

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-11/0192
of 29 May 2015

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

EJOT H1 eco and EJOT H4 eco

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

EJOT Baubefestigungen GmbH
In der Stockwiese 35
57334 Bad Laasphe
DEUTSCHLAND

Manufacturing plant

EJOT Herstellwerk 1, 2, 3, 4

This European Technical Assessment
contains

18 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.

This version replaces

ETA-11/0192 issued on 29 January 2015

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Specific part

1 Technical description of the product

The nailed-in anchors EJOT H1 eco and EJOT H4 eco consist of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of polyethylene, a mounting plug made of polyamide and accompanying specific nail of galvanised steel. For the anchor length of 95 mm (only H1 eco) and for the anchor length of 115 – 135 mm (only H4 eco) the accompanying specific nail of galvanised steel has an overmoulding of polyamide. The serrated expanding part of the anchor sleeve is slotted.

The anchor may in addition be combined with the anchor plates SBL 140 plus and VT 90.

An illustration and the description of the product are given in Annex A.

2 Specification of the intended use in accordance with the applicable EAD

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 Safety in case of fire (BWR 2)

Not applicable.

3.3 Hygiene, health and the environment (BWR 3)

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

3.4 Safety 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, C 3
Plate stiffness	See Annex C 2, C 3
Displacements	See Annex C 2, C 3

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3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

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

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

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

According to Decision 97/463/EC of the Commission of 27 June 1997 (Official Journal of the European Communities L 198 of 25.07.1997, p. 31–32) the system of assessment and verification of constancy of performance (AVCP) (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or class	System
Plastic anchors for use in concrete and masonry	For use in systems, such as façade systems, for fixing or supporting elements which contribute to the stability of the systems	—	2+

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

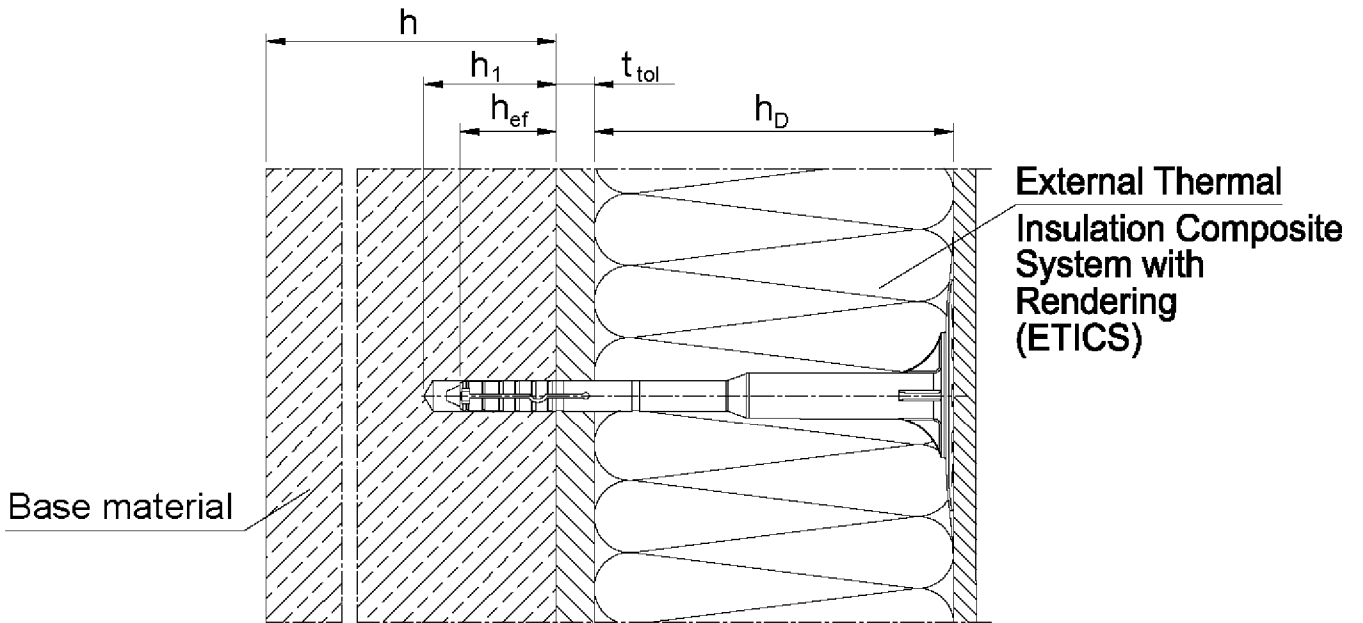
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

