

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 May 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

This version replaces

ETA-19/0019 issued on 21 January 2019

European Technical Assessment

ETA-19/0019

English translation prepared by DIBt

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Specific Part

1 Technical description of the product

The Unio-Plus VWS-Schlagdübel Termoz CN and Unio-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) (Unio-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 Unio-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+

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

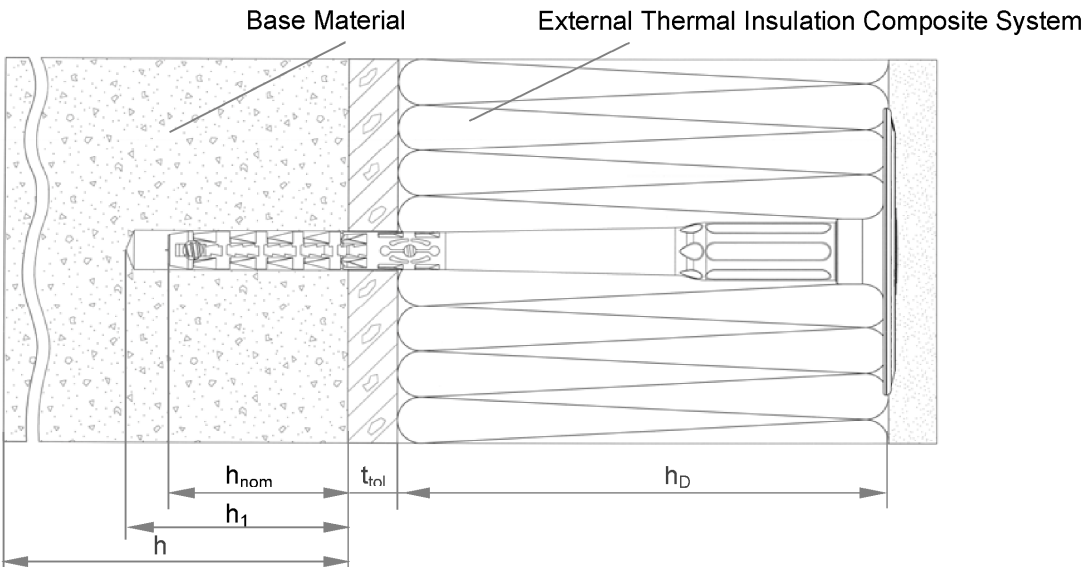
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

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

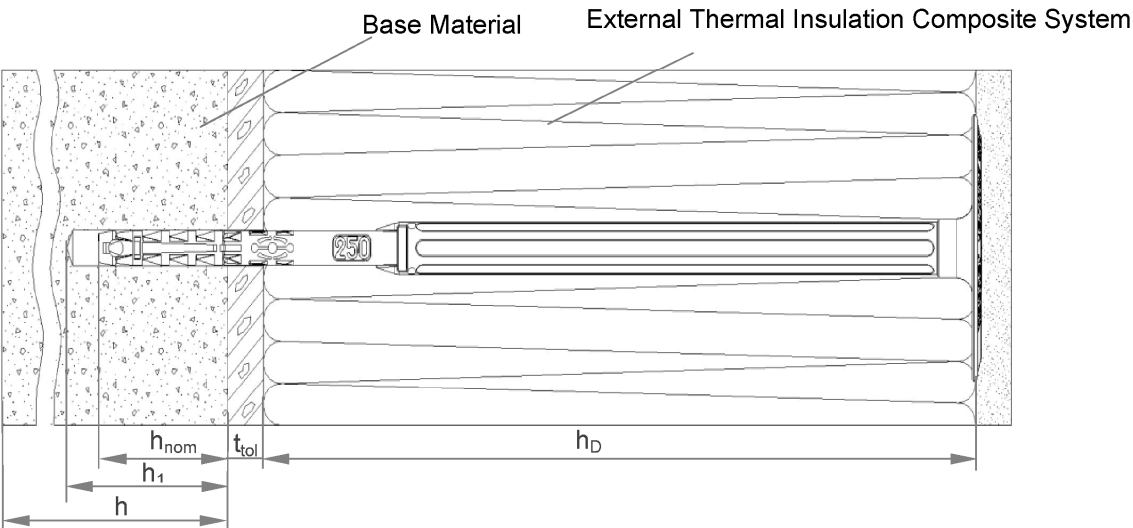
BD Dipl.-Ing. Andreas Kummerow
Head of Department

