INSTYTUT TECHNIKI BUDOWLANEJ

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

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European Technical Assessment

ETA-25/0135 of 25/02/2025

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W
Product family to which the construction product belongs	Nailed-in and screwed-in plastic anchors for fixing of external thermal insulation composite systems (ETICS)
Manufacturer	MARCOPOL Sp. z o.o. Producent Śrub ul. Oliwska 100 80-209 Chwaszczyno Poland
Manufacturing plant	Manufacturing plant no 1
This European Technical Assessment contains	34 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"

Specific Part

1 Technical description of the product

The ISOTHERM FIX-PA nailed-in plastic anchor consists of an anchor sleeve with a plate made of polypropylene (virgin material) and an accompanying specific nail as an expansion pin made of glass fibre reinforced polyamide (virgin material).

The ISOTHERM FIX-S nailed-in plastic anchor consists of an anchor sleeve with a plate made of polypropylene (virgin material) and an accompanying specific steel nail as an expansion pin.

The ISOTHERM FIX-M nailed-in plastic anchor consists of an anchor sleeve with a plate made of polypropylene (virgin material) and an accompanying specific steel nail as an expansion pin.

The ISOTHERM FIX-MT screwed-in plastic anchor consists of an anchor sleeve with a plate made of polypropylene (virgin material) and an accompanying specific steel nail as an expansion pin.

The ISOTHERM FIX-W nailed-in plastic anchor consists of an anchor sleeve with a plate made of polypropylene (virgin material) and an accompanying specific nail as an expansion pin made of polypropylene (virgin material).

The plastic anchor sleeve is expanded by hammering or screwing an expansion pin, which press the sleeve against the wall of the drilled hole.

The ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W anchors may in addition be combined with the plastic plates TDW 90, TDW 110, TDW 130 and TDW 110 G.

The description of the products is given in Annex A.

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

The performances given in Annex C 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 spacings	Annex B2
Plate stiffness	Annex C2
Displacements	Annex C3

3.1.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	Annex C2

3.2 Methods used for the assessment

The assessment has been made in accordance with EAD 330196-01-0604.

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

According to Decision 97/463/EC of the European Commission the system 2+ of assessment and verification of constancy of performance (see Annex V to 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.

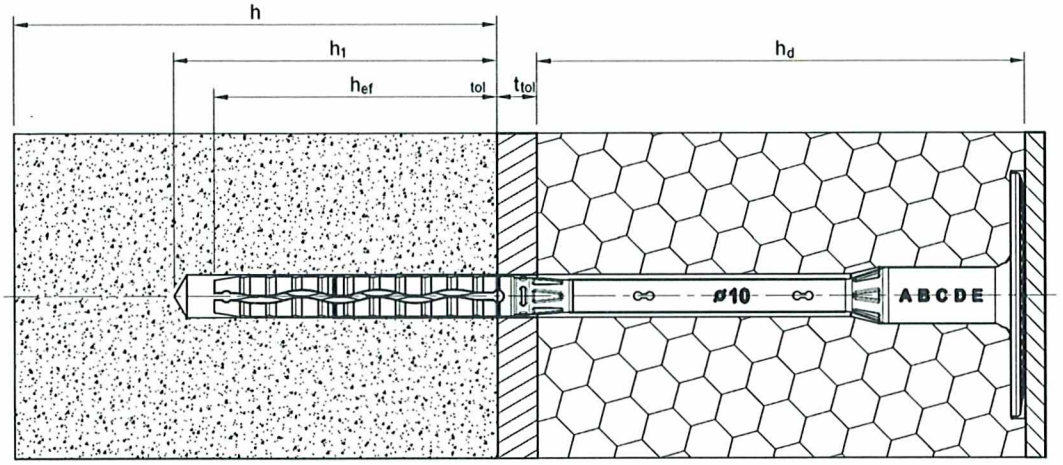
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 25/02/2025 by Instytut Techniki Budowlanej

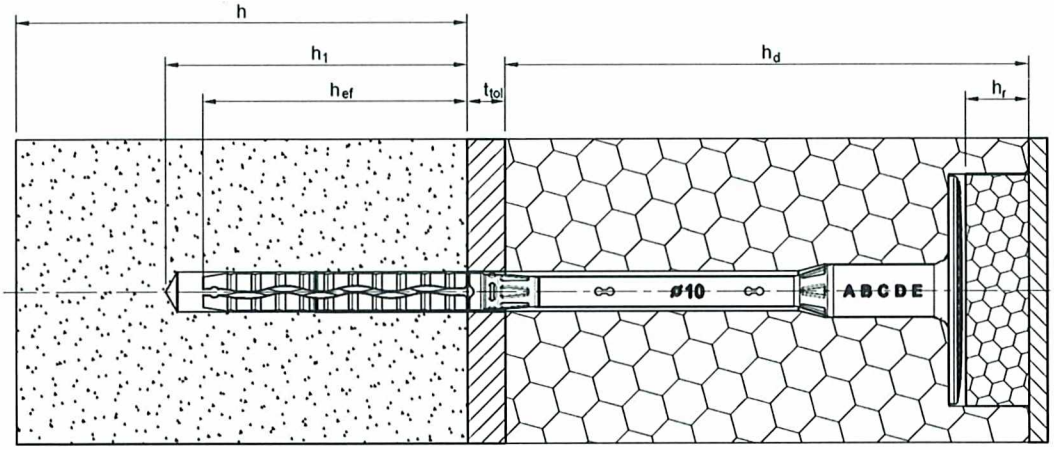
Anna Panek, MSc

Deputy Director of ITB

Surface assembly (h_{ef} = 70 mm):



