



SLOVENSKI STANDARD

SIST EN 14314:2010

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Toplotnoizolacijski proizvodi za opremo stavb in industrijske inštalacije - Proizvodi iz fenolne pene (PF) - Specifikacija

Thermal insulation products for building equipment and industrial installations - Factory made phenolic foam (PF) products - Specification

Wärmedämmstoffe für die technische Gebäudeausrüstung und für betriebstechnische Anlagen in der Industrie - Werkmäßig hergestellte Produkte aus Phenolharzschaum (PF) - Spezifikation

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Produits isolants thermiques pour l'équipement du bâtiment et les installations industrielles - Produits manufacturés en mousse phénolique (PF) - Spécification

Ta slovenski standard je istoveten z: **EN 14314:2009**

ICS:

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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Thermal insulation products for building equipment and industrial installations - Factory made phenolic foam (PF) products - Specification

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This European Standard was approved by CEN on 29 September 2009.

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Contents

Page

Foreword.....	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbols, units and abbreviated terms	8
4 Requirements	10
5 Test methods	17
6 Designation code.....	20
7 Evaluation of conformity.....	21
8 Marking and labelling	21
Annex A (normative) Factory production control.....	23
Annex B (normative) Determination of the aged value of thermal conductivity	26
Annex C (normative) Determination of minimum service temperature	30
Annex D (informative) Additional properties.....	36
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive.....	38
Bibliography	46
SIST EN 14314:2010 https://standards.iteh.ai/catalog/standards/sist/0a6e7672-7e5f-425a-98f7-268c4bd4393e/sist-en-14314-2010	
Figures	
Figure C.1 — Dimensions of test specimens (mm).....	35
Figure ZA.1 — Example of CE marking information	45
Tables	
Table 1 — Dimensional tolerances	12
Table 2 — Tolerances for deviation from flatness	13
Table 3 — Levels for compressive stress or compressive strength.....	15
Table 4 — Levels of short term water absorption by partial immersion.....	16
Table 5 — Levels for long term water absorption by partial immersion.....	17
Table 6 — Test methods, test specimens and conditions.....	18
Table A.1 — Minimum product testing frequencies	23
Table A.2 — Minimum product testing frequencies for the reaction to fire characteristics.....	25

Table B.1 — Increments to be added to accelerated aged values of thermal conductivity to obtain the time averaged value over 25 years.....	28
Table D.1 — Test methods, test specimens, conditions and minimum testing frequencies	37
Table ZA.1 — Relevant clauses	39
Table ZA.2 — System(s) of attestation of conformity.....	40
Table ZA.3 — Assignment of evaluation of conformity tasks for products under system 1	41
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.....	42

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EN 14314:2009 (E)**Foreword**

This document (EN 14314:2009) 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 2010, and conflicting national standards shall be withdrawn at the latest by August 2011.

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 EU Directive 89/106/EEC.

For relationship with EU Directive 89/106/EEC, see informative Annex ZA, which is an integral part of this document.

Locally responsible authorities and contracting entities, who are bound by EU Directives to specify their requirements using European harmonised product standards, are allowed to demand additional properties outside the provisions of this standard if this is technically necessary because of prevailing operational conditions of the building equipment or the industrial installation projected or because of safety regulations.

This European Standard contains five annexes:

- Annex A (normative), Factory production control
- Annex B (normative), Determination of the aged value of thermal conductivity
- Annex C (normative), Determination of minimum service temperature
- Annex D (informative), Additional properties
- Annex ZA (informative), Clauses of this European Standard addressing the provisions of the EU Construction Products Directive

This document includes a bibliography.

This European Standard is one of a series of standards for insulation products used in building equipment and industrial installations but this standard can 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 European package of standards, setting 21 months after availability as the date of withdrawal (dow) of national standards which conflict with the European Standards of this package.

