

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-19/0019  
of 21 January 2019

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

Unio-Plus VWS-Schlagdübel Termoz CN/ Unio-Plus  
WDVS-Schlagdübel CNplus 8

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

HORNBACH Baustoff Union GmbH  
Le Quartier Hornbach 11  
67433 Neustadt an der Weinstraße  
DEUTSCHLAND

Manufacturing plant

Hornbach Baustoff Union

This European Technical Assessment  
contains

20 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 Union-Plus VWS-Schlagdübel Termoz CN and Union-Plus WDVS-Schlagdübel CNplus 8 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) (Union-Plus VWS-Schlagdübel Termoz 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 Union-Plus VWS-Schlagdübel Termoz 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 and C 2
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 4
Displacements	See Annex C 4

#### 3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex 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+

English translation prepared by DIBt

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

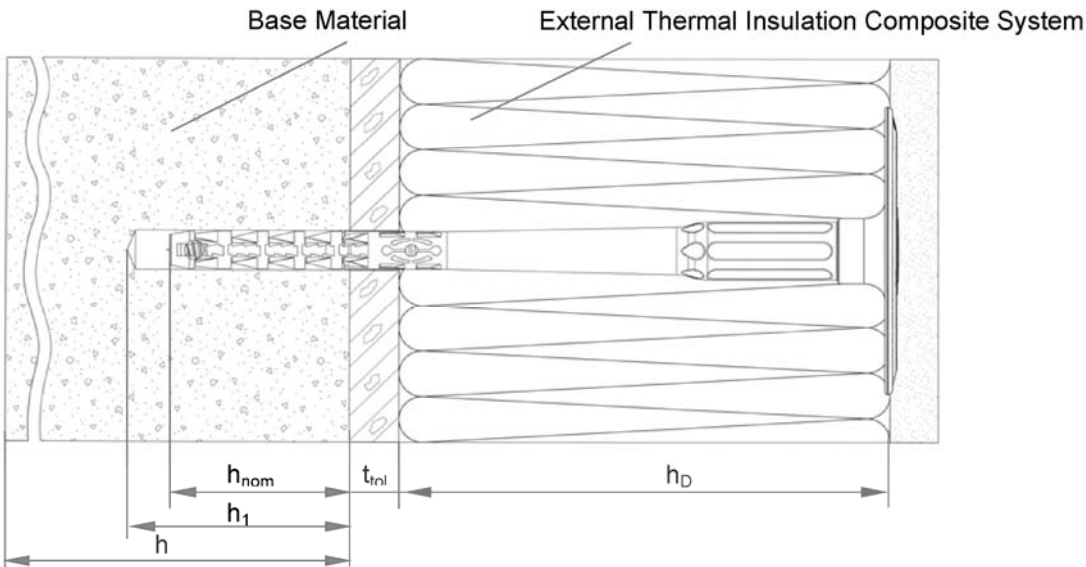
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 21 January 2019 by Deutsches Institut für Bautechnik

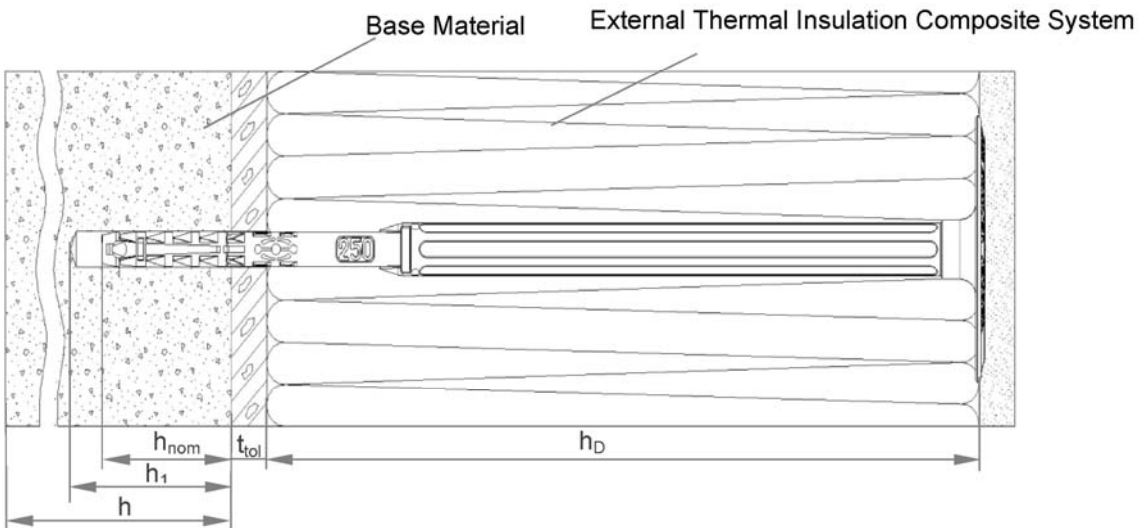
BD Dipl.-Ing. Andreas Kummerow  
Head of Department

*beglaubigt:*  
Aksünger

**Unio-Plus VWS-Schlagdübel Termoz CN / Unio-Plus WDVS-Schlagdübel CNplus 8 / 110 – 230 – flush mounted**



**Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390 /  
Unio-Plus WDVS-Schlagdübel CNplus 8 / 250-390 – flush mounted**



