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and types of construction

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European Technical Assessment

ETA-23/0243
of 12 April 2023

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

MARMODOM HYDOM THERMAL Anchoring "ANCHORS
HYDOM PL"

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

Eagle S.A.
Drama Industrial Zone
66100 DRAMA
GRIECHENLAND

Manufacturing plant

Plant Eagle

This European Technical Assessment
contains

12 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, Edition 10/2017

European Technical Assessment

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Page 2 of 12 | 12 April 2023

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Specific Part

1 Technical description of the product

The MARMODOM HYDOM THERMAL Anchoring "ANCHORS HYDOM PL" consists of a plastic sleeve made of polypropylene, a plate and an accompanying specific nail made of glass fibre reinforced polyamide.

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 load bearing capacity <ul style="list-style-type: none"> - Characteristic resistance under tension load - Minimum edge distance and spacing 	See Annex C 1 See Annex B 2
Displacements	See Annex C 2
Plate stiffness	See Annex C 2

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

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

In accordance with EAD No. 330196-01-0604, the applicable European legal act is: [97/463/EC].

The system to be applied is: 2+

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

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

The following standards and documents are referred to in this European Technical Assessment:

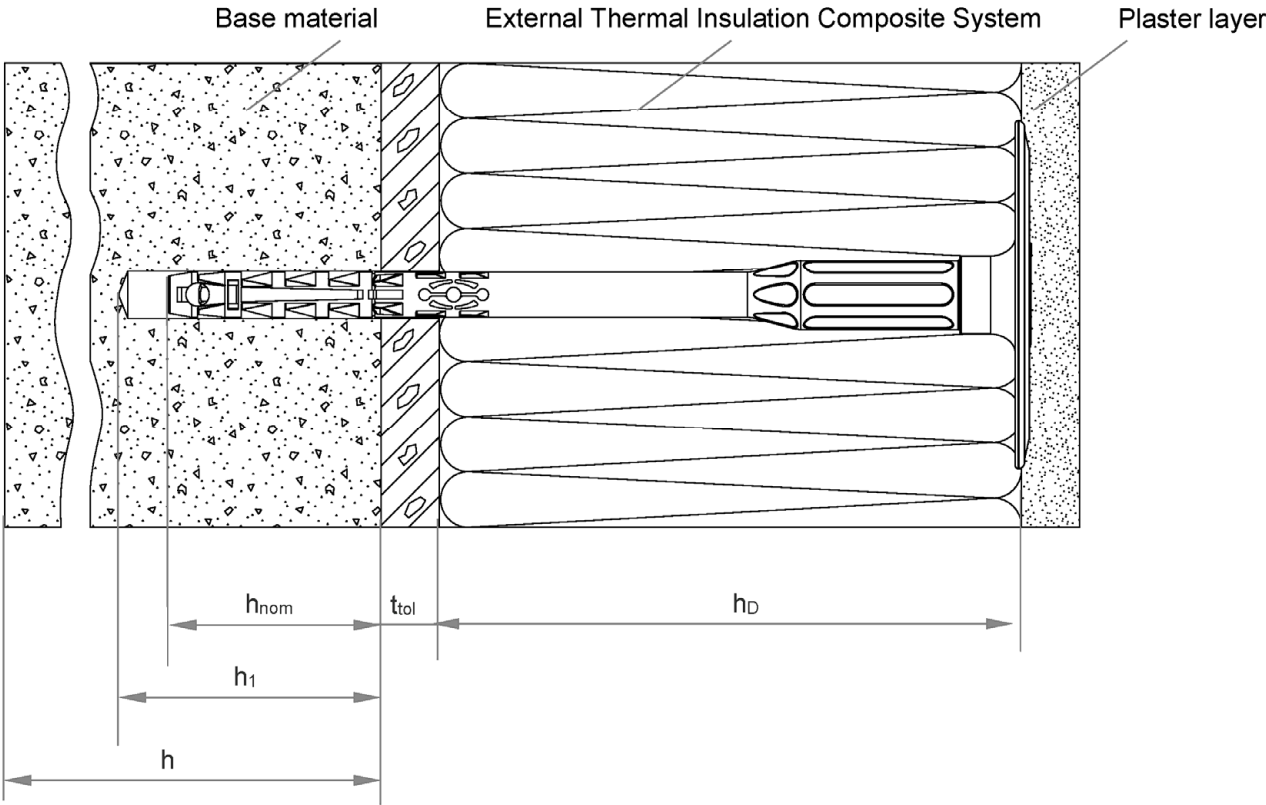
- EOTA Technical Report TR 025, Point thermal transmittance of plastic anchors for etics
Edition May 2016
- EOTA Technical Report TR 026, Plate stiffness of plastic anchors for ETICS
Edition May 2016
- EOTA Technical Report TR 051, Job site tests of plastic anchors and screws
Edition April 2018
- EN 206:2013 Concrete - Specification, performance, production and conformity
- EN 771-1:2011+A1:2015 Specification for masonry units - Part 1: Clay masonry units
- EN 771-2:2011+A1:2015 Specification for masonry units - Part 2: Calcium silicate masonry units
- EN 771-3:2011+A1:2015 Specification for masonry units - Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)
- EN 771-4:2011+A1:2015 Specification for masonry units - Part 4: Autoclaved aerated concrete masonry units
- EN 1520:2011 Prefabricated reinforced components of lightweight aggregate concrete with open structure
- EN 12602:2013 Prefabricated reinforced components of autoclaved aerated concrete

