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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-15/0208
of 10 January 2025

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

This version replaces

Deutsches Institut für Bautechnik

Carbon Fix

Plastic anchor for fixing of external thermal insulation
composite systems with rendering

DAW SE

Roßdörfer Straße 50
64372 Ober-Ramstadt
GERMANY

DAW manufacturing plant 10183

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

EAD 330196-01-0604 edition 10/2017

ETA-15/0208 issued on 19 January 2016

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Specific Part

1 Technical description of the product

The nailed-in anchor Carbon Fix consists of an anchor sleeve with an enlarged shaft, spreading zone subsequently, an insulation plate made of virgin polyethylene and an accompanying specific nail of galvanised steel with an overmoulding of polyamide (virgin material). 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 verifications 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 load bearing capacity <ul style="list-style-type: none">- Characteristic resistance under tension load- Minimum edge distance and spacing	See Annex C 1 See Annex B 2
Displacements	See Annex C 2
Plate stiffness	See Annex C 2

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

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 European Assessment Document

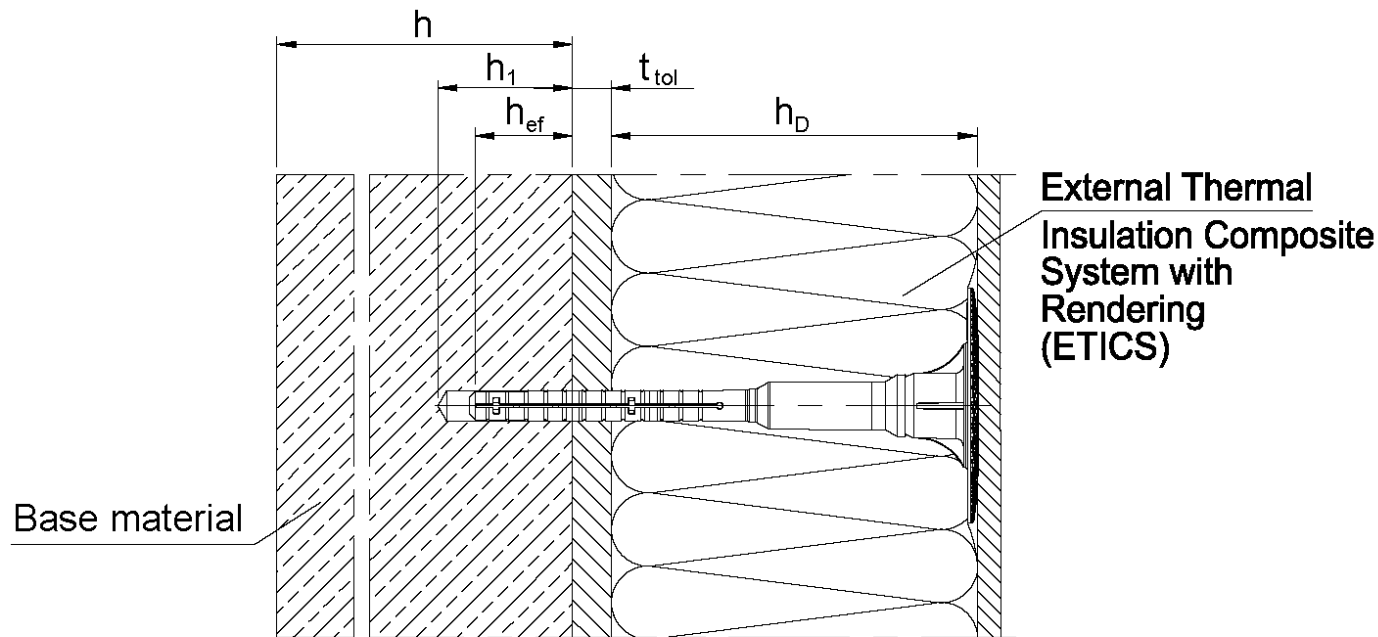
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 10 January 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Ziegler

Carbon Fix



- Legend:
- h_D = thickness of insulation material
 - h_{ef} = effective anchorage depth
 - h = thickness of member (wall)
 - h₁ = depth of drill hole to deepest point
 - t_{tol} = thickness of equalizing layer or non-load-bearing coating

