SLOVENSKI STANDARD
SIST EN 13495:2019

01-november-2019

Nadomešča:

SIST EN 13495:2003

Toplotnoizolacijski proizvodi za uporabo v gradbeništvu - Ugotavljanje oprijema kontaktnega fasadnega toplotnoizolacijskega sistema (ETICS) na podlago (preskus z blokom trde pene)

Thermal insulation products for building applications - Determination of the pull-off resistance of external thermal insulation composite systems (ETICS)(foam block test)

Wärmedämmstoffe für das Bauwesen - Bestimmung der Abreißfestigkeit von außenseitigen Wärmedämm-Verbundsystemen (WDVS) (Schaumblock-Verfahren)

Produits isolants thermiques destinés aux applications du bâtiment - Détermination de la résistance à l’arrachement des systèmes composites d’isolation thermique par l’extérieur (ETICS) (essai au bloc de mousse)

Ta slovenski standard je istoveten z: **EN 13495:2019**

ICS:

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

SIST EN 13495:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13495

September 2019

ICS 91.100.60

Supersedes EN 13495:2002

English Version

Thermal insulation products for building applications - Determination of the pull-off resistance of external thermal insulation composite systems (ETICS) (foam block test)

Produits isolants thermiques destinés aux applications du bâtiment - Détermination de la résistance à l'arrachement des systèmes composites d'isolation thermique par l'extérieur (ETICS) (essai au bloc de mousse)

Wärmedämmstoffe für das Bauwesen - Bestimmung der Abreißfestigkeit von außenseitigen Wärmedämm-Verbundsystemen (WDVS) (Schaumblock-Verfahren)

This European Standard was approved by CEN on 19 May 2019.

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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-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 13495:2019) 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 March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13495:2002.

This European standard has been drafted for applications in buildings but may also be used in other areas where it is relevant.

EN 13495:2019 includes the following significant technical changes with respect to EN 13495:2002:

	2002	2019
Scope	Pull-off resistance	Load-bearing capacity
Principle	Only static foam block test	Static foam block test A and four other methods B to E
Concrete substrate	Minimum thickness 100mm	Minimum thickness 70 mm
Concrete substrate	Minimum strength class of C 20/25	Minimum strength class of C 12/15
Timber substrate	Absent	Present
Foil	Absent	Present
Foam block dimensions	Between 200 mm x 200 mm and 333 mm x 333 mm	Length and width between (200 +-2) mm and (400 +- 2) mm
Foam block compression stress	1,5 kPa to 7,5 kPa	No limits or thresholds
Glue	Solvent free epoxy or polyurethane	Solvent free epoxy or polyurethane or polyurethane foam
Conditioning of test specimen	As specified in the relevant product standard	Curing at (20 +- 10) °C for at least 7 days and (23 +- 5) °C and (50 +- 10) % RHD for at least 24 h prior testing
Calculation of load bearing capability $F_{5\%}$	Absent	Present

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies equipment and procedures for determining the load-bearing capability ("pull-off") of kits out of external thermal insulation composite systems (ETICS) to tension and/or shear forces.

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 206, *Concrete — Specification, performance, production and conformity*

EN 1990:2002, *Eurocode — Basis of structural design*

EN 17237,[1] *Thermal insulation products for buildings — External thermal insulation composite systems with renders (ETICS) — Specification*

EN ISO 4287, *Geometrical product specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters (ISO 4287)*

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

ISO 12491:1997, *Statistical methods for quality control of building materials and components*

3 Terms and definitions, symbols and units

3.1 Terms and definition

For the purposes of this document, the terms and definitions given in EN ISO 9229:2007 and EN 17237 apply.

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

3.2 Symbols and units

For the purposes of this document, the following symbols apply.

F_{max} is the maximum load, in kN;

F_0 is the dead load of the test apparatus, in kN;

F_T is the tension load perpendicular to the surface, in kN;

F_L is the lateral shear load in the plane of the reinforcement, in kN;

U_T is the displacement perpendicular to the surface, in mm;

[1] Under preparation. Stage at time of publication: prEN 17237:2018.

u_L is the lateral displacement, in mm.