Issued in Berlin on 29 May 2015 by Deutsches Institut für Bautechnik

Uwe Bender
Head of Department

beglaubigt:
Ziegler

EJOT H1 eco



Intended use

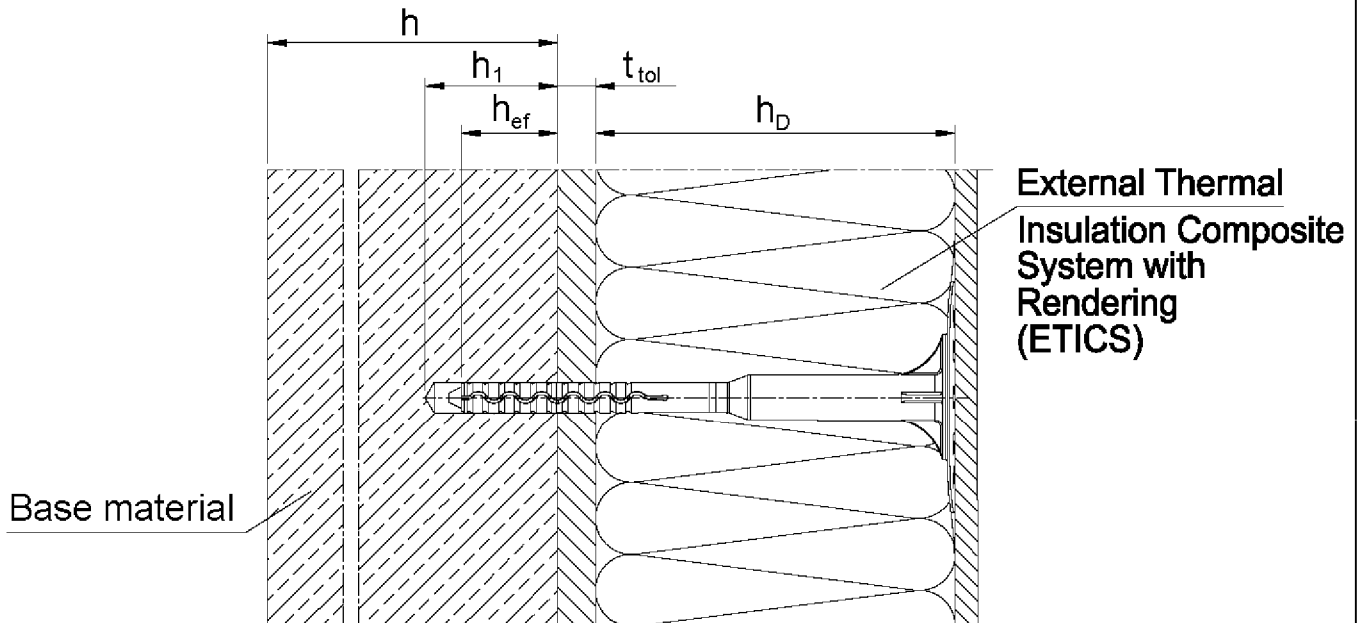
- Anchorage of ETICS in concrete and masonry
- Anchorage of ETICS in autoclaved aerated concrete and lightweight aggregate concrete

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

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EJOT H1 eco and EJOT H4 eco	Annex A 1
Product description Installed condition EJOT H1 eco	

EJOT H4 eco



Intended use

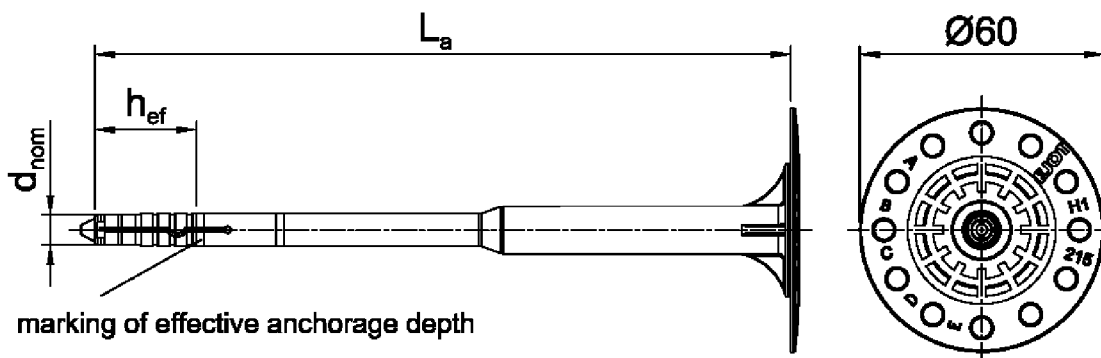
- Anchorage of ETICS in concrete and masonry
- Anchorage of ETICS in autoclaved aerated concrete and lightweight aggregate concrete

