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-11/0192 of 22 January 2020

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 manufacturing plant 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	EAD 330196-01-0604
This version replaces	ETA-11/0192 issued on 5 January 2018

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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 virgin 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 may have 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 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 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic tension resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 2, C 3
Displacements	See Annex C 2, C 3

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2, C 3

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

In accordance with EAD No. 330196-01-0604, 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.

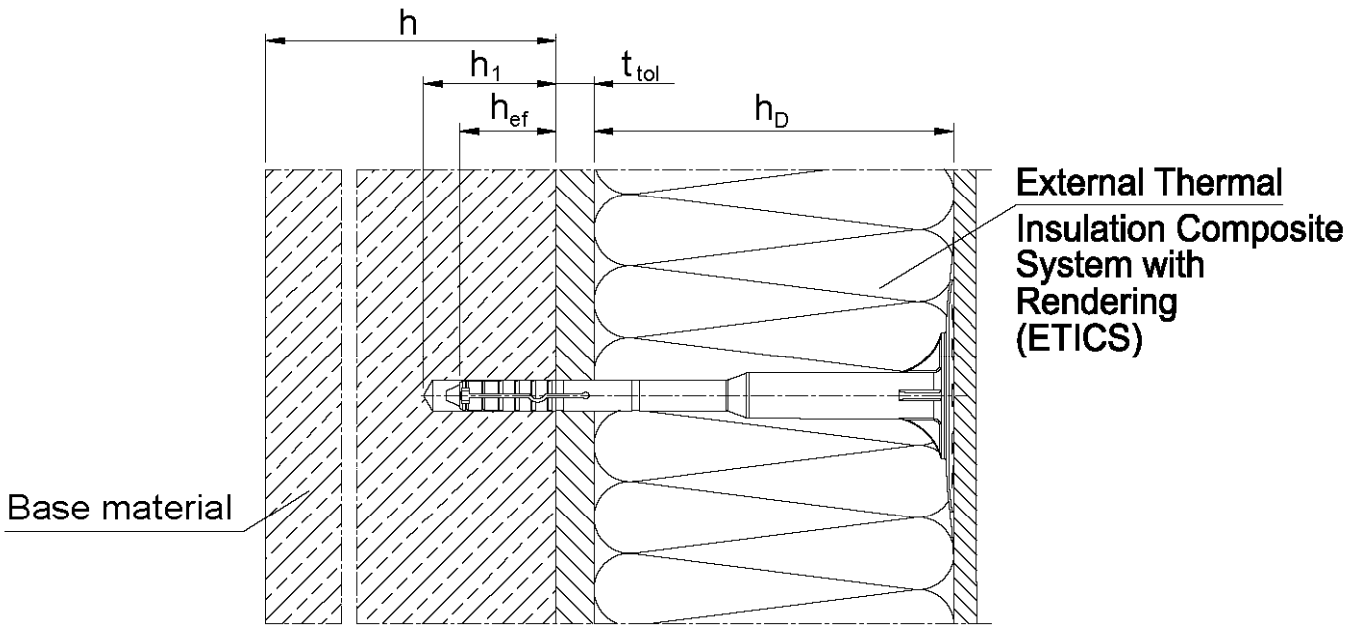
Issued in Berlin on 22 January 2020 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Ziegler

