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-18/0089 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	termoz CN8 KERAKOLL
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	KERAKOLL Spa Via dell' Artigianato, 9 41049 SASSUOLO (MO) ITALIEN
Manufacturing plant	Kerakoll 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

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Specific Part

1 Technical description of the product

The TERMOZ CN8 KERAKOLL 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) (TERMOZ CN8 KERAKOLL / 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 TERMOZ CN8 KERAKOLL / 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

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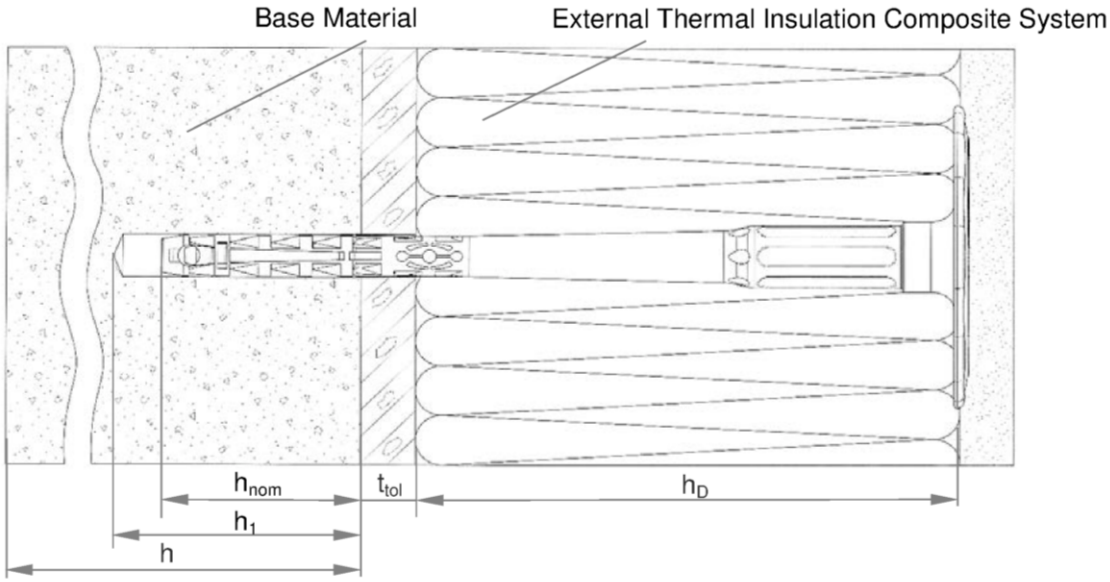
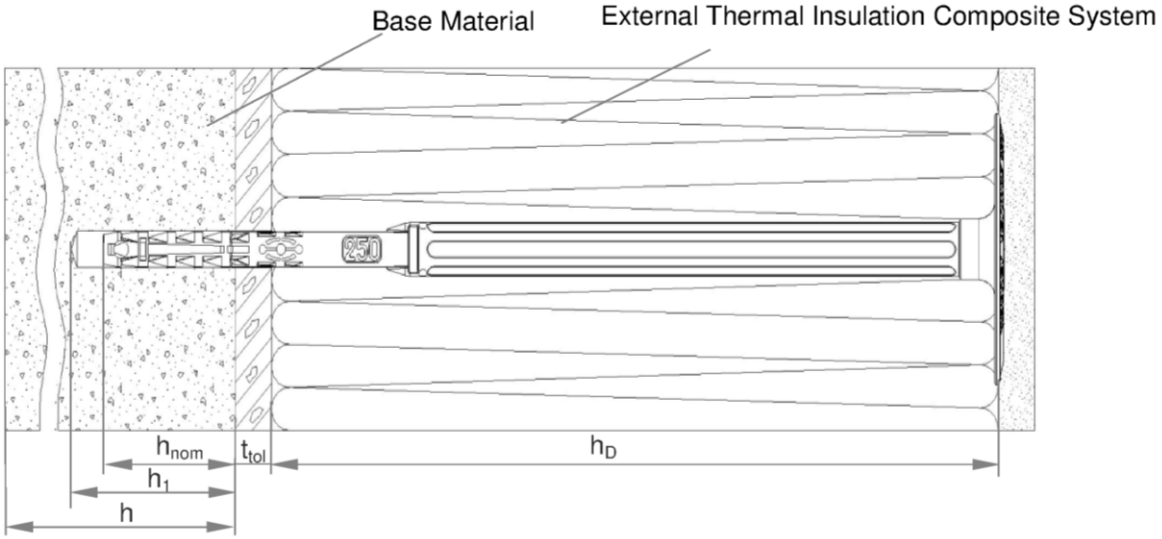
termoz CN8 KERAKOLL / 110 - 230 – flush mounted



termoz CN8 KERAKOLL / 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

termoz CN8 KERAKOLL	**Annex A1**
Product description Installed anchor – flush-mounted	