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

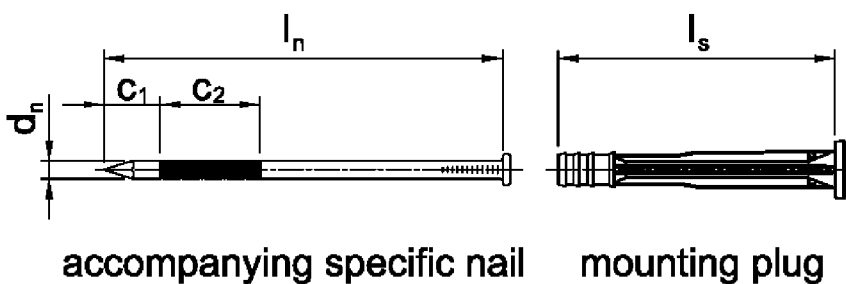
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EJOT H1 eco and EJOT H4 eco	Annex A 2
Product description Installed condition EJOT H4 eco	

EJOT H1 eco / use category: A, B, C



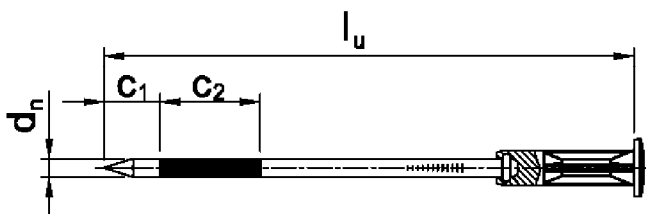
marking of effective anchorage depth



accompanying specific nail

mounting plug

Marking:
Identifying mark (EJOT)
Anchor type (H1 eco)
Length of anchor (e.g. 175)



Length of anchor 95mm: accompanying specific nail with overmolding

Table A1: Dimensions

Anchor Type	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]	c_1 [mm]	c_2 [mm]	min l_n max l_n [mm]
EJOT H1 eco	8	25	95 295	32 110	4,5	14	25	60 180	90

Determination of maximum thickness of insulation h_D [mm] for EJOT H1 eco:

$$h_D = L_a - t_{tol} - h_{ef} \quad (L_a = \text{e.g. } 175; t_{tol} = 10)$$

e.G. $h_D = 175 - 10 - 25$
 $h_{Dmax} = 140$

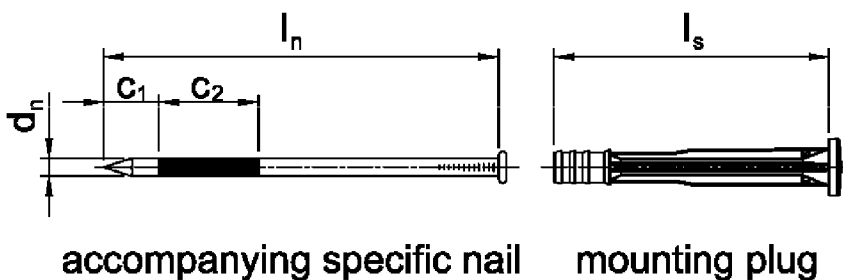
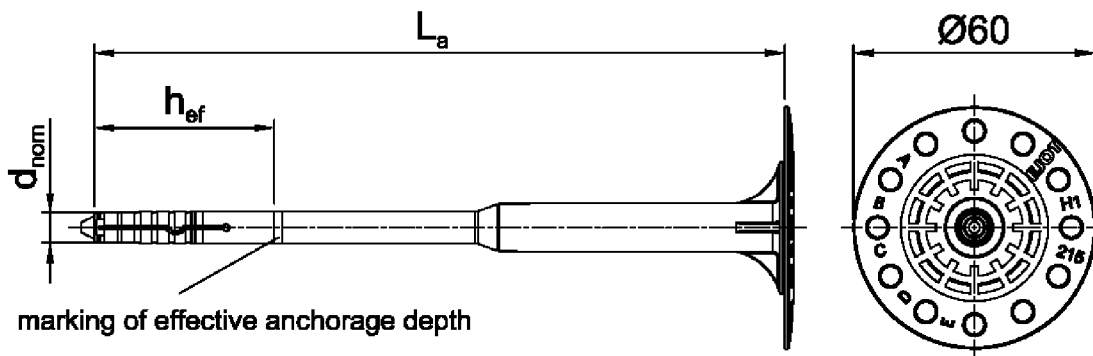
EJOT H1 eco and EJOT H4 eco

Product description

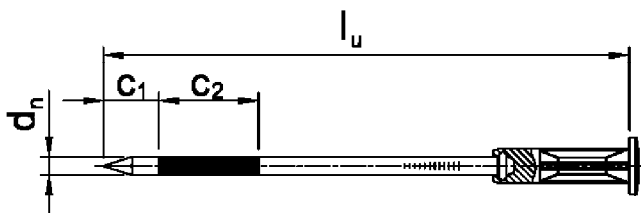
Marking and dimension of the anchor sleeve EJOT H1 eco; use category: A, B, C
Expansion element

Annex A 3

EJOT H1 eco / use category: D and E



Marking:
Identifying mark (EJOT)
Anchor type (H1 eco)
Length of anchor (e.g. 175)



