \text{ mm}$	$\pm 1 \text{ mm}$
T2	$d > 50 \text{ mm}$	$\pm 2 \%$, maximum $\pm 2 \text{ mm}$

4.2.4 Squareness

Squareness shall be determined in accordance with EN 824. The deviation from squareness on length and width, S_b , shall not exceed 5 mm/m. The deviation from squareness on thickness, S_d , shall not exceed 2 mm.

4.2.5 Flatness

Flatness shall be measured according to EN 825. The deviation from flatness, S_{\max} , of boards and slabs, shall not exceed 2 mm.

4.2.6 Reaction to fire of the product as placed on the market

Reaction to fire classification of the product, as placed on the market, shall be determined in accordance with EN 13501-1 and the basic Mounting and Fixing rules given in EN 15715.