Deutsches Institut für Bautechnik DIBt

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

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

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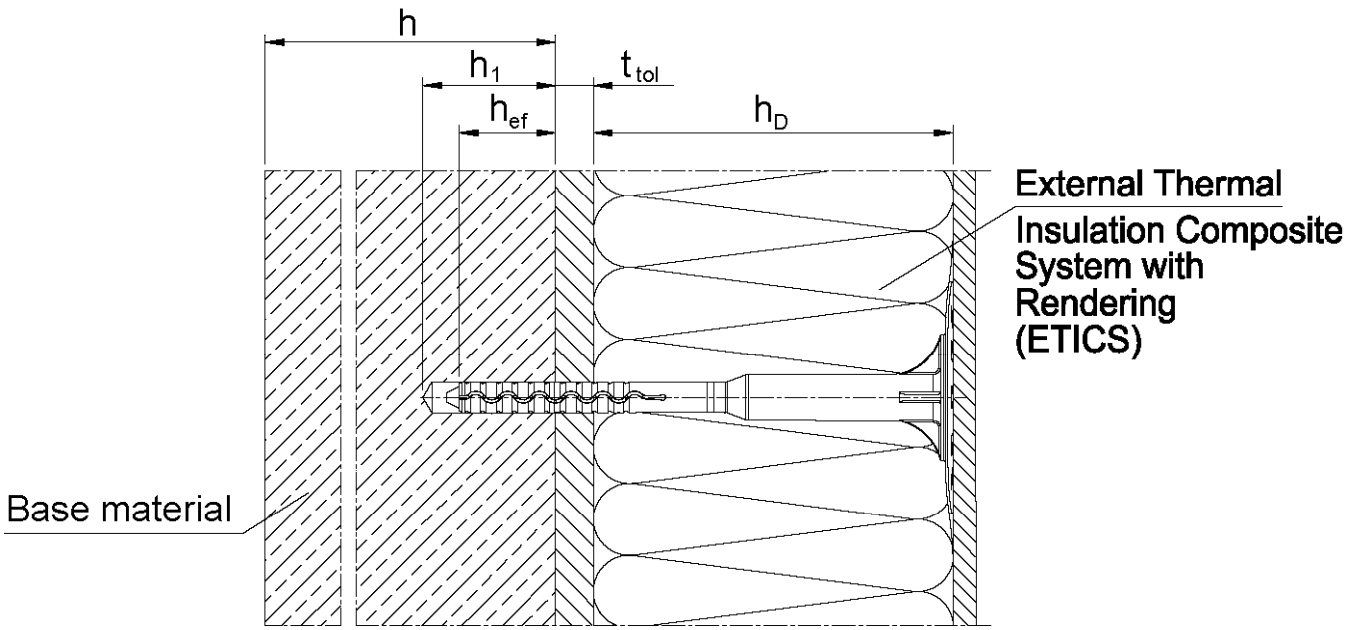
EJOT H4 eco



Intended use

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

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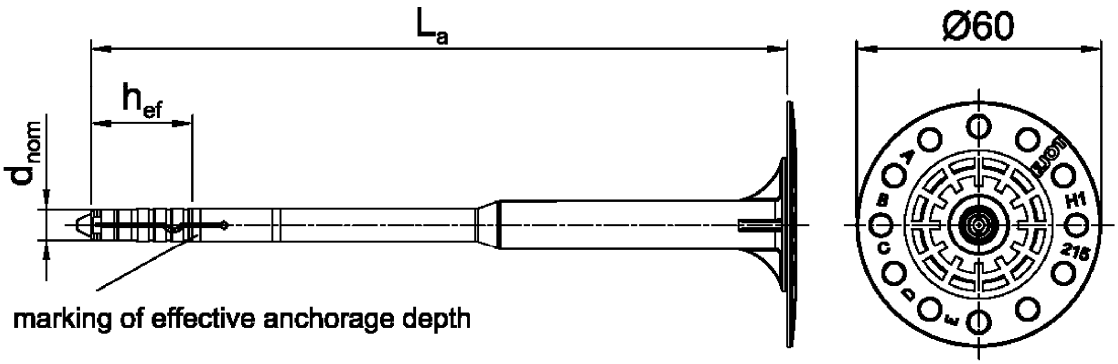
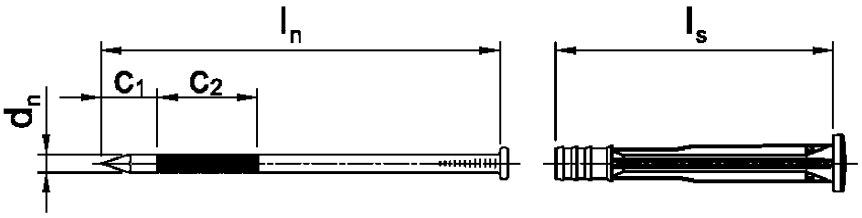
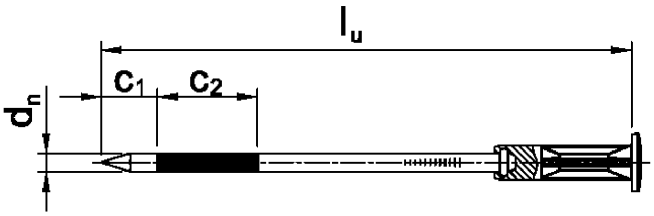
EJOT H1 eco / use category: A, B, C