Countersunk assembly (h_{ef} = 70 mm):



Intended Use:

Fixing of external thermal insulation composite systems (ETICS) in concrete and masonry

Legend:

h_{nom} = h_{ef} = effective anchorage depth

h_1 = depth of drill hole in base material

h = thickness of base material

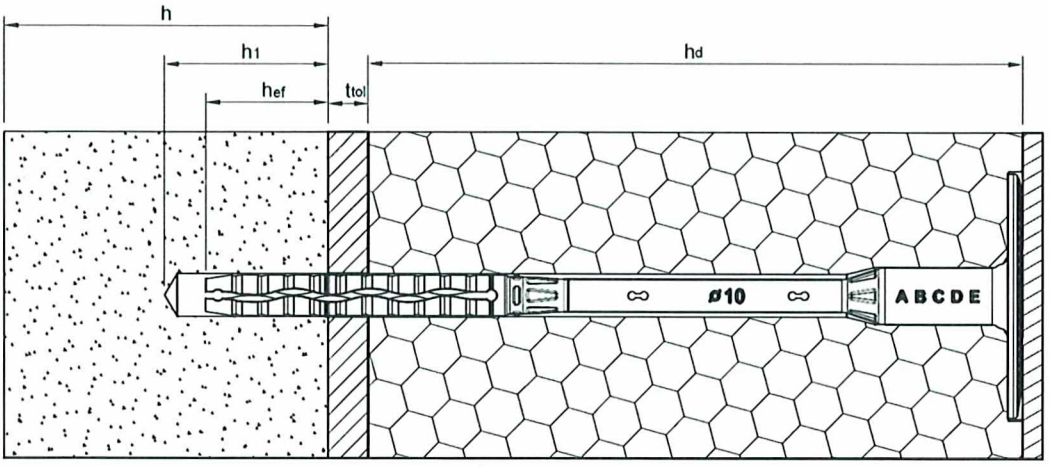
h_d = thickness of insulation material

h_r = thickness of insulation cap

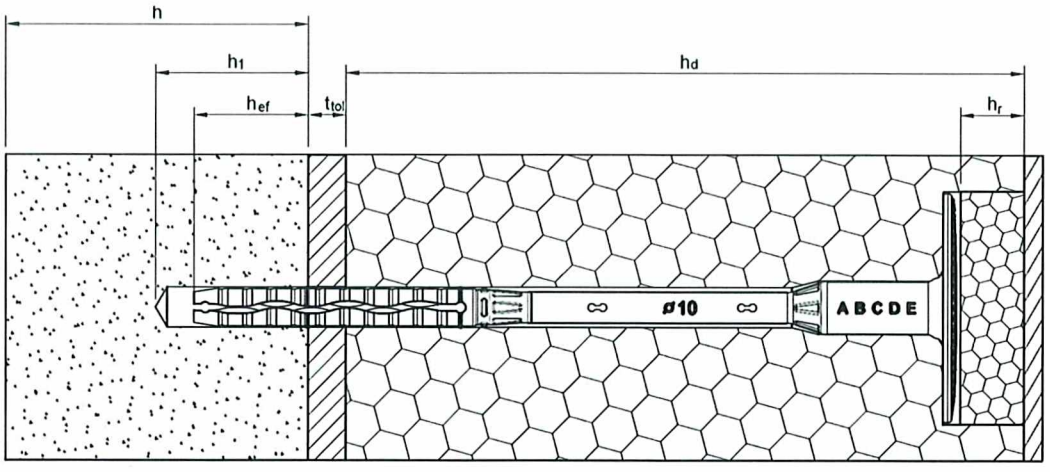
t_{tol} = thickness of equalizing and/or non-load-bearing layer

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex A1** of European Technical Assessment ETA-25/0135
Product description Installation conditions with effective anchorage depth 70 mm	

Surface assembly (h_{ef} = 30 mm):



Countersunk assembly (h_{ef} = 30 mm):



Intended Use:

Fixing of external thermal insulation composite systems (ETICS) in concrete and masonry