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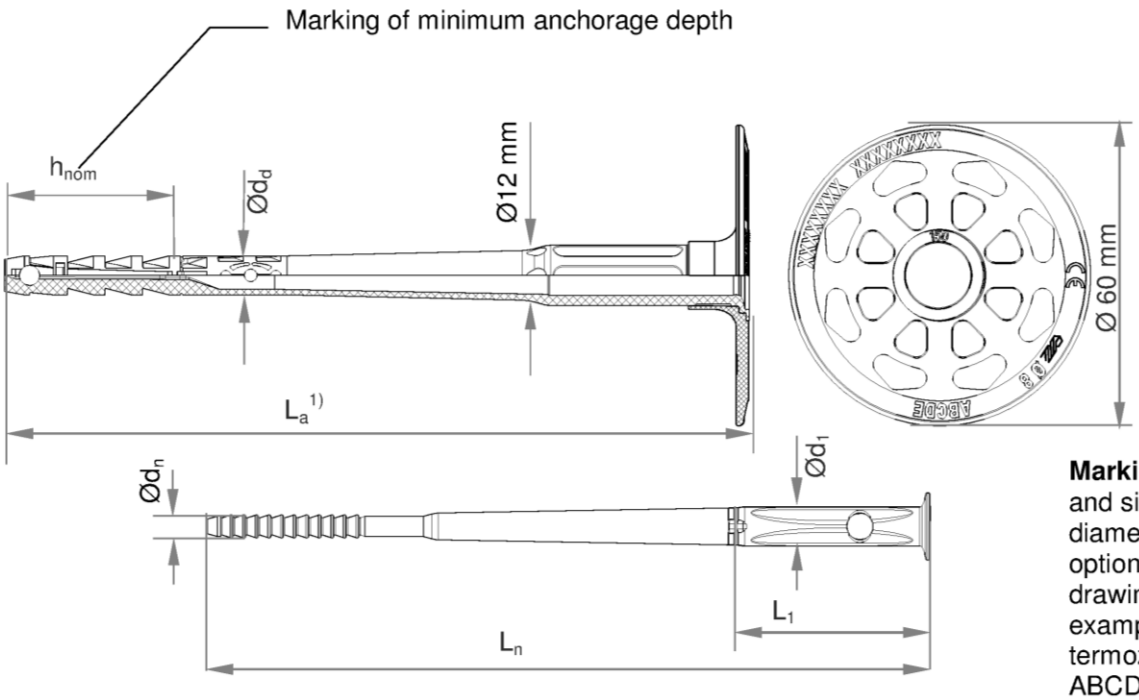
termoz CN8 KERAKOLL / 110 - 230



Marking: Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. termoz CN8 KERAKOLL ABCDE

1) Various length of the anchors are possible

e.g. for termoz CN8 KERAKOLL / 110 - 230:
110 mm ≥ L_a ≤ 230 mm
$L_a = L_n + 4$ mm

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

e.g. for termoz CN8 KERAKOLL 8x150: L_a = 148 mm, h_{nom} = 35 mm, t_{tol} = 10 mm

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

Table A2.1: Dimensions

Anchor type	Anchor sleeve		Specific compound nail		
	Ø d_d [mm]	**h_{nom}** [mm]	**Ø d_n** [mm]	**L_1** [mm]	**Ø d_1** [mm]
termoz CN8 KERAKOLL / 110 - 230	8	35/55 2)	4,5	40	8

2) Only for use cat. E

termoz CN8 KERAKOLL	**Annex A2**
Product description Dimensions termoz CN8 KERAKOLL / 110 - 230	

