



SLOVENSKI STANDARD

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Toplotnoizolacijski proizvodi za stavbe - Proizvodi iz lesne volne (WW) - Specifikacija

Thermal insulation products for buildings - Factory made wood wool (WW) products -
Specification

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Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte Produkte aus Holzwolle (WW)
- Spezifikation

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Produits isolants thermiques pour le bâtiment - Produits manufacturés en laine de bois
(WW) - Spécification

Ta slovenski standard je istoveten z: EN 13168:2008

ICS:

91.100.60

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Thermal and sound insulating materials

SIST EN 13168:2009

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EUROPEAN STANDARD

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Thermal insulation products for buildings - Factory made wood wool (WW) products - Specification

Produits isolants thermiques pour le bâtiment - Produits manufacturés en laine de bois (WW) - Spécification

Wärmedämmstoffe für Gebäude - Werkmäßig hergestellte Produkte aus Holzwolle (WW) - Spezifikation

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

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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.

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EN 13168:2008 (E)**Foreword**

This document (EN 13168:2008) 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of an identical text or by endorsement, at the latest by May 2009, and conflicting national standards shall be withdrawn at the latest by May 2009.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 13168:2001.

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.

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EN 13168:2008 (E)**1 Scope**

This European Standard specifies the requirements for factory made products of wood wool, with or without facings, which are used for the thermal insulation of buildings. The products are manufactured in the form of boards or slabs.

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

This European Standard also specifies the requirements for the factory made composite products, made from wood wool in combination with other insulation materials.

Products covered by this European Standard are also used in prefabricated thermal insulation 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/classes required for a given application are to be found in regulations or non-conflicting standards.

Products with a declared thermal resistance lower than 0,15 m²·K/W or a declared thermal conductivity greater than 0,1 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: direct airborne sound insulation and impact noise transmission.

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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.

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 insulation 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 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 application — Determination of behaviour under point load*

EN 12667, *Thermal performance for 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 for 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 conformity*

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 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 9229:2007, *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*

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 9229:2007

3.1.1.1

wood wool

long shavings of wood

EN 13168:2008 (E)**3.1.1.2****board
slab**

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.

3.1.2 Additional terms and definitions**3.1.2.1****level**

given value which is the upper or lower limit of a requirement

NOTE The level is given by the declared value of the characteristic concerned.

3.1.2.2**class**

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

3.1.2.3**inorganic cementing agent**

binder used for producing wood wool products are portland cement, magnesite and a combination of cement and lime

3.1.2.4**wood wool board****wood wool slab**

rigid insulation product manufactured from loose wood wool, bonded with a mineral binder and compressed to its final thickness

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3.1.2.5**composite wood wool slab**

composite insulation product in which wood wool is bonded with a mineral binder, on one or both face(s) to other insulating materials

EXAMPLE mineral wool, foamed rigid cellular plastics.

NOTE 1 The final thickness of the “two layer” or “three layer” products, produced in this way, is determined during manufacture.

NOTE 2 The wood wool layer(s) of composite wood wool slabs cover the bonded insulation layer completely.

3.2 Symbols, units and abbreviated terms**3.2.1 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
D	is the thickness	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	%
F_p	is the point load at a given deformation	N
k	is a factor related to the number of test results	–
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)
μ	is the water vapour diffusion resistance factor	–
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
ρ_a	is the apparent density	kg/m ³
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)
σ_{10}	is the compressive stress at 10% deformation	kPa
σ_b	is the bending strength	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
W_p	is the short term water absorption	kg/m ²
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 ·h·Pa/mg
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*	
BS(+)	is the symbol of the declared level for bending strength for a specified span	
CC(i mm,y) σ_c	is the symbol of the declared level for compressive creep*	

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Cl	is the symbol of the declared level for chloride content
CS(10\Y) _i	is the symbol of the declared level for compressive stress or strength*
DS(L)	is the symbol of the declared value for dimensional stability under specified load and temperature conditions
DS(TH)	is the symbol of the declared dimensional stability at specified temperature and relative humidity conditions
L	is the symbol of the declared class for length tolerances
MU _i	is the symbol of the declared value for water vapour diffusion resistance factor*
P	is the symbol of the declared value for flatness tolerances
PL(2) _i	is the symbol of the declared level of point load for 2 mm deformation*
S	is the symbol of the declared class for squareness tolerances
T _i	is the symbol of the declared class for thickness tolerances*
Tr _i	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 symbol of the declared level for short term water absorption
Z _i	is the symbol of the declared value for water vapour resistance*

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

3.2.2 Abbreviated terms used in this standard:

WW	iWood Wool board, slab	SIST EN 13168:2009
WW-C	Composite Wood Wool board, slab	https://standards.iteh.ai/catalog/standards/sist/2729f6ac-e53f-4bb5-9946-31d75b264/sist-en-13168-2009
WW-C/3 xx	3-layered Composite Wood Wool board, slab in combination with xx .	

NOTE xx stands for the suitable insulation material used.

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 D.

One test result for a product property is the average of the measured values on the number of test specimens given in Table 8.

All thermal insulating products used for the manufacture of WW-C-slabs shall comply with the relevant European Product Standards.

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 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 the thermal resistance, $R_{90/90}$, when calculated from the nominal thickness, d_N , and the corresponding declared 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 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.

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 length and width by more than the tolerances given in Table 1 for the declared class.