**Legend**

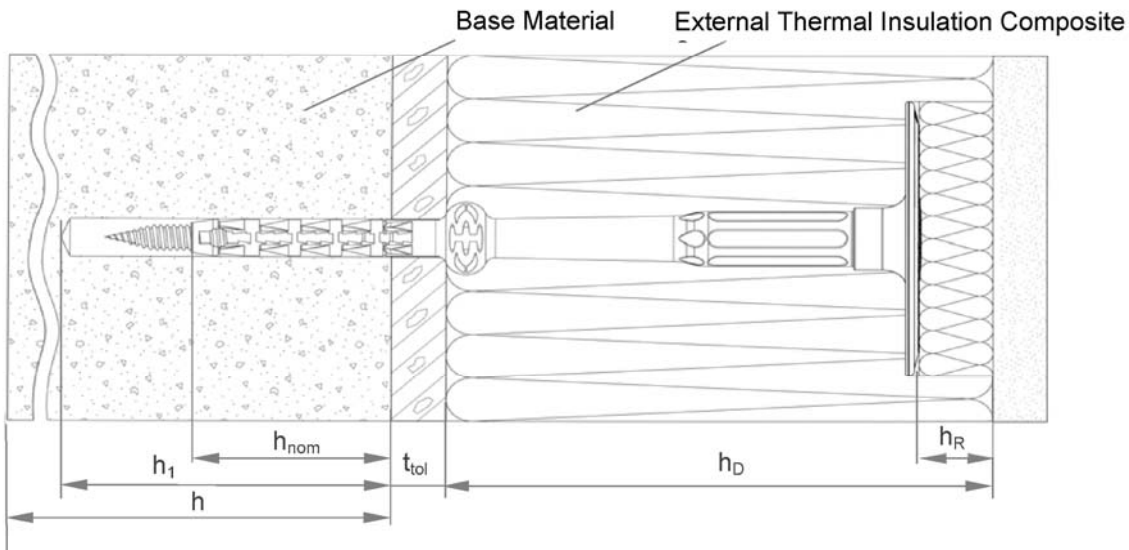
- $h_{nom}$  = Overall plastic anchor embedment depth in the base material
- $h_1$  = Depth of drilled hole to deepest point
- $h$  = Thickness of member (wall)
- $h_D$  = Thickness of insulation material
- $t_{tol}$  = Thickness of equalizing layer or non-load bearing coating

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

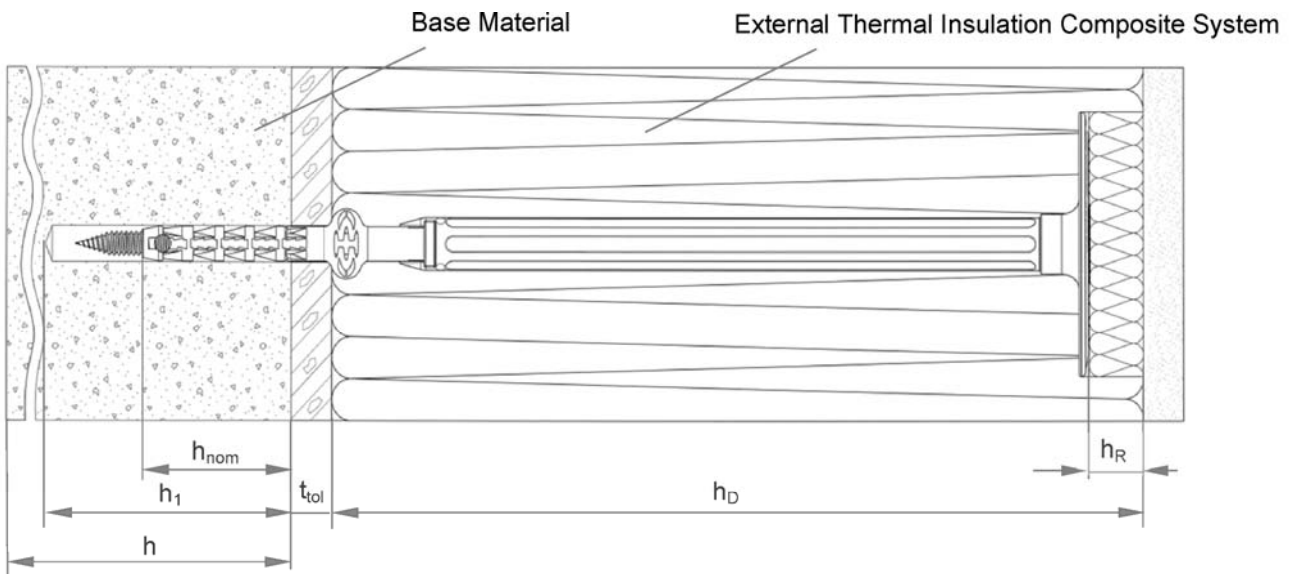
**Product description**  
Installed anchor – flush-mounted

**Annex A1**

**Unio-Plus WDVS-Schlagdübel CNplus 8 / 110 – 230 – countersunk mounted**



**Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 – 390 – countersunk 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
- $h_R$  = Thickness of insulation cap
- $t_{tol}$  = Thickness of equalizing layer or non-load bearing coating

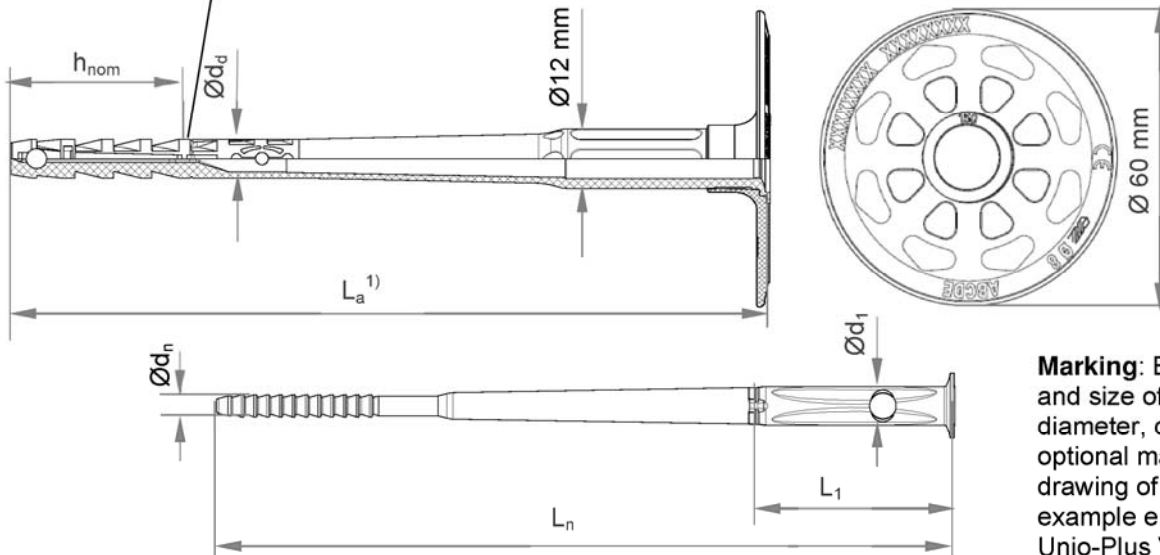
**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Product description**  
Installed anchor – countersunk mounted

