

SVENSK STANDARD

SS-EN 16383:2016



Fastställt/Approved: 2016-11-01
Publicerad/Published: 2016-11-04
Utgåva/Edition: 1
Språk/Language: engelska/English
ICS: 91.100.60

Värmeisoleringsprodukter för byggnader – Bestämning av påverkan av fukt och värme hos puts på utvändig värmeisolering för ytterväggar

Thermal insulation products for building applications – Determination of the hygrothermal behaviour of external thermal insulation composite systems with renders (ETICS)

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EUROPEAN STANDARD

EN 16383

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2016

ICS 91.100.60

English Version

Thermal insulation products for building applications -
Determination of the hygrothermal behaviour of external
thermal insulation composite systems with renders
(ETICS)

Produits isolants thermiques destinés aux applications
du bâtiment - Détermination du comportement
hygrothermique des systèmes d'isolation thermique
extérieure par enduit sur isolant (ETICS)

Wärmedämmstoffe für das Bauwesen - Bestimmung
des hygrothermischen Verhaltens von außenseitigen
Wärmedämm-Verbundsystemen mit Putzen (WDVS)

This European Standard was approved by CEN on 6 August 2016.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (EN 16383:2016) 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of an identical text or by endorsement, at the latest by April 2017, and conflicting national standards shall be withdrawn at the latest by April 2017.

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.

NOTE It has not been possible to include a statement on the accuracy of the test method in this edition, but it is intended to include such a statement when this European Standard is next revised.

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1 Scope

This European Standard specifies the equipment and procedures for determining the hygrothermal behaviour of external thermal insulation composite systems with renders (ETICS) delivered as a kit and used as thermal insulation for buildings.

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 822, *Thermal insulating products for building applications — Determination of length and width*

EN 823, *Thermal insulating products for building applications — Determination of thickness*

EN 998-1, *Specification for mortar for masonry — Part 1: Rendering and plastering mortar*

EN 1015-1, *Methods of test for mortar for masonry — Part 1: Determination of particle size distribution (by sieve analysis)*

EN 1062-1, *Paints and varnishes — Coating materials and coating systems for exterior masonry and concrete — Part 1: Classification*

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 13494, *Thermal insulation products for building applications — Determination of the tensile bond strength of the adhesive and of the base coat to the thermal insulation material*

EN 13496, *Thermal insulation products for building applications — Determination of the mechanical properties of glass fibre meshes as reinforcement for External Thermal Insulation Composite Systems with renders (ETICS)*

EN 13497, *Thermal insulation products for building applications — Determination of the resistance to impact of external thermal insulation composite systems (ETICS)*

EN 15824, *Specifications for external renders and internal plasters based on organic binders*

EN ISO 3251, *Paints, varnishes and plastics — Determination of non-volatile-matter content (ISO 3251)*

EN ISO 3451-1, *Plastics - Determination of ash — Part 1: General methods (ISO 3451-1)*

EN ISO 9229, *Thermal insulation — Vocabulary (ISO 9229)*

3 Terms and definitions

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

3.1

adhesive

component used for bonding the thermal insulation product to the substrate

3.2

base coat

component applied directly by rendering on to the thermal insulation product

3.3

design external thermal insulation composite system

design ETICS

combination of components defined by the system holder, consisting of one base coat, thermal insulation product(s) of the same material, adhesive(s), reinforcement(s) and finishing layer(s) with or without mechanical fixing device(s)

3.4

finishing layer

finishing coat with a key coat (optional) and/or a decorative coat (optional)

3.5

anchor for thermal insulation products

fixing device consisting of a plate for fixing the thermal insulation product and if appropriate also the reinforced base coat, a sleeve which passes through the thermal insulation product and a part which is embedded to the substrate

3.6

anchor for profiles or rails

fixing device for fixing the profiles or rails to the substrate

3.7

mechanical fixing device

component used for fixing a kit mechanically to the substrate

3.8

reinforced base coat

base coat with embedded reinforcement

3.9

substrate

part of the wall/test assembly to which the kit is fixed

3.10

test wall

substrate covered by a kit or set of kits to test the hygrothermal behaviour

3.11

system holder

single manufacturer who is placing kits out of a design ETICS on the market

3.12

key coat

component applied to the base coat as a preparation for the application of the finishing coat

4 Principle

Exposure of a kit to a set of hygrothermal cycles, consisting of heating, wetting, cooling and freeze/thaw cycles.

