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## European Technical Assessment

**ETA-20/0950  
of 29/12/2020**

### General Part

**Technical Assessment Body issuing the European Technical Assessment**

Instytut Techniki Budowlanej

**Trade name of the construction product**

TH.mk, TH.mkN

**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**

Mag-Krak Sp. z o.o.  
ul. Łowińskiego 7  
PL 31-752 Kraków  
Poland

**Manufacturing plant**

Mag-Krak Sp. z o.o.  
ul. Łowińskiego 7  
PL 31-752 Kraków  
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**This European Technical Assessment contains**

15 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**

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 TH.mk nailed-in plastic anchor consists of a plastic expansion sleeve with a collar made of polypropylene (virgin material) and an accompanying nail as an expansion pin made of carbon steel with zinc coating.

The TH.mkN 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 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 C2

##### 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)**

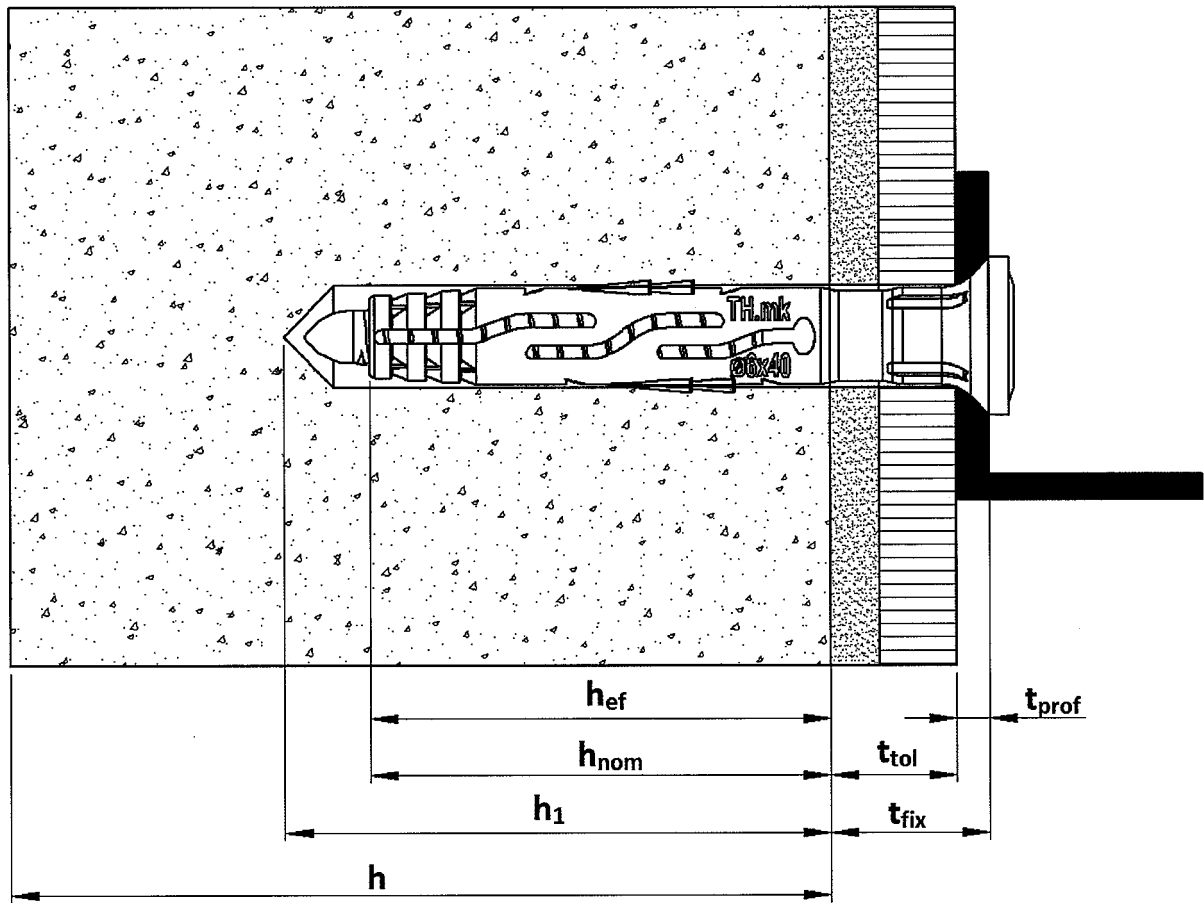
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