Carbon Fix

Product description
Installed condition

Annex A 1

Carbon Fix in base material group A, B, C

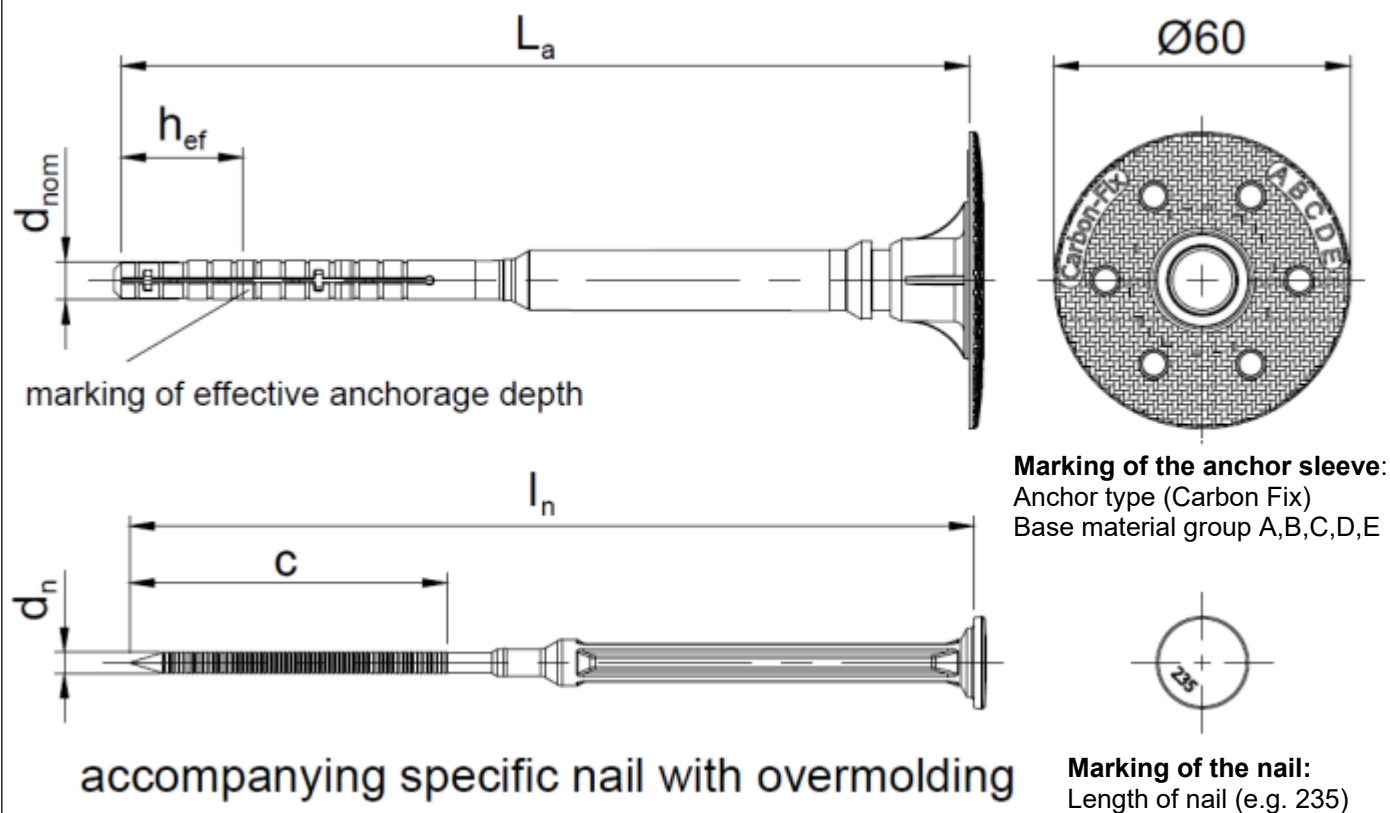


Table A1: Dimensions

Anchor Type	Colour	Anchor sleeve			Specific nail		
		d_{nom}	h_{ef}	min L_a max L_a	d_n	c	min l_n max l_n
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Carbon Fix	anthracite / grey	8	25	95 295	4,13	60	95 295

Determination of maximum thickness of insulation h_D [mm] for Carbon Fix:

$$\begin{aligned}
 h_D &= L_a - t_{tol} - h_{ef} & (L_a = \text{e.g. } 155; t_{tol} = 10) \\
 \text{e.g. } h_D &= 155 - 10 - 25 \\
 h_{Dmax} &= 120
 \end{aligned}$$