4 Principles

The load-bearing capability ("pull off") of a kit is determined by subjecting a test specimen to tensional force, applied evenly to its face through an elastic foam block and/or a lateral force, applied through the reinforcement into the basecoat. Five combinations of tension and lateral shear loads can be tested using the following methods:

— method A assesses the load-bearing capability with an increasing tension load (F_T) only. No lateral shear load is applied;

— method B assesses the load-bearing capability with an increasing tension load (F_T) and a constant lateral shear load (F_L) in the plane of the reinforcement;

— method C assesses the load-bearing capability with an increasing tension load (F_T) and a constant lateral shear displacement (u_L) in the plane of the reinforcement;

— method D assesses the load-bearing capability with an increasing lateral shear load (F_L) in the plane of the reinforcement and a constant tension load (F_T);

— method E assesses the load-bearing capability with an increasing lateral shear load (F_L) in the plane of the reinforcement. No tension load is applied.

5 Test equipment/apparatus

5.1 Substrates

5.1.1 General

The length and width of the substrate shall be equal or greater than the length and width of the test specimen. The substrate shall be big enough to support the kit in case of lateral shear displacement.

5.1.2 Concrete substrate

The concrete shall have a minimum strength class of C12/15 according to EN 206 and a minimum thickness of 70 mm.

For “mechanically fixed only” test specimens where a foil layer is omitted between the substrate and thermal insulation in the test – see 5.2 – the roughness of the concrete substrate shall be determined according to EN ISO 4287.

5.1.3 Timber substrate

The timber substrate may consist of more than one piece and may support only the setting positions.

NOTE A suitable material for the substrate is plywood of at least 20 mm thickness.

5.2 Foil

In the case of “mechanically fixed only” test specimens where no adhesive is used between the thermal insulation product and substrate, a polyethylene or polypropylene foil layer may be placed on top of the substrate to minimize the possibility of friction between the substrate and thermal insulation product surfaces influencing the test result.

5.3 Foam blocks

The thickness shall be in the range of 300 mm to 500 mm. The thickness tolerance of every foam block shall be ±3 mm. The nominal length and width of the foam blocks shall be (200 ± 2) mm to (400 ± 2) mm. The declared tensile strength of a foam block product shall be in the range of 80 kPa to 150 kPa. The declared rupture strain shall exceed 160 %.

NOTE Foam blocks manufactured from polyether foam have been found to be suitable.

Foam blocks may be re-used for subsequent testing providing their thickness is at least 300 mm. In such cases, the surfaces can be prepared by cutting a thicker block with a hot wire in order to meet the required thickness tolerance of ±3 mm.

5.4 Glue

The glue shall be suitable for fixing the foam blocks to the test specimen and to the tension plate. The glue shall not influence the results by damaging the test specimen and/or the foam blocks. It is permissible to use different glues between the foam blocks and the test specimen/tension plate if necessary.

NOTE Suitable glues are e.g. solvent free epoxy or polyurethane based adhesives or polyurethane adhesive foams.

5.5 Tension plate and rigid construction for load distribution

The tension plate shall have dimensions equal to or greater than the dimensions of the test specimen – see 6.1. The rigidity of the tension plate shall not influence the test results. If the tension plate itself is not rigid enough without additional strengthening, this can be achieved by using an additional frame fixed to the tension plate.

A suitable material for the tension plates is plywood with a minimum thickness of 20 mm. The rigid construction may be a steel cross.

5.6 Tensile testing machine

For method A

The tension load is applied to the reinforced base coat of the test specimen through the foam blocks without any lateral load, see Figure 1.

For methods B, C and D

The tension load is applied to the reinforced base coat of the test specimen through the foam blocks whilst the lateral shear load and/ordisplacement is applied simultaneously to the test specimen through the protruding reinforcement – see Figure 2.

