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European Technical Assessment ETA-19/0156 of 29/03/2019

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	SM, SMK, SMKC, SMN, SMNK, SMNKC
Product family to which the construction product belongs	Nailed-in plastic anchors for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	KLIMAS sp. z o.o. ul. Wincentego Witosa 135/137 Kuźnica Kiedrzyńska PL 42-233 Mykanów Poland
Manufacturing plant	KLIMAS sp. z o.o. ul. Warszawska 2, Wanaty PL 42-260 Kamienica Polska Poland
This European Technical Assessment contains	17 pages including 2 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	European Assessment Document EAD 330196-01-0604 "Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering"

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Specific Part

1 Technical description of the product

The SM, SMK and SMKC nailed-in plastic anchor consists of a plastic expansion sleeve with a collar made of polyethylene PE-HD (virgin material) and an accompanying nail as an expansion pin made of stainless stell or carbon steel with zinc coating.

The SMN, SMNK and SMNKC nailed-in plastic anchor consists of a plastic expansion sleeve with a collar made of polyamide PA6 (virgin material) and an accompanying nail as an expansion pin made of stainless stell or carbon steel with zinc coating.

The plastic anchor sleeve is expanded by hammering in a nail, which press the sleeve against the wall of the drilled hole.

The drawings and the description of the products are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in clause 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, 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 Performance of the product

3.1.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	Annex C1
Edge distances and spacing	Annex B2
Displacements	Annex C3

3.1.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance of an anchor	No performance assessed

3.2 Methods used for the assessment

The assessment of the products has been made in accordance with the European Assessment Document EAD 330196-01-0604 "Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering".

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to the Decision 97/463/EC of the European Commission the system 2+ of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) applies.

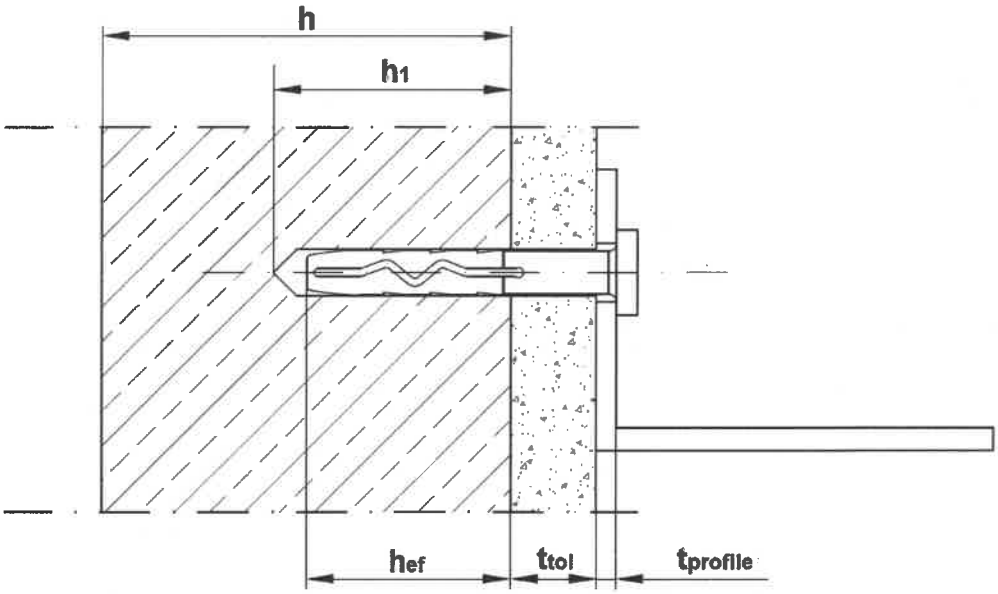
5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For the type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 29/03/2019 by Instytut Techniki Budowlanej

Anna Panek, MSc
Deputy Director of ITB



Intended Use

Multiple fixing of profiles for bonded external thermal insulation composite systems (ETICS) according to ETAG 004 or prefabricated units for external wall insulation (Veture Kits) according to ETAG 017, in concrete and masonry.

