



SLOVENSKI STANDARD

SIST EN 13169:2009

01-februar-2009

BUXca Yý U

SIST EN 13169:2002

SIST EN 13169:2002/A1:2004

SIST EN 13169:2002/AC:2006

Toplotnoizolacijski proizvodi za stavbe - Proizvodi iz ekspandiranega perlita (EPB) - Specifikacija

Thermal insulation products for buildings - Factory made products of expanded perlite (EPB) - Specification

ITeH STANDARD PREVIEW

(standards.iteh.ai)

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte Produkte aus Blähperlit (EPB) - Spezifikation

[SIST EN 13169:2009](#)

[https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-](https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009)

[e3f77e8d20ec/sist-en-13169-2009](https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009)

Produits isolants thermiques pour le bâtiment - Produits manufacturés en perlite expansée (EPB) - Spécification

Ta slovenski standard je istoveten z: EN 13169:2008

ICS:

91.100.60 Thermal and sound insulating materials

SIST EN 13169:2009

en,fr,de

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 13169:2009

<https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009>

EUROPEAN STANDARD

EN 13169

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2008

ICS 91.100.60

Supersedes EN 13169:2001

English Version

Thermal insulation products for buildings - Factory made products of expanded perlite (EPB) - Specification

Produits isolants thermiques pour le bâtiment - Produits manufacturés en perlite expansée (EPB) - Spécification

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte Produkte aus Blähperlit (EPB) - Spezifikation

This European Standard was approved by CEN on 18 October 2008.

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.

[SIST EN 13169:2009](https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009)

<https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009>



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

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

Contents

	Page
Foreword.....	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbols, units and abbreviated terms	8
4 Requirements	11
5 Test methods.....	16
6 Designation code	20
7 Evaluation of conformity.....	20
8 Marking and labelling	21
Annex A (normative) Determination of the declared values of thermal resistance and thermal conductivity.....	22
Annex B (normative) Factory production control.....	24
Annex C (normative) Determination of the thermal conductivity in relation to moisture content	27
Annex D (normative) Composite insulation boards	29
Annex E (informative) Additional properties	35
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive.....	37
Bibliography	45
Tables	
Table 1 — Thickness tolerances	12
Table 2 — Levels for compressive stress or compressive strength.....	14
Table 3 — Levels for deformation under specified compressive load and temperature	14
Table 4 — Levels for water absorption by total immersion.....	15
Table 5 — Levels for bending strength at constant span.....	15
Table 6 — Test methods, test specimens and conditions.....	19
Table A.1 — Values for k for one sided 90 % tolerance interval with a confidence level of 90 %	23
Table B.1 — Minimum product testing frequencies	24
Table B.2 — Minimum product testing frequencies for the reaction to fire characteristics.....	25
Table D.1 — Classes for thickness tolerances	30
Table D.2 — Levels of compressibility	30
Table D.3 — Test methods, test specimens and conditions	32
Table D.4 — Minimum product testing frequencies	33
Table E.1 — Test methods, test specimens, conditions and testing frequencies	36
Table ZA.1 — Relevant clauses for expanded perlite and intended use	38

Table ZA.2 — Systems of attestation of conformity	39
Table ZA.3 — Assignment of evaluation of conformity tasks for products under system 1	40
Table ZA.4 — Assignment of evaluation of conformity tasks for products under system 3 or system 3 combined with system 4 for reaction to fire	41
Figures	
Figure C.1 — Example of a graphic representation of “a” ($a = 0,04/0,037 = 1,08$ in this example).....	28
Figure ZA.1 — Example CE marking information	44

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13169:2009](https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009)

<https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009>

Foreword

This document (EN 13169:2008) has been prepared by Technical Committee CEN/TC 88 "Thermal insulating materials and products", 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 May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.

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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EC Directive(s).

For relationship with EC Directive(s), see informative Annex ZA, which is an integral part of this document.

This document supersedes EN 13169:2001.

This document is one of a series of standards for insulation products used in buildings, but this standard 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 products of expanded polystyrene (EPS) — Specification*

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

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

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

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

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

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

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

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

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 13169:2009](https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009)

<https://standards.iteh.ai/catalog/standards/sist/30ffa38b-7bcc-4af5-a1d1-e3f77e8d20ec/sist-en-13169-2009>

EN 13169:2008 (E)**1 Scope**

This European Standard specifies the requirements for factory made products of expanded perlite, with or without facings or coatings, which are used for the thermal insulation of buildings. The products are manufactured in the form of boards or multi-layered insulation.

This European Standard also covers composite insulation boards (see Annex D).

This European Standard specifies product characteristics and includes procedures for testing, evaluation of conformity, marking and labelling.

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

This European 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 0,20 m²·K/W or a declared thermal conductivity greater than 0,070 W/(m·K) at 10 °C are not covered by this European Standard.

This European Standard does not cover in situ insulation products and products intended to be used for the insulation of building equipment and industrial installations. This European Standard does not cover the following acoustical aspects: Acoustic absorption index and direct airborne sound insulation.