**Annex A2**

### Unio-Plus VWS-Schlagdübel Termoz CN / 110-230

marking of minimum anchorage depth



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. Unio-Plus VWS-Schlagdübel Termoz CN ABCDE

1) Various length of the anchors are possible

e.g. for Unio-Plus VWS-Schlagdübel Termoz 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 Unio-Plus VWS-Schlagdübel Termoz 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 A3.1: Dimensions Unio-Plus VWS-Schlagdübel Termoz CN / 110-230**

Anchor type	Anchor sleeve		Specific compound nail		
	Ø d <sub>d</sub> [mm]	h <sub>nom</sub> [mm]	Ø d <sub>n</sub> [mm]	L <sub>1</sub> [mm]	Ø d <sub>1</sub> [mm]
Unio-Plus VWS-Schlagdübel Termoz CN / 110-230	8	35 / 55 <sup>2)</sup>	4,5	40	8

2) Only for use cat. E

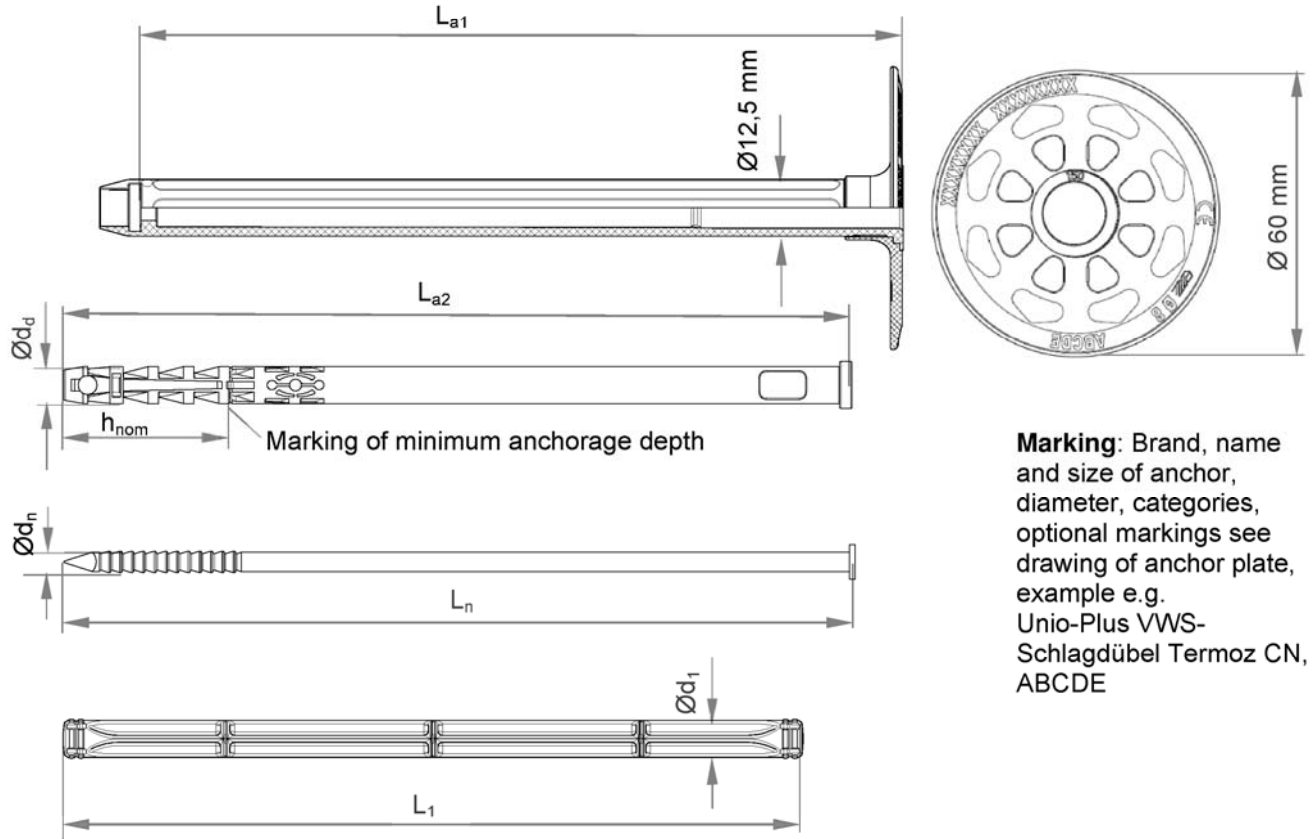
**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Annex A3**

**Product description**

Dimensions termoz CN8 / 110-230

**Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390**



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. Unio-Plus VWS-Schlagdübel Termoz CN, ABCDE

Various lengths of the anchors are possible:

e.g. for Unio-Plus VWS-Schlagdübel Termoz 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 Unio-Plus VWS-Schlagdübel Termoz 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 A4.1: Dimensions Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390**

Anchor type	Shaft		Anchor sleeve		Nail		Plastic cylinder	
	$L_{a1}$ [mm]	$\varnothing d_d$ [mm]	$h_{nom}$ [mm]	$L_{a2}$ [mm]	$\varnothing d_n$ [mm]	$L_n$ [mm]	$L_1$ [mm]	$\varnothing d_1$ [mm]
Unio-Plus VWS-Schlagdübel Termoz 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