Legend

h_{ef} = effective anchorage depth

h_1 = depth of drill hole in base material

h = thickness of base material

t_{tol} = thickness of equalizing layer and/or non-load-bearing coating

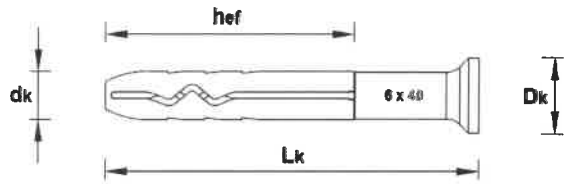
$t_{profile}$ = thickness of profile

t_{fix} = thickness of fixture ($t_{tol} + t_{profile}$)

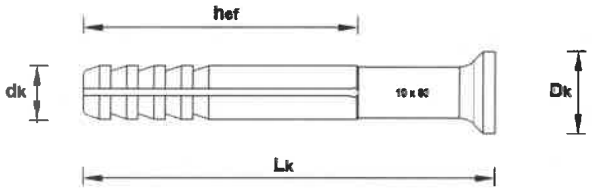
h_{nom} = h_{ef} = embedment depth

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex A1**
Product description Installation conditions	of European Technical Assessment ETA-19/0156

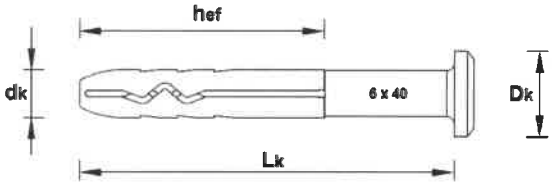
Sleeves



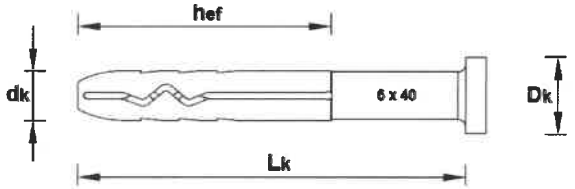
SM / SMN
Ø 5, 6, 8



SM / SMN
Ø 10

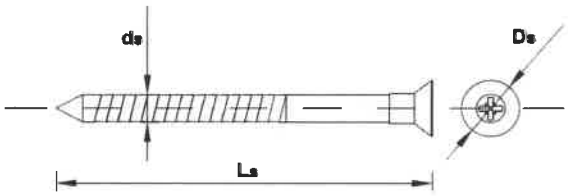


SMK / SMNK
Ø 5, 6, 8, 10



SMKC / SMNKC
Ø 5, 6, 8, 10

Nail



SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex A2** of European Technical Assessment ETA-19/0156
Product description Types of expansion sleeves and nail	

Table A1: Dimensions

Anchor index		Anchor sleeve				Expansion nail			t_{fix}
		$h_{ef\ (ABCDE)}$	L_k	d_k	D_k	L_s	d_s	D_s	-
		mm	mm	mm	mm	mm	mm	mm	mm
SM–05025	SMN–05025	25	25	5	9,5	30	3,5	8	0,5
SM–05030	SMN–05030		30			35			5
SM–05035	SMN–05035		35			40			10
SM–05040	SMN–05040		40			45			15
SM–05045	SMN–05045		45			50			20
SM–05050	SMN–05050		50			55			25
SM–06035	SMN–06035	28	35	6	10,5	40	3,9	9	7
SM–06040	SMN–06040		40			45			12
SM–06050	SMN–06050		50			55			22
SM–06060	SMN–06060		60			65			32
SM–06070	SMN–06070		70			75			42
SM–06080	SMN–06080		80			85			52
SM–08045	SMN–08045	40	45	8	11,5	50	4,9	11	5
SM–08050	SMN–08050		50			55			10
SM–08060	SMN–08060		60			65			20
SM–08080	SMN–08080		80			85			40
SM–08100	SMN–08100		100			105			60
SM–08120	SMN–08120		120			125			80
SM–08140	SMN–08140		140			145			100
SM–08160	SMN–08160		160			165			120
SM–10080	SMN–10080	50	80	10	14,5	90	6,9	14	30
SM–10100	SMN–10100		100			110			50
SM–10120	SMN–10120		120			130			70
SM–10140	SMN–10140		140			150			90
SM–10160	SMN–10160		160			170			110
SM–10180	SMN–10180		180			190			130
SM–10200	SMN–10200		200			210			150
SM–10220	SMN–10220		220			230			170