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]	l_u [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:

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

e.G. $h_D = 175 - 10 - 25$

$h_{Dmax} = 140$

EJOT H1 eco and EJOT H4 eco

Annex A 3

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

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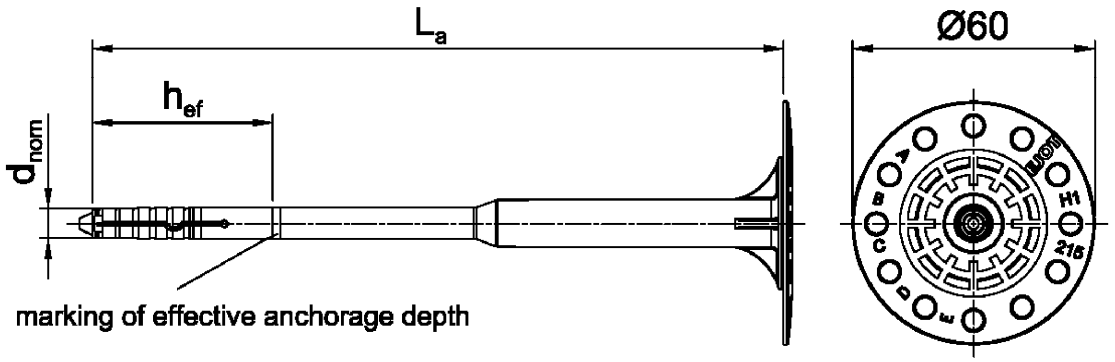
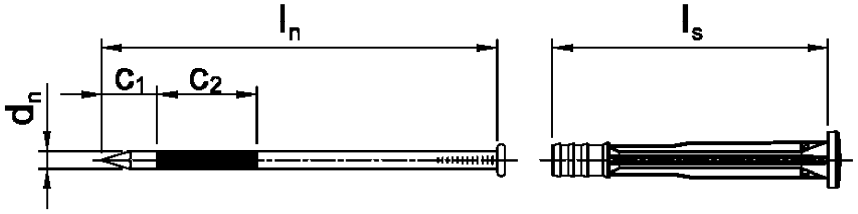
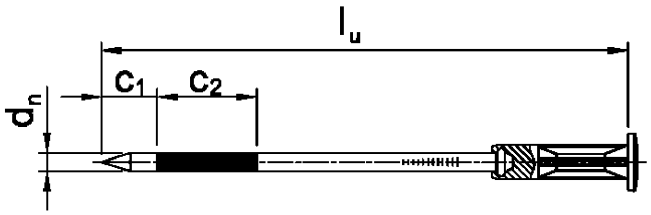
EJOT H1 eco / use category: D and E





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 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]	l_u [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:

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

e.g. $h_D = 175 - 10 - 45$

$h_{Dmax} = 120$

EJOT H1 eco and EJOT H4 eco	**Annex A 4**
Product description Marking and dimension of the anchor sleeve EJOT H1 eco; use category: D and E Expansion element	