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDV-Schlagdübel CNplus 8**

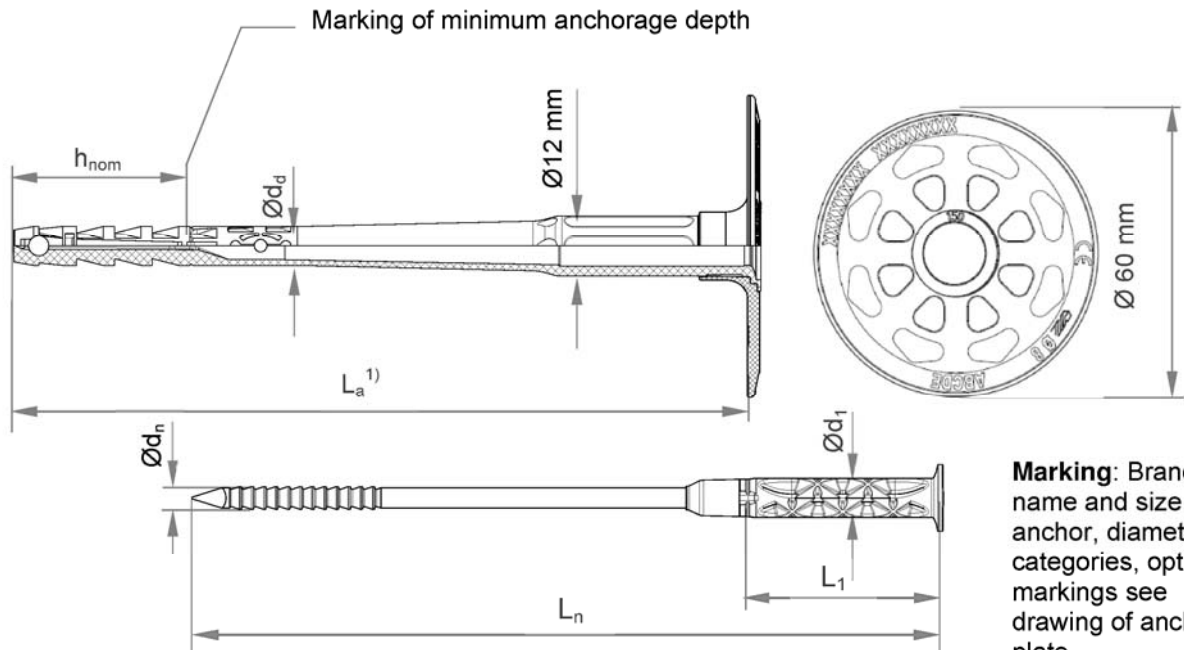
**Product description**

Dimensions Unio-Plus VWS-Schlagdübel Termoz CN / 250-390

**Annex A4**



**Unio-Plus WDVS-Schlagdübel CNplus 8 / 110–230**



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. Unio-Plus WDVS-Schlagdübel CNplus ABCDE

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

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 / 110 – 230:  $110 \text{ mm} \geq L_a \leq 230 \text{ mm}$   
 $L_a = L_n + 1,5 \text{ mm}$

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

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 8x150:  $L_a = 148 \text{ mm}$ ,  $h_{nom} = 35 \text{ mm}$ ,  $t_{tol} = 10 \text{ mm}$   
 $h_D = 148 - 35 - 10 \approx 100$

**Table A5.1: Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 110–230**

Anchor type	Anchor sleeve		Specific compound nail			
	Ø d <sub>d</sub> [mm]	h <sub>nom</sub> [mm]	Ø d <sub>n</sub> [mm]	L <sub>n</sub> [mm]	L <sub>1</sub> [mm]	Ø d <sub>1</sub> [mm]
Unio-Plus WDVS-Schlagdübel CNplus 8 / 110-230	8	35 / 55 <sup>1)</sup>	4,3	L <sub>a</sub> – 1,5	40	8

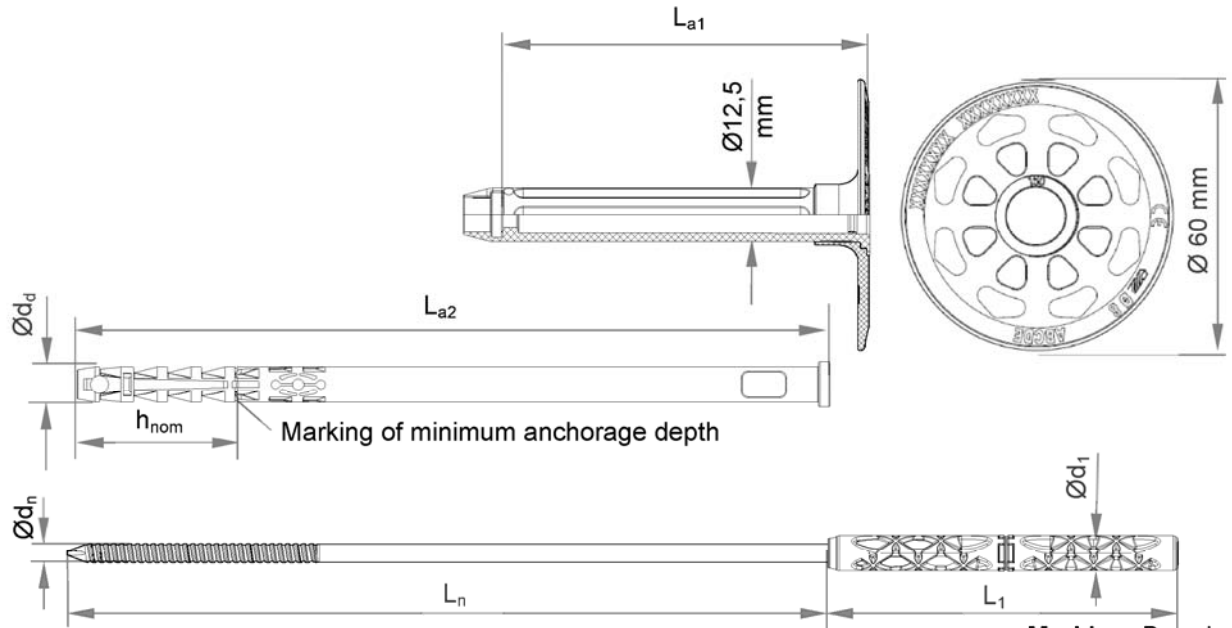
<sup>1)</sup> Only for use cat. D & E

**Unio-Plus VWS-Schlagdübel TermoZ CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Product description**  
Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 110-230

