



Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments



European Technical Assessment

ETA-16/0854 of 10 March 2017

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:

Trade name of the construction product

Product family to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment contains

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

Deutsches Institut für Bautechnik

ejotherm S and ejotherm N

Screwed-in plastic anchor and nailed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry

EJOT Baubefestigungen GmbH In der Stockwiese 35 57334 Bad Laasphe DEUTSCHLAND

EJOT 1, 2, 3, 4 EJOT 1, 2, 3, 4

25 pages including 3 annexes which form an integral part of this assessment

European Assessment Document (EAD) 330335-00-0604

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Specific Part

1 Technical description of the product

The screwed-in anchor ejotherm S consists of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of polyethylene (plate type A) or polyamide (plate type B) and an accompanying specific screw of galvanised steel or stainless steel. The head of screw type A has an overmoulding of polyamide. The serrated expanding part of the anchor sleeve is slotted.

The nailed-in anchor ejotherm N consists of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of polyethylene (plate type A) or polyamide (plate type B) and an accompanying specific nail of galvanised steel with an overmoulding of polyamide. The serrated expanding part of the anchor sleeve is slotted.

The anchors ejotherm S and ejotherm N may in addition be combined with the anchor plates SBL 140 plus and VT 90. The anchor ejotherm S may in addition be combined with the anchor plate VT 2G.

An illustration and the description of the product are 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)

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

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance	
Point thermal transmittance	See Annex C 2	



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

In accordance with EAD No. 330335-00-0604, 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 10 March 2017 by Deutsches Institut für Bautechnik

Uwe Bender Head of Department *beglaubigt:* Ziegler













Z4198.17









 $\begin{array}{ll} h_D & = L_a - t_{tol} - h_{ef} \\ e.g. \ h_D & = 215 - 10 - 25 \end{array} \begin{array}{ll} (L_a = e.g. \ 215; t_{tol} = 10) \\ h_{Dmax} = 180 \end{array}$

ejotherm S and ejotherm N

Product description

ejotherm S - marking and dimensions, mounting tool, use categories: A,B,C,D countersunk into insulation



ejotherm S (type A + B) / use category E / countersunk into insulation Ø60 Ø60 Insulation cover h_{ef} h_R d_R d_{nom} marking of effective anchorage depth type A: type B: Marking: anchor plate anchor plate Identifying mark (z.B. EJOT) Anchor type (ejotherm S) Length of anchor (e.g. 135) Use category (A,B,C,D, E) I_{s} stop plate type A: mounting tool screw drive С U. σ D type A: moulded screw die stop plate. s screw drive С type B: mounting tool ő type B: steel screw die

Table A 4: Dimensions								
Anchor		Anchor	Sleeve		Specif	ic screw	Insulat	ion cover
Type	d _{nom}	h _{ef}	min L _{a -} max L _a	ds	С	min I _s - max I _s		
туре	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	h _R	d _R
oiothorm S	8	45	115 - 295	5,5	60	type A: 115 - 295	15	65
ejomenn 5						type B: 88 - 188		

Determination of maximum thickness of insulation h_D [mm] ejotherm S:

 $\begin{array}{ll} h_D & = L_a - t_{tol} - h_{ef} & (L_a = e.g. \ 215; \ t_{tol} = 10) \\ e.g. \ h_D & = 215 - 10 - 45 & h_{Dmax} = 160 \end{array}$

ejotherm S and ejotherm N

Product description

ejotherm S - marking and dimensions, mounting tool, use category: E countersunk into insulation













Table A 6: Dimensions						
Anchor		Anchor Sleev	е		Specific nai	l
Туре	d _{nom}	h _{ef}	min L _a max L _a	d _n	с	min I _n max I _n
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ejotherm N (type A+B)	8	45	95 295	4,13	60	95 295

Determination of maximum thickness of insulation h_D [mm] for ejotherm N:

 $\begin{array}{ll} h_{D} &= L_{a} - t_{tol} - h_{ef} \\ e.g. & h_{D} &= 215 - 10 - 45 \\ h_{Dmax} &= 160 \end{array}$

 $(L_a = e.g. \ 215; t_{tol} = 10)$

ejotherm S and ejotherm N

Product description

ejotherm N - marking and dimensions, use category: E, mounting flushed at the surface

