

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-18/0077**  
**of 27 April 2018**

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

GRIGOFIX 8 CN

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

Fornaci Calce Grigolin S.p.a.  
Via Bombardieri 14  
31010 PONTE DELLA PRIULA (TV)  
ITALIEN

Manufacturing plant

Formaci Calce Grigolin S.p.a

This European Technical Assessment  
contains

13 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

**European Technical Assessment**

**ETA-18/0077**

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## Specific Part

### 1 Technical description of the product

The GRIGOFIX 8 CN consists of an anchor sleeve with an enlarged shaft made of polypropylene (virgin material), an insulation plate made of glass fibre reinforced polyamide (virgin material) (GRIGOFIX 8 CN / 250-390) and a special compound nail consisting of two parts, one made of glass fibre reinforced polyamide for the shaft element and the other part made of galvanised steel.

The specific nail for the anchor type GRIGOFIX 8 CN / 250 – 390 is made of galvanized steel which is used together with a separate plastic cylinder made of glass fibre reinforced polyamide.

The serrated expanding part of the anchor sleeve is slotted.

The anchor may in addition be combined with the anchor plates DT 90, DT 110 and DT 140.

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 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
Displacements	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 EAD**

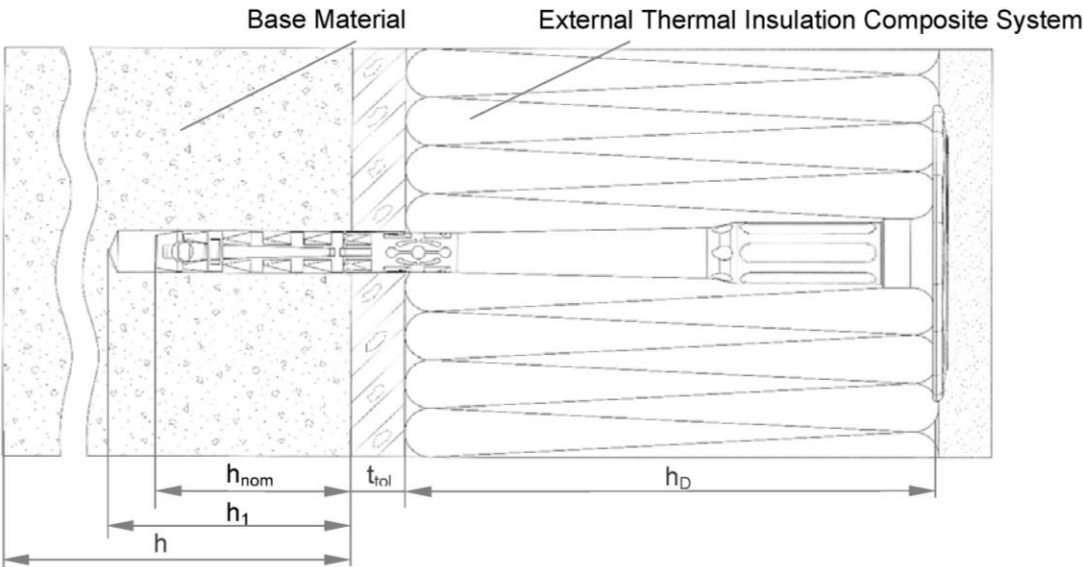
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 27 April 2018 by Deutsches Institut für Bautechnik

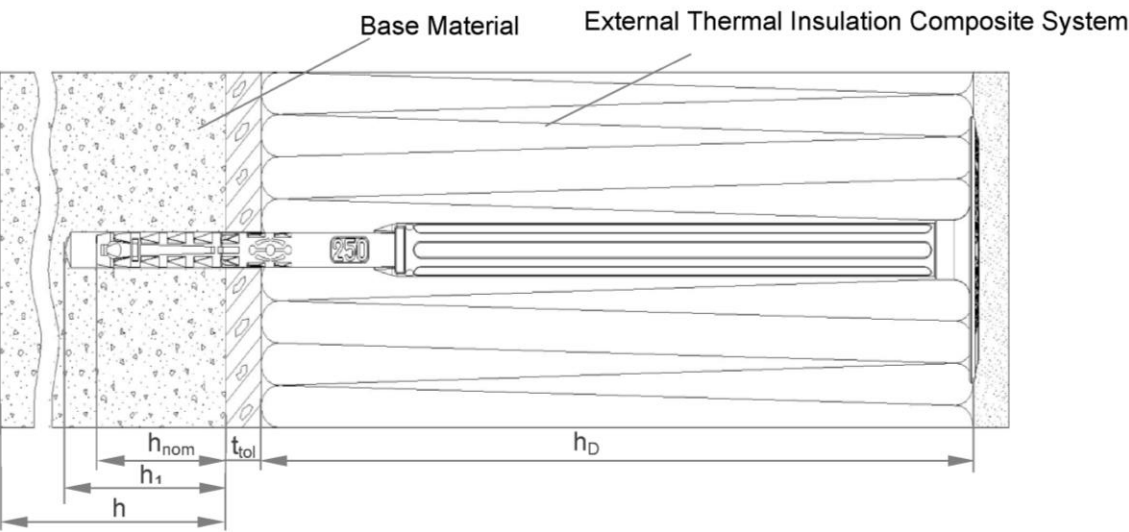
BD Dipl.-Ing. Andreas Kummerow  
Head of Department