Carbon Fix

Product description

Marking and dimension of the anchor sleeve, base material group A, B, C expansion element

Annex A 2

Carbon Fix in base material group D, E

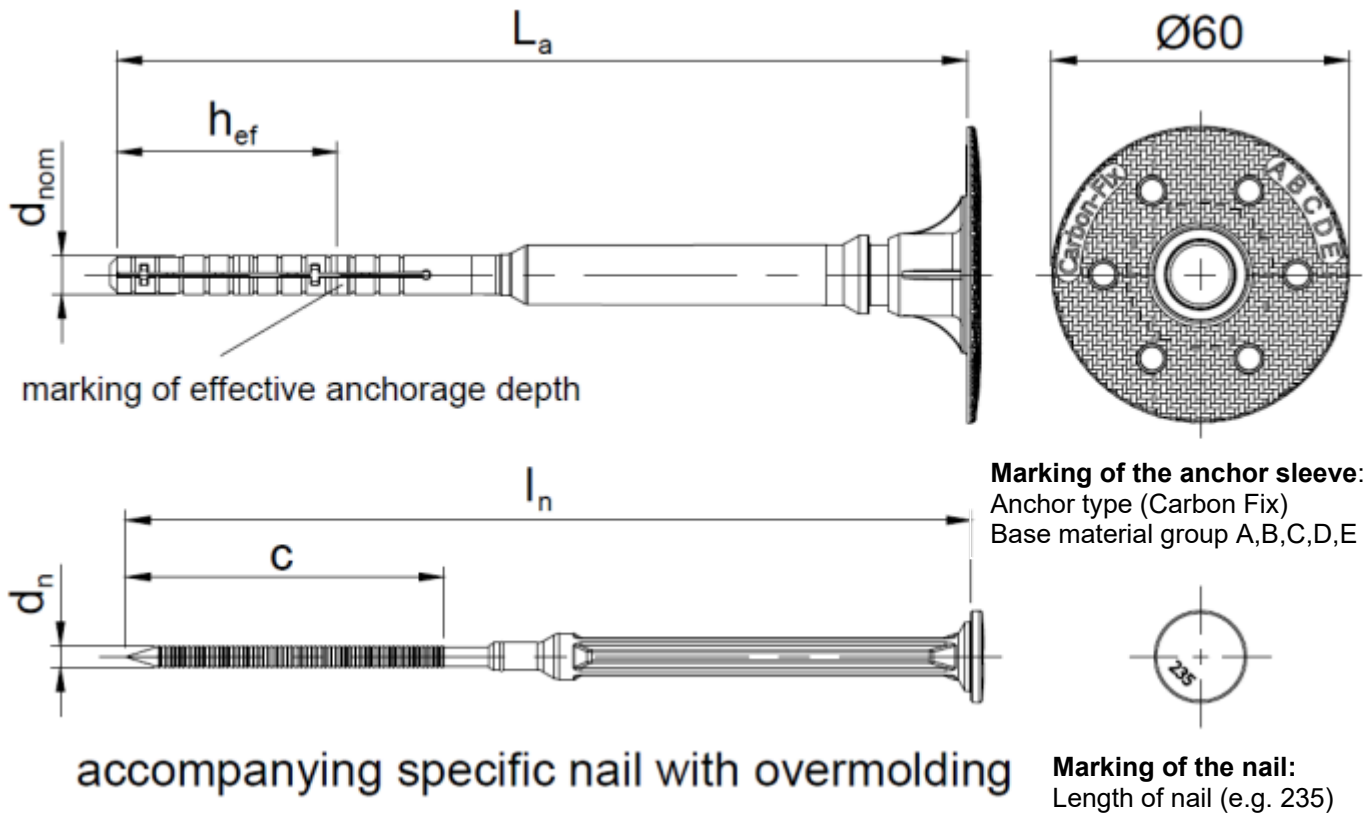


Table A2: Dimensions

Anchor Type	Colour	Anchor sleeve			Specific nail		
		d_{nom}	h_{ef}	$\min L_a$ $\max L_a$	d_n	c	$\min l_n$ $\max l_n$
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
Carbon Fix	anthracite / grey	8	45	95 295	4,13	60	95 295

Determination of maximum thickness of insulation h_D [mm] for Carbon Fix:

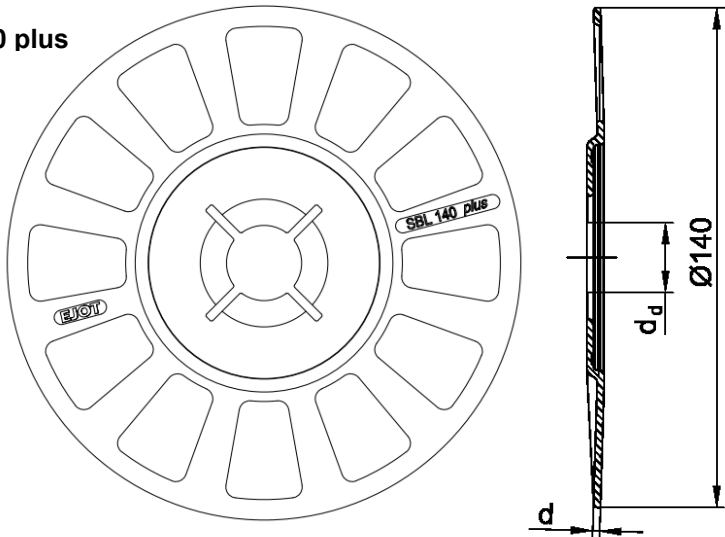
$$\begin{aligned} h_D &= L_a - t_{tol} - h_{ef} & (L_a = \text{e.g. } 155; t_{tol} = 10) \\ \text{e.g. } h_D &= 155 - 10 - 45 \\ h_{Dmax} &= 100 \end{aligned}$$

Carbon Fix	Annex A 3
Product description Marking and dimension of the anchor sleeve, base material group D, E expansion element	

Table A3: Materials

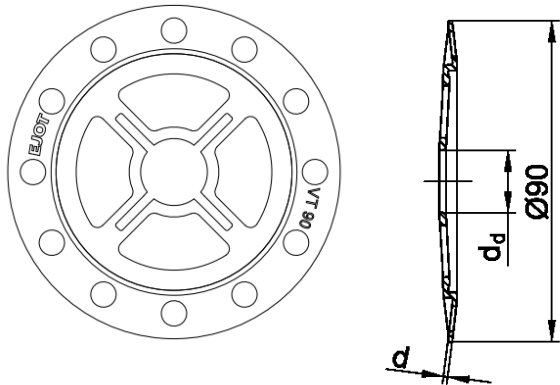
Name	Materials
Anchor sleeve + Anchor plate	Virgin polyethylene PE-HD, colour: anthracite / grey
Specific nail - overmoulding	Virgin polyamide PA GF 50
Specific nail	Steel, electro galvanized $\geq 5 \mu\text{m}$ according to EN ISO 4042:2022, blue passivated $f_{yk} \geq 670 \text{ N/mm}^2$
Slip on plate (SBL 140 plus, VT 90)	Virgin polyamide PA 6 or PA GF 50, colour: nature

SBL 140 plus



SBL 140 plus		
d_d	[mm]	20,0
d	[mm]	2,0

VT 90



VT 90		
d_d	[mm]	17,5
d	[mm]	1,2

Carbon Fix

Product description

Materials,
Slip on plates combined with Carbon Fix

Annex A 4

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:

- Compacted normal weight concrete without fibres (base material group A) according to Annex C 1
- Solid masonry (base material group B), according to Annex C 1
- Hollow or perforated masonry (base material group C), according to Annex C 1
- Lightweight aggregate concrete (base material group D), according to Annex C 1
- Autoclaved aerated concrete (base material group E), according to Annex C 1
- For other base materials of the base material groups 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 April 2018.

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 $\gamma_M = 2,0$ and $\gamma_F = 1,5$, 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 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