Length of anchor 95mm: accompanying specific nail with overmolding

Table A2: Dimensions

Anchor Type	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]	c_1 [mm]	c_2 [mm]	min l_n max l_n [mm]
EJOT H1 eco	8	45	95 295	32 110	4,5	14	25	60 180	90

Determination of maximum thickness of insulation h_D [mm] for EJOT H1 eco:

$$h_D = L_a - t_{tol} - h_{ef} \quad (L_a = \text{e.g. } 175; t_{tol} = 10)$$

e.g. $h_D = 175 - 10 - 45$
 $h_{Dmax} = 120$

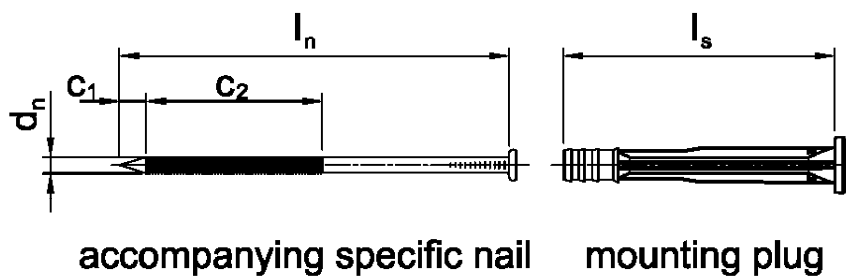
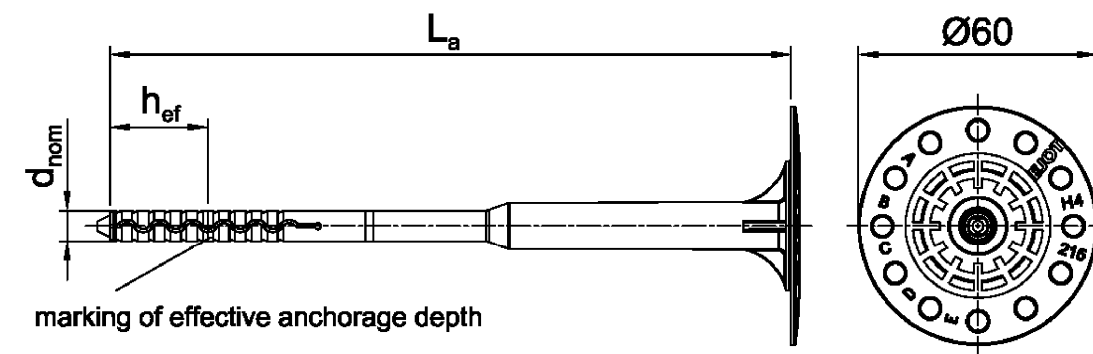
EJOT H1 eco and EJOT H4 eco

Product description

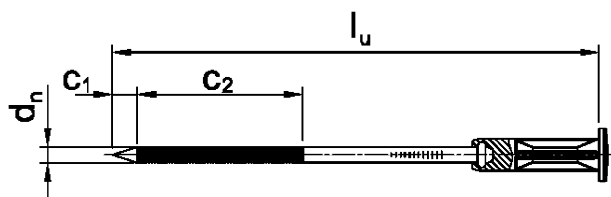
Marking and dimension of the anchor sleeve EJOT H1 eco; use category: D and E
Expansion element

Annex A 4

EJOT H4 eco / use category: A, B, C



Marking:
Identifying mark (EJOT)
Anchor type (H4 eco)
Length of anchor (e.g. 215)



Length of anchor 115mm - 135mm: accompanying specific nail with overmolding

Table A3: Dimensions

Anchor Type	Anchor Sleeve			Mounting Plug / overmolding	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]	c ₁ [mm]	c ₂ [mm]	min l _n max l _n [mm]
EJOT H4 eco	8	25	155 295	72 110	4,3	7	45	80 180	-
EJOT H4 eco	8	25	115 135	32	4,3	7	45	-	110 130

Determination of maximum thickness of insulation h_D [mm] for EJOT H4 eco:

$$h_D = L_a - t_{tol} - h_{ef} \quad (L_a = \text{e.g. } 215; t_{tol} = 10)$$

e.g. $h_D = 215 - 10 - 25$
 $h_{Dmax} = 180$

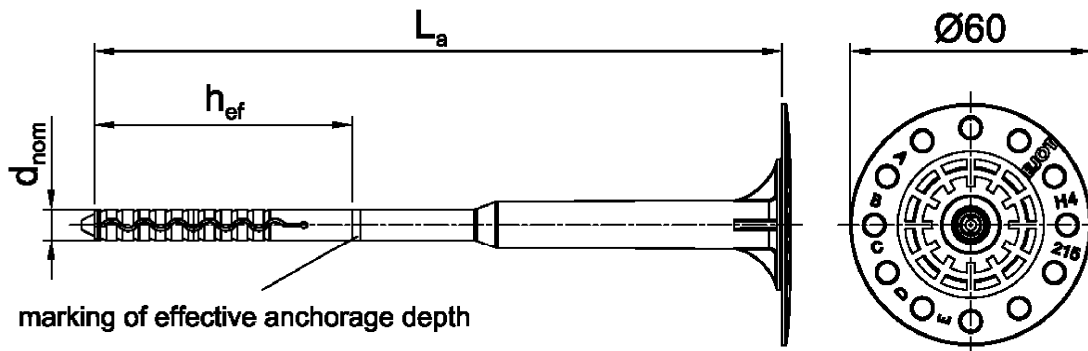
EJOT H1 eco and EJOT H4 eco

Product description

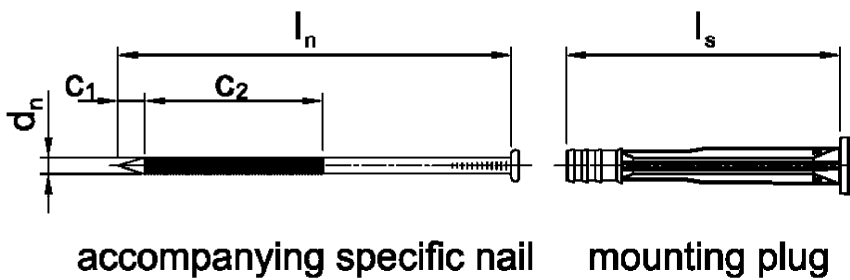
Marking and dimension of the anchor sleeve EJOT H4 eco; use category: A, B, C
Expansion element

Annex A 5

EJOT H4 eco / use category: D and E



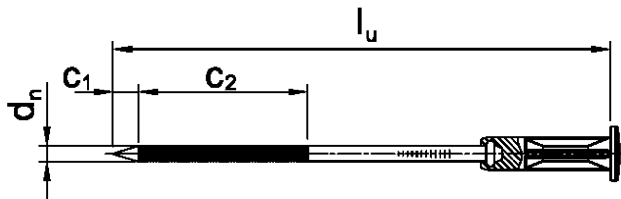
marking of effective anchorage depth



accompanying specific nail

mounting plug

Marking:
Identifying mark (EJOT)
Anchor type (H4 eco)
Length of anchor (e.g. 215)



Length of anchor 115mm - 135mm: accompanying specific nail with overmolding

Table A4: Dimensions

Anchor Type	Anchor Sleeve			Mounting Plug / overmolding	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]	c ₁ [mm]	c ₂ [mm]	min l _n max l _n [mm]
EJOT H4 eco	8	65	155 295	72 110	4,3	7	45	80 180	-
EJOT H4 eco	8	65	115 135	32	4,3	7	45	-	110 130

Determination of maximum thickness of insulation h_D [mm] EJOT H4 eco:

$$h_D = L_a - t_{tol} - h_{ef} \quad (L_a = \text{e.g. } 215; t_{tol} = 10)$$

e.g. $h_D = 215 - 10 - 65 = 140$
 $h_{Dmax} = 140$

EJOT H1 eco and EJOT H4 eco

Product description

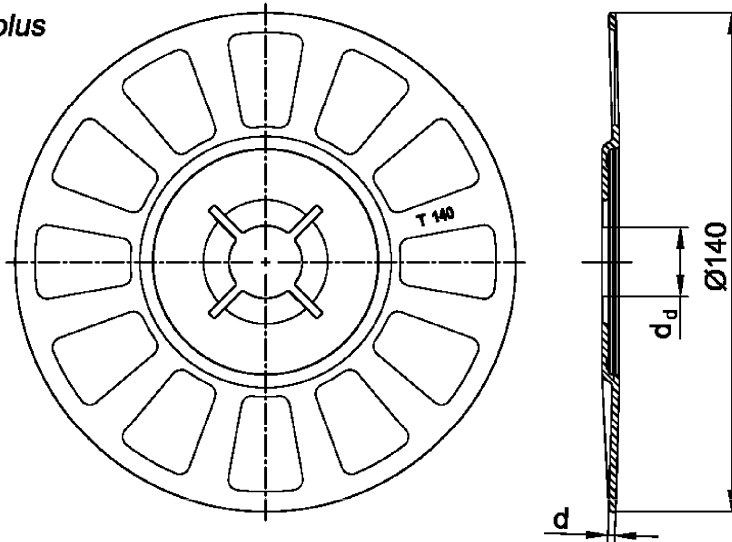
Marking and dimension of the anchor sleeve EJOT H4 eco; use category: D and E
Expansion element

