Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-15/0461 of 14 September 2016

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	DÜNA Thermo
Product family to which the construction product belongs	Nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	DÜNA Befestigungstechnik GmbH Im Langel 24 59872 Meschede-Freienohl DEUTSCHLAND
Manufacturing plant	Werk DÜNA
This European Technical Assessment contains	11 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	Guideline for European technical approval of "Plastic anchors for fixing of external thermal insulation composite systems with rendering", ETAG 014, edition February 2011, used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.

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Specific Part

1 Technical description of the product

The nailed-in anchor DÜNA Thermo consists of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of polyethylene and an accompanying specific nail of galvanised steel with a mounting plug of polyamide. The serrated expanding part of the anchor sleeve is slotted.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

3.2 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Point thermal transmittance	See Annex C 2
Plate stiffness	See Annex C 2
Displacements	See Annex C 2

3.4 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with guideline for European technical approval ETAG 014, February 2011 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: 97/463/EC.

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 14 September 2016 by Deutsches Institut für Bautechnik

Andreas Kummerow
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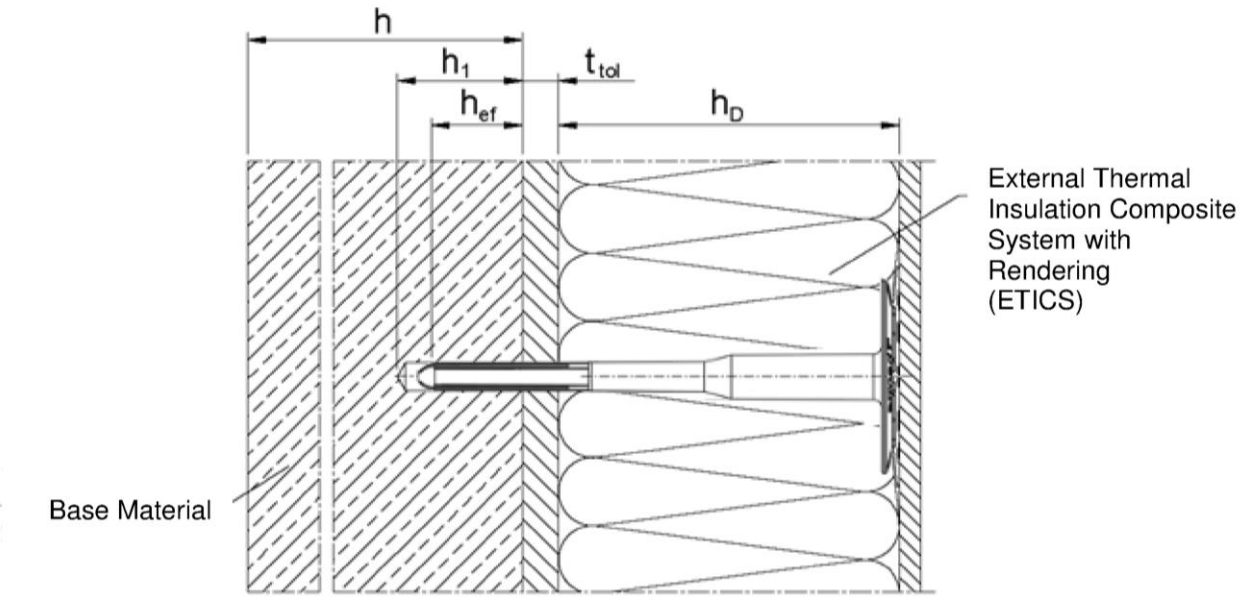
beglaubigt:
Ziegler

Deutsches Institut für Bautechnik

DIBt

DÜNA Thermo



Legend:

h_D	=	thickness of insulation material
h_{ef}	=	effective anchorage depth
h	=	thickness of member (wall)
h_1	=	depth of drilles hole to deepest point
t_{tol}	=	thickness of equalizing layer or non-load-bearing coating

DÜNA Thermo	**Annex A 1**
Product description Installed condition	

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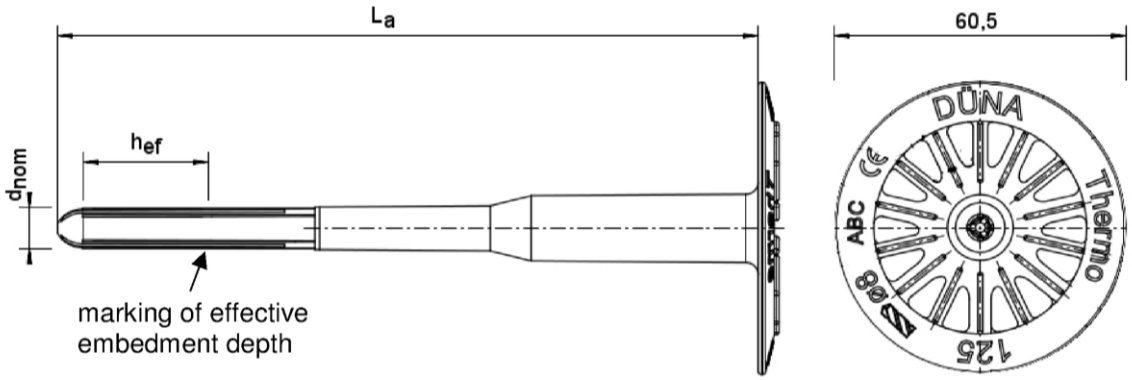
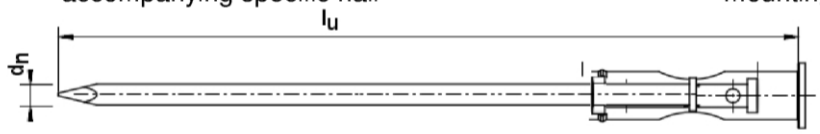