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 14303, *Thermal insulation products for building equipment and industrial installations — Factory made mineral wool (MW) products — Specification*

EN 14304, *Thermal insulation products for building equipment and industrial installations — Factory made flexible elastomeric foam (FEF) products — Specification*

EN 14305, *Thermal insulation products for building equipment and industrial installations — Factory made cellular glass (CG) products — Specification*

EN 14306, *Thermal insulation products for building equipment and industrial installations — Factory made calcium silicate (CS) products — Specification*

EN 14307, *Thermal insulation products for building equipment and industrial installations — Factory made extruded polystyrene foam (XPS) products — Specification*

EN 14308, *Thermal insulation products for building equipment and industrial installations — Factory made rigid polyurethane foam (PUR) and polyisocyanurate foam (PIR) products — Specification*

EN 14309, *Thermal insulation products for building equipment and industrial installations — Factory made products of expanded polystyrene (EPS) — Specification*

EN 14313, *Thermal insulation products for building equipment and industrial installations — Factory made polyethylene foam (PEF) products — Specification*

EN 14314, *Thermal insulation products for building equipment and industrial installations — Factory made phenolic foam (PF) 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 14314:2009 (E)**1 Scope**

This European Standard specifies the requirements for factory made phenolic foam products which are used for the thermal insulation of building equipment and industrial installations with an operating temperature in the range of approximately - 200 °C to + 120 °C.

NOTE Below an operating temperature of - 50 °C, special tests regarding the suitability of the products in the intended application are advised (e.g. liquefaction of oxygen). Manufacturer's advice should be heeded in all cases.

The products are manufactured in the form of blocks, faced or unfaced, boards, pipe sections, segments and prefabricated ware.

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

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

This standard does not specify the required level of a given property that shall be achieved by a product to demonstrate fitness for purpose in a particular application. The levels required for a given application can be found in regulations and invitations to tender.

Products with a declared thermal conductivity greater than 0,050 W/(m·K) at 10 °C are not covered by this standard.

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This standard does not cover products for in situ-insulation (blowing or pouring) or products for the insulation of the building structure.

This standard does not cover the following acoustical aspects: direct airborne sound insulation and impact noise transmission index.

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

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

EN 1608, *Thermal insulating products for building applications — Determination of tensile strength parallel to faces*

- EN 1609, *Thermal insulating products for building applications — Determination of short term water absorption by partial immersion*
- EN 12085, *Thermal insulating products for building applications — Determination of linear dimensions of test specimens*
- EN 12086, *Thermal insulating products for building applications — Determination of water vapour transmission properties*
- EN 12429, *Thermal insulating products for building applications — Conditioning to moisture equilibrium under specified temperature and humidity conditions*
- EN 12667:2001, *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 13467, *Thermal insulating products for building equipment and industrial installations — Determination of dimensions, squareness and linearity of preformed pipe insulation*
- EN 13468, *Thermal insulating products for building equipment and industrial installations — Determination of trace quantities of water soluble chloride, fluoride, silicate and sodium ions and pH*
- 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 tests for building products — Building products excluding flooring exposed to the thermal attack by a single burning item*
- EN 14706, *Thermal insulating products for building equipment and industrial installations — Determination of maximum service temperature*
- EN 14707, *Thermal insulating products for building equipment and industrial installations — Determination of maximum service temperature for preformed pipe insulation*
- EN 15715:2009, *Thermal insulation products — Instructions for mounting and fixing for reaction to fire testing — Factory made products*
- EN ISO 4590, *Rigid cellular plastics — Determination of the volume percentage of open cells and of closed cells (ISO 4590:2002)*
- EN ISO 8497, *Thermal insulation — Determination of steady-state thermal transmission properties of thermal insulation for circular pipes (ISO 8497:1994)*
- 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)*
- EN ISO 13787, *Thermal insulation products for building equipment and industrial installations — Determination of declared thermal conductivity (ISO 13787:2003)*

EN 14314:2009 (E)

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****phenolic foam**

rigid cellular insulation foam, the polymer structure of which is made primarily from the polycondensation of phenol, its homologues and/or derivatives, with aldehydes or ketones

3.1.1.2**block****billet**

(insulation) product generally of rectangular cross-section and with a thickness not significantly smaller than the width

NOTE In English, some industries define a large block as a billet.

3.1.1.3**board****slab**

(insulation) rigid or semi-rigid 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 can also be supplied in tapered form.

3.1.1.4**pipe section****section**

(insulation) product in the shape of a cylindrical annulus which may be split to facilitate application

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3.1.1.5**lag****segment**

rigid or semi-rigid insulation product for application to large diameter cylindrical or spherical equipment

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**prefabricated ware**

pieces cut, abraded or otherwise formed from a board or block of product, e.g. elbows, T-pieces, etc.

3.1.2.4**production line**

assemblage of equipment that produces products using a continuous process

3.1.2.5**production unit**

assemblage of equipment that produces products using a discontinuous process

3.1.2.6**end-use application**

real application of a product in relation to all aspects that influence the behaviour of that product under different fire situations

NOTE The term covers aspects of the product such as its quantity, its orientation, its position in relation to other adjacent products and its method of fixing.