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

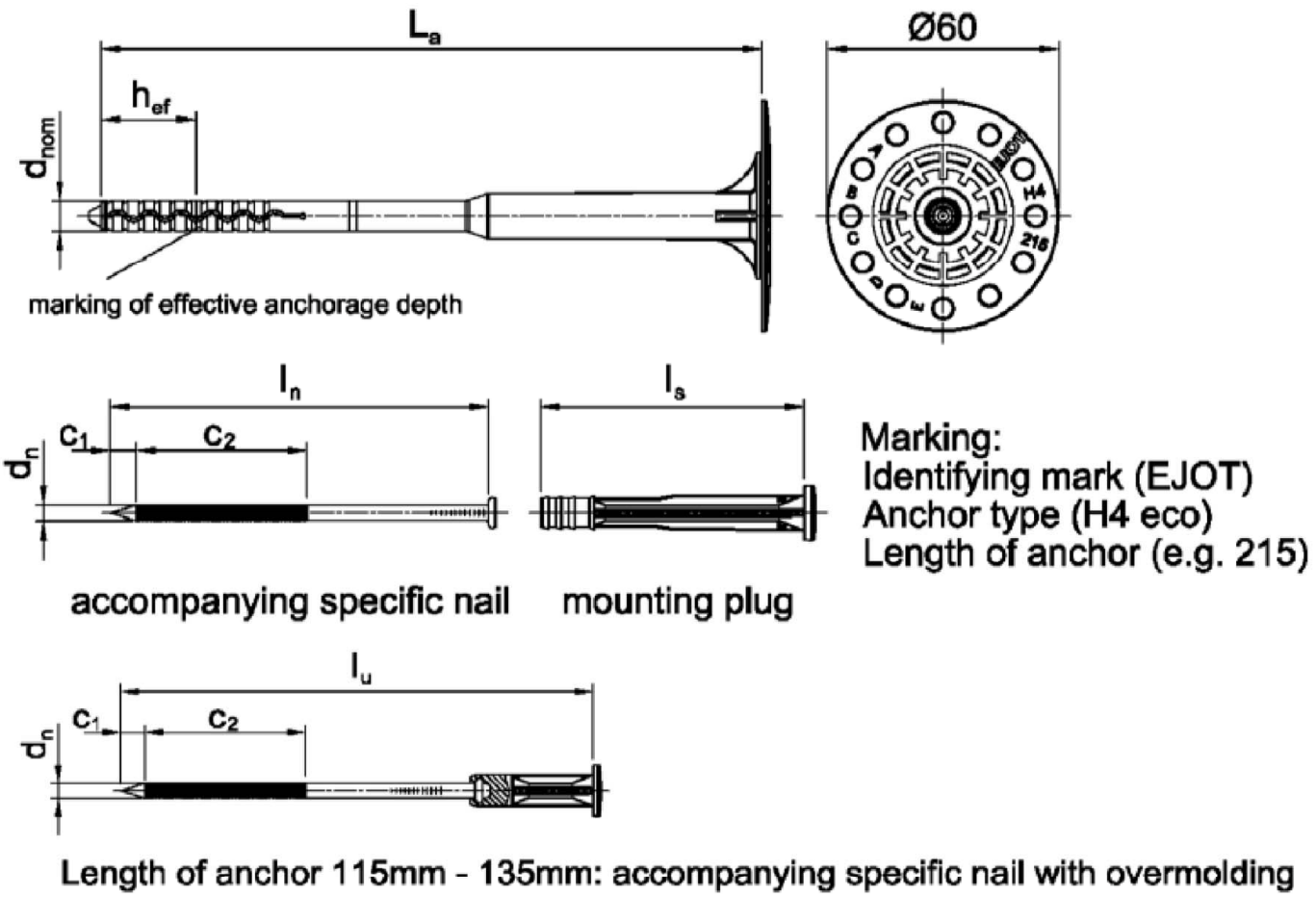

Table A3: Dimensions

Anchor type	Anchor sleeve			Mounting plug / overmoulding	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]	l_u [mm]
EJOT H4 eco	8	25	155 355	72 110	4,3	7	45	80 244	-
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:

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

e.g. $h_D = 215 - 10 - 45$

$h_{Dmax} = 180$

EJOT H1 eco and EJOT H4 eco	**Annex A 5**
Product description Marking and dimension of the anchor sleeve EJOT H4 eco, use category: A, B, C Expansion element	

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EJOT H4 eco / use category: D and E