Annex A 6

Table A5: Materials

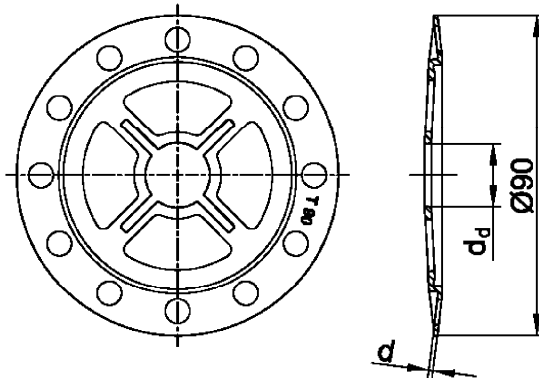
Name	Materials
Anchor sleeve	Polyethylene, PE-HD colours: yellow, orange, red, blue, grey, nature, green
Mounting plug	Polyamide, PA GF 50
Specific nail	Steel, electro galvanized $\geq 5 \mu\text{m}$ according to EN ISO 4042:2001, blue passivated, $f_{yk} \geq 670 \text{ N/mm}^2$

SBL 140 plus



SBL 140 plus	
colour	nature
d_d [mm]	20,0
d [mm]	2,0
Material	^{1) 2)}

VT 90



VT 90	
colour	nature
d_d [mm]	17,5
d [mm]	1,2
Material	^{1) 2)}

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

EJOT H1 eco and EJOT H4 eco

Product description

Materials of EJOT H1 eco and EJOT H4 eco,
Slip on plates with EJOT H1 eco and EJOT H4 eco

Annex A 7

Specifications of intended use

Anchorage 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
- Lightweight aggregate concrete (use category D), according to Annex C 1
- Autoclaved aerated concrete (use category E), according to Annex C 1
- 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 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

EJOT H1 eco und EJOT H4 eco

Intended use
Specifications

Annex B 1

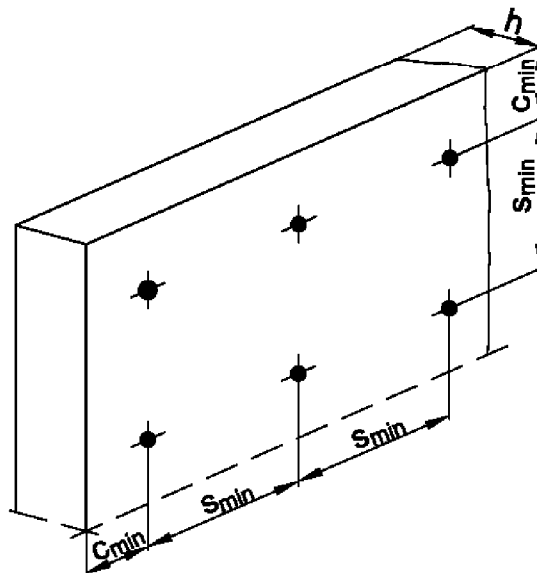
Table B1: Installation parameters

Anchor type		EJOT H1 eco		EJOT H4 eco	
		A B C	D and E	A B C	D and 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 drilled hole to deepest point	h_1 [mm] ≥	35	55	35	75
Effective anchorage depth	h_{ef} [mm] ≥	25	45	25	65

Table B2: Anchor distances and dimensions of members

Anchor type		EJOT H1 eco / EJOT H4 eco
Minimum allowable spacing	$s_{min} \geq$ [mm]	100
Minimum allowable edge distance	$c_{min} \geq$ [mm]	100
Minimum thickness of member	$h \geq$ [mm]	100

Scheme of distance and spacing



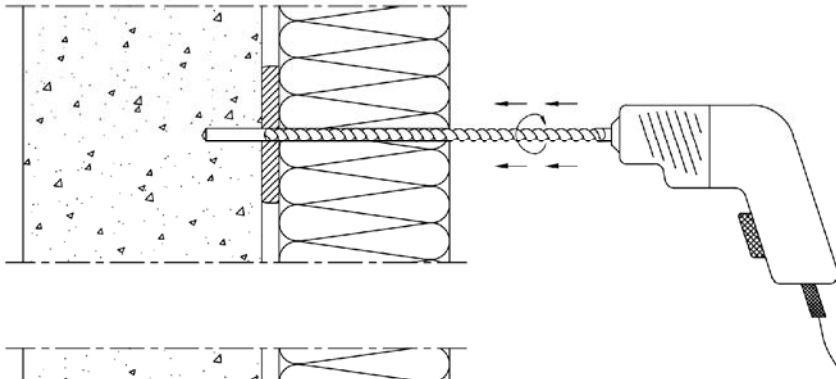
EJOT H1 eco and EJOT H4 eco

Intended use

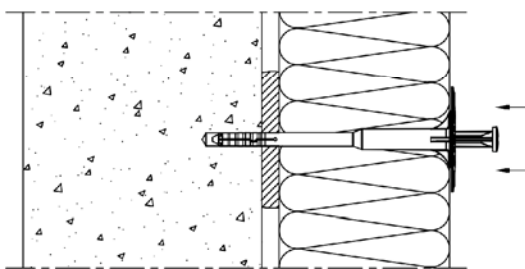
Installations parameters,
Edge distances and spacing