Marking
Manufacturer: DÜNA
Product name: Thermo
Length of the anchor: 125
Diameter of the anchor: 8
Use categories: A, B, C

accompanying specific nail

mounting plug



accompanying specific nail with installed mounting plug

Table A1: Dimensions

Anchor Type	Colour	Anchor Sleeve			Mounting Plug	Specific nail		
		d_{nom} [mm]	h_{ef} [mm]	min L_a max L_a [mm]	min L_s max L_s [mm]	d_n [mm]	min l_n max l_n [mm]	l_u [mm]
DÜNA Thermo	nature	8	35	105 225	45,0 36,6	4,4	95 215	140 260

Determination of maximum thickness of insulation h_D [mm] for **DÜNA Thermo**

$h_D = L_a - t_{tol} - h_{ef}$ (L_a = e.g. 125; t_{tol} = 10)

e.g. $h_D = 125 - 10 - 35$

$h_{Dmax} = 80$

Table A2: Materials

Name	Materials
Anchor sleeve	Polyethylene: colour: white
Mounting plug	Polyamide: colour: nature
Specific nail	steel, galvanized acc. to EN ISO 4042: 2001

DÜNA Thermo

Annex A 2

Product description
Marking and dimension of the anchor sleeve
Expansion element

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Specifications of intended use

Anchorages subject to:

- The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C 1
- Solid masonry (use category B), according to Annex C 1
- Hollow or perforated masonry (use category C), according to Annex C 1
- For other base materials of the use categories A, B or C the characteristic resistance of the anchor may be determined by job site tests according to ETAG 014 Edition February 2011, Annex D.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed in accordance with the ETAG 014 Edition February 2011 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C 1
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks

DÜNA Thermo	**Annex B 1**
Intended use Specifications	

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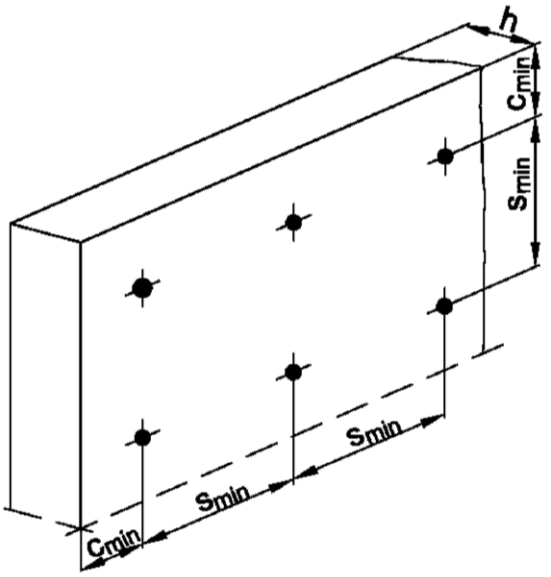
Table B1: Installation parameters		
Anchor type		**DÜNA Thermo**
Use category		A B C
Drill hole diameter	d_0 [mm] =	8
Cutting diameter of drill bit	d_{cut} [mm] ≤	8,45
Depth of drilled hole to deepest point	h_1 [mm] ≥	45
Effective anchorage depth	h_{ef} [mm] ≥	35

Table B2: Anchor distances and dimensions of members		
Anchor type		**DÜNA Thermo**
Minimum allowable spacing	s_{min} ≥ [mm]	100
Minimum allowable edge distance	c_{min} ≥ [mm]	100
Minimum thickness of member	h ≥ [mm]	100

Scheme of distance and spacing



DÜNA Thermo	**Annex B 2**
Intended Use Installations parameters, Edge distances and spacing	