Legend:

h_{nom} = h_{ef} = effective anchorage depth

h_1 = depth of drill hole in base material

h = thickness of base material

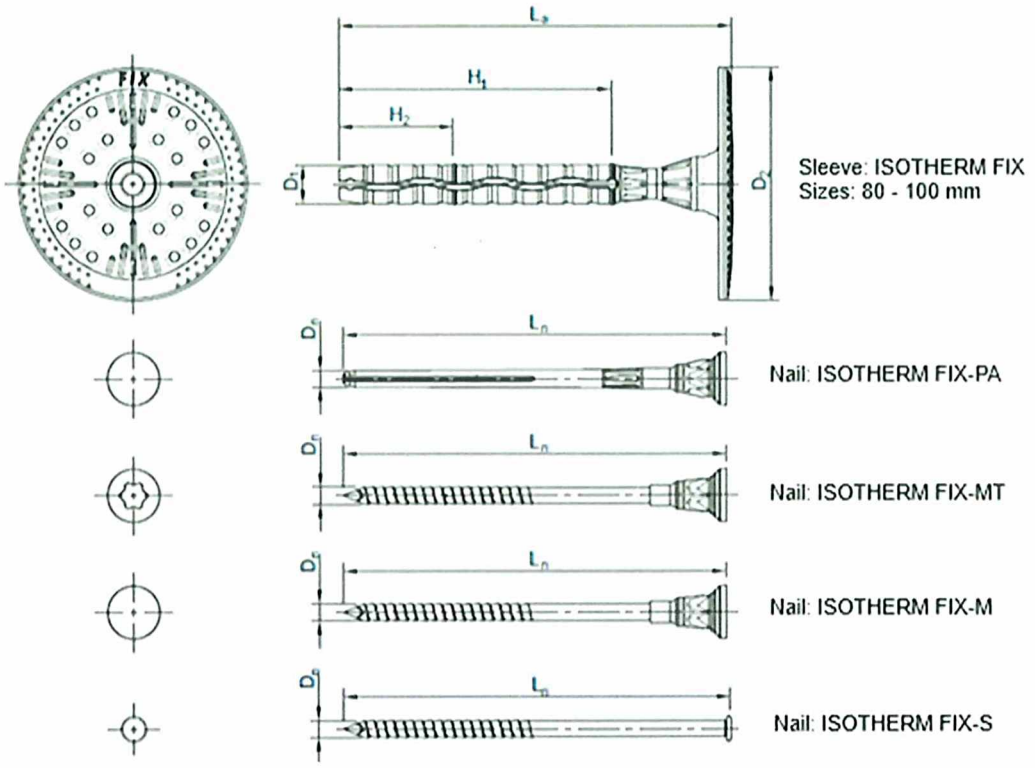
h_d = thickness of insulation material

h_r = thickness of insulation cap

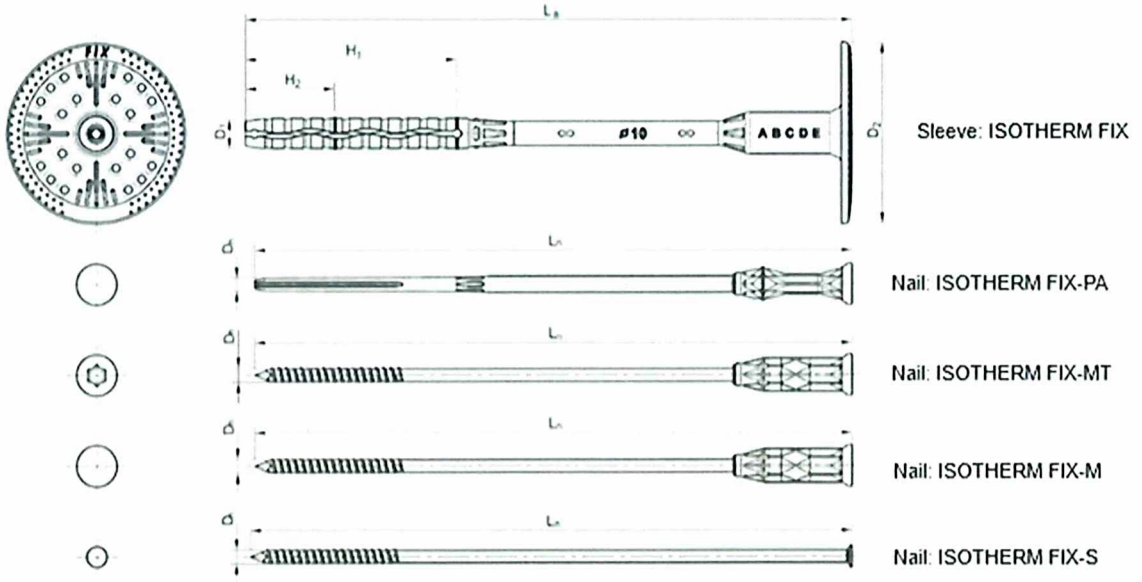
t_{tol} = thickness of equalizing and/or non-load-bearing layer

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex A2** of European Technical Assessment ETA-25/0135
Product description Installation conditions with effective anchorage depth 30 mm	

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT with L_a = 80 – 100 mm



ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT with L_a = 120 – 560 mm



ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex A3** of European Technical Assessment ETA-25/0135
Product description Marking of the anchor sleeve and expansion element of ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT anchors	