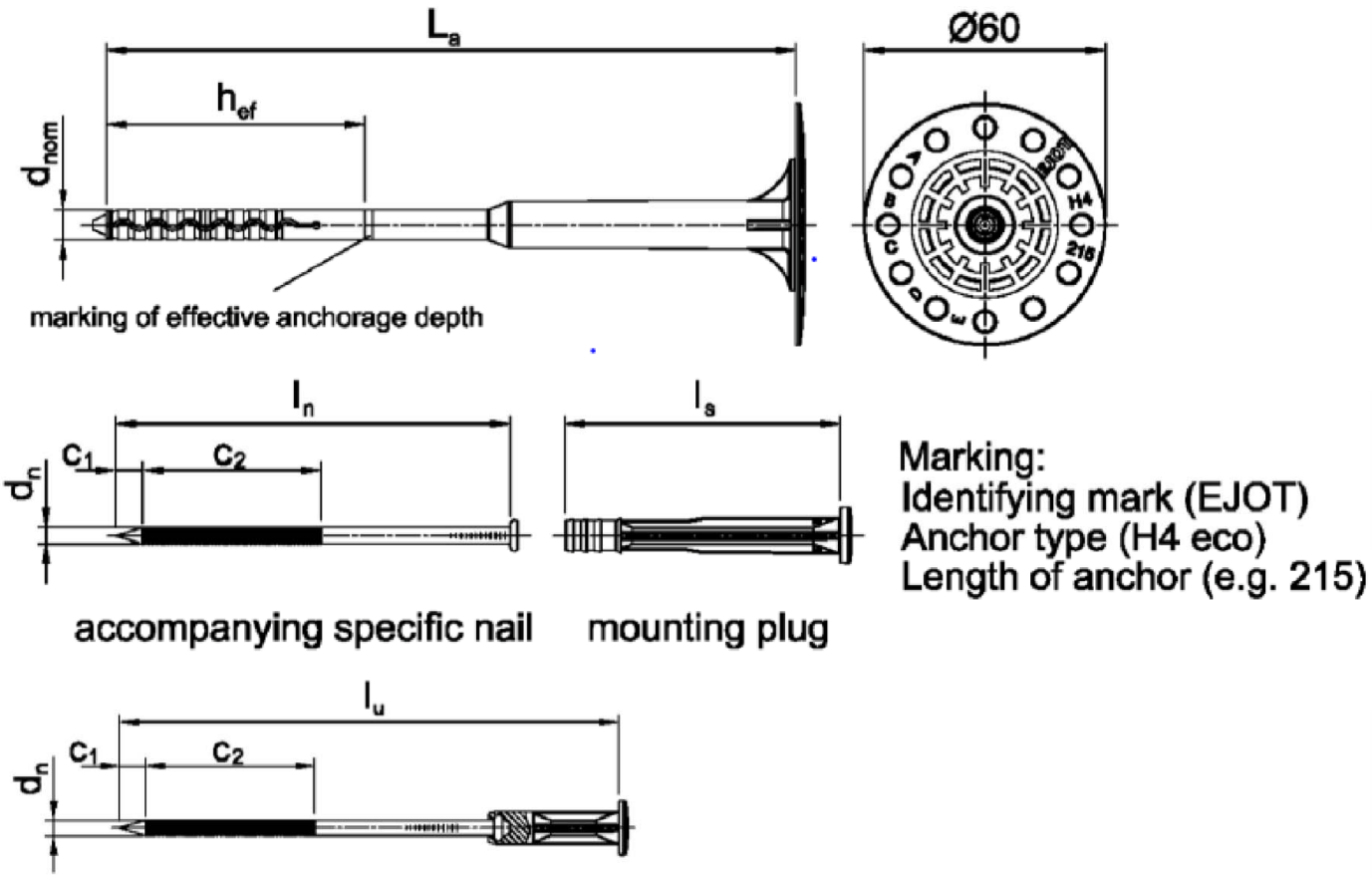

Table A4: Dimensions

Anchor type	Anchor sleeve			Mounting plug / overmoulding	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]	l_u [mm]
EJOT H4 eco	8	65	155 355	72 110	4,3	7	45	80 244	-
EJOT H4 eco	8	65	115 135	32	4,3	7	45	-	110 130