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

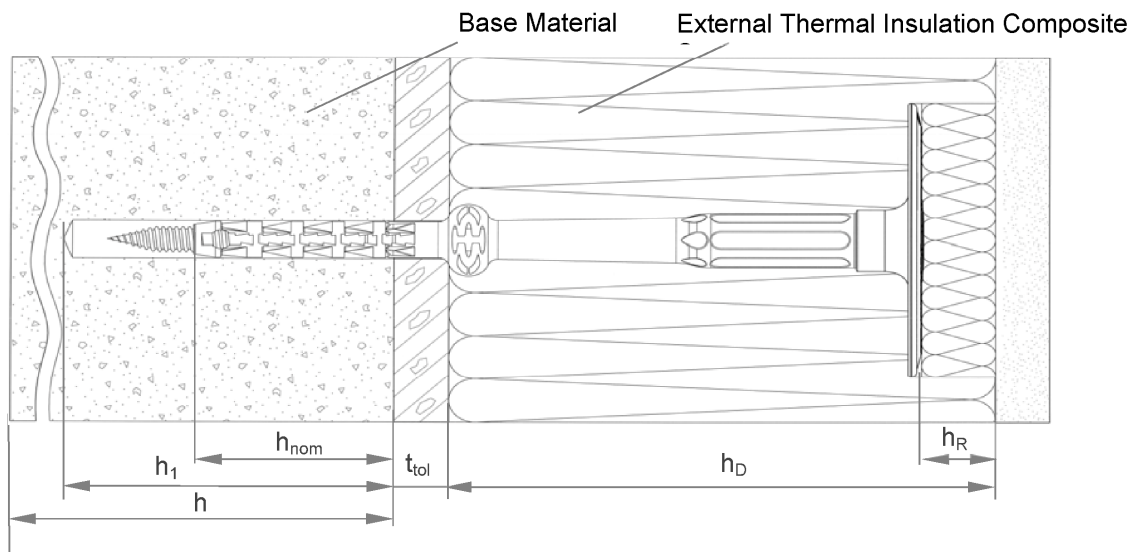
- h_{nom} = Overall plastic anchor embedment depth in the base material
- h_1 = Depth of drilled hole to deepest point
- h = Thickness of member (wall)
- h_D = Thickness of insulation material
- t_{tol} = Thickness of equalizing layer or non-load bearing coating

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

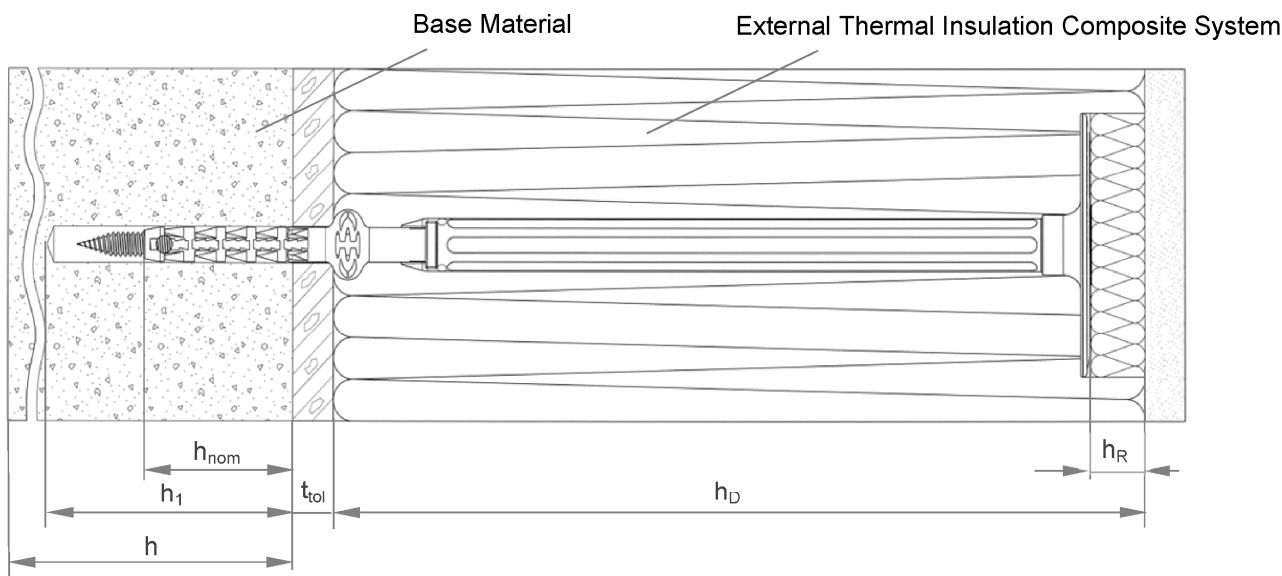
Product description
Installed anchor – flush-mounted