Table A1: ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT dimensions [mm]

Anchor type	Anchor sleeve						Expansion pin	
	$D_1 \pm 0,1$	$L_a \pm 2$	$D_2 \pm 1,5$	h_{ef}	H_1	H_2	$D_n \pm 0,1$	$L_n \pm 2$
ISOTHERM FIX-PA	10	80 - 560	60	30 / 70	70	30	5,3	80 - 560
ISOTHERM FIX-S	10	80 - 560	60	30 / 70			4,4	80 - 560
ISOTHERM FIX-M	10	80 - 560	60	30 / 70			4,4	80 - 560
ISOTHERM FIX-MT	10	80 - 560	60	30 / 70			4,8	80 - 560

Determination of maximum thickness of insulation material:

For surface assembly: $h_d = L_a - t_{tol} - h_{ef}$

For countersunk assembly: $h_d = L_a - t_{tol} - h_{ef} + 20$ mm

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex A4** of European Technical Assessment ETA-25/0135
Product description Dimensions of the anchor sleeve and expansion element of ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT anchors	

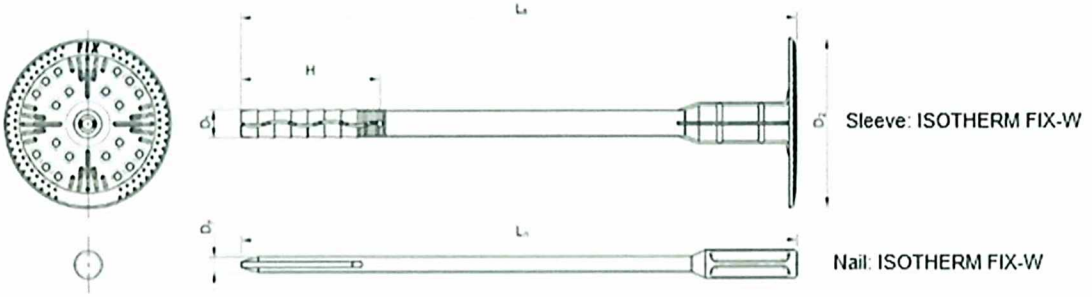


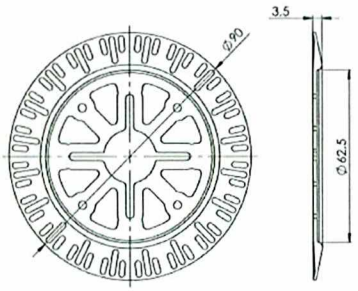
Table A2: ISOTHERM FIX-W anchor dimensions [mm]

Anchor type	Anchor sleeve				Expansion pin	
	$D_1 \pm 0,1$	$L_a \pm 2$	$D_2 \pm 1,5$	$h_{ef} = H$	$D_n \pm 0,1$	$L_n \pm 2$
ISOTHERM FIX-W	10	100 - 260	60	50	5,5	100 - 260
Determination of maximum thickness of insulation material: For surface assembly: $h_d = L_a - t_{tol} - h_{ef}$ For countersunk assembly: $h_d = L_a - t_{tol} - h_{ef} + 20$ mm						

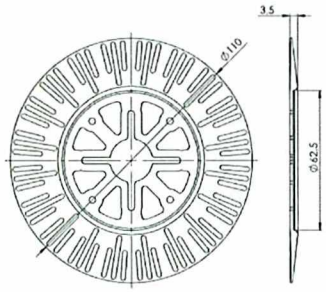
ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	Annex A5 of European Technical Assessment ETA-25/0135
Product description Marking and dimensions of the anchor sleeve and expansion element of ISOTHERM FIX-W anchors	

Table A3: Materials

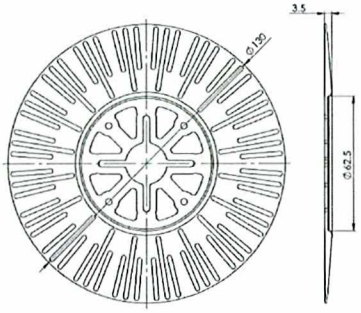
Designation		Material
Anchor sleeve		Virgin plastic: polypropylene PP, natural / white, grey, orange or blue
Expansion pin	ISOTHERM FIX-PA	Virgin plastic: polyamide PA6 reinforced with glass fibre GF30, black or natural
	ISOTHERM FIX-M, ISOTHERM FIX-MT	Carbon steel, electroplated ≥ 5 µm according to EN ISO 4042, covered with polyamide PA6, natural / white, black, yellow, blue, red, green
	ISOTHERM FIX-S	Carbon steel, electroplated ≥ 5 µm according to EN ISO 4042
	ISOTHERM FIX-W	Virgin plastic: polypropylene PP, natural / white, grey, orange or blue