*beglaubigt:*  
E. Aksünger

GRIGOFIX 8 CN / 110 – 230 – flush mounted



GRIGOFIX 8 CN / 250-390 – flush mounted



Legend

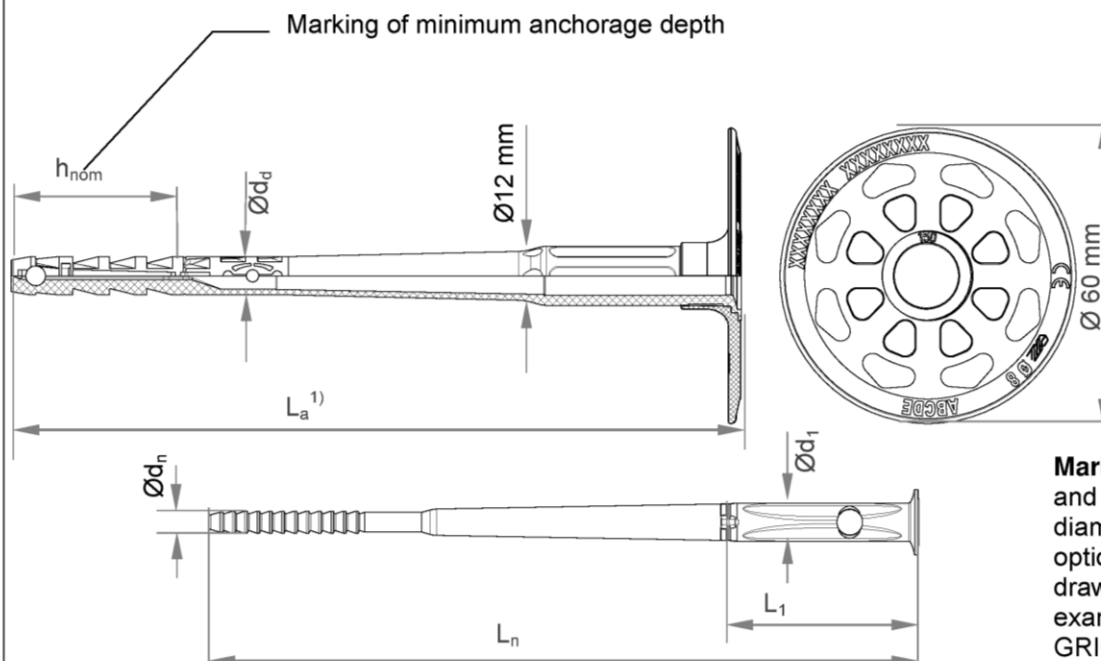
- $h_{nom}$  = Overall plastic anchor embedment depth in the base material
- $h_1$  = Depth of drilled hole to deepest point
- $h$  = Thickness of member (wall)
- $h_D$  = Thickness of insulation material
- $t_{tol}$  = Thickness of equalizing layer or non-load bearing coating

GRIGOFIX 8 CN

Product description  
Installed anchor – flush-mounted

Annex A1

## GRIGOFIX 8 CN / 110-230



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. GRIGOFIX 8 CN ABCDE

<sup>1)</sup> Various length of the anchors are possible

e.g. for GRIGOFIX 8 CN / 110-230:

$110 \text{ mm} \geq L_a \leq 230 \text{ mm}$

$L_a = L_n + 4 \text{ mm}$

Determination of maximum thickness of insulation:  $h_D = L_a - h_{nom} - t_{tol}$

e.g. for GRIGOFIX 8 CN 8x150:

$L_a = 148 \text{ mm}$ ,  $h_{nom} = 35 \text{ mm}$ ,  $t_{tol} = 10 \text{ mm}$

$h_D = 148 - 35 - 10 \approx 100$

**Table A2.1: Dimensions**

Anchor type	Anchor sleeve		Specific compound nail		
	$\varnothing d_d$ [mm]	$h_{nom}$ [mm]	$\varnothing d_n$ [mm]	$L_1$ [mm]	$\varnothing d_1$ [mm]
GRIGOFIX 8 CN / 110-230	8	35/55 <sup>2)</sup>	4,5	40	8

<sup>2)</sup> Only for use cat. E

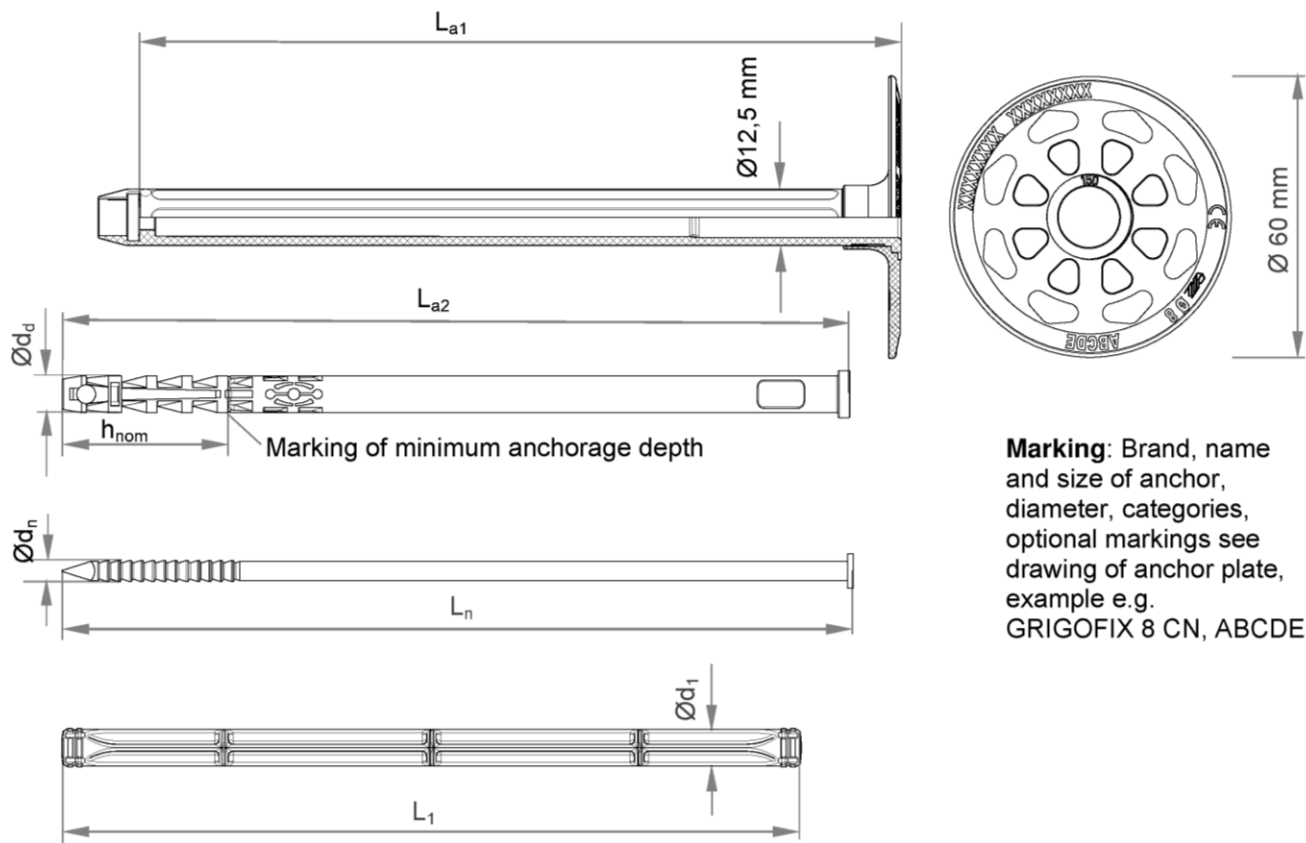
**GRIGOFIX 8 CN**

**Product description**

Dimensions GRIGOFIX 8 CN / 110-230

**Annex A2**

GRIGOFIX 8 CN / 250 – 390



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. GRIGOFIX 8 CN, ABCDE

Various lengths of the anchors are possible:

e.g. for GRIGOFIX 8 CN / 250 – 390:  
 $250 \text{ mm} \geq L_{a1} + L_{a2} \leq 390 \text{ mm}$   
 $L_a = L_{a1} + L_{a2} = L_n + 160,5 \text{ mm}$