**Annex A5**

**Unio-Plus WDVS-Schlagdübel CNplus 8 / 250–310**



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. Unio-Plus WDVS-Schlagdübel CNplus ABCDE

Various lengths of the anchors are possible:

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 – 310:  
 $250 \text{ mm} \geq L_{a1} + L_{a2} \leq 310 \text{ mm}$   
 $L_a = L_{a1} + L_{a2} = L_n + 79,5 \text{ mm}$

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

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 x 250:  $L_a = 248 \text{ mm}$ ,  $h_{nom} = 35 \text{ mm}$ ,  $t_{tol} = 10 \text{ mm}$   
 $h_D = 248 - 35 - 10 \approx 200 \text{ mm}$

**Table A6.1: Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 – 310**

Anchor type	Shaft		Anchor sleeve			Specific compound nail		
	$L_{a1}$ [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]
Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 – 310	81	8	35 / 55 <sup>1)</sup>	167 - 247	4,3	$(L_{a1}+L_{a2}) - 79,5$	77,5	8

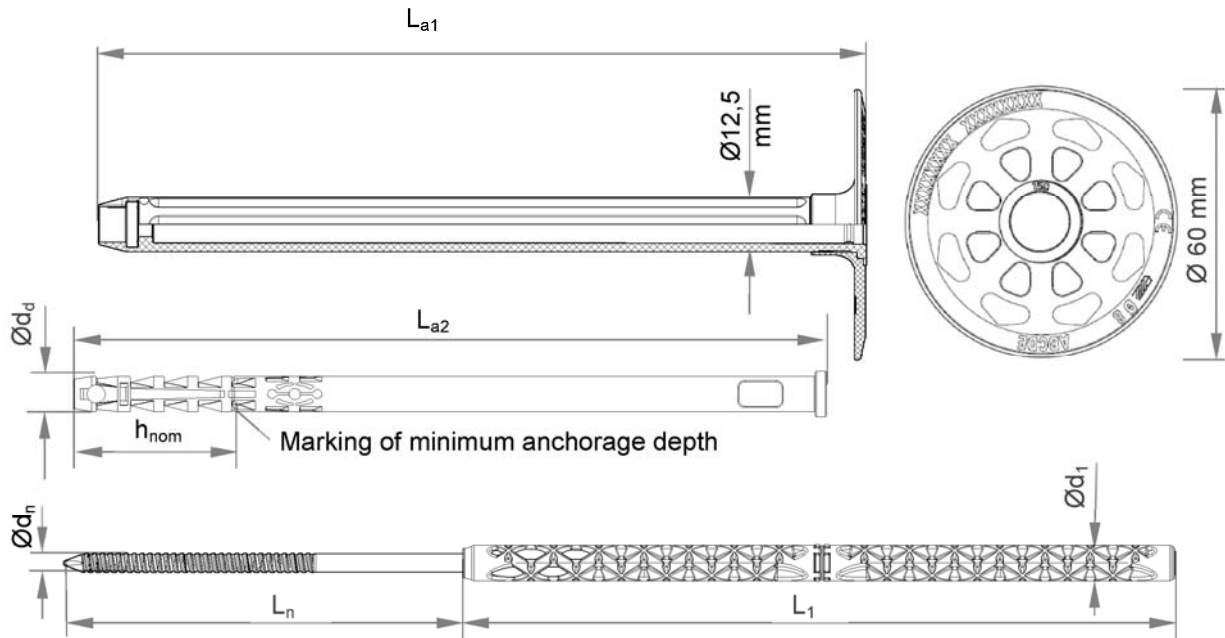
<sup>1)</sup> Only for use cat. D & E

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Product description**  
Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 250-310

**Annex A6**

### Unio-Plus WDVS-Schlagdübel CNplus 8 / 330–390



**Marking:** Brand, name and size of anchor, diameter, categories, optional markings see drawing of anchor plate, example e.g. Unio-Plus WDVS-Schlagdübel CNplus ABCDE

Various lengths of the anchors are possible:

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 / 330 – 390:

$$330 \text{ mm} \geq L_{a1} + L_{a2} \leq 390 \text{ mm}$$

$$L_a = L_{a1} + L_{a2} = L_n + 159,5 \text{ mm}$$

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

e.g. for Unio-Plus WDVS-Schlagdübel CNplus 8 8 x 330:  $L_a = 328 \text{ mm}$ ,  $h_{nom} = 35 \text{ mm}$ ,  $t_{tol} = 10 \text{ mm}$

$$h_D = 328 - 35 - 10 \approx 280 \text{ mm}$$

**Table A7.1: Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 330 – 390**

Anchor type	Shaft		Anchor sleeve			Specific compound nail		
	$L_{a1}$ [mm]	$\varnothing d_d$ [mm]	$h_{nom}$ [mm]	$L_{a2}$ [mm]	$\varnothing d_n$ [mm]	$L_n$ [mm]	$L_1$ [mm]	$\varnothing d_1$ [mm]
Unio-Plus WDVS-Schlagdübel CNplus 8/ 330 – 390	161	8	35 / 55 <sup>1)</sup>	167 - 247	4,3	$(L_{a1}+L_{a2}) - 159,5$	157,5	8

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

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

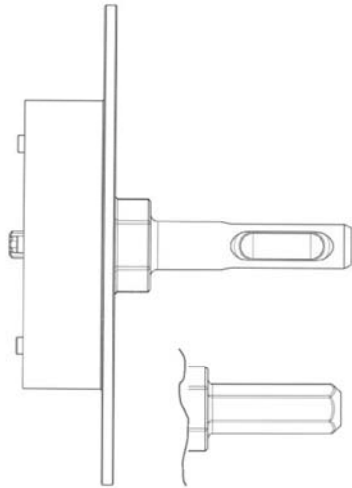
**Product description**  
Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 330-390