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Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Aksünger

ANCHORS HYDOM PL



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 equalising layer and / or non-load bearing coating

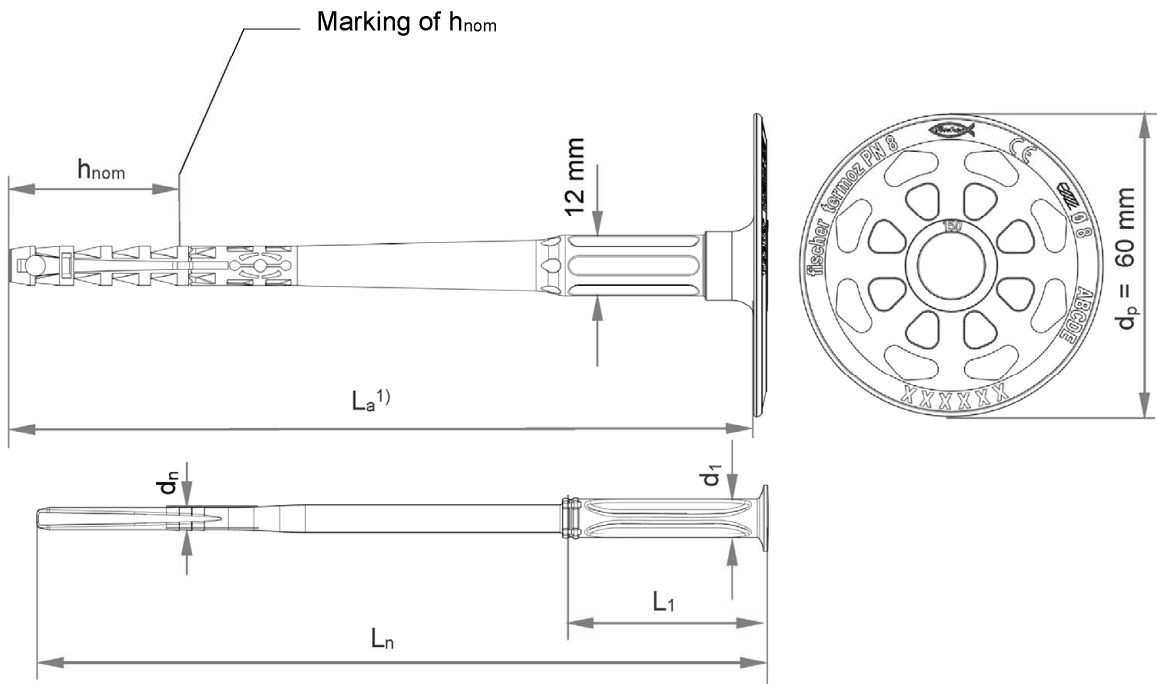
Figure not to scale

MARMODOM HYDOM THERMAL Anchoring “ANCHORS HYDOM PL”

Product description
Installed anchor

Annex A 1

ANCHORS HYDOM PL



1) Various length of the anchors are possible.

ANCHORS HYDOM PL :

$L_{a\text{ min}} \geq 110\text{ mm}$; $L_{a\text{ max}} \leq 230\text{ mm}$

L_a = length of accompanying specific nail $L_n + 5\text{ mm}$

Table A2.1: Dimensions

Anchor type	Anchor sleeve		Accompanying specific plastic nail		
	d_d [mm]	h_{nom} [mm]	d_n [mm]	L_1 [mm]	d_1 [mm]
ANCHORS HYDOM PL	8	35/55 ²⁾	4,4	40	8

²⁾ Only for base material group „D“ and „E“.