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Anchor sleeve	Polyethylene, PE-HD
	colours: nature, yellow, orange, red, blue, grey, green
Anchor plate (type A)	Polyethylene, PE-HD
	colours: nature, yellow, orange, red, blue, grey, green
Anchor plate (type B)	Polyamid, PA GF 50
	colours: nature, yellow, orange, red, blue, grey, green
Plastic moulding of the screw	Polyamide, PA GF 50
for ejotherm S	colours: nature, black
(for anchor plate type A)	
Plastic moulding of the nail	Polyamide, PA GF 50
for ejotherm N	colours: nature, black
(for anchor plate type A+B)	
Insulation cover	Polystyrene EPS 20
(for anchor plate type A+B)	
	Mineral-Wool HD
anchor cap	Polystyrene EPS 30
for ejotherm S (type B)	
Specific screw	Steel 5.8, electro galvanized \ge 5 µm according to EN ISO 4042:2001,
for ejotherm S	blue passivated
	Stainless steel, according to ISO 3506
	material number 1.4401 or 1.4571
	material number 1.4301 or 1.4567
Specific nail	Steel, electro galvanized \geq 5 µm according to EN ISO 4042:2001,
for ejotherm N	blue passivated, f _{yk} ≥ 670 N/mm²

ejotherm S and ejotherm N

Product description Materials of ejotherm S and ejotherm N





SBL 140 plus					
colour	nature				
d _d [mm]	20,0				
d [mm]	2,0				
Material	1) 2)				

VT 90						
colour	nature					
d _d [mm]	18,5					
d [mm]	1,2					
Material	1) 2)					

¹⁾ Polyamide, PA 6 ²⁾ Polyamide, PA GF 50



ejotherm S (type A+B) VT 2G CLUB CLUB VT 2G colour nature d_d [mm] 29,0 d [mm] 1,5 Ø112.5 1) Material d ¹⁾ Polyamide, PA GF 50

ejotherm S and ejotherm N

Product description Slip on plates with ejotherm S

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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 C1.
- Solid masonry (use category B), according to Annex C1.
- Hollow or perforated masonry (use category C), according to Annex C1.
- · Lightweight aggregate concrete (use category D), according to Annex C1.
- Autoclaved aerated concrete (use category E), according to Annex C1.
- For other base materials of the use categories A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051 edition December 2016.

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 EAD 330335-00-0604 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 C1.
- 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

ejotherm S and ejotherm N

Intended use Specifications

Annex B 1



Table B1: Installation parameters							
Anchor type	ejothe	ərm N	ejotherm S				
		ABCD	E	ABCD	E		
Drill hole diameter	$d_0 [mm] =$	8	8	8	8		
Cutting diameter of drill bit	d _{cut} [mm] ≤	8,45	8,45	8,45	8,45		
Depth of drill hole to deepest point							
- deep mounting	h₁ [mm] ≥			50	70		
- mounting on the surface	h₁ [mm] ≥	35	55	35	55		
Effective anchorage depth	h _{ef} [mm] ≥	25	45	25	45		

Table B2: Anchor distances and dimensions of members							
Anchor type				ejotherm S / ejotherm N			
Minimum allowable spacing	s _{min}	≥	[mm]	100			
Minimum allowable edge distance	C _{min}	≥	[mm]	100			
Minimum thickness of member							
				100			
- deep mounting	h	≥	[mm]	40			
				(only skins of concrete)			
				100			
- mounting on the surface	h	≥	[mm]	40			
				(only skins of concrete)			