Annex A1

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



Unio-Plus WDVS-Schlagdübel CNplus 8 / 250 – 390 – countersunk mounted



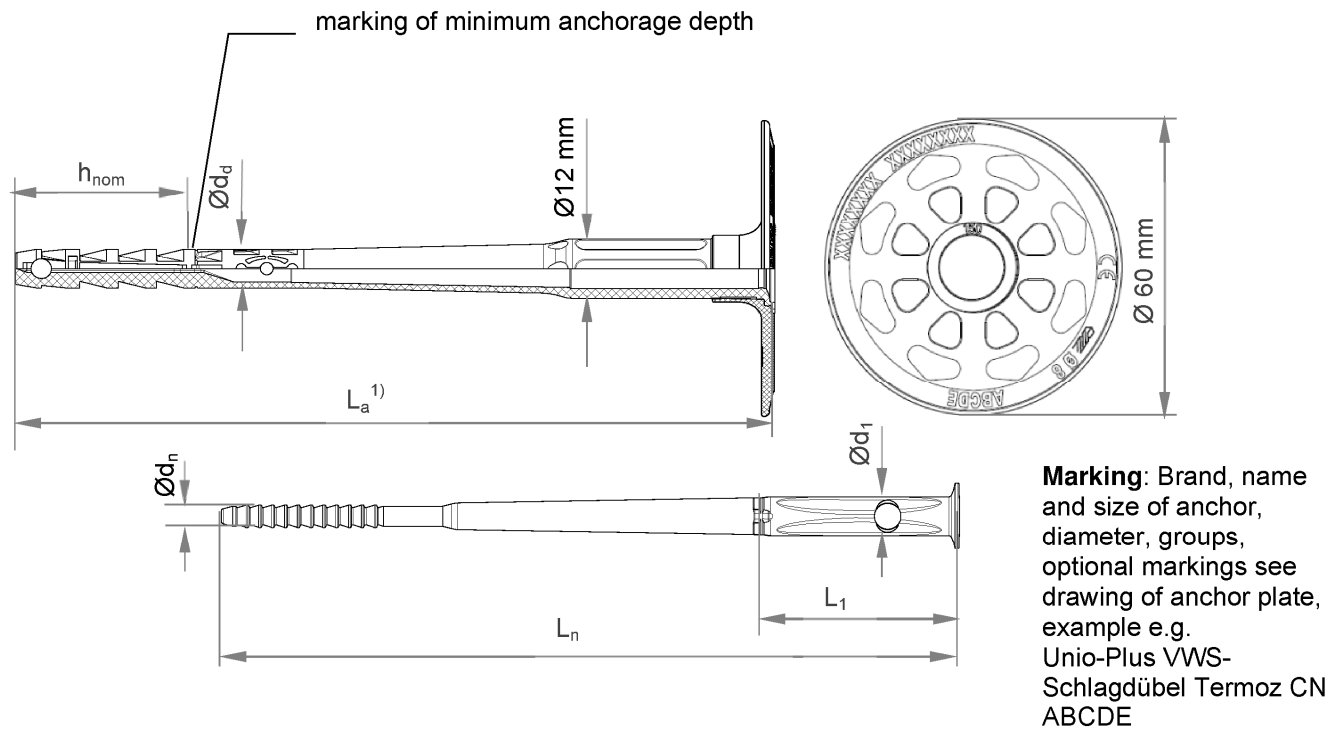
- Legend**
- h_{nom} = Overall plastic anchor embedment depth in the base material
 - h_1 = Depth of drilled hole to deepest point
 - h = Thickness of member (wall)
 - h_D = Thickness of insulation material
 - h_R = Thickness of insulation cap
 - t_{tol} = Thickness of equalizing layer or non-load bearing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



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 _d [mm]	h _{nom} [mm]	Ø d _n [mm]	L ₁ [mm]	Ø d ₁ [mm]
Unio-Plus VWS-Schlagdübel Termoz CN / 110-230	8	35 / 55 ²⁾	4,5	40	8