Determination of maximum thickness of insulation:  $h_D = L_a - h_{nom} - t_{tol}$

e.g. for GRIGOFIX 8 CN 8x330:  $L_a = 328 \text{ mm}$ ,  $h_{nom} = 35 \text{ mm}$ ,  $t_{tol} = 10 \text{ mm}$   
 $h_D = 328 - 35 - 10 \approx 280 \text{ mm}$

Table A3.1: Dimensions

Anchor type	Shaft	Anchor sleeve			Nail		Plastic cylinder	
	$L_{a1}$ [mm]	$\text{Ø } d_d$ [mm]	$h_{nom}$ [mm]	$L_{a2}$ [mm]	$\text{Ø } d_n$ [mm]	$L_n$ [mm]	$L_1$ [mm]	$\text{Ø } d_1$ [mm]
GRIGOFIX 8 CN / 250–390	161	8	35/55 <sup>1)</sup>	87 - 247	4,5	$(L_{a1}+L_{a2}) - 160,5$	157	8

<sup>1)</sup> Only for use cat. E

GRIGOFIX 8 CN

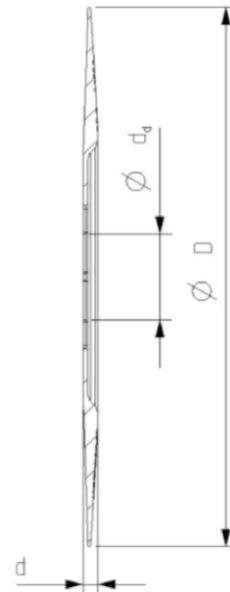
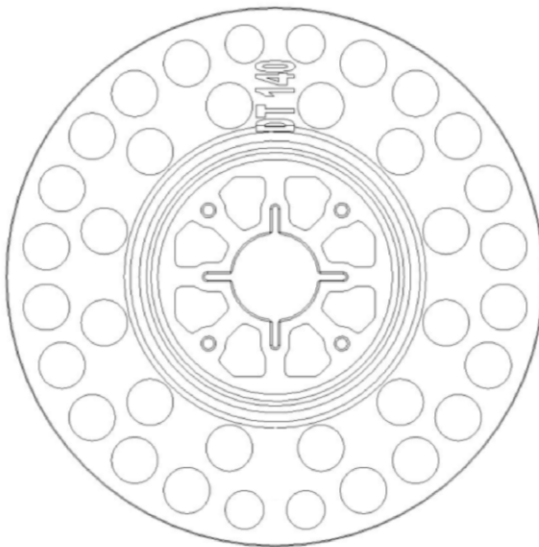
Product description  
Dimensions GRIGOFIX 8 CN / 250-390

Annex A3

**Table A4.1: Material**

Designation	Material
Anchor sleeve	PP (virgin material), colour: grey
Shaft GRIGOFIX 8 CN / 250 – 390	PA6 (virgin material)GF, colour: grey
Plastic cylinder GRIGOFIX 8 CN / 250 – 390	PA6 (virgin material) GF
Specific nail GRIGOFIX 8 CN / 250 – 390	Steel gal Zn A2G or A2F according to EN ISO 4042 : 1999
Specific compound nail GRIGOFIX 8 CN / 110 – 230	PA6 GF (plastic part of compound nail) Steel gal Zn A2G or A2F according to EN ISO 4042 : 1999
Anchor plate	PA6 (virgin material) GF colour: grey, orange, red, green, yellow, blue
Slip-on plate	PA6 (virgin material) GF colour: grey, orange, red, green, yellow, blue

**Drawing of the slip-on plates**



**Table A4.2: Slip-on plate, diameters and material**

Slip-on plate	Ø D [mm]	Ø d <sub>d</sub> [mm]	d [mm]	Material
DT 90 / 110 / 140	90 / 110 / 140	22,5	3,9	PA6 GF

**GRIGOFIX 8 CN**

**Product description**

Material  
Slip-on plates combined with GRIGOFIX 8 CN

**Annex A4**



## 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 external thermal insulation composite system (ETICS).

### 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 and E the characteristic resistance of the anchor may be determined by job site tests acc. 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  $\gamma_M = 2,0$  and  $\gamma_F = 1,5$  in absence of other national regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchors is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of ETICS.

