SLOVENSKI STANDARD
SIST EN 13497:2018

01-oktober-2018

Nadomešča:

SIST EN 13497:2003

Toplotnoizolacijski proizvodi za uporabo v gradbeništvu - Ugotavljanje odpornosti proti udarcem kontaktnih fasadnih toplotnoizolacijskih sistemov (ETICS)

Thermal insulation products for building applications - Determination of the resistance to impact of external thermal insulation composite systems (ETICS)

Wärmedämmstoffe für das Bauwesen - Bestimmung der Schlagfestigkeit von außenseitigen Wärmedämm-Verbundsystemen (WDVS)

Produits isolants thermiques pour le bâtiment - Détermination de la résistance au choc des systèmes composites d'isolation thermique par l'extérieur (ETICS)

Ta slovenski standard je istoveten z: **EN 13497:2018**

ICS:

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

SIST EN 13497:2018 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13497

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ICS 91.100.60

Supersedes EN 13497:2002

English Version

Thermal insulation products for building applications - Determination of the resistance to impact of external thermal insulation composite systems (ETICS)

Produits isolants thermiques pour le bâtiment - Détermination de la résistance au choc des systèmes composites d'isolation thermique par l'extérieur (ETICS)

Wärmedämmstoffe für das Bauwesen - Bestimmung der Schlagfestigkeit von außenseitigen Wärmedämm-Verbundsystemen (WDVS)

This European Standard was approved by CEN on 23 April 2018.

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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 13497:2018) 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of an identical text or by endorsement, at the latest by March 2019, and conflicting national standards shall be withdrawn at the latest by March 2019.

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 13497:2002.

The following table includes the most significant technical changes between both editions.

2002 Version	2018 Version
Two impact energy levels 2 J and 10 J with two different balls possible. ETAG 004 only partly matched	Thirteen impact energy levels with five different balls possible. Matches ETAG 004 levels. No 2 J impact energy level anymore
Only size and weight of steel balls defined	Definition of steel ball material added
No definition of measuring device	Definition of Crack measuring gauge included
No definition of specimen support	Definition of specimen support included
Weak definition of optional tube	Precise definition of optional tube
Minimum dimensions of test specimen given	Minimum distances between impacts defined instead.
-	More precise description of conditioning of the test specimens
-	Second procedure for conditioning added
-	Figure for second procedure for conditioning added
-	Detailed description of test procedure
-	Detailed description of the examination and expression of results
-	Introduction of hard facts for evaluation, which is the measurement of crack widths.
-	Evaluation of cracks well defined
-	Amended test report
Alternative ISO 7892 test possible	No alternative test possible

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

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 European Standard specifies the equipment and procedure for determining the resistance to impact of design ETICS kits with renders.

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

EN 1607, *Thermal insulating products for building applications — Determination of tensile strength perpendicular to faces*

EN 16383, *Thermal insulation products for building applications — Determination of the hygrothermal behaviour of external thermal insulation composite systems with renders (ETICS)*

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

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

ISO 3290-1, *Rolling bearings — Balls — Part 1: Steel balls*

3 Terms and definitions

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

4 Principle

The impact resistance of a design ETICS kit is the hard body impact resistance, determined by means of a steel ball falling onto the surface of the kit. The energy level and corresponding dropping height is selected from Table 1. Any damages occurring are visibly assessed (e.g. the reinforcement has become visible from the external surface, the finishing coat or the rendering system has visibly delaminated or been perforated) and cracks widths are measured.

5 Test apparatus

5.1 General

For the test a steel ball is dropped from a specified height onto the surface of the test specimen (see Table 1). A second impact (rebound) by the ball shall be avoided.

[1] To be published. Stage at the time of publication: prEN 17237:2018.

5.2 Steel ball requirements

Balls made of cutlery grade steel, AISI/SE Type 440 C and grade G100 according to ISO 3290-1 with the weights and nominal diameters given in Table 1.

5.3 Crack measuring gauge

For measurement of the width of any cracks formed as a result of the impact of the steel ball onto the surface of the test specimen. The gauge shall be capable measuring from 0,1 mm and be graduated in steps of 0,05 mm.

5.4 Specimen support

The support itself shall be flat, not bend, deform or absorb impact energy during the test, e.g. concrete support, in order not to influence the test result. The test specimen shall not move or bump during the test.

NOTE 1 Larger specimen tends to show less movement than smaller specimen.

NOTE 2 The specimen might be fixed, clamped or glued to the support so that contact between them is maintained during the test.

5.5 Optional tube to control descent of steel ball

A vertical tube manufactured from a metal or rigid plastic can be used for this purpose with an inner diameter at least 2 mm larger than the steel ball diameter. The walls of the tube should preferably include regular perforated holes to prevent air within the tube becoming compressed due to the velocity of the ball during its descent and thereby acting as a "resistance cushion" to the impact of the ball with the specimen surface.