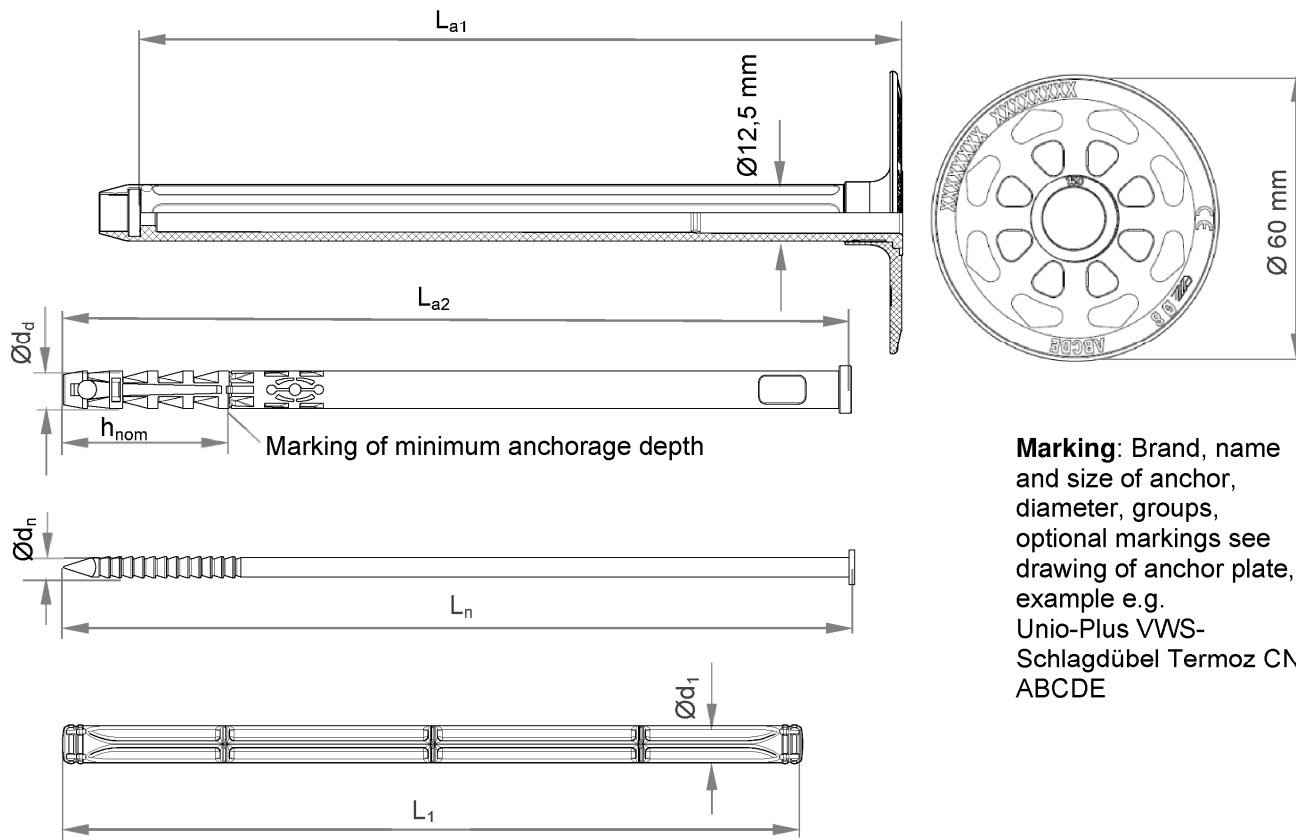
²⁾ Only for group E

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

Product description
Dimensions Unio-Plus VWS-Schlagdübel Termoz CN / 110-230

Annex A3

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



Marking: Brand, name and size of anchor, diameter, groups, 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]	Ø d _d [mm]	h _{nom} [mm]	L _{a2} [mm]	Ø d _n [mm]	L _n [mm]	L ₁ [mm]	Ø d ₁ [mm]
Unio-Plus VWS-Schlagdübel Termoz CN / 250 – 390	161	8	35 / 55 ¹⁾	87 - 247	4,5	(L _{a1} +L _{a2}) – 160,5	157	8

¹⁾ Only for group E

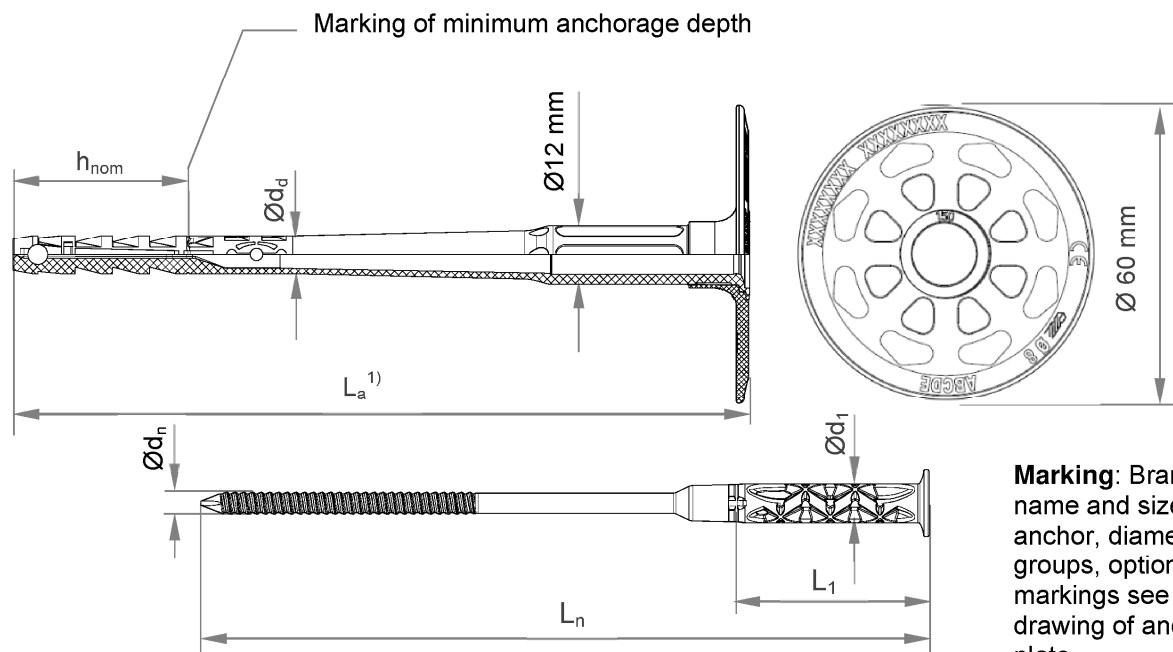
**Unio-Plus VWS-Schlagdübel Termoz CN |
Unio-Plus WDVS-Schlagdübel CNplus 8**

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, groups, optional markings see drawing of anchor plate, example e.g. Unio-Plus WDVS-Schlagdübel CNplus ABCDE

¹⁾ 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 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 _d [mm]	h _{nom} [mm]	Ø d _n [mm]	L _n [mm]	L ₁ [mm]	Ø d ₁ [mm]
Unio-Plus WDVS-Schlagdübel CNplus 8 / 110-230	8	35 / 55 ¹⁾	4,3	L _a – 1,5	40	8

