SLOVENSKI STANDARD
SIST EN 16025-1:2013

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Toplotno- in/ali zvočnoizolacijski proizvodi v gradbeništvu - Vezano EPS-nasutje - 1. del: Zahteve za industrijsko pripravljeno suho maltno mešanico EPS

Themal and/or sound insulating products in building construction - Bound EPS ballastings - Part 1: Requirements for factory premixed EPS dry plaster

Dämmstoffe für den Wärme- und/oder Schallschutz im Hochbau - Gebundene EPS-Schüttungen - Teil 1: Anforderungen an den werkmäßig vorgemischten EPS-Trockenmörtel

Produits isolants thermiques et/ou acoustiques utilisés dans la construction - Empierrements en PSE lié - Partie 1: Exigences pour un pré-mélange en usine plâtre sec PSE

Ta slovenski standard je istoveten z: **EN 16025-1:2013**

ICS:

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

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Thermal and/or sound insulating products in building construction - Bound EPS ballastings - Part 1: Requirements for factory premixed EPS dry plaster

Produits isolants thermiques et/ou acoustiques utilisés dans la construction des bâtiments - Empierrements en PSE lié - Partie 1: exigences pour un pré-mélange en usine plâtre sec PSE

Wärmedämmstoffe für den Wärme- und/oder Schallschutz im Hochbau - Gebundene EPS-Schüttungen - Teil 1: Anforderungen an den werkmäßig vorgemischten EPS-Trockenmörtel

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Foreword

This document (EN 16025-1:2013) 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of an identical text or by endorsement, at the latest by November 2013, and conflicting national standards shall be withdrawn at the latest by November 2013.

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(s).

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

This document consists of two parts which form a package:

— EN 16025-1, *Thermal and/or sound insulating products in building construction — Bound EPS ballastings — Part 1: Requirements for factory premixed EPS dry plaster*

— EN 16025-2, *Thermal and/or sound insulating products in building construction — Bound EPS ballastings — Part 2: Processing of the factory premixed EPS dry plaster*

The first part is the harmonised part satisfying the mandate and the CPD and is the basis for the CE marking covering the products, which are placed on the market. The second part, which is the non-harmonised part, covers the specification for the installed products. Both parts need to be used for the application of the insulation product in the end-use applications covered by the standard.

This document is one of a series for mineral wool, expanded clay, expanded perlite, exfoliated vermiculite, polyurethane/polyisocyanurate, cellulose, bound EPS and expanded polystyrene in-situ formed insulation products used in buildings, but this document may be used in other areas where appropriate.

The reduction 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.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the requirements for in-situ formed bound EPS products (BEPS) for the thermal and/or sound insulation of buildings when applied to walls, ceilings, roofs and floors.

This European Standard covers products which are manufactured as premixed EPS dry plaster/mortar in a factory or mobile production unit.

This European Standard is a specification for the bound EPS products before installation.

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

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

Products with a declared thermal conductivity at 10 °C greater than 0,18 W/(m · K) are not covered by this European Standard.

This European Standard does not cover factory made insulation products in the form of prefabricated shapes or boards made of bound EPS.

This European Standard also specifies performance requirements for airborne sound insulation and for acoustic absorption applications.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN 933-1, *Tests for geometrical properties of aggregates — Part 1: Determination of particle size distribution — Sieving method*

EN 1097-3, *Tests for mechanical and physical properties of aggregates — Part 3: Determination of loose bulk density and voids*

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

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

EN 1609:2013, *Thermal insulating products for building applications — Determination of short term water absorption by partial immersion*

EN 12086:2013, *Thermal insulating products for building applications — Determination of water vapour transmission properties*

EN 12350-6, *Testing fresh concrete — Part 6: Density*

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 13172:2012, *Thermal insulation products — Evaluation of conformity*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13823:2010, *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 9229:2007, *Thermal insulation — Vocabulary (ISO 9229:2007)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

3 Terms and definitions, symbols and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 9229:2007 and the following apply.

3.1.1
fresh mortar
EPS dry mortar mixed with water on the construction site

3.1.2
bound EPS (BEPS)
installed and hardened fresh mortar for use as insulating material for thermal and/or impact noise insulation

3.1.3
class
combination of two levels of the same or different property between which the performance falls, where the levels are given by the declared value of the characteristic concerned

3.1.4
level
given value, which is the upper or lower limit of a requirement

Note 1 to entry: The level is given by the declared value of the characteristic concerned.

3.1.5
factory premixed EPS dry mortar
loose dry mixture of EPS aggregate and mineral binder for producing bound EPS

3.2 Symbols and abbreviated terms

3.2.1 Symbols

C	compressibility	mm
d_B	thickness of the specimen under a load of 2 kPa after removal of an additional load of 48 kPa	mm
d_L	thickness of the specimen under a load of 250 Pa	mm
d_N	nominal thickness of the product	mm
ε_{ct}	compressive creep	%
ε_t	total relative thickness reduction	%
$\lambda_{90/90}$	90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m · K)
λ_D	declared value of thermal conductivity	W/(m · K)
λ_U	design value of thermal conductivity	W/(m · K)
μ	water vapour diffusion resistance factor	1
s'	dynamic stiffness	MN/m^3
σ_2	compressive stress at 2 % deformation	kPa
σ_{10}	compressive stress at 10 % deformation	kPa
σ_c	compressive stress	kPa
W_p	water absorption by short-term partial immersion	kg/m^2
CC(i_1/i_2/25)σ_c	declared level for compressive creep	
CP	declared level for compressibility	
CS(2)	declared level for compressive stress at 2 % deformation	
CS(10)	declared level for compressive stress at 10 % deformation	
DLT	declared level for dimensional stability under load and temperature conditions	
DMD	bound EPS density	
FMD	apparent density of fresh mortar	
LD	bulk density of the EPS dry mortar	
MU	declared range of the water vapour resistance factor	
PS	particle size group	
SD	declared level for dynamic stiffness	

3.2.2 Abbreviated terms

BEPS	Bound EPS
EPS	Expanded PolyStyrene
ITT	Initial Type Test

4 Requirements

4.1 General

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

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

4.2 For all applications

4.2.1 Factory premixed EPS dry mortar

4.2.1.1 Type of EPS aggregate

The manufacturer shall identify the type of EPS aggregate. With regard to the type of aggregate, a differentiation shall be made between freshly foamed EPS indicated by N (= new) and ground EPS indicated by R (= recycled).