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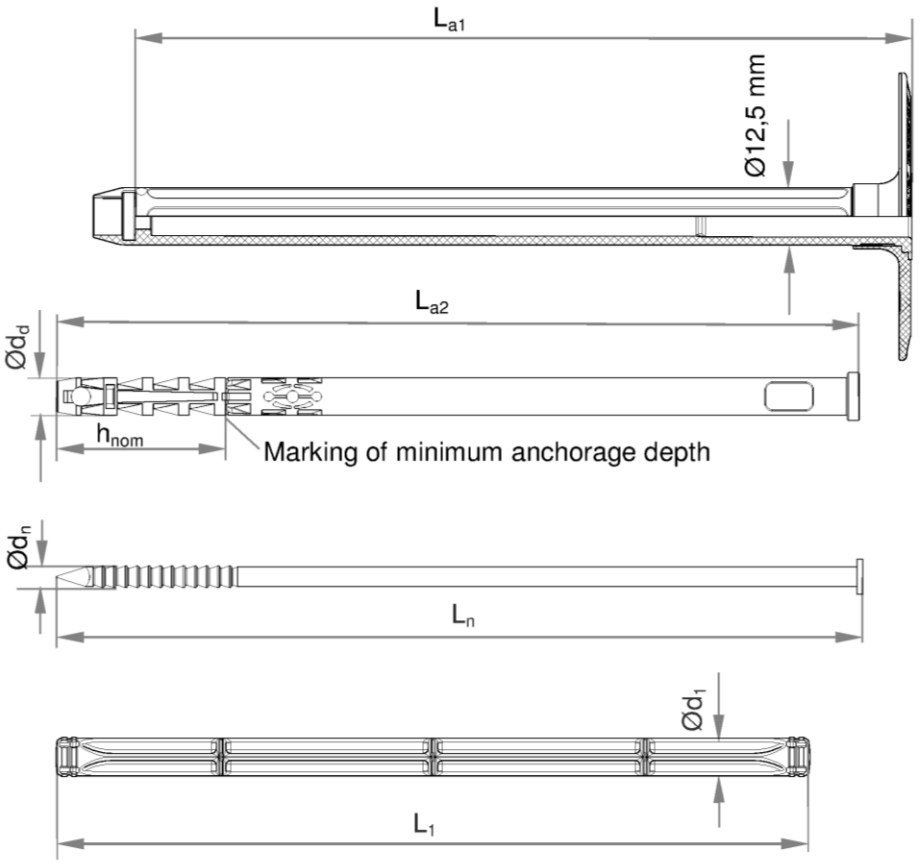
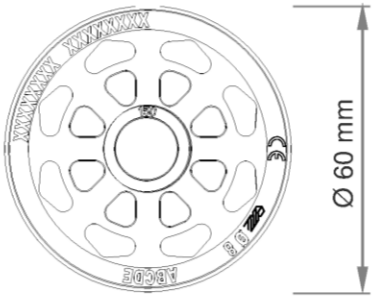
termoz CN8 KERAKOLL / 250 - 390





Marking: Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. termoz CN8 KERAKOLL, ABCDE

Various lengths of the anchors are possible:

e.g. for termoz CN8 KERAKOLL / 250 - 390:
250 mm ≥ $L_{a1} + L_{a2}$ ≤ 390 mm
$L_a = L_{a1} + L_{a2} = L_n + 160{,}5$ mm

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

e.g. for termoz CN8 KERAKOLL 8x330: $L_a = 328$ mm, $h_{nom} = 35$ mm, $t_{tol} = 10$ mm

$h_D = 328 - 35 - 10 \approx 280$ mm

Table A3.1: Dimensions

Anchor type	Shaft	Anchor sleeve			Nail		Plastic cylinder	
	L_{a1} [mm]	Ø d_d [mm]	h_{nom} [mm]	L_{a2} [mm]	Ø d_n [mm]	L_n [mm]	L_1 [mm]	Ø d_1 [mm]
termoz CN8 KERAKOLL / 250 - 390	161	8	35/55[1)]	87 - 247	4,5	(L_{a1}+L_{a2}) - 160,5	157	8

[1)] Only for use cat. E

termoz CN8 KERAKOLL	**Annex A3**
Product description Dimensions termoz CN8 KERAKOLL / 250 - 390	

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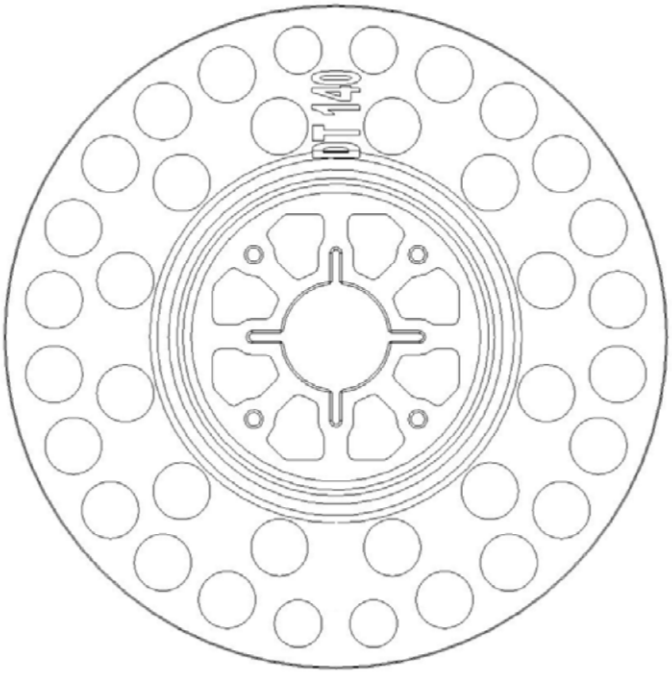
Table A4.1: Material