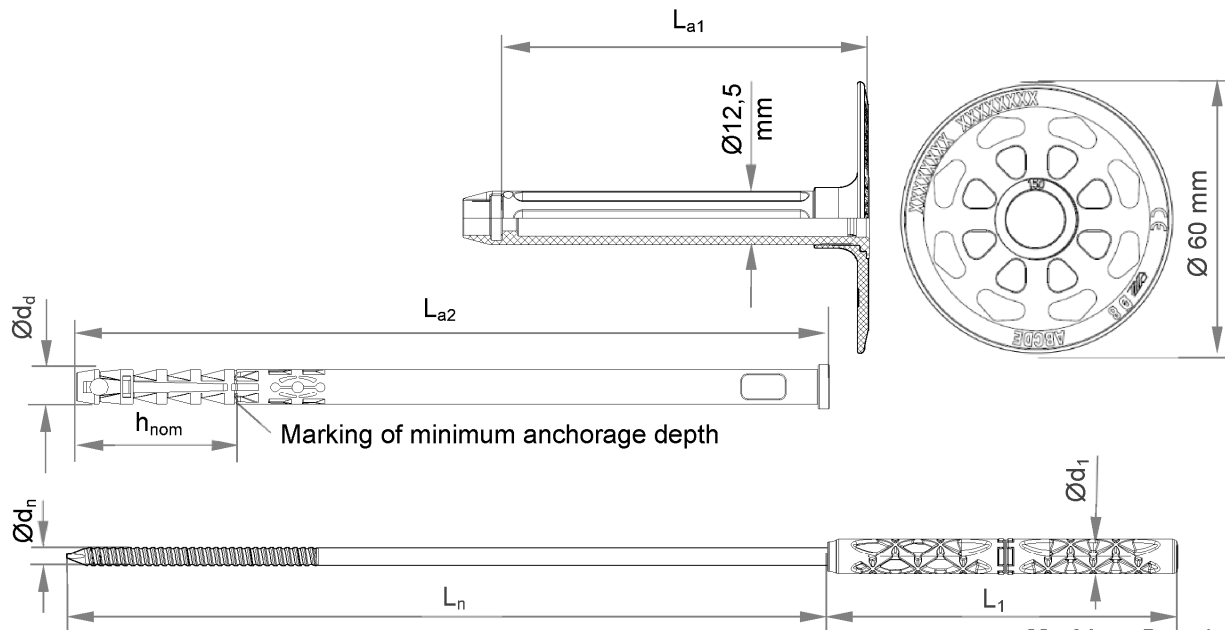
¹⁾ Only for groups D & E

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 WDV-Schlagdübel CNplus 8 / 250–310



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

Various lengths of the anchors are possible:

e.g. for Unio-Plus WDV-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 WDV-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 WDV-Schlagdübel CNplus 8 / 250 – 310

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 WDV-Schlagdübel CNplus 8 / 250 – 310	81	8	35 / 55 ¹⁾	167 - 247	4,3	$(L_{a1}+L_{a2}) - 79,5$	77,5	8

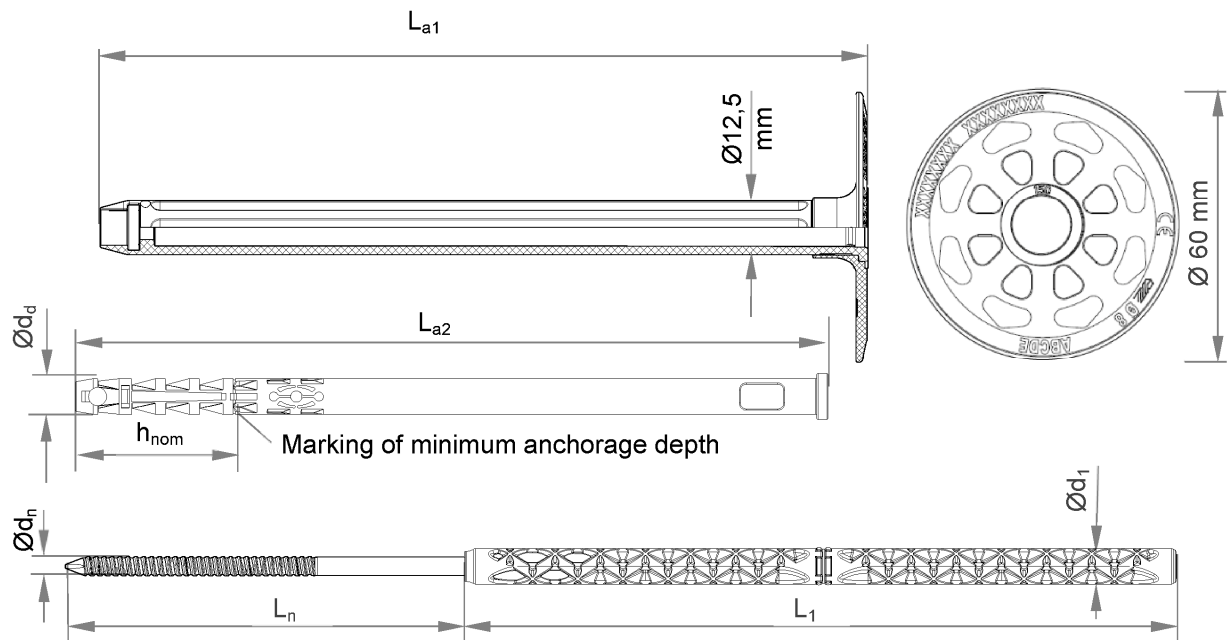
¹⁾ Only for groups D & E

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

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

Annex A6

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



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 x 330: $L_a = 328 \text{ mm}$, $h_{nom} = 35 \text{ mm}$, $t_{tol} = 10 \text{ mm}$