$h_{ef\ (ABCDE)}$ – for anchors in the base material category A, B, C, D and E
Determination of maximum thickness of insulation material: $h_D = L_k - t_{tol} - h_{ef}$

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex A3** of European Technical Assessment ETA-19/0156
Product description Dimensions	

Table A2: Dimensions

Anchor index		Anchor sleeve				Expansion nail			t_{fix}
		$h_{ef\ (ABCDE)}$	L_k	d_k	D_k	L_s	d_s	D_s	-
		mm	mm	mm	mm	mm	mm	mm	mm
SMK–05025	SMNK–05025	25	25	5	11	30	3,5	8	0,5
SMK–05030	SMNK–05030		30			35			5
SMK–05035	SMNK–05035		35			40			10
SMK–05040	SMNK–05040		40			45			15
SMK–05045	SMNK–05045		45			50			20
SMK–05050	SMNK–05050		50			55			25
SMK–06035	SMNK–06035	28	35	6	13	40	3,9	9	7
SMK–06040	SMNK–06040		40			45			12
SMK–06050	SMNK–06050		50			55			22
SMK–06060	SMNK–06060		60			65			32
SMK–06070	SMNK–06070		70			75			42
SMK–06080	SMNK–06080		80			85			52
SMK–08045	SMNK–08045	40	45	8	14	50	4,9	11	5
SMK–08050	SMNK–08050		50			55			10
SMK–08060	SMNK–08060		60			65			20
SMK–08080	SMNK–08080		80			85			40
SMK–08100	SMNK–08100		100			105			60
SMK–08120	SMNK–08120		120			125			80
SMK–08140	SMNK–08140		140			145			100
SMK–08160	SMNK–08160		160			165			120
SMK–10080	SMNK–10080	50	80	10	15	90	6,9	14	30
SMK–10100	SMNK–10100		100			110			50
SMK–10120	SMNK–10120		120			130			70
SMK–10140	SMNK–10140		140			150			90
SMK–10160	SMNK–10160		160			170			110
SMK–10180	SMNK–10180		180			190			130
SMK–10200	SMNK–10200		200			210			150
SMK–10220	SMNK–10220		220			230			170

$h_{ef\ (ABCDE)}$ – for anchors in the base material category A, B, C, D and E
Determination of maximum thickness of insulation material: $h_D = L_k - t_{tol} - h_{ef}$

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex A3** of European Technical Assessment ETA-19/0156
Product description Dimensions	

Table A3: Dimensions

Anchor index		Anchor sleeve				Expansion nail			t_{fix}
		$h_{ef\ (ABCDE)}$	L_k	d_k	D_k	L_s	d_s	D_s	-
		mm	mm	mm	mm	mm	mm	mm	mm
SMKC–05025	SMNKC–05025	25	25	5	10	30	3,5	8	0,5
SMKC–05030	SMNKC–05030		30			35			5
SMKC–05035	SMNKC–05035		35			40			10
SMKC–05040	SMNKC–05040		40			45			15
SMKC–05045	SMNKC–05045		45			50			20
SMKC–05050	SMNKC–05050		50			55			25
SMKC–06035	SMNKC–06035	28	35	6	11	40	3,9	9	7
SMKC–06040	SMNKC–06040		40			45			12
SMKC–06050	SMNKC–06050		50			55			22
SMKC–06060	SMNKC–06060		60			65			32
SMKC–06070	SMNKC–06070		70			75			42
SMKC–06080	SMNKC–06080		80			85			52
SMKC–08045	SMNKC–08045	40	45	8	12	50	4,9	11	5
SMKC–08050	SMNKC–08050		50			55			10
SMKC–08060	SMNKC–08060		60			65			20
SMKC–08080	SMNKC–08080		80			85			40
SMKC–08100	SMNKC–08100		100			105			60
SMKC–08120	SMNKC–08120		120			125			80
SMKC–08140	SMNKC–08140		140			145			100
SMKC–08160	SMNKC–08160		160			165			120
SMKC–10080	SMNKC–10080	50	80	10	16	90	6,9	14	30
SMKC–10100	SMNKC–10100		100			110			50
SMKC–10120	SMNKC–10120		120			130			70
SMKC–10140	SMNKC–10140		140			150			90
SMKC–10160	SMNKC–10160		160			170			110
SMKC–10180	SMNKC–10180		180			190			130
SMKC–10200	SMNKC–10200		200			210			150
SMKC–10220	SMNKC–10220		220			230			170