For method E

The lateral shear load is applied to the side of the test specimen through the protruding reinforcement, without any tension load, see Figure 3.

For methods A, B, C and D

A tensile testing machine for applying a force perpendicular to the face of test specimen at a displacement rate of (10 ± 1) mm/min is required.

For method B

The testing machine shall have the ability to apply a constant lateral shear load F_L in the plane of the reinforcement.

For method C

The testing machine shall have the ability to apply a constant lateral displacement u_L in the plane of the reinforcement.

For methods D and E

The testing machine shall have the ability to apply a lateral force parallel to the face of test specimen at an induced displacement rate of (3 ± 1) mm/min.

For all methods

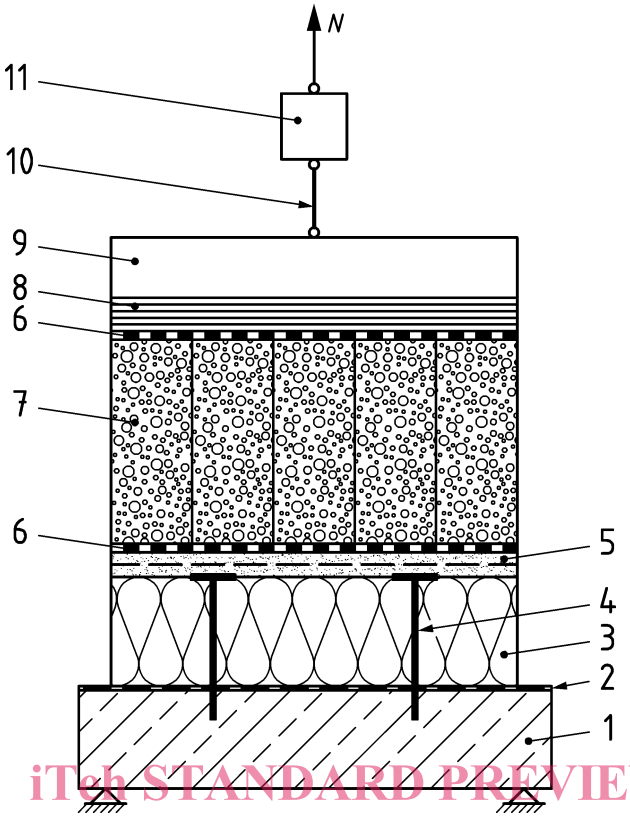
The testing machine shall be capable of measuring the force to an accuracy of ± 1 % and of measuring the induced displacement to an accuracy of ±0,1 mm.

The machine shall also be capable of measuring the displacement of the test specimen's surface using a calliper (see Figures 4 and 5) with an accuracy of ±0,5 mm. The forces and the related induced displacements shall be continuously recorded for all methods.

NOTE The records are intended to provide additional information on the behaviour of the test specimen product during the application of the imposed forces.