Carbon Fix

Intended use
Specifications

Annex B 1

Table B1: Installation parameters

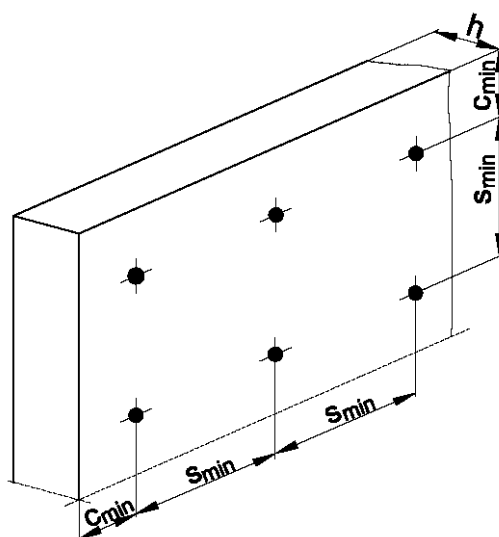
Anchor type		Carbon Fix	
		Base material group	
		A, B, C	D, E
Drill hole diameter	d_0 [mm] =	8	8
Cutting diameter of drill bit	d_{cut} [mm] ≤	8,45	8,45
Depth of drill hole to deepest point	h_1 [mm] ≥	35	55
Effective anchorage depth ¹⁾	h_{ef} [mm] ≥	25	45

¹⁾ Larger anchoring depths are fundamentally possible.

Table B2: Anchor distances and dimensions of members

Anchor type		Carbon Fix
Minimum spacing	s_{min} [mm] =	100
Minimum edge distance	c_{min} [mm] =	100
Thickness of member	h [mm] ≥	100
Thickness of thin concrete members	h [mm] ≥	40

Scheme of distance and spacing



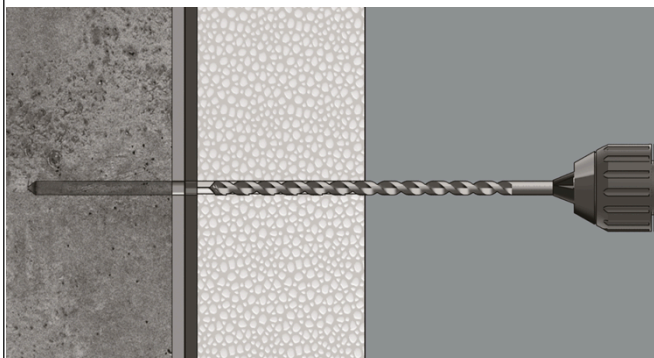
Carbon Fix

Intended use

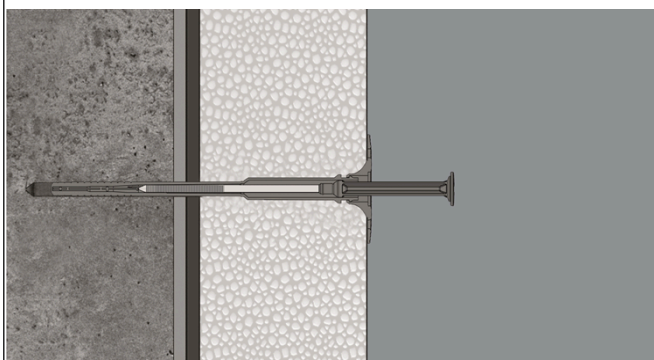
Installation parameters,
Minimum thickness of member, edge distances and spacing

Annex B 2

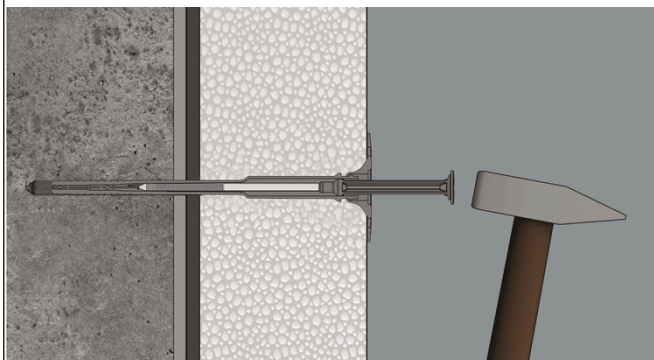
Installation instructions



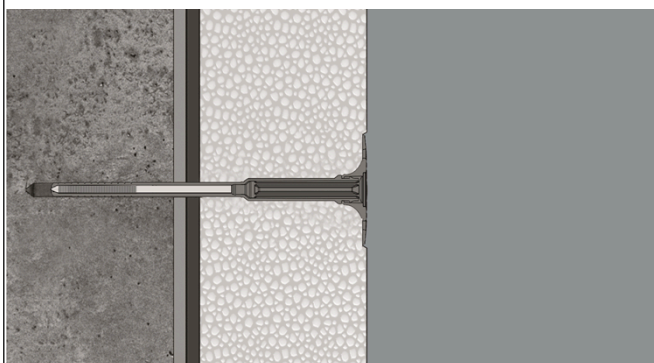
Drill the hole perpendicular to the substrate surface.
Clean the drill hole 3x.