Determination of max. thickness of insulation:

e.g. for ANCHORS HYDOM PL 15 cm:

$L_a = 148\text{ mm}$, $h_{nom} = 35\text{ mm}$, $t_{tol} = 10\text{ mm}$

$$\text{max. } h_D = L_a - h_{nom} - t_{tol}$$

$$\text{max } h_D = 148 - 35 - 10 = 103\text{ mm}$$

recommended $h_D = 100\text{ mm}$

Figures not to scale

MARMODOM HYDOM THERMAL Anchoring “ANCHORS HYDOM PL”

Product description
Dimensions

Annex A 2

Table A3.1: Material

Designation	Material
Anchor sleeve	PP, colour: grey
Specific plastic nail	PA6 GF, colour: nature
Anchor plate / Slip-on plate	PA6, GF colour: grey, orange, red, green, yellow, blue, mocca-latte, black

Drawing of the slip-on-plate (e.g. DT 140)

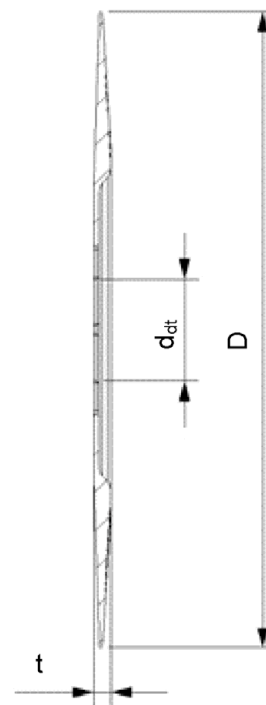
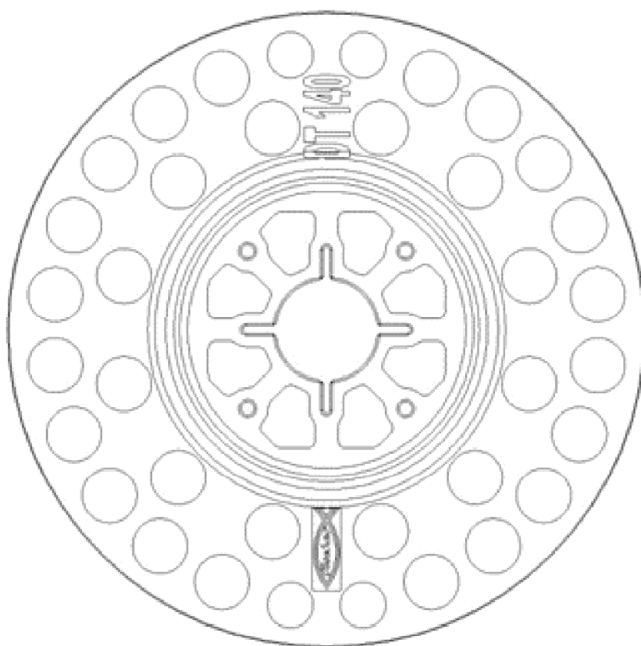


Table A3.2: Slip-on plate, dimensions and material

Slip-on plate	D [mm]	d _{dt} [mm]	t [mm]
DT 90 / 110 / 140	90 / 110 / 140	22,5	3,9

Figures not to scale

MARMODOM HYDOM THERMAL Anchoring “ANCHORS HYDOM PL”

Product description

Material

Dimensions of slip-on plate for the combination with ANCHORS HYDOM PL

Annex A 3

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:

- Compacted normal weight concrete without fibres, strength classes $\geq C12/15$ (base material group "A"), in accordance with EN 206, see Annex C1.
- Solid brick masonry (base material group "B") as per EN 771-1, EN 771-2 or EN 771-3, see Annex C1.
- Hollow brick masonry (base material group "C"), as per EN 771-1, EN 771-2 or EN 771-3, see Annex C1.
- Prefabricated reinforced components of lightweight aggregate concrete with open structure (base material group "D") as per EN 1520, see Annex C1.
- Unreinforced autoclaved aerated concrete (base material group "E") as per EN 771-4 and reinforced autoclaved aerated concrete (base material group "E") as per EN 12602, see Annex C1.
- For other comparable base materials of the base material group "A", "B", "C", "D" and "E" the characteristic resistance of the anchor may be determined by job site tests in accordance with EOTA Technical Report TR 051.