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

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

e.g. $h_D = 215 - 10 - 65$

$h_{Dmax} = 140$

EJOT H1 eco and EJOT H4 eco

Annex A 6

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

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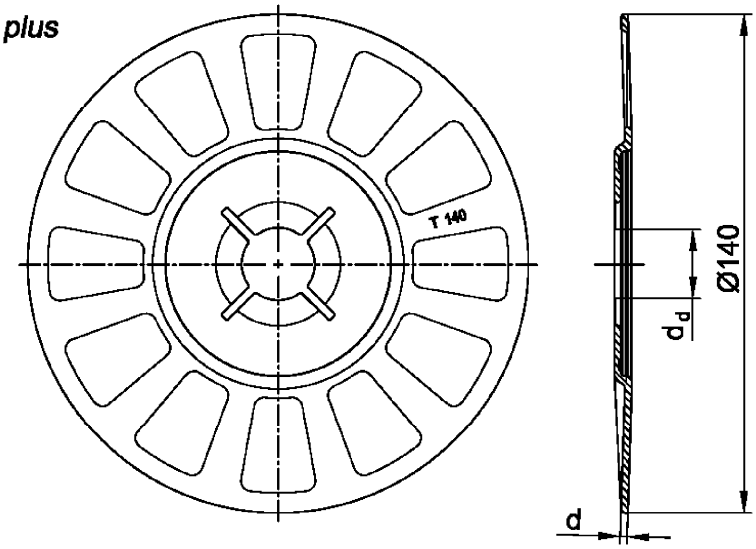
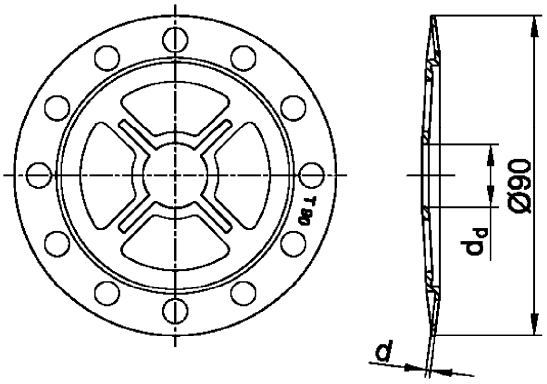
Table A5: Materials	
Name	Materials
Anchor sleeve	virgin Polyethylene PE-HD colours: yellow, orange, red, blue, grey, nature, green
Mounting plug	Polyamide, PA GF 50
Specific nail	Steel, electro galvanized ≥ 5 µm according to EN ISO 4042:2018, blue passivated, f_{yk} ≥ 670 N/mm²

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	**Annex A 7**
Product description Materials of EJOT H1 eco and EJOT H4 eco, Slip on plates with EJOT H1 eco and EJOT H4 eco	

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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
- 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 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 under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors γ_M = 2,0 and γ_F = 1,5, if there are no other national regulations.
- 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	**Annex B 1**
Intended use Specifications	

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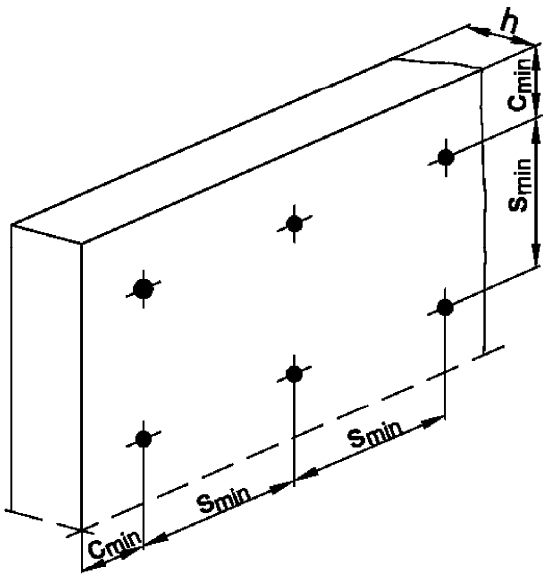
Table B1: Installation parameters

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 drilles 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} ≥ [mm]	100
Minimum allowable edge distance	c_{min} ≥ [mm]	100
Minimum thickness of member	h ≥ [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