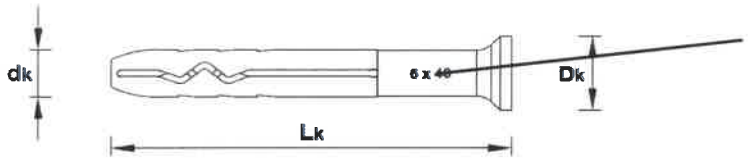
$h_{ef\ (ABCDE)}$ – for anchors in the base material category A, B, C, D and E
Determination of maximum thickness of insulation material: $h_D = L_k - t_{tol} - h_{ef}$

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex A3** of European Technical Assessment ETA-19/0156
Product description Dimensions	

Table A4: Materials

Designation	Material
Anchor sleeve SM, SMK and SMKC	Polyethylene PE-HD (natural / grey), virgin material
Anchor sleeve SMN, SMNK and SMNKC	Polyamide PA6 (natural / gray), virgin material
Expansion pin	Carbon steel ($f_{y,k} \geq 320$ MPa, $f_{u,k} \geq 420$ MPa) with zinc coating ≥ 5 µm; electroplated according to EN ISO 4042 or non-electrolyticaly applied zinc flake coatings ≥ 5 µm according to EN ISO 10683
	Stainless steel ($f_{y,k} \geq 360$ MPa, $f_{u,k} \geq 600$ MPa) grade 1.4301, 1.4306, 1.4307 (AISI 304) or 1.4401, 1.4404, 1.4571 (AISI 316) according to EN 10088

Marking:



Size: L_k x d_k
e.g. 6 x 40

Specification of intended use

Anchorages subject to:

- Wind suction loads.
  Note: The anchor shall not be used for the transmission of dead loads of the external thermal insulation composite system (ETICS) or prefabricated units for external wall insulation (Veture Kits).

Base materials:

- Reinforced or unreinforced normal weight concrete (use category A), according to Annex C1 and C2.
- Solid masonry (use category B), according to Annex C1 and C2.
- Hollow or perforated masonry (use category C), according to Annex C1 and C2.
- Lightweight aggregate concrete (use category D), according to Annex C1 and C2.
- Autoclaved aerated concrete (use category E), according to Annex C1 and C2.
- For other base materials of the use categories A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051, edition December 2016.

Application 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 experiences in anchorages and masonry work with the partial safety factors γ_M = 2,0 and γ_F = 1,5, if there are no other national regulations.
- Verifiable calculation notes and drawings with anchor positions are prepared taking into account of the loads to be anchored.
- Fasteners are only to be used for multiple fixings of profiles for external thermal insulation composite system (ETICS) according to ETAG 004 or prefabricated units for external wall insulation (Veture Kits) according to ETAG 017.

Installation:

- Hole shall be drilled by the drill modes according to Annex C1.
- Anchor installation shall be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation shall be executed in temperature from 0°C to +40°C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering shall not exceed 6 weeks.

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex B1**
Intended use Specifications	of European Technical Assessment ETA-19/0156

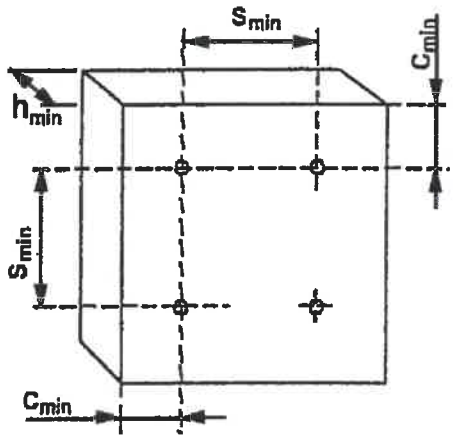
Table B1: Installation characteristics

Anchor type		SM, SMK, SMKC, SMN, SMNK and SMNKC			
		Ø 5	Ø 6	Ø 8	Ø 10
Nominal diameter	d_{nom} [mm]	5	6	8	10
Nominal diameter of drill bit	d_{cut} [mm]	5	6	8	10
Depth of drill hole for base material category A, B, C, D, E	h_1 [mm]	≥ 35	≥ 40	≥ 50	≥ 60
Effective anchorage depth for base material category A, B, C, D, E	h_{ef} [mm]	25	28	40	50