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

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

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 ¹⁾	167 - 247	4,3	$(L_{a1}+L_{a2}) - 159,5$	157,5	8

¹⁾ Only for group D & E

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

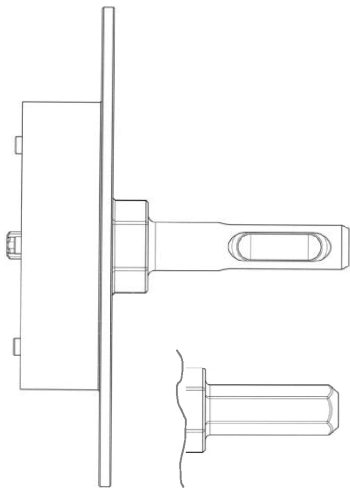
Product description
Dimensions Unio-Plus WDVS-Schlagdübel CNplus 8 / 330-390

Annex A7

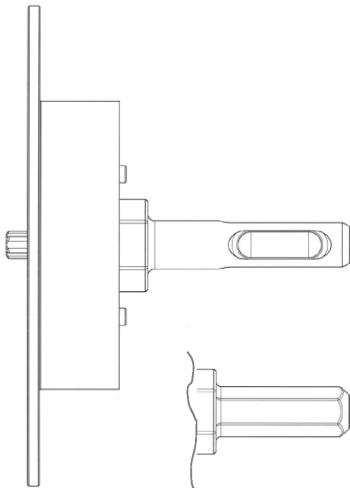
Setting tool with SDS adapter or hexagonal adapter available

Unio-Plus WDV-Schlagdübel CNplus 8

Countersunk setting ¹⁾

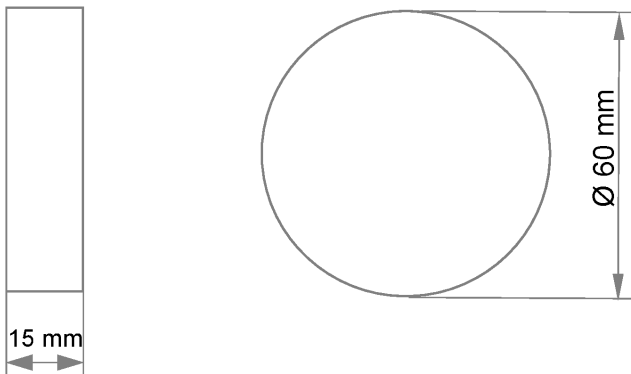


optional plain surface setting



¹⁾ 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 WDV-Schlagdübel CNplus 8

Product description
Setting tool for Unio-Plus WDV-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 : 2018
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 : 2018
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

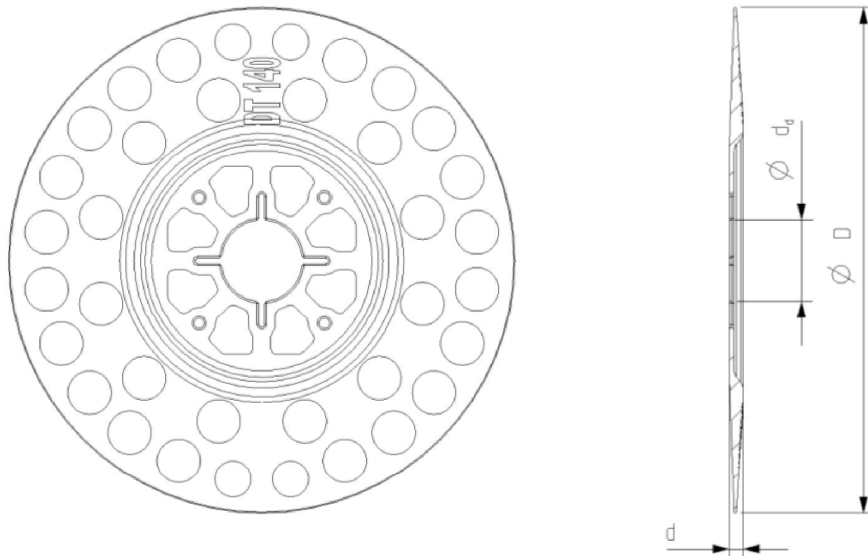


Table A9.2: Slip-on plate, diameters and material

Slip-on plate	Ø D [mm]	Ø d _d [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 (base material group A), in accordance with Annex C1 and C2.
- Solid masonry (base material group B), in accordance with Annex C1 and C2.
- Hollow or perforated masonry (base material group C), in accordance with Annex C1 and C2.
- Lightweight aggregate concrete (base material group D), in accordance with Annex C1 and C2.
- Autoclaved aerated concrete (base material group E), in accordance with Annex C1 and C2.
- For other base materials of the base material groups 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 ≤ 6 weeks.