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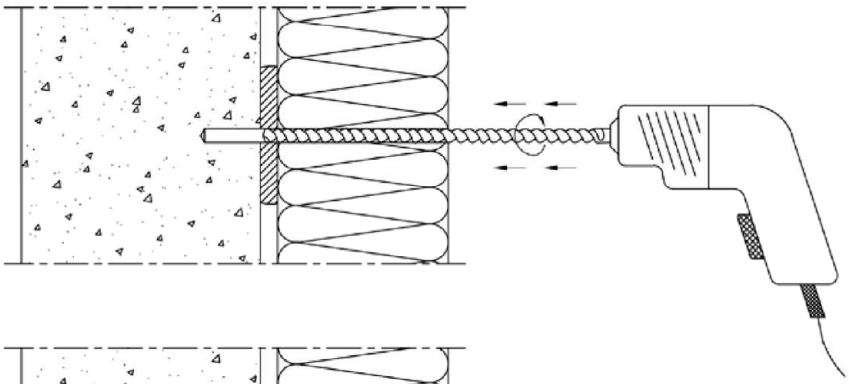
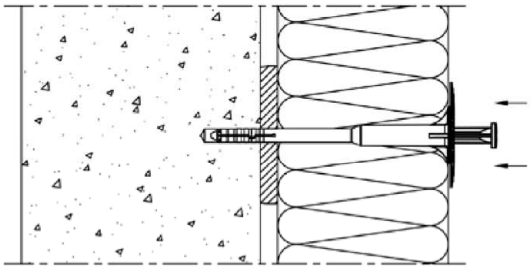
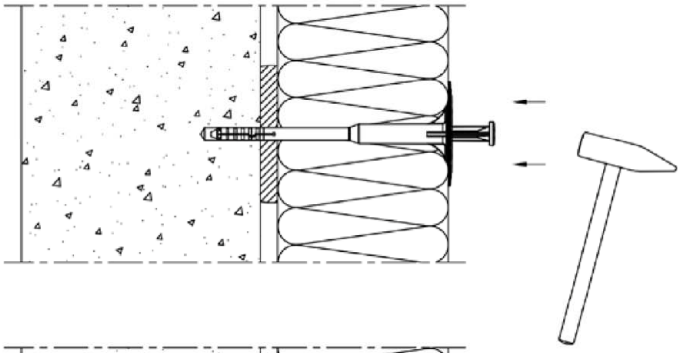
Installation instructions EJOT H1 eco



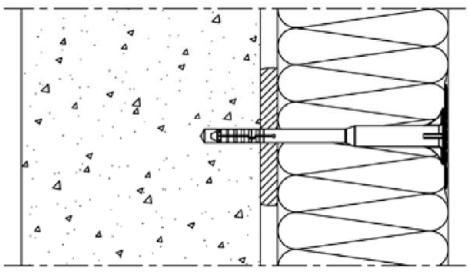
Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.



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.

EJOT H1 eco and EJOT H4 eco	**Annex B 3**
Intended use Installation instructions EJOT H1 eco	

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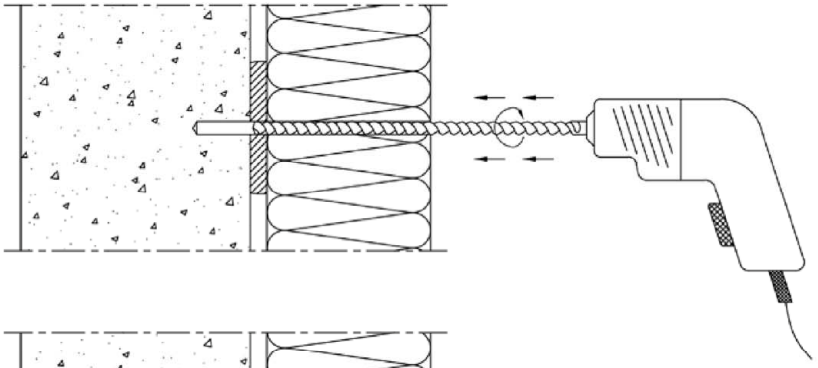
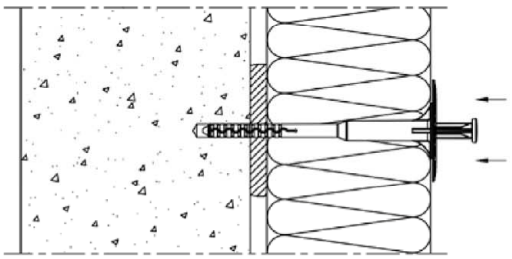
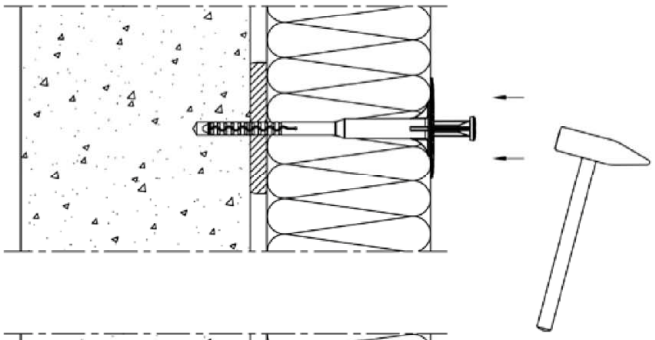
Installation instructions EJOT H4 eco



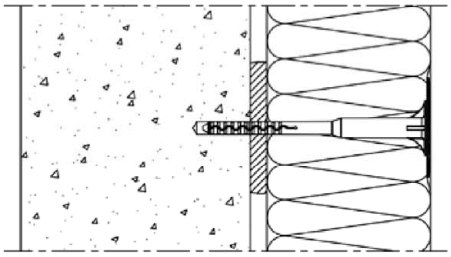
Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.