### 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 on the site.
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering  $\leq 6$  weeks.

GRIGOFIX 8 CN

Intended use  
Specifications

Annex B1

**Table B2.1: Installation parameters / flush mounted**

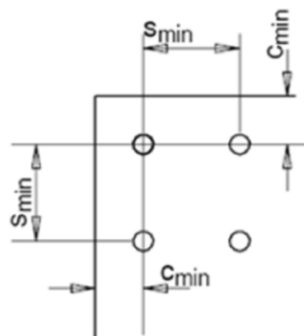
Anchor type				GRIGOFIX 8 CN
Drill hole diameter	$d_0$	=	[mm]	8
Cutting diameter of drill bit	$d_{cut}$	≤	[mm]	8,45
Depth of drilled hole to deepest point	$h_1$	≥	[mm]	45/65 <sup>1)</sup>
Overall plastic anchor embedment depth in the base material	$h_{nom}$	≥	[mm]	35/55 <sup>1)</sup>

<sup>1)</sup> Only for use cat. "E"

**Table B2.2: Minimum distances and spacing**

				GRIGOFIX 8 CN
Minimum thickness of member	$h_{min}$	=	[mm]	100
Minimum spacing	$s_{min}$	=	[mm]	100
Minimum edge distance	$c_{min}$	=	[mm]	100

**Scheme of distance and spacing**



**GRIGOFIX 8 CN**

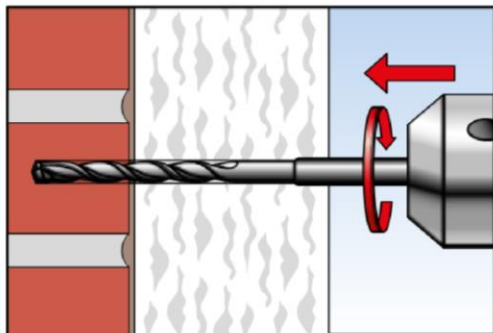
**Intended use**

Installation parameters  
Minimum distances and spacing

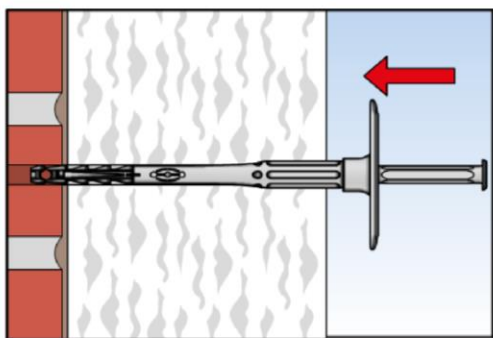
**Annex B2**

## Installation instructions

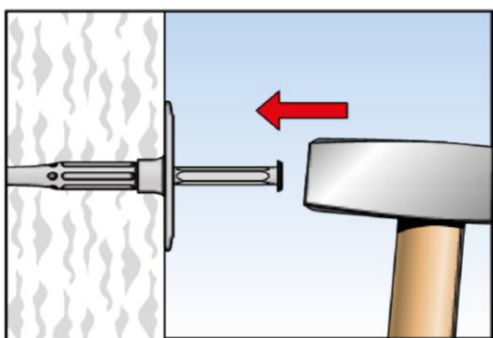
### Setting of anchor (flush mounted) by hammer / GRIGOFIX 8 CN



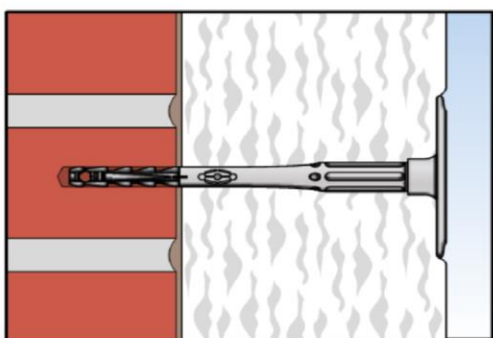
1. Drill hole by corresponding drilling method