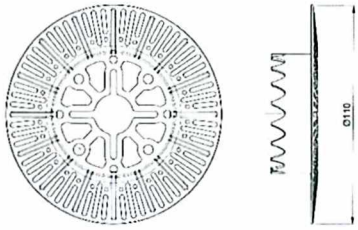
TDW 90



TDW 110



TDW 130

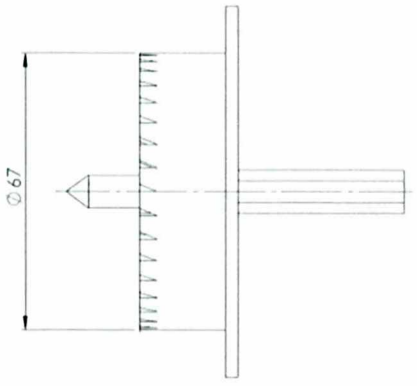


TDW 110 G

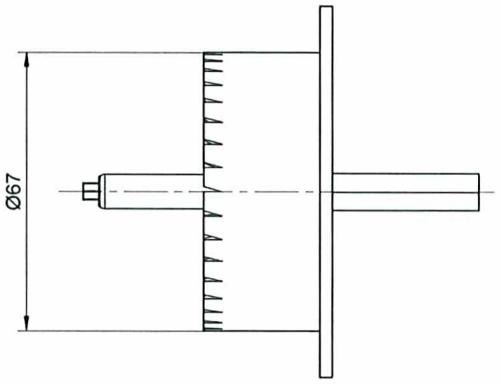
Table A4: Additional plates TDW 90, TDW 110, TDW 130 and TDW 110 G

Plate type	Outer diameter [mm]	Material
TDW 90	90	Polyamide PA6 reinforced with glass fibre GF30 (natural or grey) or polypropylene PP (natural or grey)
TDW 110	110	
TDW 130	130	
TDW 110 G	110	

Cutters for countersunk assembly:



ZP-FS



ZP-FT

Insulation cap:

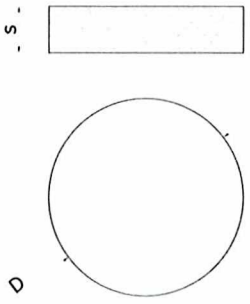


Table A5: Insulation cap

Thickness, s [mm]	Diameter, D [mm]	Material
16,5	67	expanded polystyrene (EPS) – white or grey
20		mineral wool (MW)

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).

Base materials:

- Normal weight concrete (base material group A), according to Annex C1.
- Solid masonry (base material group B), according to Annex C1.
- Hollow or perforated masonry (base material group C), according to Annex C1.
- Lightweight aggregate concrete (base material group D), according to Annex C1.
- Autoclaved aerated concrete (base material group E), according to Annex C1.
- For other base materials of the base material groups 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 April 2018.

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 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 external thermal insulation composite system (ETICS), according to EAD 330196-01-0604.

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.

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex B1** of European Technical Assessment ETA-25/0135
Intended use Specifications	

Table B1: Installation characteristics for ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT

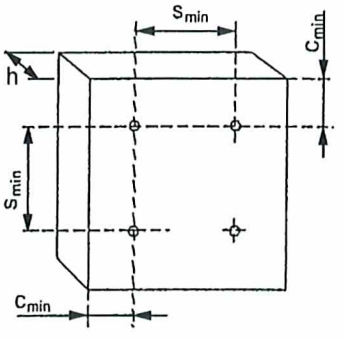
Anchor type		ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-MT	
Effective anchorage depth	$h_{ef} = h_{nom}$ [mm]	≥ 30	≥ 70
Drill hole diameter	d_o [mm]	10,00	
Cutting diameter of drill bit	d_{cut} [mm]	≤ 10,45	
Depth of drill hole	h_1 [mm]	≥ 40	≥ 80

Table B2: Installation characteristics for ISOTHERM FIX-W

Anchor type		ISOTHERM FIX-W
Effective anchorage depth	$h_{ef} = h_{nom}$ [mm]	≥ 50
Drill hole diameter	d_o [mm]	10,00
Cutting diameter of drill bit	d_{cut} [mm]	≤ 10,45
Depth of drill hole	h_1 [mm]	≥ 60

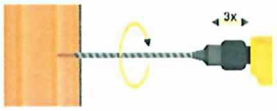
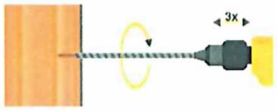
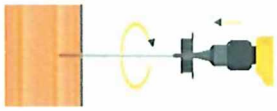
Table B3: Minimum thickness of base material, spacing and edge distance

Anchor type		ISOTHERM FIX-PA, ISOTHERM FIX-S, ISTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W
Minimum thickness of base material	h [mm]	100
Minimum spacing	s_{min} [mm]	100
Minimum edge distance	c_{min} [mm]	100



ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex B2** of European Technical Assessment ETA-25/0135
Intended use Installation characteristics, minimum thickness of base material, spacing and edge distance	

Table B4: Installation instruction of ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-W anchor – surface and countersunk assembly

Surface assembly:		Countersunk assembly with ZP-FS cutter:	
	1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.		1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.
	2. Place an anchor sleeve in the drill hole. The bottom side of the plate must be flush with the ETICS.		2. Drill a slot for countersunk installation using the drill with the ZP-FS cutter.
	3. Drive in a specific nail using the hammer.		3. Place an anchor sleeve in the drill hole. The bottom side of the plate must be flush with the ETICS.
	4. Assembled anchor.		4. Drive in a specific nail using the hammer.
			5. Install the insulation cover.
			6. Assembled anchor.