Unio-Plus VWS-Schlagdübel Termoz CN |
Unio-Plus WDVS-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 ¹⁾ /65 ²⁾
Overall plastic anchor embedment depth in the base material	h_{nom}	≥	[mm]	35/45 ¹⁾ /55 ²⁾

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

²⁾ Unio-Plus VWS-Schlagdübel Termoz CN : Only for group "E" | Unio-Plus WDVS-Schlagdübel CNplus 8: Only for group "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 ¹⁾ /80 ²⁾
Overall plastic anchor embedment depth in the base material	h_{nom}	≥	[mm]	35/45 ¹⁾ /55 ²⁾

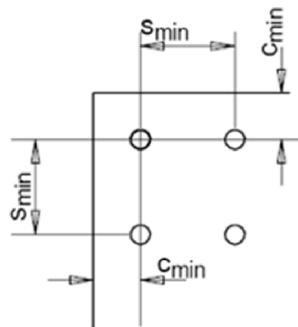
¹⁾ valid for weather shell (thin concrete slabs): 35 mm ≤ h_{nom} ≤ 45 mm

²⁾ Only for group "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



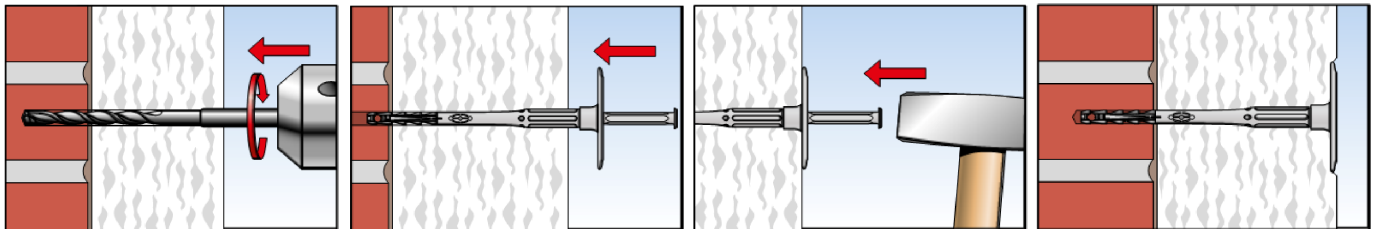
Unio-Plus VWS-Schlagdübel Termoz CN |
Unio-Plus WDVS-Schlagdübel CNplus 8

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 WDV-Schlagdübel CNplus 8



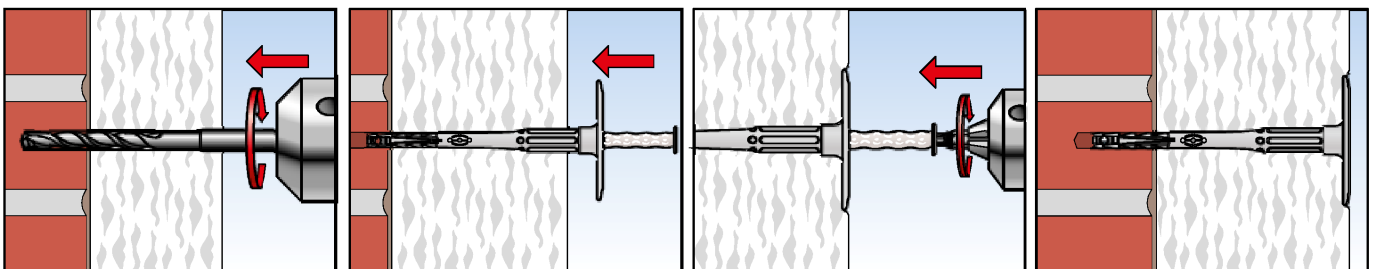
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by hammerblows

4. Correctly installed anchor

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



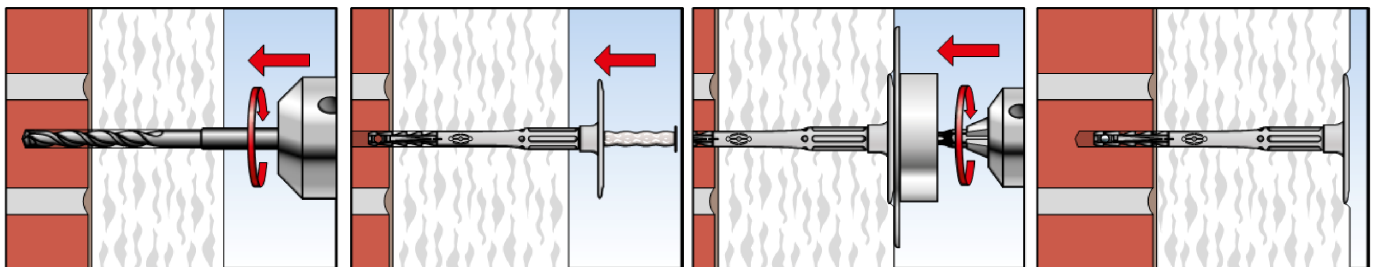
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by machine.