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 29/12/2020 by Instytut Techniki Budowlanej



Anna Panek, MSc  
Deputy Director of ITB



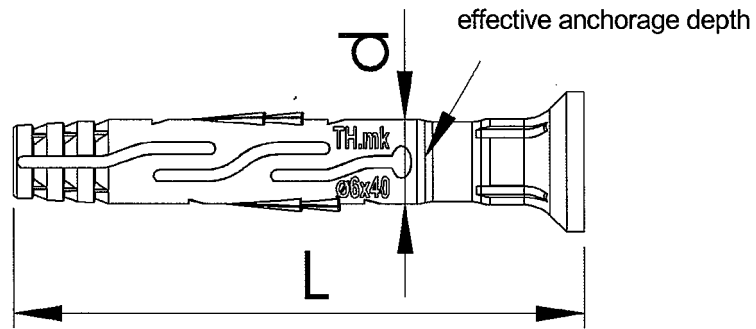
**Intended Use**

Multiple fixing of profiles in ETICS systems or VETURE Kits.

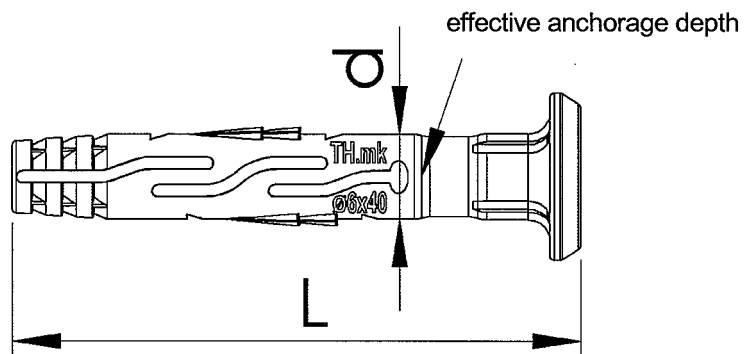
**Legend**

- $h_{ef}$  = 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
- $t_{prof}$  = thickness of profile
- $t_{fix}$  = thickness of fixture ( $t_{tol} + t_{prof}$ )
- $h_{nom}$  = embedment depth

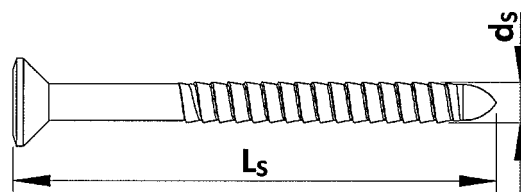
<b>TH.mk and TH.mkN</b>	<b>Annex A1</b> of European Technical Assessment ETA-20/0950
<b>Product description</b> Installation conditions	



Plastic expansion sleeve TH.mk...L.../ TH.mkN...L...



Plastic expansion sleeve TH.mk...K.../ TH.mkN...K...



Expansion pin

<p><b>TH.mk and TH.mkN</b></p>	<p><b>Annex A2</b> of European Technical Assessment ETA-20/0950</p>
<p><b>Product description</b> Range of plastic expansion sleeves and expansion pin</p>	