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex B3** of European Technical Assessment ETA-25/0135
Intended use Installation instruction of ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M and ISOTHERM FIX-W anchors – surface and countersunk assembly	

Table B5: Installation instruction of ISOTHERM FIX-MT anchor – surface assembly

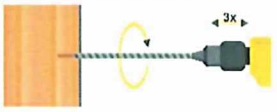
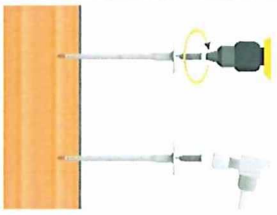
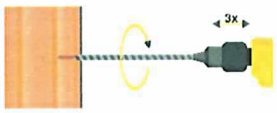
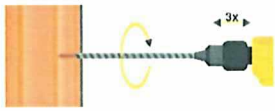
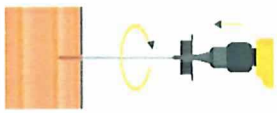
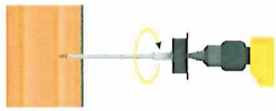
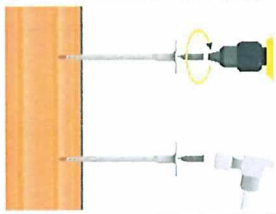
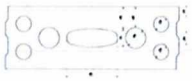
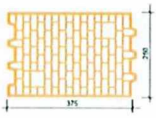
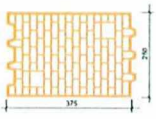
Surface assembly:	
	1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.
	2. Place an anchor sleeve in the drill hole. The bottom side of the plate must be flush with the ETICS.
	3. Drive in a specific nail using the screwdriver or the hammer.
	4. Assembled anchor.

Table B6: Installation instruction of ISOTHERM FIX-MT anchor – countersunk assembly

Countersunk assembly with ZP-FS cutter:		Countersunk assembly with ZP-FT cutter:	
	1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.		1. Drill the hole perpendicular to the substrate surface. Clean the drill hole.
	2. Drill a slot for countersunk installation with the ZP-FS cutter.		2. Place an anchor sleeve in the drill hole. The bottom side of the plate must be flush with the ETICS.
	3. Place an anchor sleeve in the drill hole. The bottom side of the plate must be flush with the ETICS.		3. Drive in a specific nail using the screwdriver with the ZP-FT.
	4. Drive in a specific nail using the screwdriver or the hammer.		4. Install the insulation cover.
	5. Install the insulation cover.		5. Assembled anchor.
	6. Assembled anchor.		

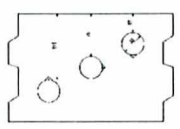
ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex B5** of European Technical Assessment ETA-25/0135
Intended use Installation instruction of ISOTHERM FIX-MT anchor – countersunk assembly	

Table C1.1: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-PA anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
A	Concrete C12/15			EN 206-1	0,55	1,30	hammer
	Concrete C16/20 – C50/60			EN 206-1	0,80	1,50	hammer
	Thin concrete members C16/20 – C50/60			EN 206-1	0,80	1,50	hammer
B	Clay brick MZ 	≥ 1,80	≥ 15,0	EN 771-1	0,80	1,50	hammer
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	EN 771-2	0,80	1,50	hammer
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	EN 771-2	0,70	1,50	hammer
	Vertically perforated clay bricks Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	EN 771-1	0,50	1,00	rotary
	Vertically perforated clay bricks Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	EN 771-1	0,55	1,20	rotary

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

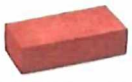
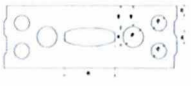
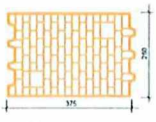
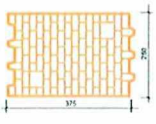
Table C1.2: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-PA anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	EN 771-3	0,60	1,20	rotary
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	EN 771-3	0,80	1,50	rotary
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	EN 771-3	0,80	1,50	rotary
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	EN 771-3	0,60	1,20	rotary
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	EN 771-4	0,60	1,20	rotary
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	EN 771-4	0,75	1,50	rotary
Partial safety factor for anchor resistance, γ_M [2]		2,0					

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

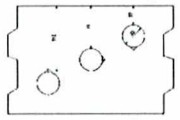
[2] Valid in absence of other national regulations