Annex B 2

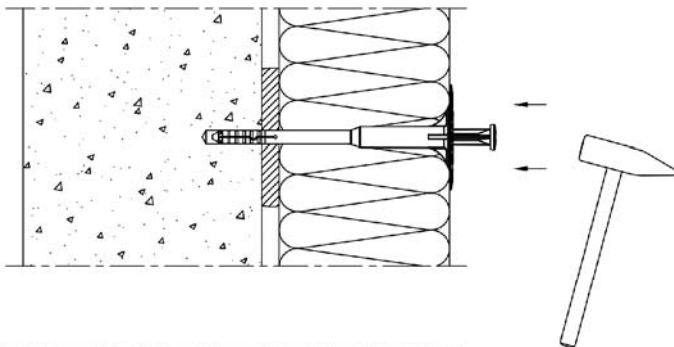
Installation instructions EJOT H1 eco



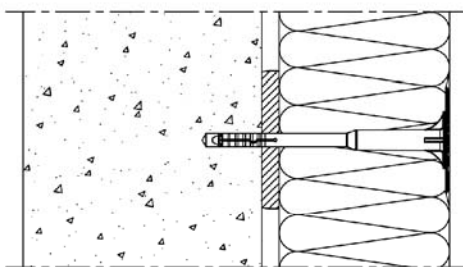
Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.



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 of
EJOT H1 eco.

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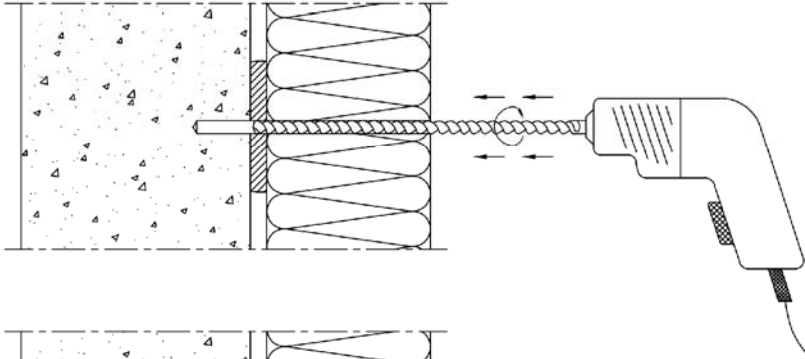
EJOT H1 eco and EJOT H4 eco

Intended use

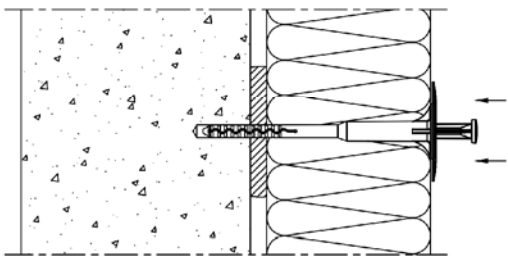
Installation instructions EJOT H1 eco

Annex B 3

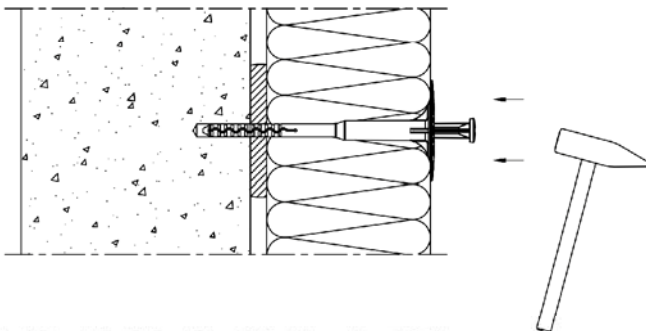
Installation instructions EJOT H4 eco



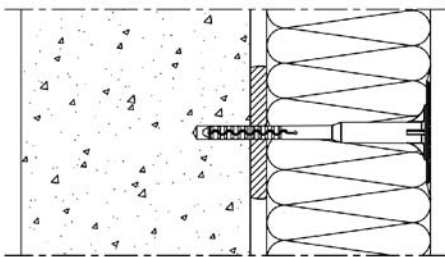
Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.



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 of
EJOT H4 eco.