Table 1 — Impact Energy levels and specified height from the specimen surface

Impact energy J	Steel ball nominal diameter mm	Steel ball weight kg	Specified height from the surface mm
3	50,0	0,499	620
10	63,5	1,022	1 000
15	63,5	1,022	1 500
20	63,5	1,022	2 000
30	80,0	2,088	1 470
40	80,0	2,088	1 960
60	100,0	4,079	1 500
80	100,0	4,079	2 000
100	100,0	4,079	2 500
125	125,0	7,930	1 610
150	125,0	7,930	1 930
175	125,0	7,930	2 250
200	125,0	7,930	2 580

6 Test specimens

6.1 Preparation of a test specimen

The test specimen shall have the size/dimension to allow minimum 5 impacts taking into account the minimum distances according to 7.2. It consists of the thermal insulation product with the rendering system. It shall be prepared according to the system holders instructions.

6.2 Sealing and conditioning of test specimens

Sealing and conditioning of test specimen shall be according to procedure 1 or procedure 2 as follows:

Procedure 1:

The reverse side and the edges of the test specimen shall be sealed, if exposure to water occurs. Condition the test specimens after preparation as follows:

— (23 ± 2) °C and (50 ± 5) % r. H. for at least 28 days;

— Conditioning according to EN 16383 test cycles;

— Drying for at least 7 days at (23 ± 2) °C and (50 ± 5) % r. H.

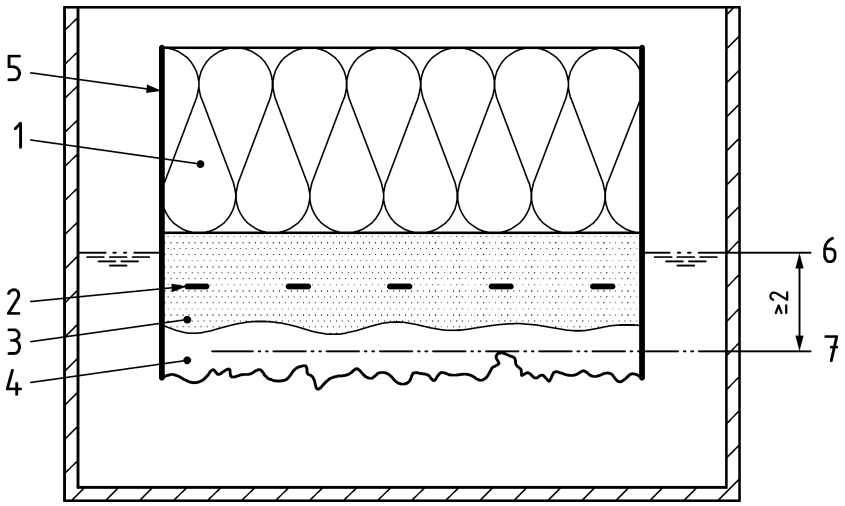
Procedure 2:

The edges of the test specimens shall be sealed. Condition the test specimens after preparation as follows:

— (23 ± 2) °C and (50 ± 5) % r. H. for at least 28 days;

— Immersion in tap water for at least 7 days at (20 ± 5) °C. The depth of submersion over the entire surface shall be at least 2 mm that is, the distance between levels 6 and 7 in Figure 1;

Dimensions in millimetre



Key

1 insulation product
2 reinforcement
3 base coat
4 finishing layer
5 sealing of the test specimen
6 surface of the water
7 level at which the minimum point of external surface of the finishing layer occurs

Figure 1 — Minimum depth of submersion of the test specimen for water absorption

— Drying for at least 7 days at (23 ± 2) °C and (50 ± 5) % r. H.

7 Procedure

7.1 Test conditions

The test shall be carried out at (20 ± 5) °C.

7.2 Test procedure

The test specimen shall be placed on a support according to 5.4.

The steel ball is dropped from the specified height onto the surface of the test specimen, as determined in Table 1, see Figure 2. For each energy level chosen, five separate impacts are performed at different positions of the test specimen. The minimum distance between any impact position and the specimen edges shall be at least 100 mm. The minimum distance between any impact position and the insulation board edges shall be at least 100 mm, i.e. no impact on a joint between insulation boards if more than one board is used to prepare the test specimen. The centre to centre distance between any two impacts shall be at least 100 mm.

In case of possible rebound, the steel ball shall be caught or diverted away to avoid a second impact.

If a perforated tube is used to control descent of the steel ball, it can be placed directly onto the test specimen surface. Alternatively, an unperforated tube can be used but this should be lifted above the