**Annex A7**

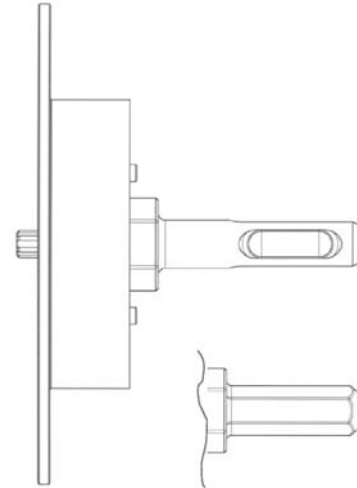
**Setting tool with SDS adapter or hexagonal adapter available**

**Unio-Plus WDVS-Schlagdübel CNplus 8**

**Countersunk setting <sup>1)</sup>**

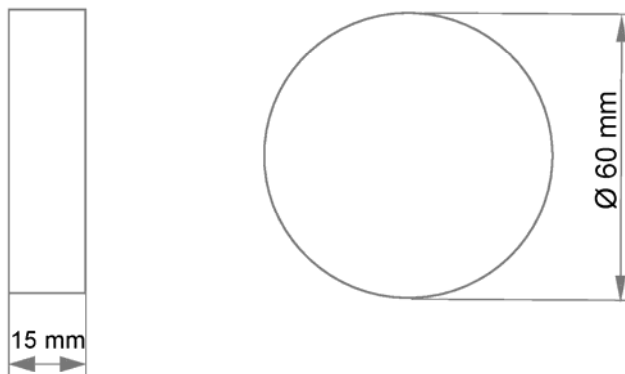


**optional plain surface setting**



<sup>1)</sup> Alternatively, it is possible to mill the insulation material with a standard, market-available milling tool.

**Polystyrene or mineral wool cap**



**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

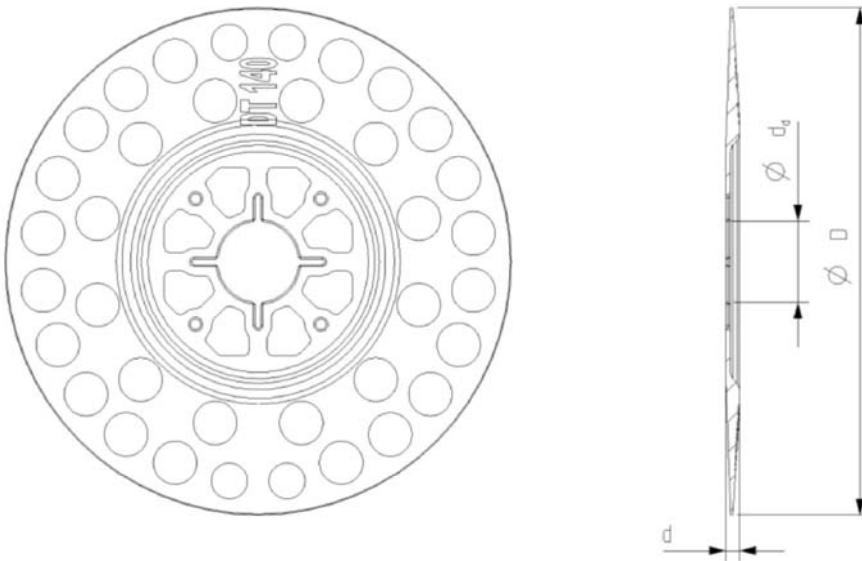
**Product description**  
Setting tool for Unio-Plus WDVS-Schlagdübel CNplus 8

**Annex A8**

**Table A9.1: Material**

Designation	Material
Anchor sleeve	PP (virgin material), colour: grey
Shaft Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390 or Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 - 390	PA6 (virgin material)GF, colour: grey
Plastic cylinder Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390	PA6 (virgin material) GF
Specific nail Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390	Steel gal Zn A2G or A2F In accordance with EN ISO 4042 : 1999
Specific compound nail Unio-Plus VWS-Schlagdübel Termoz CN / 110 – 230 or Unio-Plus WDVS-Schlagdübel CNplus 8 / 110 – 230 or Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 - 390	PA6 GF (plastic part of compound nail) Steel gal Zn A2G or A2F In accordance with 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 A9.2: 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

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Product description**

Material

Slip-on plates combined with Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8

**Annex A9**

## 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), in accordance with Annex C1 and C2.
- Solid masonry (use category B), in accordance with Annex C1 and C2.
- Hollow or perforated masonry (use category C), in accordance with Annex C1 and C2.
- Lightweight aggregate concrete (use category D), in accordance with Annex C1 and C2.
- Autoclaved aerated concrete (use category E), in accordance with Annex C1 and C2.
- 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 and C2.
- 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.

Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDV-Schlagdübel CNplus 8

Intended use  
Specification

Annex B1

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

Anchor type			Unio-Plus VWS-Schlagdübel Termoz CN   Unio-Plus WDVS-Schlagdübel CNplus 8
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]	45/55 <sup>1)</sup> /65 <sup>2)</sup>
Overall plastic anchor embedment depth in the base material	$h_{nom}$	≥ [mm]	35/45 <sup>1)</sup> /55 <sup>2)</sup>

<sup>1)</sup> Only Unio-Plus WDVS-Schlagdübel CNplus 8: for weather shell (thin concrete slabs) : 35 mm ≤  $h_{nom}$  ≤ 45 mm

<sup>2)</sup> Unio-Plus VWS-Schlagdübel Termoz CN : Only for use cat. "E" | Unio-Plus WDVS-Schlagdübel CNplus 8:  
Only for use cat. "D" & "E"

**Table B2.2: Installation parameters / countersunk mounted**

Anchor type			Unio-Plus WDVS-Schlagdübel CNplus 8
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]	60/70 <sup>1)</sup> /80 <sup>2)</sup>
Overall plastic anchor embedment depth in the base material	$h_{nom}$	≥ [mm]	35/45 <sup>1)</sup> /55 <sup>2)</sup>

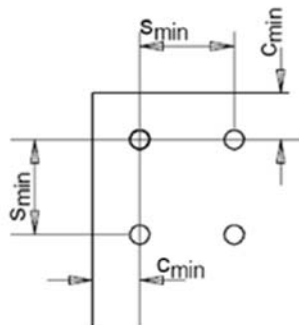
<sup>1)</sup> valid for weather shell (thin concrete slabs): 35 mm ≤  $h_{nom}$  ≤ 45 mm