Table B2: Minimum thickness of base material, anchor spacing and edge distance

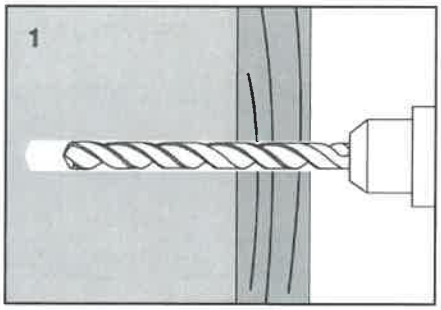
Anchor type		SM, SMK, SMKC, SMN, SMNK and SMNKC			
		Ø 5	Ø 6	Ø 8	Ø 10
Minimum thickness of base material	h_{min} [mm]	100			
Minimum spacing	s_{min} [mm]	100			
Minimum edge distance	c_{min} [mm]	100			

Diagram of spacing

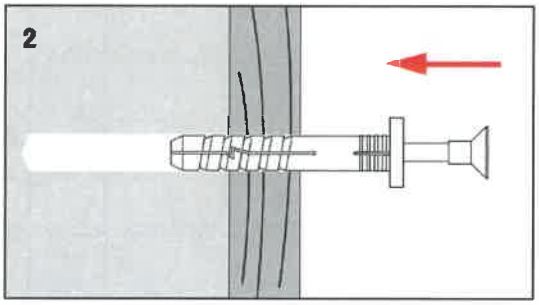


SM, SMK, SMKC, SMN, SMNK and SMNKC	Annex B2
Intended use Installation characteristics, minimum thickness of base material, spacing and edge distance	of European Technical Assessment ETA-19/0156

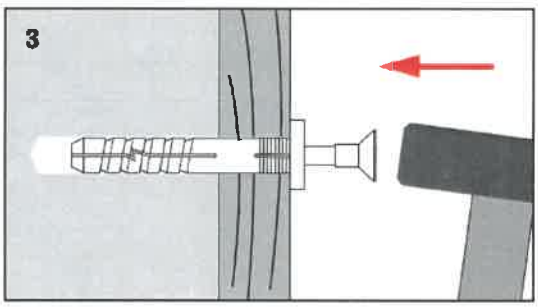
Installation instruction



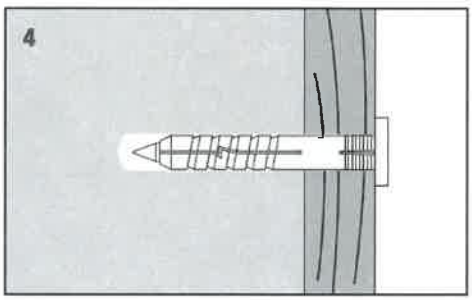
1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.



2. Place the anchor into the drill hole. The bottom side of the collar must be flush with the profile.



3. Drive in the specific nail with the hammer.



4. Installed condition.

SM, SMK, SMKC, SMN, SMNK and SMNKC	**Annex B3** of European Technical Assessment ETA-19/0156
Intended use Installation instruction	

Table C1: Characteristic resistance to tension loads N_{Rk} in concrete and in masonry for single SM, SMK, SMKC anchor

Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN] SM, SMK, SMKC				Drill method
				Ø 5	Ø 6	Ø 8	Ø 10	
Concrete C12/15 (use category A)			EN 206	0,20	0,40	0,40	0,55	hammer
Concrete C16/20 ÷ C50/60 (use category A)			EN 206	0,30	0,60	0,60	0,80	hammer
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	EN 771-1	0,30	0,60	0,60	1,20	hammer
Cegły silikatowe KS (kategoria użytkowa B)	≥ 2,0	≥ 20,0	EN 771-2	0,30	0,60	0,60	1,20	hammer
Calcium silicate hollow blocks KSL (use category C) 	≥ 1,6	≥ 12,0	EN 771-2	0,25	0,30	0,40	0,90	rotary
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	EN 771-3	0,10	0,25	0,35	0,60	rotary
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	EN 771-4	-	0,10	0,10	0,20	rotary
Autoclaved concrete blocks AAC 7 (use category E)	≥ 0,65	≥ 3,5	EN 771-4	-	0,10	0,25	0,20	rotary
Partial safety factor for anchor resistance, γ_M (1)	2,0							
(1) in the absence of national regulations								