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 Carbon Fix.

Carbon Fix

Intended use
Installation instructions

Annex B 3

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

Anchor type					Carbon Fix
Base materials	Bulk density ρ [kg/dm ³]	minimum compressive strength f_b [N/mm ²]	General remarks	Drill method ¹⁾	N_{Rk} [kN]
Concrete C16/20 – C50/60 as per EN 206:2013+A1:2016			Compacted normal weight concrete without fibres	H	0,9
Thin concrete members (e.g. weather resistant skin) Concrete C12/15 – C50/60 as per EN 206:2013+A1:2016			Thickness of the thin skin: 100 mm > h ≥ 40 mm	H	0,9
Clay bricks, Mz as per EN 771-1:2011+A1:2015	≥ 1,8	12	Vertically perforation up to 15 %. ⁵⁾	H	0,9
Sand-lime solid bricks, KS as per EN 771-2:2011+A1:2015	≥ 1,8	12	Vertically perforation up to 15 %. ⁵⁾	H	0,9
Vertically perforated clay bricks, HLz as per EN 771-1:2011+A1:2015	≥ 0,8	12	Vertically perforation > 15 % and ≤ 50 %. ⁵⁾	R	0,6 ²⁾
Sand-lime perforated bricks, KSL as per EN 771-2:2011+A1:2015	≥ 1,6	12	Vertically perforation > 15 % and ≤ 50 %. ⁵⁾	R	0,9 ³⁾
Lightweight concrete solid blocks, V as per EN 771-3:2011+A1:2015	≥ 0,7	4	Perforation of the Resting area up to 10% maximum extension of hole: length = 110mm; wide = 45mm	H	0,75
Lightweight concrete hollow blocks, Hbl, as per EN 771-3:2011+A1:2015	≥ 1,2	6	Vertically perforation > 15 % and ≤ 50 %. ⁵⁾	R	0,6 ⁴⁾
Lightweight aggregate concrete, LAC as per EN 1520:2011	≥ 0,7	4	-	R	0,9
Autoclaved aerated concrete, AAC as per EN 771-4:2011+A1:2015	≥ 0,55	4	-	R	0,5

1) H = hammer drilling / R = rotary drilling

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.

4) The value applies only for outer web thickness ≥ 40 mm; otherwise the characteristic resistance shall be determined by job site pull-out tests.

5) Cross section reduced by perforation vertically to the resting area

Carbon Fix

Performances

Characteristic tension resistance

Annex C 1

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]
ejothem H2 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 of the anchor plate [kN]	plate stiffness [kN/mm]
ejothem H2 eco	60	1,5	1,17

Table C4: Displacements

Base materials	Bulk density ρ [kg/dm ³]	Minimum compressive strength f_b [N/mm ²]	Tension load N [kN]	Displacements $\Delta \delta_N$ [mm]
Concrete C16/20 – C50/60 (EN 206:2013+A1:2016)			0,3	0,4
Thin concrete members (e.g. weather resistant skin) Concrete C12/15 – C50/60 (EN 206:2013+A1:2016)			0,3	0,5
Clay bricks, Mz (EN 771-1:2011+A1:2015)	$\geq 1,8$	12	0,3	0,5
Sand-lime solid bricks, KS (EN 771-2:2011+A1:2015)	$\geq 1,8$	12	0,3	0,3
Vertically perforated clay bricks, HLz (EN 771-1:2011+A1:2015)	$\geq 0,9$	12	0,2	0,5
Sand-lime perforated bricks, KSL (EN 771-2:2011+A1:2015)	$\geq 1,4$	12	0,3	0,4
Lightweight concrete solid blocks, V (EN 771-3:2011+A1:2015)	$\geq 0,7$	4	0,25	0,4
Lightweight concrete hollow blocks, Hbl (EN 771-3:2011+A1:2015)	$\geq 1,2$	6	0,2	0,4
Lightweight aggregate concrete, LAC (EN 1520:2011)	$\geq 0,7$	4	0,3	0,5
Autoclaved aerated concrete, AAC (EN 771-4:2011+A1:2015)	$\geq 0,55$	4	0,15	0,4

Carbon Fix

Performances

Point thermal transmittance, plate stiffness, displacements

Annex C 2