3.1.2.7**end-use application parameter**

aspect of the mounting and fixing arrangement of a product reflecting/simulating its end use application (for example: type of substrate, lining, fixing method, position and type of joints) which may or may not affect the fire performance

3.2 Symbols, units and abbreviated terms**3.2.1 Symbols and units used in this standard**

b	is the width	mm
D_i	is the inside diameter of pipe sections	mm
d	is the thickness	mm
d_D	is the declared 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	%
X_{ct}	is the compressive creep	%
ε_t	is the total thickness reduction	%
L	is the deviation from linearity	mm
l	is the length	mm
λ	is the thermal conductivity	W/(m·K)
λ_D	is the declared thermal conductivity	W/(m·K)
μ	is the water vapour diffusion resistance factor	—
S_b	is the deviation from squareness for boards on length and width	mm/m
S_d	is the deviation from squareness for boards on thickness	mm
S_{max}	is the deviation from flatness	mm
σ_{10}	is the compressive stress at 10 % deformation	kPa

EN 14314:2009 (E)

σ_c	is the compressive stress	kPa
σ_m	is the compressive strength	kPa
v	is the deviation from squareness for pipe sections	mm
ψ_0	is the closed cell content (corrected)	%
Z	is the water vapour resistance	$m^2 \cdot h \text{ Pa/mg}$
$CC(i_1/i_2/y)\sigma_c$	is the symbol of the declared level of compressive creep	
CL	is the symbol of the declared level for soluble chloride ions	
CS(10Y)	is the symbol of the declared level for compressive stress or compressive strength	
CV	is the symbol of the declared value for closed cell content	
DS(T+)	is the symbol of the declared value for dimensional stability at specified temperature	
DS(T-)	is the symbol of the declared value for dimensional stability at - 20 °C	
MU	is the symbol of the declared value for water vapour diffusion resistance factor	
ST(+)	is the symbol of the declared level for maximum service temperature	
ST(-)	is the symbol of the declared level for minimum service temperature	
WVT	is the symbol for the declared level for water vapour transmission rate	
WVP	is the symbol for the declared value of water vapour permanence	
WVPE	is the symbol for the declared value of water vapour permeability	
Z	is the symbol of the declared value for water vapour resistance	

3.2.2 Abbreviated terms used in this standard

PF	is Phenolic Foam
ITT	is Initial Type Test
FPC	is Factory Production Control
ML	is Manufacturer's Literature

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 the test specimens given in Table 6.

4.2 For all applications

4.2.1 Thermal conductivity

For flat specimens, the thermal conductivity shall be based upon measurements carried out in accordance with EN 12667 or EN 12939 for thick products. For cylindrical specimens, EN ISO 8497 shall be used as specified in 5.3.2.

In both cases, the thermal conductivity values shall be determined by the manufacturer and verified in accordance with EN ISO 13787 and Annex B of this product standard. They shall be declared by the manufacturer according to the measuring standards mentioned above covering the product service temperature range. The following conditions apply:

- the measured values shall be expressed with three significant figures;
- the declared thermal conductivity curve shall be given as a limit curve, defined in EN ISO 13787;
- the value of the declared thermal conductivity, λ_D , shall be rounded upwards to the nearest 0,001 W/(m·K);
- the lowest reference mean test temperature required is - 170 °C.

The declared equation/limit curve is the "declared reference" with three significant figures, that is to 0,000 1 W/(m·K) for λ values below 0,1 W/(m·K) and in 0,001 W/(m·K) for λ values above 0,1 W/(m·K). This shall be used as a reference for the verification of the declaration.

When thermal conductivity is declared as a table derived from the equation, rounding upwards to the next 0,001 W/(m·K) has to be done for the full range of the thermal conductivity.

NOTE Determinations of the declared thermal conductivity of pipe sections, following EN ISO 8497, having joints in the metering area, include the effects of these joints as defined in EN ISO 23993.

4.2.2 Dimensions and tolerances

4.2.2.1 Linear dimensions

The length, l , width, b , and thickness, d , of boards shall be determined in accordance with EN 822 and EN 823. The length, l , thickness, d , and inside diameter, D_i , of pipe sections, segments and prefabricated ware shall be determined in accordance with EN 13467. No test result shall deviate from the declared values by more than the tolerances given in Table 1.

Products with a surface facing or natural skin shall be tested without removing them.