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

**Table B2.3: Minimum distances and spacing**

			Unio-Plus VWS-Schlagdübel Termoz CN   Unio-Plus WDVS-Schlagdübel CNplus 8
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**



Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8

**Intended use**

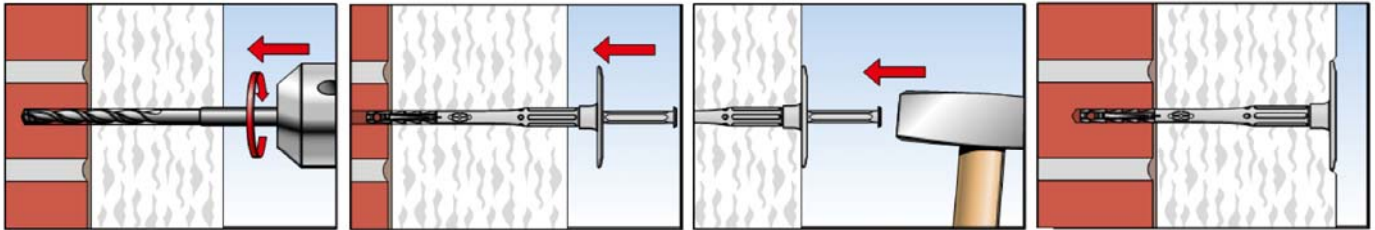
Installation parameters

Minimum distances and spacing

**Annex B2**

### Installation instructions

#### Setting of anchor (flush mounted) by hammer / Unio-Plus VWS-Schlagdübel Termoz CN | Unio-Plus WDVS-Schlagdübel CNplus 8



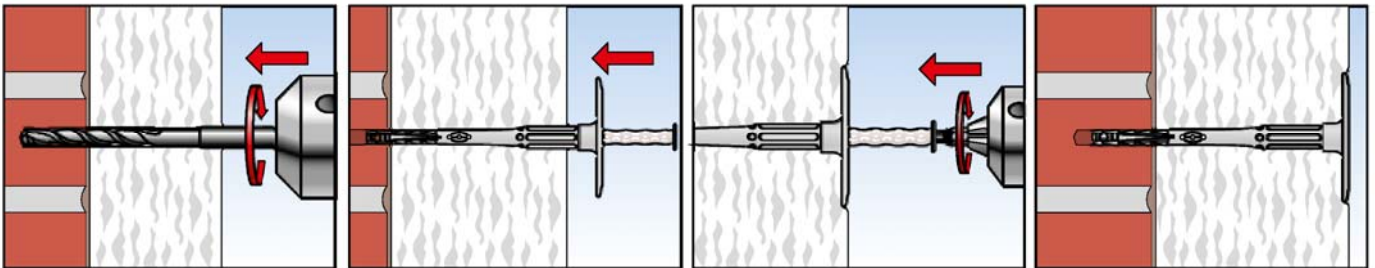
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by hammerblows

4. Correctly installed anchor

#### Setting of anchor (flush mounted) by machine / Unio-Plus WDVS-Schlagdübel CNplus 8



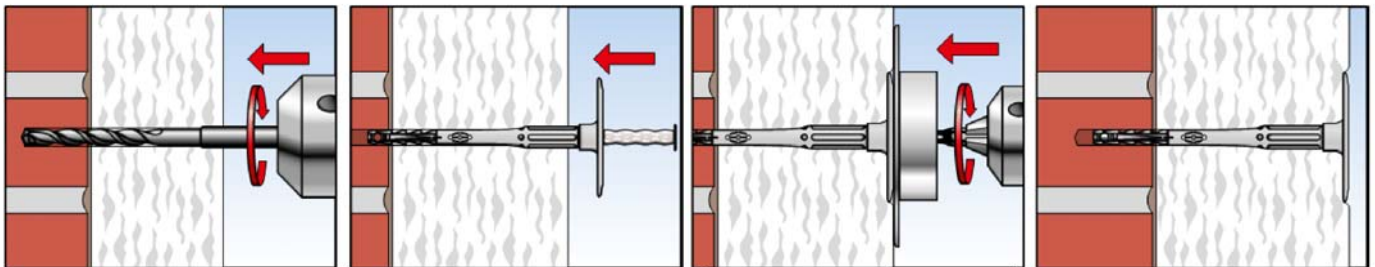
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by machine.

4. Correctly installed anchor

#### Setting of anchor (flush mounted) by setting tool \ Unio-Plus WDVS-Schlagdübel CNplus 8



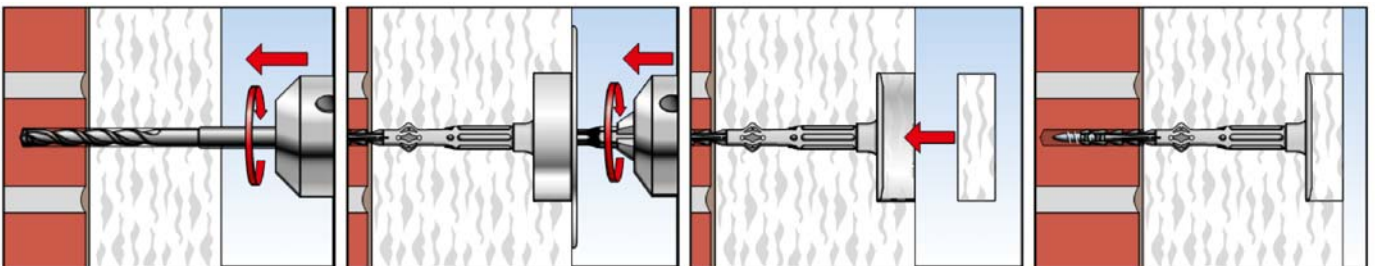
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by setting tool.