Scheme of distance and spacing



ejotherm S and ejotherm N

Intended use

Installations parameters, Edge distances and spacing

Annex B 2

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Anchor type					ejotherm	ejotherm
	1		1		N	S
Base materials	Bulk density p [kg/dm³]	minimum compressive strength f _b [N/mm ²]	General remarks	Drill method	N _{Rk}	N _{Rk}
Concrete C12/15		[]			[]	[]
EN 206-1:2000				hammer	0,75	0,9
Concrete C20/25 – C50/60 EN 206-1:2000				hammer	1,2	1,5
Concrete C20/25 – C50/60 Thin members EN 206-1:2000 (thin members)			Thickness of the skin 100 mm > h ≥ 40 mm	hammer	1,2	1,5
Clay bricks, Mz e.g. according to EN 771-1:2011	≥ 1,8	36	Vertically perforation up to 15 %.	hammer	1,5	1,5
Sand-lime solid bricks, KS e.g. according to EN 771-2:2011	≥ 1,8	16	Vertically perforation up to 15 %.	hammer	1,5	1,5
Vertically perforated clay bricks, HLz e.g. according to EN 771-1:2011	≥ 1,4	16	Vertically perforation ≥ 15 % and ≤ 50 %. outer web thickness ≥ 14 mm	rotary	0,9 ¹⁾	1,5 ¹⁾
Sand-lime perforated bricks, KSL e.g. according to EN 771-2:2011	≥ 1,4	12	Vertically perforation ≥ 15 %. outer web thickness ≥ 20 mm	rotary	0,9 ²⁾	1,5 ²⁾
Lightweight concrete hollow blocks, Hbl e.g. according to EN 771-3:2011	≥ 0,9	4	Vertically perforation ≥ 15 %. outer web thickness ≥ 30 mm	rotary	0,6 ³⁾	1,2 ³⁾
Lightweight aggregate concrete LAC 8 – LAC 25 e.g. according to EN 771-3:2011	≥ 1,2	8		hammer	0,6	0,75
Autoclaved aerated concrete AAC4 – AAC 7 e.g. according to EN 771-4:2011	≥ 0,55	4		rotary	0,75	0,75

¹⁾ The value applies only for outer web thickness \geq 14 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.

²⁾ The value applies only for outer web thickness ≥ 20 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.
³⁾ The value applies only for outer web thickness ≥ 20 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.

The value applies only for outer web thickness \geq 30 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.

ejotherm S and ejotherm N

Performances Characteristic resistance Annex C 1



Table C2: Point thermal transmittance according EOTA Technical Report TR 025:2007-06						
	insulation thickness	point thermal transmittance				
anchor type	h _D [mm]	χ [W/K]				
ejotherm N (type A+B)	60 – 260	0,001				
ejotherm S (type A+B), countersunk	80 – 260	0,001				
ejotherm S (type A+B), flushed	80 – 260	0,002				

Table C3: Plate stiffness according EOTA Technical Report TR 026:2007-06							
anchor type	diameter of the anchor plate [mm]	load resistance of the anchor plate [kN]	plate stiffness [kN/mm]				
ejotherm N / ejotherm S (type A)	60	1,1	1,1				
ejotherm N / ejotherm S (type B)	60	2,7	1,5				

Table C4: Displacements					
Base materials	Bulk density	Min. compressive	Tension Load N [kN] ejotherm N / S	Displacements $\delta_{_{(N)}}$ [mm]	
	ρ [kg/dm³]	f _b [N/mm²]		ejotherm N	ejotherm S
Concrete C20/25 – C50/60 (EN 206-1:2000)			0,4 / 0,5	0,4	0,4
Clay bricks, Mz (EN 771-1:2011)	≥ 1,8	36	0,5 / 0,5	0,3	0,3
Sand-lime solid bricks, KS (EN 771-2:2011)	≥ 1,8	16	0,5 / 0,5	0,4	0,4
Vertically perforated clay bricks, HLz (EN 771-1:2011)	\geq 1,4	16	0,3 / 0,5	0,2	0,4
Sand-lime perforated bricks, KSL (EN 771-2:2011)	\geq 1,4	12	0,3 / 0,5	0,3	0,3
Lightweight concrete hollow blocks, Hbl (EN 771-3:2011)	\geq 0,9	4	0,2 / 0,4	0,2	0,2
Lightweight aggregate concrete, LAC 8 – LAC 25 (EN 771-3:2011)	≥1,2	8	0,2 / 0,25	0,2	0,2
Autoclaved aerated concrete, AAC 4 – AAC 7 (EN 771-4:2011)	≥ 0,55	4	0,25 / 0,25	0,3	0,3

ejotherm S and ejotherm N

Performances

Point thermal transmittance, plate stiffness and displacements for ejotherm N / ejotherm S

Annex C 2