**Table A1: Designation and dimensions of TH.mk and TH.mkN anchors [mm]**

Anchor index		Anchor sleeve		Expansion pin	
TH.mk...L...	TH.mk...K...	L [mm]	d [mm]	L <sub>s</sub> [mm]	d <sub>s</sub> [mm]
TH.mk06L40	TH.mk06K40	39,2 ± 0,3	5,7 ± 0,1	43 ± 1,5	3,65 ± 0,1
TH.mkN06L40	TH.mkN06K40	39,6 ± 0,3	5,8 ± 0,1		
TH.mk06L60	TH.mk06K60	59,2 ± 0,3	5,7 ± 0,1	63 ± 1,5	
TH.mkN06L60	TH.mkN06K60	59,6 ± 0,3	5,8 ± 0,1		
TH.mk06L80	TH.mk06K80	79,2 ± 0,3	5,7 ± 0,1	83 ± 1,5	
TH.mkN06L80	TH.mkN06K80	79,6 ± 0,3	5,8 ± 0,1		
TH.mk08L45	TH.mk08K45	45 ± 0,5	7,8 ± 0,4	48 ± 1,5	4,5 ± 0,1
TH.mkN08L45	TH.mkN08K45	45 ± 0,4	7,8 ± 0,3		
TH.mk08L60	TH.mk08K60	58,5 ± 0,5	7,8 ± 0,4	63 ± 1,5	
TH.mkN08L60	TH.mkN08K60	58,5 ± 0,4	7,8 ± 0,3		
TH.mk08L80	TH.mk08K80	78,5 ± 0,5	7,8 ± 0,4	83 ± 1,5	
TH.mkN08L80	TH.mkN08K80	78,5 ± 0,4	7,8 ± 0,3		
TH.mk08L100	TH.mk08K100	98 ± 1,0	7,8 ± 0,4	103 ± 1,5	
TH.mkN08L100	TH.mkN08K100	98 ± 0,9	7,8 ± 0,3		
TH.mk08L120	TH.mk08K120	118 ± 1,0	7,8 ± 0,4	123 ± 1,5	
TH.mkN08L120	TH.mkN08K120	118 ± 0,9	7,8 ± 0,3		
TH.mk08L140	TH.mk08K140	138 ± 1,0	7,8 ± 0,4	143 ± 1,5	
TH.mkN08L140	TH.mkN08K140	138 ± 0,9	7,8 ± 0,3		
TH.mk08L160	TH.mk08K160	158 ± 1,0	7,8 ± 0,4	163 ± 1,5	
TH.mkN08L160	TH.mkN08K160	158 ± 0,9	7,8 ± 0,3		
TH.mk10L80	TH.mk10K80	78,5 ± 0,5	9,8 ± 0,4	83 ± 2,0	6,0 ± 0,1
TH.mkN10L80	TH.mkN10K80	78,5 ± 0,4	9,8 ± 0,3		
TH.mk10L100	TH.mk10K100	98,5 ± 0,5	9,8 ± 0,4	103 ± 2,0	
TH.mkN10L100	TH.mkN10K100	98,5 ± 0,4	9,8 ± 0,3		
TH.mk10L120	TH.mk10K120	118,5 ± 0,5	9,8 ± 0,4	123 ± 2,0	
TH.mkN10L120	TH.mkN10K120	118,5 ± 0,4	9,8 ± 0,3		
TH.mk10L140	TH.mk10K140	138 ± 1,0	9,8 ± 0,4	143 ± 2,0	
TH.mkN10L140	TH.mkN10K140	138 ± 0,9	9,8 ± 0,3		
TH.mk10L160	TH.mk10K160	158 ± 1,0	9,8 ± 0,4	163 ± 2,0	
TH.mkN10L160	TH.mkN10K160	158 ± 0,9	9,8 ± 0,3		
TH.mk10L180	TH.mk10K180	178 ± 1,0	9,8 ± 0,4	183 ± 2,0	
TH.mkN10L180	TH.mkN10K180	178 ± 0,9	9,8 ± 0,3		
TH.mk10L200	TH.mk10K200	198 ± 1,0	9,8 ± 0,4	203 ± 2,0	
TH.mkN10L200	TH.mkN10K200	198 ± 0,9	9,8 ± 0,3		

**TH.mk and TH.mkN**

**Product description**  
Dimensions of the anchor components

**Annex A3**  
of European  
Technical Assessment  
ETA-20/0950

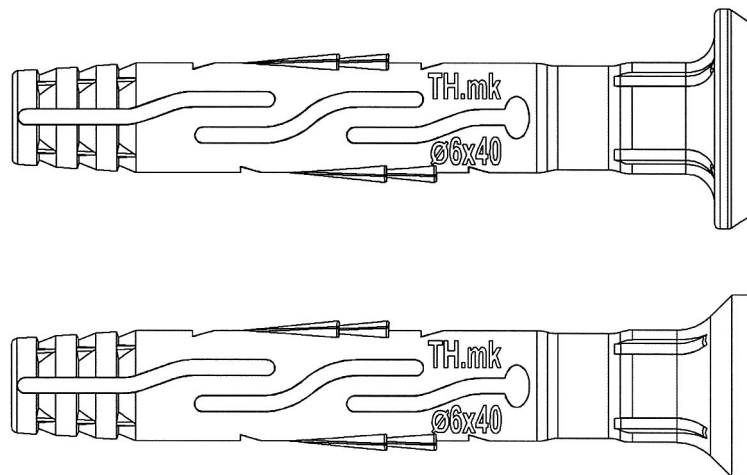
**Table A2: Materials**

Designation	Material
Plastic expansion anchor sleeve TH.mk...L... / TH.mk...K...	Polypropylene (natural / grey / orange), virgin material
Plastic expansion anchor sleeve TH.mkN...L... / TH.mkN...K...	Polyamide PA6 (natural / grey / orange), virgin material
Expansion pin	Carbon steel ( $f_{y,k} \geq 217$ MPa, $f_{u,k} \geq 322$ MPa) with zinc coating $\geq 5$ $\mu\text{m}$ ; electroplated according to EN ISO 4042