Table C1.3: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-S and ISOTHERM FIX-M anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
A	Concrete C12/15			EN 206-1	0,70	1,30	hammer
	Concrete C16/20 – C50/60			EN 206-1	1,00	1,50	hammer
	Thin concrete members C16/20 – C50/60			EN 206-1	1,00	1,50	hammer
B	Clay brick MZ 	≥ 1,80	≥ 15,0	EN 771-1	1,00	1,50	hammer
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	EN 771-2	1,00	1,50	hammer
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	EN 771-2	1,00	1,50	hammer
	Vertically perforated clay bricks Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	EN 771-1	0,50	0,60	rotary
	Vertically perforated clay bricks Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	EN 771-1	0,55	0,80	rotary

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

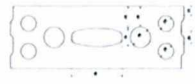
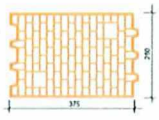
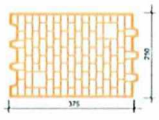
Table C1.4: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-S and ISOTHERM FIX-M anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	EN 771-3	0,60	0,90	rotary
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	EN 771-3	1,00	1,50	rotary
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	EN 771-3	1,00	1,50	rotary
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	EN 771-3	0,60	0,90	rotary
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	EN 771-4	0,60	0,90	rotary
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	EN 771-4	0,70	1,20	rotary
Partial safety factor for anchor resistance, γ_M [2]		2,0					

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

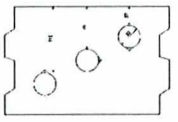
[2] Valid in absence of other national regulations

Table C1.5: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-MT anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
A	Concrete C12/15			EN 206-1	0,70	1,40	hammer
	Concrete C16/20 – C50/60			EN 206-1	1,00	1,50	hammer
	Thin concrete members C16/20 – C50/60			EN 206-1	1,00	1,50	hammer
B	Clay brick MZ 	≥ 1,80	≥ 15,0	EN 771-1	1,00	1,50	hammer
	Calcium silicate brick KS 	≥ 1,80	≥ 15,0	EN 771-2	1,00	1,50	hammer
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	EN 771-2	1,00	1,50	hammer
	Vertically perforated clay bricks Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	EN 771-1	0,50	0,60	rotary
	Vertically perforated clay bricks Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	EN 771-1	0,55	0,80	rotary

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

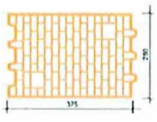
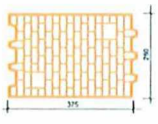
Table C1.6: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-MT anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]		Drill method
					h_{ef} = 30 mm	h_{ef} = 70 mm	
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	EN 771-3	0,60	0,90	rotary
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	EN 771-3	1,00	1,50	rotary
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	EN 771-3	1,00	1,50	rotary
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	EN 771-3	0,60	0,90	rotary
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	EN 771-4	0,60	1,20	rotary
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	EN 771-4	0,70	1,40	rotary
Partial safety factor for anchor resistance, γ_M [2]		2,0					

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

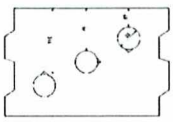
[2] Valid in absence of other national regulations

Table C1.7: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-W anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN] h_{ef} = 50 mm	Drill method
A	Concrete C12/15			EN 206-1	0,70	hammer
	Concrete C16/20 – C50/60			EN 206-1	1,00	hammer
	Thin concrete members C16/20 – C50/60			EN 206-1	1,00	hammer
B	Clay brick MZ 	≥ 1,80	≥ 15,0	EN 771-1	0,80	hammer
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	EN 771-2	0,80	hammer
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	EN 771-2	0,70	hammer
	Vertically perforated clay bricks Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	EN 771-1	0,40	rotary
	Vertically perforated clay bricks Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	EN 771-1	0,50	rotary

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

Table C1.8: Characteristic resistance under tension loads N_{Rk} in concrete and in masonry for single ISOTHERM FIX-W anchor

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Referring standard	N_{Rk} [kN]	Drill method
					h_{ef} = 50 mm	
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	EN 771-3	0,50	rotary
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	EN 771-3	1,00	rotary
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	EN 771-3	1,00	rotary
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	EN 771-3	0,50	rotary
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	EN 771-4	0,50	rotary
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	EN 771-4	0,60	rotary
Partial safety factor for anchor resistance, γ_M [2]		2,0				

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

[2] Valid in absence of other national regulations

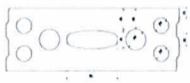
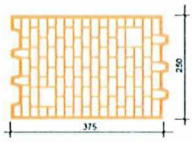
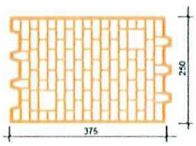
Table C2.1: Point thermal transmittance according to EOTA Technical Report TR 025

Anchor type	Insulation thickness H_D [mm]	Point thermal transmittance χ [W/K]
Surface installation		
ISOTHERM FIX-PA and ISOTHERM FIX-W	40	0,000
	150	0,000
	530	0,000
ISOTHERM FIX-M and ISOTHER FIX-MT	40	0,002
	150	0,002
	530	0,001
ISOTHERM FIX-S	40	0,005
	150	0,003
	530	0,002
Countersunk installation		
ISOTHERM FIX-PA and ISOTHERM FIX-W	40	0,000
	150	0,000
	530	0,000
ISOTHERM FIX-M and ISOTHER FIX-MT	40	0,001
	150	0,002
	530	0,001
ISOTHERM FIX-S	40	0,001
	150	0,002
	530	0,001