Mechanical pre-conditioning

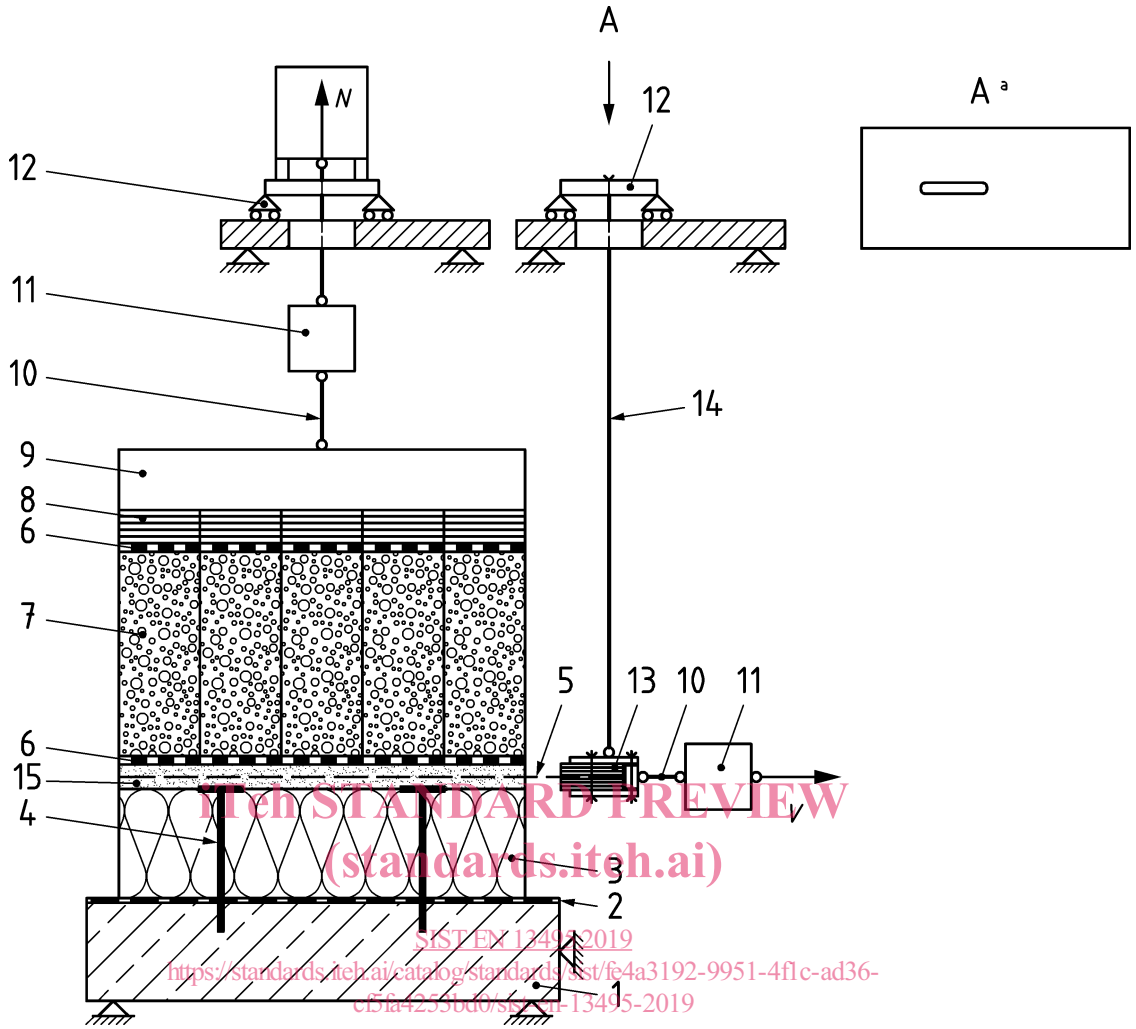
If mechanical pre-conditioning is required in accordance with Annex A, the apparatus shall be capable of applying a periodic lateral shear displacement at a frequency of 1/60 Hz ± 10 % to the reinforced base coat of the test specimen, through the protruding reinforcement.



Key

1 substrate
2 adhesive (if required)
3 thermal insulation product
4 mechanical fixing device, e.g. anchor or rail/profile
5 reinforced base coat
6 glue
7 foam blocks
8 tension plate
9 rigid construction for load distribution
10 universal coupling
11 load cell

Figure 1 — Example of a test apparatus and test specimen for method A



Key

1 substrate
2 foil or adhesive (if required)
3 thermal insulation product
4 mechanical fixing device, e.g. anchor (optional)
5 protruding reinforcement
6 glue
7 foam blocks
8 tension plate
9 rigid construction for load distribution
10 universal coupling
11 load cell
12 lateral moveable crosshead
13 clamp
14 clamp support rod
15 reinforced base coat
a illustrated without position number 12

Figure 2 — Example of a test apparatus and test specimen for methods B, C and D and for pre-conditioning