Designation	Material
Anchor sleeve	PP (virgin material), colour: grey
Shaft termoz CN8 KERAKOLL / 250 - 390	PA6 (virgin material)GF, colour: grey
Plastic cylinder termoz CN8 KERAKOLL / 250 - 390	PA6 (virgin material) GF
Specific nail termoz CN8 KERAKOLL / 250 - 390	Steel gal Zn A2G or A2F according to EN ISO 4042 : 1999
Specific compound nail termoz CN8 KERAKOLL / 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



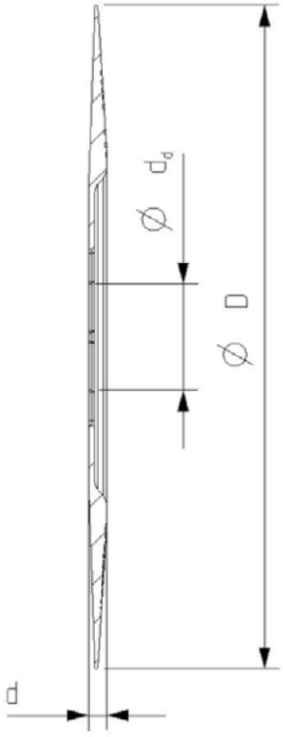


Table A4.2: Slip-on plate, diameters and material

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

termoz CN8 KERAKOLL	**Annex A4**
Product description Material Slip-on plates combined with termoz CN8 KERAKOLL	

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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 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 γ_M = 2,0 and γ_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 ≤ 6 weeks.

termoz CN8 KERAKOLL	**Annex B1**
Intended use Specifications	

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Table B2.1: Installation parameters / flush mounted

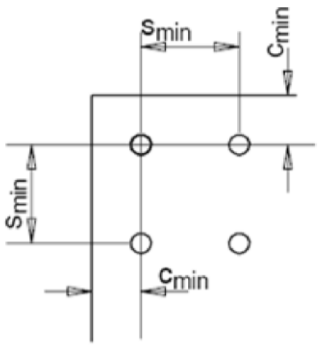
Anchor type				**termoz CN8 KERAKOLL**
Drill hole diameter	d_0	=	[mm]	8
Cutting diameter of drill bit	d_{cut}	≤	[mm]	8,45
Depth of drilled hole to deepest point	h_1	≥	[mm]	45/65[1)]
Overall plastic anchor embedment depth in the base material	h_{nom}	≥	[mm]	35/55[1)]

[1)] Only for use cat. "E"

Table B2.2: Minimum distances and spacing

				termoz CN8 KERAKOLL
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



termoz CN8 KERAKOLL	**Annex B2**
Intended use Installation parameters Minimum distances and spacing	

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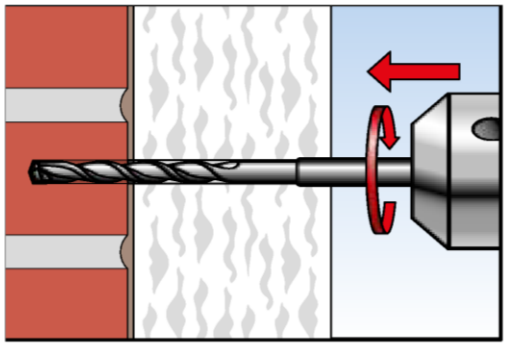
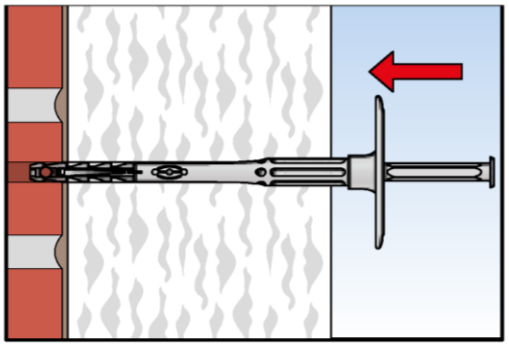
Installation instructions