**Marking:**

Sort of anchor: e.g. TH.mk

Diameter and length of anchor: e.g.  $\varnothing 6 \times 40$



**TH.mk and TH.mkN**

**Product description**  
Materials and marking

**Annex A4**  
of European  
Technical Assessment  
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**Specification of intended use**

**Anchorage 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 with renderings(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 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  $\gamma_M = 2,0$  and  $\gamma_F = 1,5$ , 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 ETICS systems or VETURE Kits, according to EAD 330196-01-0604, fig. 1.3.

**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.

<b>TH.mk and TH.mkN</b>	<b>Annex B1</b> of European Technical Assessment ETA-20/0950
<b>Intended use</b> Specifications	

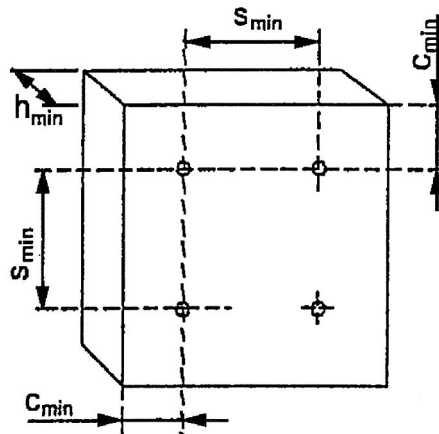
**Table B1: Installation characteristics**

Anchor type		TH.mk and TH.mkN		
		Ø 6	Ø 8	Ø 10
Nominal diameter	$d_{nom}$ [mm]	6	8	10
Cutting diameter of drill bit	$d_{cut}$ [mm]	≤ 6,40	≤ 8,45	≤ 10,45
Depth of drill hole for base material category A, B, C, D, E	$h_1$ [mm]	≥ 40	≥ 50	≥ 60
Effective anchorage depth for base material category A, B, C, D, E	$h_{ef}$ [mm]	≥ 30	≥ 40	≥ 50

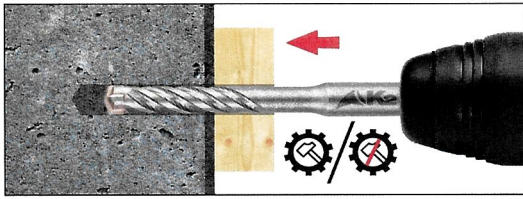
**Table B2: Minimum thickness of base material, anchor spacing and edge distance**

Anchor type		TH.mk and TH.mkN		
		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		

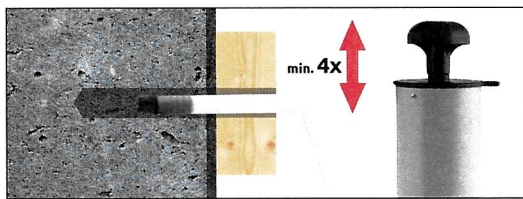
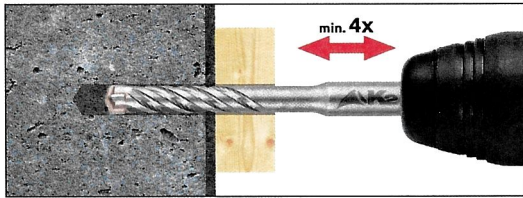
**Diagram of spacing**



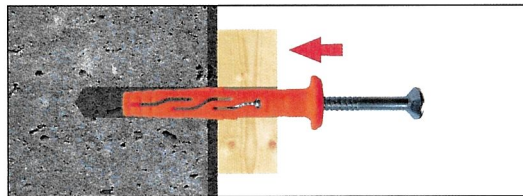
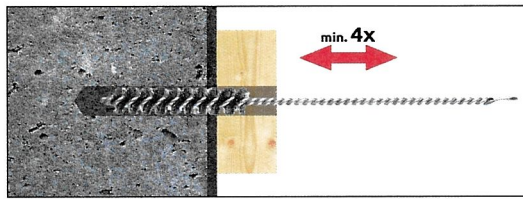
<b>TH.mk and TH.mkN</b>	<b>Annex B2</b> of European Technical Assessment ETA-20/0950
<b>Intended use</b> Installation characteristics, minimum thickness of base material, minimum spacing and minimal edge distance	