ITeH STANDARD PREVIEW
(standards.iteh.ai)

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 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 load 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 12086:1997, *Thermal insulating products for building applications — Determination of water vapour transmission properties*
- EN 12089, *Thermal insulating products for building applications — Determination of bending behaviour*
- 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 13172:2008, *Thermal insulating products — Evaluation of conformity¹*
- EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire test*
- EN 13820, *Thermal insulating materials for building applications — Determination of organic content*
- EN 13823, *Reaction to fire tests 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 ISO 354, *Acoustics — Measurement of sound absorption in a reverberation room (ISO 354:2003)*
- EN ISO 1182, *Reaction to fire tests for building products — Non-combustibility test (ISO 1182:2002)*
- EN ISO 1716, *Reaction to fire tests for building products — Determination of the heat of combustion (ISO 1716:2002)*
- EN ISO 9229, *Thermal insulation — Vocabulary (ISO 9229:2007)*
- EN ISO 11654, *Acoustics — Sound absorbers for use in buildings — Rating of sound absorption (ISO 11654:1997)*
- 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 11925-2:2002)*
- ISO 12491, *Statistical methods for quality control of building materials and components*

¹ Under review

3 Terms, definitions, symbols, units and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1 Terms and definitions as given in EN ISO 9229

3.1.1.1

expanded perlite

lightweight granular (insulation) material manufactured from naturally occurring volcanic rock expanded by heat to form a cellular structure

3.1.1.2

multi-layered insulation

combination of two or more layers of a specific insulation material. The thickness of the individual layers may differ

3.1.1.3

composite insulation

combination of layers of at least two different insulation materials. The insulation property of the composite is derived from the insulation properties of the individual materials

3.1.2 Additional terms and definitions (standards.iteh.ai)

3.1.2.1

expanded perlite board

rigid insulation board manufactured from expanded perlite, reinforcing fibres and binding agents

NOTE 1 It may be delivered as a board or as two or more boards bonded together with a suitable adhesive (multi-layered insulation: see 3.1.1.2).

NOTE 2 Boards may also have a profiled edge.

3.1.2.2

level

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

3.1.2.3

class

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

3.2 Symbols units and abbreviated terms

3.2.1 Symbols and units used in this standard:

<i>a</i>	is the coefficient describing the influence of moisture on the thermal conductivity	–
<i>b</i>	is the width	mm
<i>c</i>	is the compressibility	mm
<i>d</i>	is the thickness	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
$\Delta\varepsilon_b$	is the relative change in width	%
$\Delta\varepsilon_d$	is the relative change in thickness	%
$\Delta\varepsilon_l$	is the relative change in length	%
k	is a factor related to the number of test results available	–
l	is the length	mm
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)
$\lambda_{10,\text{dry}}$	is the thermal conductivity in the dry state	W/(m·K)
$\lambda_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m·K)
m_1	is the mass of the test specimen after 2 h total immersion in water	kg
$m_{23,\text{dry}}$	is the mass of specimen in the dry state	kg
$m_{23,50}$	is the mass of specimen at 23 °C and 50 % relative humidity	kg
μ	is the water vapour diffusion resistance factor	–
n	is the number of test results	–
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
$R_{90/90}$	is the 90 % fractile with a confidence level of 90 % for the thermal resistance	m ² ·K/W
S_b	is the deviation from squareness on length and width	mm/m
S_{max}	is the deviation from flatness	mm
s_R	is the estimate of the standard deviation of the thermal resistance	m ² ·K/W
s_λ	is the estimate of the standard deviation of the thermal conductivity	W/(m·K)
s'	is the dynamic stiffness	MN/m ³
σ_b	is the bending strength	kPa
σ_{bc}	is the bending strength at a constant span	kPa
σ_c	is the declared compressive stress	kPa
σ_m	is the compressive strength	kPa
σ_{mt}	is the tensile strength perpendicular to faces	kPa
σ_{10}	is the compressive stress at 10 % deformation	kPa
$u_{23,50}$	is the moisture content by mass at 23 °C and 50 % relative humidity	kg/kg

EN 13169:2008 (E)

V	is the volume of the specimen	m^3
W_p	is the short-term water absorption by partial immersion	kg/m^2
W_{st}	is the short-term water absorption by total immersion	kg/dm^3
X_0	is the initial deformation after 60 s from the beginning of loading	mm
X_{ct}	is the compressive creep	mm
X_t	is the deformation at time t (total thickness reduction)	mm
Z	is the water vapour resistance	$m^2 \cdot h \cdot Pa/mg$

BS	is the symbol of the declared level of bending strength
BS(z)	is the symbol of the declared level of bending strength at a constant span
$CC(i_1/i_2/y)\sigma_c$	is the symbol of the declared level for compressive creep*
CP	is the symbol of the declared level for compressibility
CS(10\Y) _i	is the symbol of the declared level for compressive stress or compressive strength*
DLT(i)5	is the symbol of the declared level of deformation under load and temperature
DS(H)	is the symbol of the declared value for dimensional stability under humidity condition
DS(T+/50)	is the symbol of the declared value for dimensional stability under specified temperature and humidity
MU _i	is the symbol of the declared value for water vapour diffusion resistance factor*
PL(2) _i	is the symbol of the declared level of point load for 2 mm deformation*
SD	is the symbol of the declared level of dynamic stiffness
T	is the symbol of the declared class for thickness tolerances
TR _i	is the symbol of the declared value for tensile strength perpendicular to faces*
WS	is the symbol of the declared level for short term water absorption absorption by partial immersion
WS(T)	is the symbol of the declared level of short term water absorption by total immersion
Z _i	is the symbol of the declared value for water vapour resistance*

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

3.2.2 Abbreviated terms used in this standard:

EPB	Expanded Perlite Board
ITT	Initial Type Test
RTF	Reaction To Fire
FPC	Factory Production Control

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 the requirements of 4.3 as appropriate.

NOTE Information on additional properties is given in Annex E.

One test result on a product property is the average of the measured values on the number of test specimens given in Table 6.

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 Annex A and Annex C, 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 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 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 , and the corresponding thermal conductivity, $\lambda_{90/90}$;
- the value of thermal resistance, $R_{90/90}$, when calculated from the nominal thickness, d_N , 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 value of $R_{90/90}$, for those products for which only 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.

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 following:

± 3 mm for length and width not exceeding 1 200 mm;