Temperature Range:

- 0 °C to + 40 °C (max. short term temperature + 40 °C and max. long term temperature + 24 °C) of the base material.

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors for material related resistances $\gamma_M = 2,0$ and for action loads $\gamma_F = 1,5$ 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 external thermal insulation composite system.

Installation:

- Drilling method according to Annex C1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site.
- Installation temperature from 0 °C to + 40 °C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks.

MARMODOM HYDOM THERMAL Anchoring "ANCHORS HYDOM PL"

Intended use
Specifications

Annex B 1

Table B2.1: Installation parameters for base material groups “A” concrete, “B” solid bricks, “C” hollow or perforated bricks, “D” lightweight aggregate concrete and “E” autoclaved aerated concrete

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

¹⁾ Only for base material group “D” and “E”.

Table B2.2: Minimum thickness of member, edge distances and spacing in all regulated base material groups

Anchor type			ANCHORS HYDOM PL
Minimum thickness of member	h_{min}	= [mm]	100
Minimum spacing	s_{min}	= [mm]	100
Minimum edge distance	c_{min}	= [mm]	100

Scheme of edge distances and spacing
for base material group “A”, concrete,
group “B” solid bricks, group “C” hollow or
perforated masonry, group “D” lightweight
aggregate concrete, group “E” autoclaved
aerated concrete

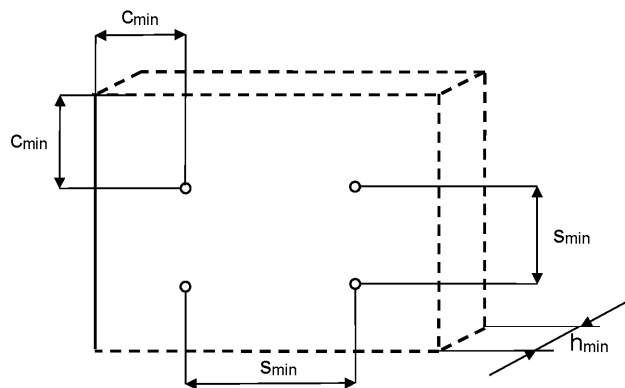


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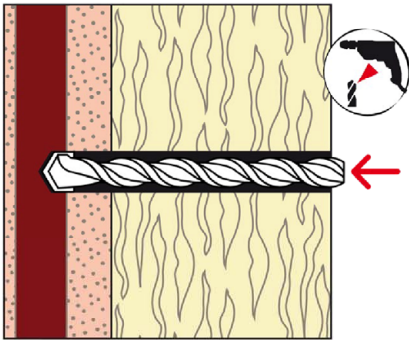
MARMODOM HYDOM THERMAL Anchoring “ANCHORS HYDOM PL”

Intended use

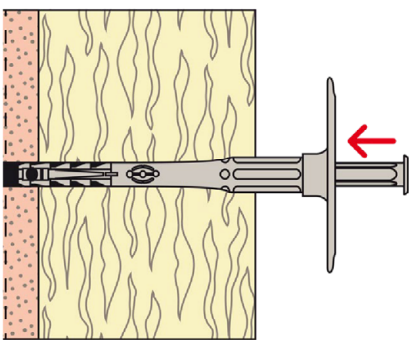
Installation parameters depending on the base material groups
Minimum thickness of member, edge distances and spacings

Annex B 2

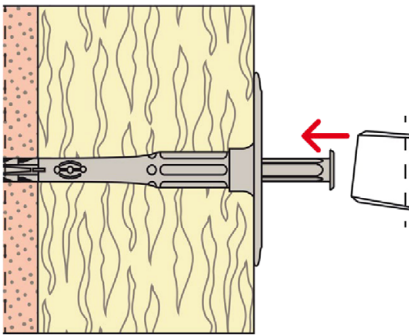
Installation instruction



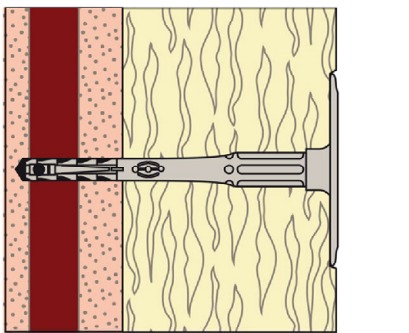
1. Drill hole by corresponding drilling method defined for each stone according to Table C1.1 and drill hole diameter d_0 and depth h_1 according to Table B2.1.