Table C2: Characteristic resistance to tension loads N_{Rk} in concrete and in masonry for single SMN, SMNK, SMNKC anchor

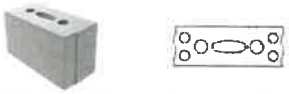
Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN] SMN, SMNK, SMNKC				Drill method
				Ø 5	Ø 6	Ø 8	Ø 10	
Concrete C12/15 (use category A)			EN 206	0,30	0,60	0,75	1,50	hammer
Concrete C16/20 ÷ C50/60 (use category A)			EN 206	0,45	0,90	1,00	1,50	hammer
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	EN 771-1	0,35	0,90	1,00	1,50	hammer
Calcium silicate bricks KS (use category B)	≥ 2,0	≥ 20,0	EN 771-2	0,34	0,90	1,00	1,50	hammer
Calcium silicate hollow blocks KSL (use category C) 	≥ 1,6	≥ 12,0	EN 771-2	0,60	0,90	1,00	1,50	rotary
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	EN 771-3	0,35	0,40	0,60	1,50	rotary
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	EN 771-4	0,10	0,20	0,50	0,75	rotary
Autoclaved concrete blocks AAC 7 (use category E)	≥ 0,65	≥ 3,5	EN 771-4	0,15	0,30	0,70	0,90	rotary
Partial safety factor for anchor resistance, γ_M (1)	2,0							
(1) in the absence of national regulations								

Table C3: Displacements for SM, SMK, SMKC anchors

Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]				$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]			
			Ø 5	Ø 6	Ø 8	Ø 10	Ø 5	Ø 6	Ø 8	Ø 10
Concrete C12/15 (use category A)			0,07	0,15	0,13	0,18	0,33	0,31	0,14	0,26
Concrete C16/20 ÷ C50/60 (use category A)			0,10	0,20	0,20	0,27	0,49	0,42	0,20	0,37
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	0,10	0,20	0,20	0,4	0,57	0,67	0,39	0,46
Calcium silicate bricks KS (use category B)	≥ 2,0	≥ 20,0	0,10	0,20	0,20	0,4	0,29	0,30	0,42	0,53
Calcium silicate hollow blocks KSL (use category C) 	≥ 1,6	≥ 12,0	0,08	0,10	0,13	0,3	0,57	0,60	0,29	0,36
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	0,03	0,08	0,12	0,20	0,26	0,58	0,22	0,21
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	-	0,03	0,03	0,07	-	0,08	0,17	0,29
Autoclaved concrete blocks AAC 7 (use category E)	≥ 0,65	≥ 3,5	-	0,03	0,08	0,07	-	0,14	0,48	0,44

Table C4: Displacements for SMN, SMNK, SMNKC anchors

Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]				$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]			
			Ø 5	Ø 6	Ø 8	Ø 10	Ø 5	Ø 6	Ø 8	Ø 10
Concrete C12/15 (use category A)			0,10	0,20	0,25	0,50	0,14	0,39	0,37	0,61
Concrete C16/20 ÷ C50/60 (use category A)			0,15	0,30	0,33	0,50	0,21	0,47	0,49	0,61
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	0,12	0,30	0,33	0,50	0,23	0,39	0,84	0,31
Calcium silicate bricks KS (use category B)	≥ 2,0	≥ 20,0	0,12	0,30	0,33	0,50	0,22	0,27	0,58	0,36
Calcium silicate hollow blocks KSL (use category C) 	≥ 1,6	≥ 12,0	0,20	0,30	0,33	0,50	0,36	0,39	0,55	0,58
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	0,12	0,13	0,20	0,50	0,17	0,29	0,25	0,57
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	0,03	0,07	0,17	0,25	0,18	0,17	0,46	0,31
Autoclaved concrete blocks AAC 7 (use category E)	≥ 0,65	≥ 3,5	0,05	0,10	0,23	0,30	0,46	0,32	0,54	0,68