5 Testing devices

The following test devices are necessary:

- device for heating the surface of the assembled kit regulated to (70 ± 5) °C and maintaining the relative humidity of the air close to the surface of the kit to less than 30 %;
- device for wetting the surface of the kit with tap or demineralized or deionized water with a temperature of (15 ± 5) °C and an amount of $(1,5 \pm 0,5)$ l/(m² · min) with the use of spraying nozzles to ensure uniform water distribution;
- device for cooling the surface of the kit to (-20 ± 5) °C.

These devices shall meet the required test conditions described in Clause 7.

6 Test wall

6.1 Preparation of the test wall

6.1.1 General

The kit(s) shall be applied on the substrate according to the instructions of the system holder. The configuration of the kit(s) to be tested shall be according to the worst case rules given in the relevant product standard.

The thermal insulation product shall be fixed to the substrate and covered by the reinforced base coat. The perimeter edges of the test wall shall be wrapped/covered with the reinforced base coat. The upper 2/3 of the height of the test wall shall be covered additionally with one or more finishing layers according to Figure 1 and Figure 2. Within the lower 1/3 from the bottom edge shall be at least one horizontal joint between thermal insulation products (see "a" in Figure 1 and Figure 2). The distance between the horizontal joint and the 1/3 of the height of the test wall (see "b" in Figure 1 and Figure 2) shall be at least 200 mm.

If the height of the thermal insulation product is bigger than 1/3 of the height of the test wall minus 200 mm, the thermal insulation product shall be cut properly.

The test wall shall have openings according to 6.1.2 or 6.1.3.

NOTE If given in the worst case rules of the relevant product standard, the whole test wall can be covered by finishing coat(s).

6.1.2 Test wall with one opening

The dimensions of the weathered surface of the test wall shall be as following (see Figure 1):

- width: $\geq 2,5$ m;
- height: $\geq 2,0$ m.

In the middle of the upper 2/3 of the total height of the test wall, one opening shall be included (see Figure 1). The opening shall have a width of $(0,5 \pm 0,1)$ m and a height of $(0,5 \pm 0,1)$ m. The opening

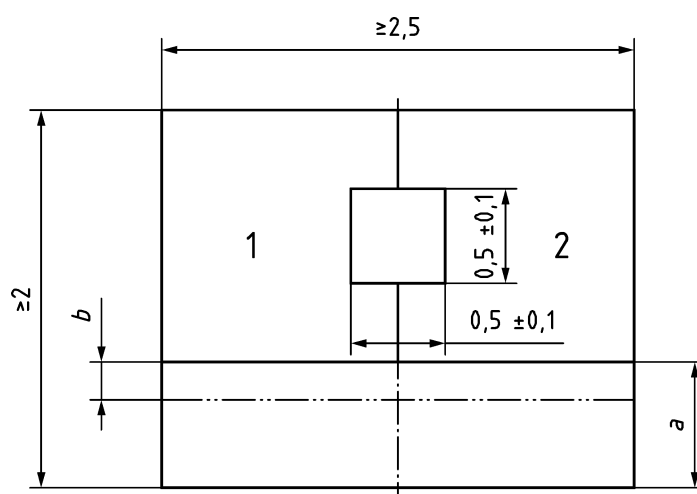
shall be obtained by a recess in the thermal insulation product. Edges and corners of the opening shall be covered with the reinforced base coat and finishing layer(s).

The lower horizontal area of the opening shall be protected against water penetration. The edges of the openings to the substrate shall be sealed.

If specified in the relevant product standard, at maximum two different configurations noted as 1 and 2 can be tested on the test wall. In this case the test wall shall be divided vertically in the middle (see Figure 1). The two configurations shall contain the same reinforced base coat. If two different insulation products are tested, they shall have the same thickness. In any case, the nominal thickness/coverage of the reinforced base coat shall be the same.

The two different insulation products may consist of the same or different thermal insulation materials or types.

Dimensions in metres



Key

- 1 configuration 1
- 2 configuration 2

- a* 1/3 of the total height of the test wall
- b* at least 200 mm

Figure 1 — Scheme of the test wall with one opening

6.1.3 Test wall with two openings

The dimensions of the weathered surface of the test wall shall be as following (see Figure 2):

- width: $\geq 3,0$ m;
- height: $\geq 2,0$ m.

In the middle of each half side of the upper 2/3 of the total height of the test wall, one opening shall be included (see Figure 2). The two openings shall have a width of $(0,5 \pm 0,1)$ m and a height of $(0,5 \pm 0,1)$ m. The openings shall be obtained by a recess in the thermal insulation product. Edges and corners of the openings shall be covered with the reinforced base coat and finishing layer(s).

The lower horizontal area of the openings shall be protected against water penetration. The edges of the openings to the substrate shall be sealed.