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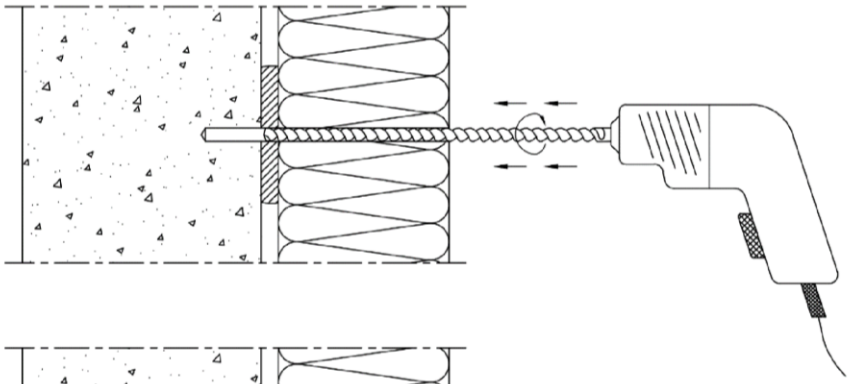
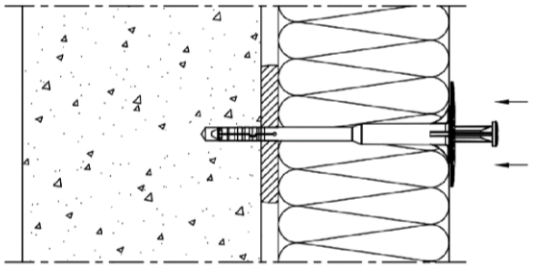
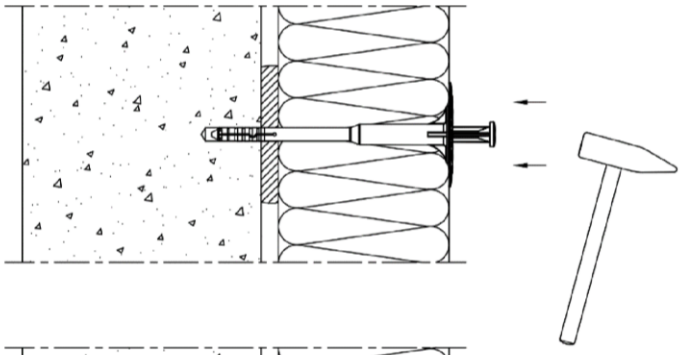
Installation instructions



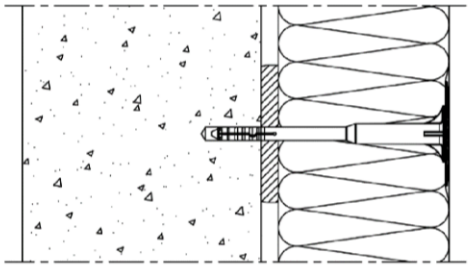
Drill the hole perpendicular to the substrate surface.
Clean the drill hole.



Place the anchor into the drill hole.
The bottom side of the plate must be flush with the ETICS.



Drive in the specific nail with the hammer.



Installed condition

DÜNA Thermo	
Intended use Installation instructions	**Annex B 3**

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Table C1: Characteristic resistance to tension loads N_{Rk} in concrete and masonry for a single anchor in kN

Anchor type					**DÜNA Thermo**
Base materials	Bulk density class ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	General remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 EN 206-1:2000				hammer	0,3
Concrete C20/25 – C50/60 EN 206-1:2000				hammer	0,5
Clay bricks, Mz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	1,8	28	Vertically perforation up to 15 %	hammer	0,4
Sand-lime solid bricks, KS e.g. according to DIN V 106:2005-10 / EN 771-2:2011	1,8	20	Vertically perforation up to 15 %	hammer	0,4
Vertically perforated clay bricks, HLz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	0,8	16	Vertically perforation more than 15 % and less than 50 %	rotary	0,3
Sand-lime perforated bricks, KSL e.g. according to DIN V 106:2005-10 / EN 771-2:2011	1,4	16	Vertically perforation more than 15 % and less than 50 %	hammer	0,3
Hollow masonry of lightweight aggregate concrete, Hbl e.g. according to DIN V 18151-100:2005-10 / EN 771-3:2011	0,8	2	Outer web in longitudinal direction a=50 mm, thickness of brick d=240 mm 	rotary	0,3

DÜNA Thermo

Performances
Characteristic resistance

Annex C 1

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Table C2: Point thermal transmittance according EOTA Technical Report TR 025:2007-06		
anchor type	insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
DÜNA Thermo	60 – 180	0,009

Table C3: Plate stiffness according EOTA Technical Report TR 026:2007-06			
anchor type	diameter of the anchor plate [mm]	load resistance oft the anchor plate [kN]	plate stiffness [kN/mm]
DÜNA Thermo	60	1,1	0,5

Table C4: Displacements				
Base materials	Bulk density class ρ [kg/dm³]	Minimum Compressive strength f_b [N/mm²]	Tension load N_{Rk} [kN]	Displacements $\delta(N_{Rk}/3)$ [mm]
Concrete C12/15			0,3	
Concrete 20/25 – C50/60 (EN 206-1:2000)			0,5	0,32
Clay bricks, Mz (DIN 105-100:2012-01 / EN 771-1:2011)	1,8	28	0,4	0,24
Sand-lime solid bricks, KS (DIN V 106:2005-10 / EN 771-2:2011)	1,8	20	0,4	0,26
Vertically perforated clay bricks, HLz (DIN 105-100:2012-01 / EN 771-1:2011)	0,80	16	0,3	0,13
Sand-lime perforated bricks, KSL (DIN V 106:2005-10 / EN 771-2:2011)	1,4	16	0,3	0,16
Hollow masonry of lightweight aggregate concrete, Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	0,8	2	0,3	0,16

DÜNA Thermo	**Annex C 2**
Performances Point thermal transmittance, plate stiffness, displacements	