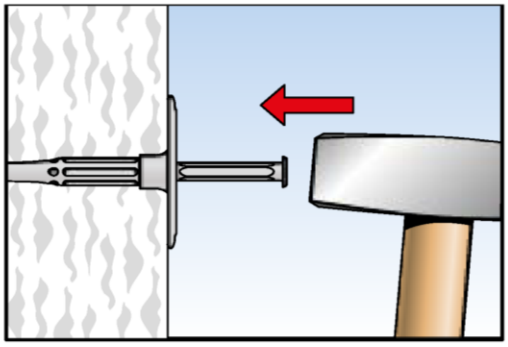
Setting of anchor (flush mounted) by hammer / TERMOZ CN8 KERAKOLL



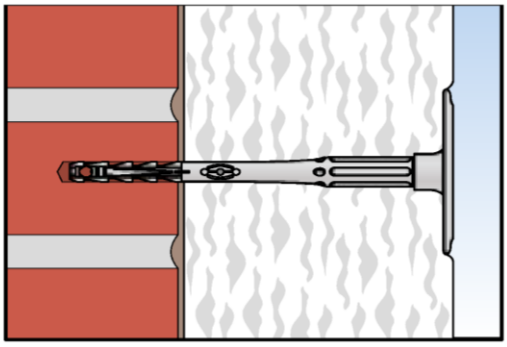
1.Drill hole by corresponding drilling method



2.Insert anchor manually



3.Set anchor by hammerblows



4.Correctly installed anchor

termoz CN8 KERAKOLL	**Annex B3**
Intended use Installation instruction	

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

Base material	Use cat.[1]	Min. compressive strength f_b [N/mm²]	Bulk density ρ [kg/dm³]	Remarks	Drill method[2]	Characteristic resistance N_{Rk} [kN]
Concrete ≥ C12/15 - C50/60 EN 206-1:2000	A	-	-	-	H	**0,9**
Solid clay bricks **Mz** acc. to EN 771-1:2011	B	12	≥ 2,0	Cross section reduced up to 15 % by perforation vertically to the resting area	H	**0,9**
Calcium silicate solid bricks **KS** e.g. acc. to EN 771-2:2011	B	12	≥ 1,8		H	**0,9**
Solid concrete blocks **Vbn** acc. to EN 771-3:2011	B	20	≥ 2,0		H	**0,75**
Lightweight concrete blocks **Vbl** acc. to EN 771-3:2011	B	8	≥ 1,4		H	**0,6**
Vertically perforated clay bricks **Hlz** acc. to EN 771-1:2011	C	12	≥ 1,0	Cross section reduced between 15 % and 50 % by perforation vertically to the resting area. Exterior web thickness ≥ 15 mm	R	**0,6**
Hollow calcium silicate brick **KSL** acc. to EN 771-2:2011	C	20	≥ 1,4	Cross section reduced between 15 % and 50 % by perforation vertically to the resting area. Exterior web thickness ≥ 23 mm	H	**0,75**
		12				**0,5**
Lightweight concrete hollow blocks **Hbl**, acc. to EN 771-3:2011	C	10	≥ 1,2	Cross section reduced between 15 % and 50 % by perforation vertically to the resting area. Exterior web thickness ≥ 38 mm	H	**0,6**
Lightweight aggregate concrete **LAC**, acc. to EN 1520:2011, EN 771-3:2011	D	6	≥ 0,8	-	H	**0,6**
		4				**0,4**
Autoclaved aerated concrete blocks, **AAC** acc. to EN 771-4:2011	E	6	> 0,6	-	R	**0,3**[3]
		4	> 0,4			**0,3**[3]

[1] See Annex B1
[2] R = Rotary drilling | H = Hammer drilling
[3] Only valid for $h_{nom} \geq 55$ mm

termoz CN8 KERAKOLL

Performance
Characteristic resistance termoz CN8 KERAKOLL

Annex C1

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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 χ [W/K]
termoz CN8 KERAKOLL / 110 - 230	60 - 80	0,001
	> 80 - 180	0,000
termoz CN8 KERAKOLL / 250 - 350	200 - 300	0,000
termoz CN8 KERAKOLL / 370 - 390	> 300 - 340	0,001

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

Anchor type	Size oft he anchor [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
termoz CN8 KERAKOLL	60	1,7	0,6

Table C2.3: Displacements termoz CN8 KERAKOLL

Base material		Tension load **F** [kN]	Displacements **δ** [mm]
Concrete ≥ 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

termoz CN8 KERAKOLL	**Annex C2**
Performance Point thermal transmittance, plate stiffness and displacements	