4. Correctly installed anchor

#### Setting of anchor (countersunk mounted) by setting tool / Unio-Plus WDVS-Schlagdübel CNplus 8



1. Drill hole by corresponding drilling method

2. Insert anchor and set anchor by setting tool.

3. Put on polystyrene or mineral wool cap

4. Correctly installed anchor

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**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]  <b>Unio-Plus VWS-Schlagdübel Termoz CN</b>
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

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Performance**  
Characteristic resistance Unio-Plus VWS-Schlagdübel Termoz CN

**Annex C1**

**Table C2.1: 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] <b>Unio-Plus WDVS- Schlagdübel CNplus 8</b>
Concrete $\geq$ C12/15 - C50/60 EN 206-1:2000	A	-	-	-	H	<b>0,9</b>
Weather resistant concrete shell $\geq$ C20/25 EN 206-1:2000	A	-	-	$h \geq 42$ mm ; $t_{fix} \geq 35$ mm	H	<b>0,9</b>
Solid clay bricks <b>Mz</b> acc. to EN 771-1:2011	B	20	$\geq 1,8$	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> acc. to EN 771-2:2011	B	20	$\geq 1,8$		H	<b>0,9</b>
Solid concrete blocks <b>Vbn</b> acc. to EN 771-3:2011	B	20	$\geq 2,0$		H	<b>0,9</b>
Lightweight concrete blocks <b>Vbl</b> acc. to EN 771-3:2011	B	10	$\geq 1,6$		H	<b>0,75</b>
Vertically perforated clay bricks <b>Hiz</b> acc. to EN 771-1:2011	C	48	$\geq 1,6$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 17$ mm	R	<b>0,75</b>
		12	$\geq 1,0$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 15$ mm		<b>0,5</b>
Hollow calcium silicate brick <b>KSL</b> acc. to EN 771-2:2011	C	16	$\geq 1,4$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness $\geq 16$ mm	H	<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	$\geq 0,9$	-	H	<b>0,4<sup>3)</sup></b>
Autoclaved aerated concrete blocks, <b>AAC</b> acc. to EN 771-4:2011	E	4	$> 0,4$	-	R	<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

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Performance**

Characteristic resistance Unio-Plus WDVS-Schlagdübel CNplus 8

**Annex C2**

**Table C3.1:** Point thermal transmittance in accordance with EOTA Technical Report TR 025 : 2016 – 05  
Unio-Plus VWS-Schlagdübel Termoz CN

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

**Table C3.2:** Point thermal transmittance in accordance with EOTA Technical Report TR 025 : 2016 – 05  
Unio-Plus WDVS-Schlagdübel CNplus 8 - flush mounted

Thickness of insulation material $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]				
	cat. A	cat. B	cat. C	cat. D	cat. E
60	0,001	0,001	0,001	0,001	0
80					0,001
100	0,002	0,002	0,001		
120				0,002	
140	0,001	0,001	0		
160				0,001	
180	0,001	0,001	0,001		
200				0,001	0,001
220	0,001	0,001	0,001		
240				0,001	0,001
260	0,001	0,001	0,001		
280				0,001	0,001
300	0,001	0,001	0,001		
320				0,001	0,001
340	-	-	-		

**Table C3.3:** Point thermal transmittance in accordance with EOTA Technical Report TR 025 : 2016 – 05  
Unio-Plus WDVS-Schlagdübel CNplus 8 - countersunk mounted

Thickness of insulation material $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]				
	cat. A	cat. B	cat. C	cat. D	cat. E
80	0,001	0	0	0	0
100		0,001	0,001	0,001	0,001
120	0,002				
140		0,001	0,001	0,001	0,001
160	0,001				
180		0,001	0,001	0,001	0,001
200	0,001				
220		0,001	0,001	0,001	0,001
240	0,001				
260		0,001	0,001	0,001	0,001
280	0,001				
300		0,001	0,001	0,001	0,001
320	0,001				
340		-	-	-	-

Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8

Performance  
Point thermal transmittance

Annex C3

**Table C4.1: Plate stiffness in accordance with EOTA Technical Report TR 026 : 2016 – 05**

Anchor type	Size of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
Unio-Plus VWS-Schlagdübel Termoz CN and Unio-Plus WDVS-Schlagdübel CNplus 8	60	1,7	0,6

**Table C4.2: Displacements Unio-Plus VWS-Schlagdübel Termoz CN**

Base material	Unio-Plus VWS-Schlagdübel Termoz CN		
	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 bricks (EN 771-2:2011), KS 12	0,30	< 0,3	
Vertically perforated clay brick (EN 771-1:2011), Hlz 12	0,2	< 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	0,2	< 0,2	
Lightweight concrete solid blocks (EN 771-3:2011), Vbl 8	0,2	< 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

**Table C4.3: Displacements Unio-Plus WDVS-Schlagdübel CNplus 8**

Base material	Unio-Plus WDVS-Schlagdübel CNplus 8		
	Tension load F [kN]	Displacements $\delta$ [mm]	
Concrete $\geq$ C12/15 – C50/60 (EN 206-1:2000)	0,30	< 0,1	
Weather resistant concrete shell $\geq$ C20/25 (EN 206-1:2000)	0,30	< 0,1	
Clay brick (EN 771-1:2011), Mz 20	0,30	< 0,2	
Calcium silicate solid bricks (EN 771-2:2011), KS 20	0,30	< 0,2	
Solid concrete blocks (EN 771-3:2011), Vbn 20	0,30	< 0,2	
Lightweight concrete solid blocks (EN 771-3:2011), Vbl 10	0,25	< 0,1	
Vertically perforated clay brick (EN 771-1:2011), Hlz 48	0,25	< 0,2	
Vertically perforated clay brick (EN 771-1:2011), Hlz 12	0,17	< 0,1	
Hollow calcium silicate brick (EN 771-2:2011), KSL 16	0,17	< 0,1	
Hollow brick lightweight concrete (EN 771-3:2011), Hbl 10	0,20	< 0,1	
Lightweight aggregate concrete (EN 1520:2011, EN 771-3:2011)	LAC 6	0,13	< 0,2
Autoclaved aerated concrete blocks (EN 771-4:2011)	AAC 4	0,10	< 0,1

**Unio-Plus VWS-Schlagdübel Termoz CN |  
Unio-Plus WDVS-Schlagdübel CNplus 8**

**Performance**  
Plate stiffness  
Displacements

**Annex C4**