2. Insert anchor manually



3. Set anchor by hammerblows



4. Correctly installed anchor

**GRIGOFIX 8 CN**

**Intended use**  
Installation instruction

**Annex B3**

**Table C1.1: Characteristic resistance  $N_{Rk}$  in [kN] to tension loads for single anchor**

Base material	Use cat. <sup>1)</sup>	Min. compressive strength $f_b$ [N/mm <sup>2</sup> ]	Bulk density $\rho$ [kg/dm <sup>3</sup> ]	Remarks	Drill method <sup>2)</sup>	Characteristic resistance $N_{Rk}$ [kN]
Concrete $\geq$ C12/15 - C50/60 EN 206-1:2000	A	-	-	-	H	<b>0,9</b>
Solid clay bricks <b>Mz</b> acc. to EN 771-1:2011	B	12	$\geq 2,0$	Cross section reduced up to 15% by perforation vertically to the resting area	H	<b>0,9</b>
Calcium silicate solid bricks <b>KS</b> e.g. acc. to EN 771-2:2011	B	12	$\geq 1,8$		H	<b>0,9</b>
Solid concrete blocks <b>Vbn</b> acc. to EN 771-3:2011	B	20	$\geq 2,0$		H	<b>0,75</b>
Lightweight concrete blocks <b>Vbl</b> acc. to EN 771-3:2011	B	8	$\geq 1,4$		H	<b>0,6</b>
Vertically perforated clay bricks <b>Hlz</b> acc. to EN 771-1:2011	C	12	$\geq 1,0$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 15$ mm	R	<b>0,6</b>
Hollow calcium silicate brick <b>KSL</b> acc. to EN 771-2:2011	C	20	$\geq 1,4$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 23$ mm	H	<b>0,75</b>
		12				<b>0,5</b>
Lightweight concrete hollow blocks <b>Hbl</b> , acc. to EN 771-3:2011	C	10	$\geq 1,2$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 38$ mm	H	<b>0,6</b>
Lightweight aggregate concrete <b>LAC</b> , acc. to EN 1520:2011, EN 771-3:2011	D	6	$\geq 0,8$	-	H	<b>0,6</b>
		4				<b>0,4</b>
Autoclaved aerated concrete blocks, <b>AAC</b> acc. to EN 771-4:2011	E	6	$> 0,6$	-	R	<b>0,3<sup>3)</sup></b>
		4	$> 0,4$			<b>0,3<sup>3)</sup></b>

<sup>1)</sup> See Annex B1

<sup>2)</sup> R = Rotary drilling | H = Hammer drilling

<sup>3)</sup> Only valid for  $h_{nom} \geq 55$  mm

**GRIGOFIX 8 CN**

**Performance**

Characteristic resistance GRIGOFIX 8 CN

**Annex C1**

**Table C2.1: Point thermal transmittance according to EOTA Technischer Report TR 025 : 2016 – 05**

Anchor type	Thickness of insulation material $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]
GRIGOFIX 8 CN / 110-230	60 - 80	0,001
	> 80 - 180	0,000
GRIGOFIX 8 CN / 250-350	200 - 300	0,000
GRIGOFIX 8 CN / 370-390	> 300 - 340	0,001

**Table C2.2: Plate stiffness according to EOTA Technischer Report TR 026 : 2016 – 05**

Anchor type	Size of the anchor [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
GRIGOFIX 8 CN	60	1,7	0,6

**Table C2.3: Displacements GRIGOFIX 8 CN**

Base material		Tension load $F$ [kN]	Displacements $\delta$ [mm]
Concrete $\geq$ C12/15 – C50/60 (EN 206-1:2000)		0,30	< 0,3
Clay brick (EN 771-1:2011), Mz 12		0,30	< 0,5
Calcium silicate solid brick (EN 771-2:2011), KS 12		0,30	< 0,3
Vertically perforated clay brick (EN 771-1:2011), Hlz 12		0,20	< 0,2
Hollow calcium silicate brick (EN 771-2:2011), KSL 12		0,15	< 0,2
Hollow calcium silicate brick (EN 771-2:2011), KSL 20		0,25	< 0,3
Solid concrete blocks (EN 771-3:2011), Vbn 20		0,25	< 0,3
Hollow brick lightweight concrete (EN 771-3:2011), Hbl 4		0,20	< 0,2
Lightweight concrete solid block (EN 771-3:2011), Vbl 8		0,20	< 0,2
Lightweight aggregate concrete (EN 1520:2011, EN 771-3:2011)	LAC 4	0,15	< 0,3
	LAC 6	0,20	
Autoclaved aerated concrete blocks EN 771-4:2011	AAC 4	0,10	< 0,2
	AAC 6	0,13	< 0,3

**GRIGOFIX 8 CN**

**Performance**

Point thermal transmittance, plate stiffness and displacements

**Annex C2**