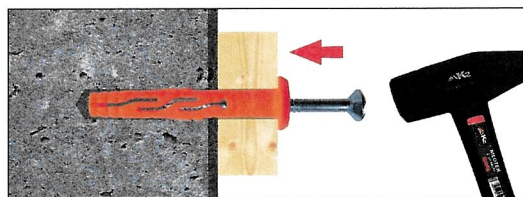
Drill hole perpendicular by method corresponding to Annex C1.



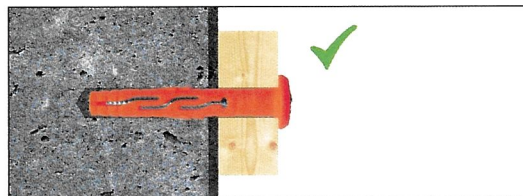
Clean the hole by at least 4 back and forth moves of rotating drill or by at least 4 blows of pump or by at least 4 back and forth moves of brush.



Set-in the anchor and make sure that the head is flush with the installed material.



Nail-in the expansion pin.



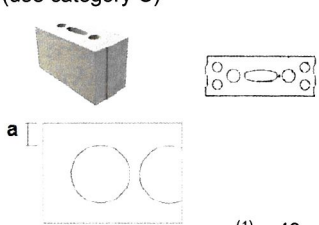

Correctly installed anchor.

TH.mk and TH.mkN

**Intended use**  
Installation instruction

**Annex B3**  
of European  
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ETA-20/0950

**Table C1: Characteristic resistance to tension loads  $N_{Rk}$  in concrete and in masonry for single TH.mk anchor**

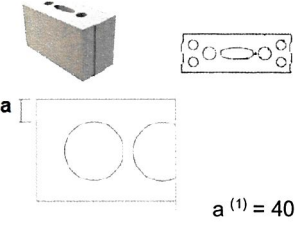

Base material	Bulk density [kg/dm <sup>3</sup> ]	Compressive strength [N/mm <sup>2</sup> ]	Referring standard	$N_{Rk}$ [kN]			Drill method
				Ø 6	Ø 8	Ø 10	
Concrete C12/15 (use category A)			EN 206	0,35	0,65	1,10	hammer
Concrete C16/20 ÷ C50/60 (use category A)			EN 206	0,55	0,95	1,50	hammer
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	EN 771-1	0,40	0,55	1,20	hammer
Cegły silikatowe KS (kategoria użytkowa B)	≥ 2,0	≥ 20,0	EN 771-2	0,40	0,55	1,20	hammer
Calcium silicate hollow blocks KSL (use category C)  a <sup>(1)</sup> = 40 mm	≥ 1,6	≥ 12,0	EN 771-2	0,10	0,25	0,50	rotary
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	EN 771-3	0,15	0,20	0,55	rotary
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	EN 771-4	0,10	0,20	0,50	rotary
Partial safety factor for anchor resistance, $\gamma_M$ <sup>(2)</sup>	2,0						
<sup>(1)</sup> minimum values "a"; for elements with lower value of "a" the load tests on the construction site are required							
<sup>(2)</sup> in the absence of other national regulations							

TH.mk and TH.mkN

**Performances**  
Characteristic resistance

**Annex C1**  
of European  
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**Table C2: Characteristic resistance to tension loads  $N_{Rk}$  in concrete and in masonry for single TH.mkN anchor**