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.

EJOT H1 eco and EJOT H4 eco	**Annex B 4**
Intended use Installation instructions EJOT H4 eco	

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

Anchor type					EJOT H1 eco	EJOT H4 eco
Base materials	Bulk density ρ [kg/dm³]	minimum compressive strength f_b [N/mm²]	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 EN 771-1:2011	≥ 1,8	12	Vertically perforation up to 15 %	hammer	0,90	0,75
Sand-lime solid bricks, KS e.g. according to EN 771-2:2011	≥ 1,8	12	Vertically perforation up to 15 %	hammer	0,90	0,75
Vertically perforated clay bricks, HLz e.g. according to EN 771-1:2011	≥ 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 EN 771-1:2011	≥ 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 EN 771-2:2011	≥ 1,4	12	Vertically perforation more than 15 % and less than 50 %	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	≥ 1,2	4		hammer	0,9	1,2
Autoclaved aerated concrete, AAC 4 – AAC 7 e.g. according to EN 771-4:2011	≥ 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	**Annex C 1**
Performances Characteristic resistance	

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EJOT H1 eco

Table C2: Point thermal transmittance according EOTA Technical Report TR 025:2016-05		
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 026:2016-05			
anchor type	diameter of the anchor plate [mm]	load resistance oft 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 ρ [kg/dm³]	Minimum Compressive strength f_b [N/mm²]	Tension load N [kN]	Displacements $\delta_{(N)}$ [mm]
Concrete C12/15 – C50/60 (EN 206-1:2000)			0,3	0,3
Clay bricks, Mz (EN 771-1:2011)	≥ 1,8	12	0,3	0,3
Sand-lime solid bricks, KS (EN 771-2:2011)	≥ 1,8	12	0,3	0,3
Vertically perforated clay bricks, HLz (EN 771-1:2011)	≥ 1,2	20	0,25	0,4
Vertically perforated clay bricks, HLz (EN 771-1:2011)	≥ 0,9	12	0,2	0,2
Sand-lime perforated bricks, KSL (EN 771-2:2011)	≥ 1,4	12	0,3	0,3
Lightweight aggregate concrete, LAC 4 – LAC 25 (EN 1520:2011 / EN 771-3:2011)	≥ 1,2	4	0,3	1,1
Autoclaved aerated concrete, AAC 4 – AAC 7 (EN 771-4:2011)	≥ 0,6	4	0,17	0,7

EJOT H1 eco and EJOT H4 eco	**Annex C 2**
Performances Point thermal transmittance, plate stiffness, displacements for EJOT H1 eco	

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EJOT H4 eco

Table C5: Point thermal transmittance according EOTA Technical Report TR 025:2016-05		
anchor type	insulation thickness h_D [mm]	point thermal transmittance χ [W/K]
EJOT H4 eco	60 – 260	0,001

Table C6: Plate stiffness according EOTA Technical Report TR 026:2016-05			
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 ρ [kg/dm³]	Minimum Compressive strength f_b [N/mm²]	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 (EN 771-1:2011)	≥ 1,8	12	0,25	0,4
Sand-lime solid bricks, KS (EN 771-2:2011)	≥ 1,8	12	0,25	0,4
Vertically perforated clay bricks, HLz (EN 771-1:2011)	≥ 0,9	12	0,15	0,6
Sand-lime perforated bricks, KSL (EN 771-2:2011)	≥ 1,4	12	0,25	0,4
Lightweight aggregate concrete, LAC 4 – LAC 25 (EN 1520:2011 / EN 771-3:2011)	≥ 1,2	4	0,4	1,3
Autoclaved aerated concrete, AAC 4 – AAC 7 (EN 771-4:2011)	≥ 0,6	4	0,17	0,6

EJOT H1 eco and EJOT H4 eco	**Annex C 3**
Performances Point thermal transmittance, plate stiffness, displacements for EJOT H4 eco	