2. Insert anchor manually.



3. Set anchor by hammer blows.



4. Correctly installed anchor.

MARMODOM HYDOM THERMAL Anchoring "ANCHORS HYDOM PL"

Intended use
Installation instruction

Annex B 3

Table C1.1: Characteristic resistance N_{Rk} to tension loads for single anchor ANCHORS HYDOM PL

Base material	Group	Bulk density ρ [kg/dm ³]	Mean compressive strength / minimum compressive strength single brick as per EN 771 ⁴⁾ [N/mm ²]	Remarks	Drilling method ¹⁾	Characteristic resistance to tension loads N_{Rk} [kN]
Concrete, C12/15 - C50/60 as per EN 206	A	-	-	-	H	0,50
Solid Clay bricks, Mz as per EN 771-1	B ²⁾	$\geq 2,0$	15/12	-	H	0,60
Calcium silicate solid bricks, KS as per EN 771-2	B ²⁾	$\geq 1,8$	15/12	-	H	0,60
Vertically perforated clay, HLz bricks as per EN 771-1	C ³⁾	$\geq 1,0$	15/12	Exterior web thickness ≥ 12 mm.	R	0,40
Hollow calcium silicate brick, KSL as per EN 771-2	C ³⁾	$\geq 1,4$	15/12	Exterior web thickness ≥ 23 mm.	H	0,40
Lightweight concrete hollow blocks, Hbl as per EN 771-3	C ³⁾	$\geq 1,2$	12,5/10	Exterior web thickness ≥ 38 mm.	H	0,50
Lightweight aggregate concrete, LAC as per EN 1520	D ³⁾	$\geq 0,9$	5/4	Minimum thickness of brick $h = 100$ mm or minimum exterior web thickness $t = 50$ mm.	H	0,30
			7,5/6			0,40
Unreinforced autoclaved aerated concrete members, AAC as per EN 771-4 Reinforced autoclaved aerated concrete blocks, AAC as per EN 12602	E	$\geq 0,5$	5/4	-	R	0,30
		$\geq 0,6$	7,5/6			0,40

¹⁾ H = Hammer drilling, R = Rotary drilling.

²⁾ Vertically perforation $\leq 15\%$; cross section reduced by perforation vertically to the resting area.

³⁾ Vertically perforation $> 15\%$ and $\leq 50\%$, cross section reduced by perforation vertically to the resting area.

⁴⁾ The compressive strength of the single brick must not be less than 80% of the mean compressive strength.

MARMODOM HYDOM THERMAL Anchoring "ANCHORS HYDOM PL"

Performances

Characteristic resistance to tension load for single anchor

Annex C 1

Table C2.1: C2.1 Point thermal transmittance according to EOTA Technical Report TR 025

Anchor type	Thickness of insulation material h_D [mm]	Point thermal transmittance χ [W/K]
ANCHORS HYDOM PL	60 - 180	0,000

Table C2.2: Plate stiffness according to EOTA Technical Report TR 026

Anchor type	Maximum size of anchor plate d_p [mm]	Load resistance of anchor plate [kN]	Plate stiffness c [kN/mm]
ANCHORS HYDOM PL	60	1,7	0,6

Table C2.3: Displacements ANCHORS HYDOM PL

Base material	Mean compressive strength / minimum compressive strength single brick as per EN 771 ¹⁾ [N/mm ²]	Tension load N [kN]	Displacements $\Delta\delta_N$ [mm]
Concrete, C12/15 – C50/60 as per EN 206	-	0,15	0,20
Clay brick, Mz as per EN 771-1	15/12	0,20	0,20
Calcium silicate solid bricks, KS as per EN 771-2	15/12	0,20	0,30
Vertically perforated clay brick, Hlz as per EN 771-1	15/12	0,15	0,40
Hollow calcium silicate brick, KSL as per EN 771-2	15/12	0,15	0,20
Hollow brick lightweight concrete, Hbl as per EN 771-3	12,5/10	0,15	0,20
Lightweight aggregate concrete, LAC as per EN 1520	5/4	0,10	0,20
	7,5/6	0,13	
Unreinforced autoclaved aerated concrete members, AAC as per EN 771-4 and reinforced autoclaved aerated concrete members, AAC as per EN 12602	5/4	0,10	0,10
	7,5/6	0,13	0,20

¹⁾ The compressive strength of the single brick must not be less than 80% of the mean compressive strength.

MARMODOM HYDOM THERMAL Anchoring “ANCHORS HYDOM PL”

Performances
Point thermal transmittance and plate stiffness
Displacements

Annex C 2