In a visual inspection, the EPS aggregate shall be checked for foreign substances and lumps. These shall be removed from the aggregate.

4.2.1.2 Particle size group of the EPS aggregate

The maximum size of the EPS beads shall be determined in accordance with EN 933-1. The maximum volume of the beads having a diameter greater than specified in Table 1 for the appropriate level shall not exceed 5 %.

Table 1 — Levels of maximum sizes of the EPS beads

Level	Maximum diameter of beads in mm
PS10	≤ 10
PS8	≤ 8
PS6	≤ 6
PS5	≤ 5
PS2	≤ 2

The amount of dust (0 mm to 0,5 mm) in the EPS beads, regarding to the volume, shall be determined in accordance with EN 933-1. The level shall be determined according to Table 2 and recorded during the factory production control process.

Table 2 — Levels of the percentage of dust (0 mm to 0,5 mm)

Level	Amount of dust
D0	< 1 vol-%
D5	< 5 vol-%
D10	< 10 vol-%

4.2.1.3 Mineral binder (e.g. cement, mixtures produced by the manufacturer, including additives)

The manufacturer shall inform the testing body of the binder's active ingredients, to monitor the mixing of binder ingredients and to keep records thereon. This obligation can be waived if a ready mixed, supervised binder is used.

4.2.1.4 Density of the EPS dry mortar

The bulk density of the EPS dry mortar shall be determined in accordance with EN 1097-3 and shall be indicated by the manufacturer in steps of 1 kg/m^3. The tolerances shall not exceed the values given in Table 3.

NOTE There is a relationship between the thermal conductivity, dynamic stiffness, compressive stress, compressibility and the bulk density of the EPS dry mortar.

4.2.2 Fresh mortar

4.2.2.1 Mixing water

The manufacturer shall specify the quantity of mixing water. The mixing water used shall have drinking-water quality.

4.2.2.2 Apparent density of fresh mortar

The apparent density of fresh mortar shall be determined in accordance with EN 12350-6 and shall be indicated by the manufacturer in steps of 1 kg/m^3. The tolerances shall not exceed the values given in Table 3.

NOTE There is a relationship between the thermal conductivity, dynamic stiffness, compressive stress, compressibility and the bulk density of the EPS dry mortar.

4.2.3 Bound EPS

4.2.3.1 Thermal conductivity

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

The 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;

— the declared thermal conductivity, $\lambda_{90/90}$, shall be given as a limit value 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).

NOTE The declaration of the declared installed thermal resistance for an installed bound EPS product is given in EN 16025-2.

4.2.3.2 Bound EPS density

Bound EPS density shall be determined in accordance with EN 1602 and shall be indicated by the manufacturer rounded to 1 kg/m^3. The tolerances shall not exceed the values given in Table 3.

NOTE There is a relationship between the thermal conductivity, dynamic stiffness, compressive stress, compressibility and the bulk density of the EPS dry mortar.

Table 3 — Maximum deviation of the bulk density of EPS dry mortar, apparent density of the fresh mortar and bound EPS density from the manufacturer's specifications

Density	Products for thermal insulation		Products for sound insulation	
	Mean	Individual value	Mean	Individual value
Bulk density of the EPS dry mortar	± 10 %	± 15 %	± 7 %	± 10 %
Apparent density of fresh mortar	± 10 %	± 15 %	± 7 %	± 10 %
Bound EPS density	± 10 %	± 15 %	± 7 %	± 10 %

4.2.3.3 Reaction to fire

The reaction to fire classification of the products placed on the market but not simulating the end-use application shall be determined in accordance with Annex C and EN 13501-1 and using data obtained from tests carried out according to procedures EN ISO 11925-2 (see C.3.1) and EN 13823 (see C.3.2), using test specimens prepared in accordance with C.3.1.2 and C.3.2.1.

4.2.3.4 Durability characteristics

4.2.3.4.1 General

The appropriate durability characteristics have been considered and are covered in 4.2.3.4.2, 4.2.3.4.3 and 4.2.3.4.4.

4.2.3.4.2 Durability of reaction to fire against ageing/degradation

The reaction to fire performance of BEPS products does not decrease with time, in the applications covered by this document.

4.2.3.4.3 Durability of thermal resistance against ageing/degradation

The thermal conductivity of BEPS products does not change with time. This is covered by 4.2.3.1 thermal resistance — thermal conductivity.

4.2.3.4.4 Durability of compression strength against ageing/degradation

The compression strength of BEPS products does not change with time. This is covered by 4.3.2.1, compressive stress, 4.3.3.3, compressibility and 4.3.4, creep.

4.3 For specific applications

4.3.1 General

If there is no intended requirement for a property described in 4.3, for a product in the end-use application, then the property need not be determined and declared by the manufacturer.

4.3.2 Compressive stress

4.3.2.1 Compressive stress at 2 % deformation

Compressive stress at 2 % deformation, σ_2, or compressive strength, σ_m, shall be determined in accordance with EN 826. No test results shall be less than the value given in Table 4 for the declared level.

NOTE The compressive stress at 2 % deformation is not a design value.