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EJOT H1 eco and EJOT H4 eco

Intended use
Installation instructions EJOT H4 eco

Annex B 4

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

Anchor type					EJOT H1 eco	EJOT H4 eco
Base materials	Bulk density class ρ [kg/dm ³]	minimum compressive strength f_b [N/mm ²]	General remarks	Drill method	N_{Rk} [kN]	N_{Rk} [kN]
Concrete C12/15 EN 206-1:2000				hammer	0,90	0,50
Concrete C25/25 – C50/60 EN 206-1:2000				hammer	0,90	0,75
Clay bricks, Mz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	$\geq 1,8$	12	Vertically perforation up to 15 %	hammer	0,90	0,75
Sand-lime solid bricks, KS e.g. according to DIN V 106:2005-10 / EN 771-2:2011	$\geq 1,8$	12	Vertically perforation up to 15 %	hammer	0,90	0,75
Vertically perforated clay bricks, HLz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	$\geq 1,2$	20	Vertically perforation more than 15 % and less than 50 %	rotary	0,75 ¹⁾	-
Vertically perforated clay bricks, HLz e.g. according to DIN 105-100:2012-01 / EN 771-1:2011	$\geq 0,9$	12	Vertically perforation more than 15 % and less than 50 %	rotary	0,60 ²⁾	0,50 ²⁾
Sand-lime perforated bricks, KSL e.g. according to DIN V 106:2005-10 / EN 771-2:2011	$\geq 1,4$	12	Vertically perforation more than 15 %	rotary	0,9 ³⁾	0,75 ³⁾
Lightweight aggregate concrete, LAC 4 – LAC 25 e.g. according to EN 1520:2011 / EN 771-3:2011	$\geq 1,2$	4		hammer	0,9	1,2
Autoclaved aerated concrete, AAC 4 – AAC 7 e.g. according to DIN V 4165-100:2005-11 / EN 771-4:2011	$\geq 0,6$	4		rotary	0,5	0,5

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

²⁾ The value applies only for outer web thickness ≥ 11 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.

EJOT H1 eco and H4 eco

Performances
Characteristic resistance

Annex C 1

EJOT H1 eco

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]
EJOT H1 eco	60 – 260	0,001

Table C3: Plate stiffness according EOTA Technical Report TR 026:2007-06

anchor type	diameter of the anchor plate [mm]	load resistance off the anchor plate [kN]	plate stiffness [kN/mm]
EJOT H1 eco	60	1,4	0,60

Table C4: Displacements EJOT H1 eco

Base materials	Bulk density class ρ [kg/dm ³]	Minimum Compressive strength f_b [N/mm ²]	Tension load N [kN]	Displacements $\delta(N)$ [mm]
Concrete C12/15 – C50/60 (EN 206-1:2000)			0,3	0,3
Clay bricks, Mz (DIN 105-100:2012-01 / EN 771-1:2011)	$\geq 1,8$	12	0,3	0,3
Sand-lime solid bricks, KS (DIN V 106:2005-10 / EN 771-2:2011)	$\geq 1,8$	12	0,3	0,3
Vertically perforated clay bricks, HLz (DIN 105-100:2012-01 / EN 771-1:2011)	$\geq 1,2$	20	0,25	0,4
Vertically perforated clay bricks, HLz (DIN 105-100:2012-01 / EN 771-1:2011)	$\geq 0,9$	12	0,2	0,2
Sand-lime perforated bricks, KSL (DIN V 106:2005-10 / EN 771-2:2011)	$\geq 1,4$	12	0,3	0,3
Lightweight aggregate concrete, LAC 4 – LAC 25 (EN 1520:2011 / EN 771-3:2011)	$\geq 1,2$	4	0,3	1,1
Autoclaved aerated concrete, AAC 4 – AAC 7 (DIN V 4165-100:2005-11 / EN 771-4:2011)	$\geq 0,6$	4	0,17	0,7

EJOT H1 eco and EJOT H4 eco

Performances

Point thermal transmittance, plate stiffness, displacements for EJOT H1 eco

Annex C 2

EJOT H4 eco

Table C5: Point thermal transmittance according EOTA Technical Report TR 025:2007-06

anchor type	insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
EJOT H4 eco	60 – 260	0,002

Table C6: 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]
EJOT H4 eco	60	1,4	0,60

Table C7: Displacements EJOT H4 eco

Base materials	Bulk density class ρ [kg/dm ³]	Minimum Compressive strength f_b [N/mm ²]	Tension load N [kN]	Displacements $\delta(N)$ [kN/mm]
Concrete C12/15 – C50/60 (EN 206-1:2000)			0,3	0,6
Clay bricks, Mz (DIN 105-100:2012-01 / EN 771-1:2011)	$\geq 1,8$	12	0,25	0,4
Sand-lime solid bricks, KS (DIN V 106:2005-10 / EN 771-2:2011)	$\geq 1,8$	12	0,25	0,4
Vertically perforated clay bricks, HLz (DIN 105-100:2012-01 / EN 771-1:2011)	$\geq 0,9$	12	0,15	0,6
Sand-lime perforated bricks, KSL (DIN V 106:2005-10 / EN 771-2:2011)	$\geq 1,4$	12	0,25	0,4
Lightweight aggregate concrete, LAC 4 – LAC 25 (EN 1520:2011 / EN 771-3:2011)	$\geq 1,2$	4	0,4	1,3
Autoclaved aerated concrete, AAC 4 – AAC 7 (DIN V 4165-100:2005-11 / EN 771-4:2011)	$\geq 0,6$	4	0,17	0,6

EJOT H1 eco and EJOT H4 eco

Performances

Point thermal transmittance, plate stiffness, displacements for EJOT H4 eco

Annex C 3