4. Correctly installed anchor

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



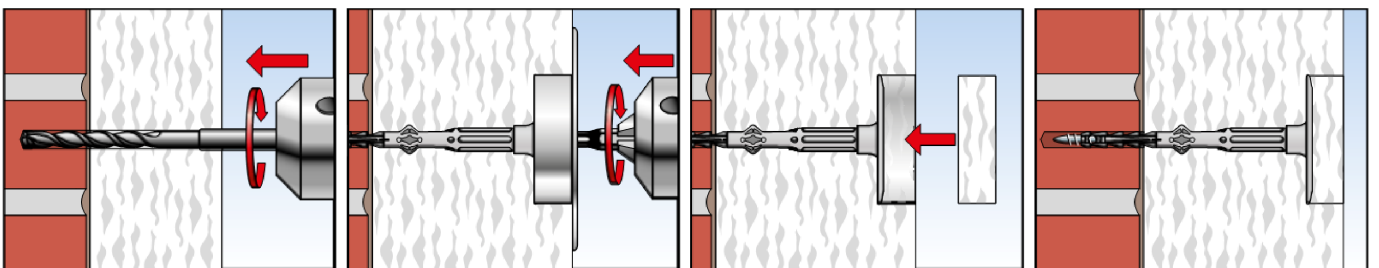
1. Drill hole by corresponding drilling method

2. Insert anchor manually

3. Set anchor by setting tool.

4. Correctly installed anchor

Setting of anchor (countersunk mounted) by setting tool / Unio-Plus WDV-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 WDV-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	group ¹⁾	Min. compressive strength f_b [N/mm ²]	Bulk density ρ [kg/dm ³]	Remarks	Drill method ²⁾	Characteristic resistance N_{Rk} [kN] Unio-Plus VWS-Schlagdübel Termoz CN
Concrete \geq C12/15 - C50/60 EN 206-1:2000	A	-	-	-	H	0,9
Solid clay bricks Mz 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	0,9
Calcium silicate solid bricks KS e.g. acc. to EN 771-2:2011	B	12	$\geq 1,8$		H	0,9
Solid concrete blocks Vbn acc. to EN 771-3:2011	B	20	$\geq 2,0$		H	0,75
Lightweight concrete blocks Vbl acc. to EN 771-3:2011	B	8	$\geq 1,4$		H	0,6
Vertically perforated clay bricks Hlz 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 ≥ 15 mm	R	0,6
Hollow calcium silicate brick KSL 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 ≥ 23 mm	H	0,75
		12				0,5
Lightweight concrete hollow blocks Hbl , 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 ≥ 38 mm	H	0,6
Lightweight aggregate concrete LAC , acc. to EN 1520:2011, EN 771-3:2011	D	6	$\geq 0,8$	-	H	0,6
		4				0,4
Autoclaved aerated concrete blocks, AAC acc. to EN 771-4:2011	E	6	$> 0,6$	-	R	0,3³⁾
		4	$> 0,4$			0,3³⁾

¹⁾ See Annex B1

²⁾ R = Rotary drilling | H = Hammer drilling

³⁾ 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	group ¹⁾	Min. com-pressive strength f_b [N/mm ²]	Bulk density ρ [kg/dm ³]	Remarks	Drill method ²⁾	Characteristic resistance N_{Rk} [kN] Unio-Plus WDVS-Schlagdübel CNplus 8
Concrete \geq C12/15 - C50/60 EN 206-1:2000	A	-	-	-	H	0,9
Weather resistant concrete shell \geq C20/25 EN 206-1:2000	A	-	-	$h \geq 42$ mm ; $t_{fix} \geq 35$ mm	H	0,9
Solid clay bricks Mz 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	0,9
Calcium silicate solid bricks KS acc. to EN 771-2:2011	B	20	$\geq 1,8$		H	0,9
Solid concrete blocks Vbn acc. to EN 771-3:2011	B	20	$\geq 2,0$		H	0,9
Lightweight concrete blocks Vbl acc. to EN 771-3:2011	B	10	$\geq 1,6$		H	0,75
Vertically perforated clay bricks Hlz 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 ≥ 17 mm	R	0,75
		12	$\geq 1,0$	Cross section reduced between 15% and 50% by perforation vertically to the resting area. Exterior web thickness ≥ 15 mm		0,5
Hollow calcium silicate brick KSL 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 ≥ 16 mm	H	0,5
Lightweight concrete hollow blocks Hbl , 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 ≥ 38 mm	H	0,6
Lightweight aggregate concrete LAC , acc. to EN 1520:2011, EN 771-3:2011	D	6	$\geq 0,9$	-	H	0,4³⁾
Autoclaved aerated concrete blocks, AAC acc. to EN 771-4:2011	E	4	$> 0,4$	-	R	0,3³⁾

¹⁾ See Annex B1

²⁾ R = Rotary drilling | H = Hammer drilling

³⁾ 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 χ [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 χ [W/K] according to base material						
	group A	group B	group C	group D	group E		
60	0,001	0,001	0,001	0,001	0		
80					0,001		
100	0,002	0,002	0,002	0,001			
120							
140							
160			0,001	0,001			
180				0			
200				0			
220					0,001		
240				0	0		
260							
280	0,001	0,001		0			
300				0,001	-		
320				-			
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 χ [W/K] according to base material				
	group A	group B	group C	group D	group E
80	0,001	0	0	0	0
100		0,001	0,001	0,001	
120					
140					
160					
180	0,002	0,002	0,001	0,001	0,001
200	0,001	0,001			
220					
240					
260					
280	0	0	0	0	0
300	0,001	0,001			
320					
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 δ [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	< 0,3
	LAC 6	
Autoclaved aerated concrete blocks EN 771-4:2011	AAC 4	< 0,2
	AAC 6	< 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 δ [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	< 0,2
Autoclaved aerated concrete blocks (EN 771-4:2011)	AAC 4	< 0,1

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

Performance
Plate stiffness
Displacements

Annex C4