



**SLOVENSKI STANDARD**  
**oSIST prEN 16025-1:2018**  
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**Toplotno- in/ali zvočnoizolacijski proizvodi v gradbeništvu - Vezano EPS-nasutje -  
1. del: Zahteve za industrijsko pripravljeno suho maltno mešanico EPS**

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

Wärmedämmstoffe 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 des  
bâtiments - Empierrements en EPS lié - Partie 1 : Exigences pour un pré-mélange en  
usine plâtre sec EPS

**Ta slovenski standard je istoveten z: prEN 16025-1**

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**ICS:**

91.100.60	Materiali za toplotno in zvočno izolacijo	Thermal and sound insulating materials
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[oSIST prEN 16025-1:2018](https://standards.iteh.ai/catalog/standards/sist/6443ec75-fae5-4c68-8223-4e4611e5ff31/osist-pren-16025-1-2018)

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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  
EPS lié - Partie 1 : Exigences pour un pré-mélange en  
usine plâtre sec EPS

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

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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (prEN 16025-1:2018) 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 has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

For relationship with EU Regulation(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 harmonized 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-harmonized 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.

**prEN 16025-1:2018 (E)****1 Scope**

This document describes product characteristics and includes procedures for testing, assessment and verification of constancy of performance (AVCP), marking and labelling.

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

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

This document describes the product characteristics and includes procedures for testing, marking and labelling and the rules for assessment and verification of constancy of performance.

This document 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 document .

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

This document also specifies performance characteristics for sound insulation.

**2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 826, *Thermal insulating products for building applications - Determination of compression behaviour*  
<https://standards.iteh.ai/catalog/standards/sist/6443ec75-fae5-4c68-8223-4e4611e5831/osist-pr-en-16025-1-2018>

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, *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, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 16516, *Construction products: Assessment of release of dangerous substances - Determination of emissions into indoor air*

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 (standards.iteh.ai)

For the purposes of this document, the terms and definitions given in EN ISO 9229:2007 and the following apply. <https://standards.iteh.ai/catalog/standards/sist/6443ec75-fae5-4c68-8223-4e4611e5831/osist-pren-16025-1-2018>

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

##### 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.

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## 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
$\varepsilon_{ct}$	compressive creep	%
$\varepsilon_t$	total relative thickness reduction	%
$\lambda_{90/90}$	90 % fractile with a confidence level of 90 % for the thermal conductivity	W/(m · K)
$\lambda_D$	declared value of thermal conductivity	W/(m · K)
$\lambda_U$	design value of thermal conductivity	W/(m · K)
$\mu$	water vapour diffusion resistance factor	1
$s'$	dynamic stiffness	MN/m <sup>3</sup>
$\sigma_{10}$	compressive stress at 10 % deformation	kPa
$\sigma_c$	compressive stress	kPa
$W_p$	water absorption by short-term partial immersion	kg/m <sup>2</sup>
$CC(i_1/i_2/25)\sigma_c$	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	
D	level of the percentage of dust	
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
TT	Type Testing

## 4 Characteristics

### 4.1 General

Product characteristics shall be assessed in accordance with Clause 5. To comply with this document, products shall meet the characteristics of 4.2, and the characteristics 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 5.

### 4.2 For all applications

#### 4.2.1 Factory premixed EPS dry mortar

##### 4.2.1.1 Type of EPS aggregate

The type of EPS aggregate shall be identified. 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). The type N shall be used for 100 % new EPS beads only.

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

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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 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 in steps of 1 kg/m<sup>3</sup>. 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 quantity of mixing water shall be specified.

##### 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 in steps of 1 kg/m<sup>3</sup>. 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 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  $\lambda_D$  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 and rounded to 1 kg/m<sup>3</sup>. 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 declared values.**

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, compressive stress, 4.3.3.3, compressibility and 4.3.4, creep.

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### 4.3 For specific applications

#### 4.3.1 General

If there is no requirement for a characteristic described in 4.3 for a product in use, then the characteristic does not need to be determined and declared by the manufacturer.

#### 4.3.2 Compressive stress at 10 % deformation

Compressive stress at 10 % deformation,  $\sigma_{10}$ , or compressive strength,  $\sigma_m$ , shall be determined in accordance with EN 826. The declared value shall be expressed in steps of 10 kPa and declared as CS(10)i.

#### 4.3.3 Compressibility

##### 4.3.3.1 Thickness, d<sub>L</sub>

The thickness  $d_L$  shall be determined under a load of 250 Pa in accordance with EN 12431.

##### 4.3.3.2 Thickness, d<sub>B</sub>

The thickness,  $d_B$ , shall be determined in accordance with EN 12431 with a pause of 300 s before measuring  $d_B$ .

##### 4.3.3.3 Compressibility

Compressibility,  $c$ , shall be determined as the difference between  $d_L$  and  $d_B$ . No test result shall exceed the values given in Table 4 for the declared level.

**Table 4 — Levels of compressibility**

Level	Useful load on the floor screed	Performance	Maximum deviation of a test result
	kPa	mm	mm
CP5	≤ 2,0	≤ 5	+2
CP4	≤ 3,0	≤ 4	+2
CP3	≤ 4,0	≤ 3	+2
CP2	≤ 5,0	≤ 2	+1

#### 4.3.4 Creep

Compressive creep shall be measured and extrapolated according to the method described in EN 1606, at the specified stress level,  $\varepsilon_{ct}$ , and for the specified extrapolation time,  $y$ ; the total relative thickness reduction,  $\varepsilon_t$ , shall not exceed the declared level,  $i_1$ , and the compressive creep,  $\varepsilon_{ct}$ , shall not exceed the declared level  $i_2$ .

The specified stress level should preferably be indicated in values of 3,5 kPa; 6,5 kPa and 10 kPa. The extrapolation time should be 10 years.

**EXAMPLE** Example for declaration of levels: The designation code CC(2/1,5/10)6,5 defines a declared level of 2 % for the total relative thickness reduction and the declared level of 1,5 % for the compressive creep of 6,5 kPa for an extrapolated time of 10 years.