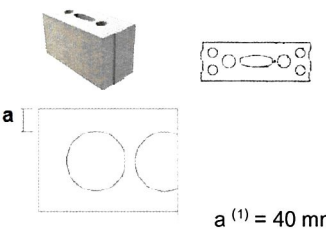

Base material	Bulk density [kg/dm <sup>3</sup> ]	Compressive strength [N/mm <sup>2</sup> ]	Referring standard	$N_{Rk}$ [kN]			Drill method
				Ø 6	Ø 8	Ø 10	
Concrete C12/15 (use category A)			EN 206	0,55	1,50	1,50	hammer
Concrete C16/20 ÷ C50/60 (use category A)			EN 206	0,85	1,50	1,50	hammer
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	EN 771-1	0,60	1,00	1,50	hammer
Cegły silikatowe KS (kategoria użytkowa B)	≥ 2,0	≥ 20,0	EN 771-2	0,60	1,00	1,50	hammer
Calcium silicate hollow blocks KSL (use category C) 	≥ 1,6	≥ 12,0	EN 771-2	0,30	0,50	1,20	rotary
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	EN 771-3	0,10	0,25	0,70	rotary
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	EN 771-4	0,25	0,25	0,50	rotary
Partial safety factor for anchor resistance, $\gamma_M^{(2)}$	2,0						
<sup>(1)</sup> minimum values "a"; for elements with lower value of "a" the load tests on the construction site are required							
<sup>(2)</sup> in the absence of other national regulations							

TH.mk and TH.mkN

**Performances**  
Characteristic resistance

**Annex C1**  
of European  
Technical Assessment  
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**Table C3: Displacements for TH.mk anchors**

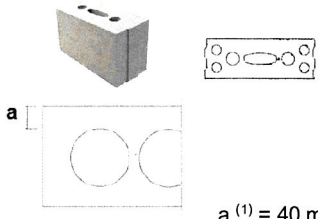

Base material	Bulk density [kg/dm <sup>3</sup> ]	Compressive strength [N/mm <sup>2</sup> ]	$\frac{N_{Rk}}{3}$ [kN]			$\delta \left( \frac{N_{Rk}}{3} \right)$ [mm]		
			Ø 6	Ø 8	Ø 10	Ø 6	Ø 8	Ø 10
Concrete C12/15 (use category A)			0,12	0,22	0,37	0,2	0,2	0,5
Concrete C16/20 + C50/60 (use category A)			0,18	0,32	0,50	0,4	0,3	0,7
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	0,13	0,18	0,40	0,4	0,3	0,5
Calcium silicate bricks KS (use category B)	≥ 2,0	≥ 20,0	0,13	0,18	0,40	0,2	0,3	0,5
Calcium silicate hollow blocks KSL (use category C)								
 a (1) = 40 mm	≥ 1,6	≥ 12,0	0,03	0,08	0,17	0,2	0,2	0,2
Lightweight concrete blocks LAC (use category D)								
	≥ 0,88	≥ 5,0	0,05	0,07	0,18	0,3	0,2	0,2
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	0,03	0,07	0,17	0,1	0,4	0,5
(1) minimum values "a"; for elements with lower value of "a" the load tests on the construction site are required								

**TH.mk and TH.mkN**

**Performances**  
Displacement

**Annex C2**  
of European  
Technical Assessment  
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**Table C4: Displacements for TH.mkN anchors**

Base material	Bulk density [kg/dm <sup>3</sup> ]	Compressive strength [N/mm <sup>2</sup> ]	$\frac{N_{Rk}}{3}$ [kN]			$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]		
			Ø 6	Ø 8	Ø 10	Ø 6	Ø 8	Ø 10
Concrete C12/15 (use category A)			0,18	0,50	0,50	0,4	0,4	0,7
Concrete C16/20 + C50/60 (use category A)			0,28	0,50	0,50	0,6	0,4	0,7
Clay bricks MZ (use category B)	≥ 2,0	≥ 20,0	0,20	0,33	0,50	0,7	0,6	0,4
Calcium silicate bricks KS (use category B)	≥ 2,0	≥ 20,0	0,20	0,33	0,50	0,3	0,6	0,8
Calcium silicate hollow blocks KSL (use category C)  a <sup>(1)</sup> = 40 mm	≥ 1,6	≥ 12,0	0,10	0,16	0,40	0,6	0,4	0,7
Lightweight concrete blocks LAC (use category D) 	≥ 0,88	≥ 5,0	0,10	0,08	0,23	0,2	0,2	0,2
Autoclaved concrete blocks AAC 2 (use category E)	≥ 0,35	≥ 2,0	0,08	0,08	0,16	0,2	0,4	0,5
<sup>(1)</sup> minimum values "a"; for elements with lower value of "a" the load tests on the construction site are required								

TH.mk and TH.mkN

Performances  
DisplacementAnnex C2  
of European  
Technical Assessment  
ETA-20/0950