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

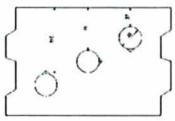
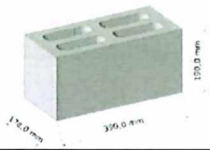
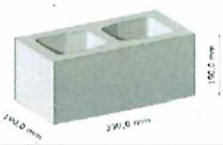
Anchor type	Diameter of the anchor plate d_{plate} [mm]	Load resistance of the anchor plate $N_{u,m}$ [kN]	Plate stiffness $N_{0,m}$ [kN/mm]
ISOTHERM FIX-PA ISOTHERM FIX-S ISOTHERM FIX-M ISOTHERM FIX-MT	60	2,60	1,0
ISOTHERM FIX-W	60	1,57	0,5

Table C3.1: Displacements for ISOTHERM FIX-PA

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
A	Concrete C12/15	–	–	0,18	0,43	0,10	0,19
	Concrete C16/20 – C50/60	–	–	0,27	0,50	0,14	0,20
	Thin concrete members C16/20 – C50/60	–	–	0,27	0,50	0,14	0,20
B	Clay brick MZ 	≥ 1,80	≥ 15,0	0,27	0.50	0,13	0,22
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	0,27	0.50	0,13	0,22
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	0,23	0.50	0,13	0,22
	Verticaly perforated porosited block Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	0,17	0,33	0,13	0,22
	Verticaly perforated porosited block Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	0,18	0,40	0,13	0,22

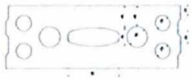
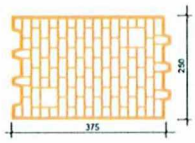
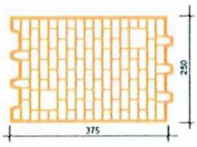
[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

Table C3.2: Displacements for ISOTHERM FIX-PA

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	0,20	040	0,13	0,22
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	0,27	0,50	0,14	0,20
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	0,27	0,50	0,14	0,20
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	0,20	0,40	0,09	0,33
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	0,20	0,40	0,22	0,33
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	0,25	0,50	0,22	0,15

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

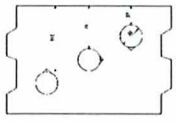
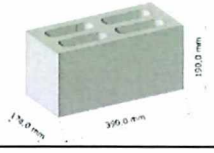
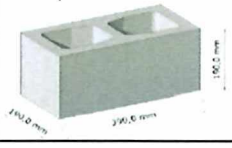
Table C3.3: Displacements for ISOTHERM FIX-S and ISOTHERM FIX-M

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
A	Concrete C12/15	–	–	0,23	0,43	0,10	0,19
	Concrete C16/20 – C50/60	–	–	0,33	0,50	0,15	0,22
	Thin concrete members C16/20 – C50/60	–	–	0,33	0,50	0,15	0,22
B	Clay brick MZ 	≥ 1,80	≥ 15,0	0,33	0,50	0,39	0,45
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	0,33	0,50	0,39	0,45
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	0,33	0,50	0,39	0,45
	Verticaly perforated porosited block Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	0,17	0,20	0,39	0,45
	Verticaly perforated porosited block Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	0,18	0,27	0,39	0,45

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

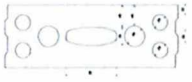
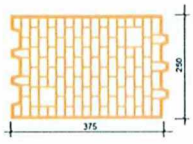
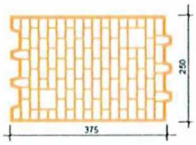
ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex C3** of European Technical Assessment ETA-25/0135
Performances Displacements	

Table C3.4: Displacements for ISOTHERM FIX-S and ISOTHERM FIX-M

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	0,20	0,30	0,39	0,45
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	0,33	0,50	0,15	0,22
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	0,33	0,50	0,15	0,22
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	0,20	0,30	0,07	0,11
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	0,20	0,40	0,12	0,17
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	0,23	0,30	0,12	0,17

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

Table C3.5: Displacements for ISOTHERM FIX-MT

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
A	Concrete C12/15	–	–	0,23	0,47	0,10	0,21
	Concrete C16/20 – C50/60	–	–	0,33	0,50	0,15	0,22
	Thin concrete members C16/20 – C50/60	–	–	0,33	0,50	0,15	0,22
B	Clay brick MZ 	≥ 1,80	≥ 15,0	0,33	0,50	0,39	0,45
	Calcium silicate brick KS	≥ 1,80	≥ 15,0	0,33	0,50	0,39	0,45
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	0,33	0,50	0,39	0,45
	Verticaly perforated porosited block Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	0,17	0,20	0,39	0,45
	Verticaly perforated porosited block Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	0,18	0,27	0,39	0,45

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex C3** of European Technical Assessment ETA-25/0135
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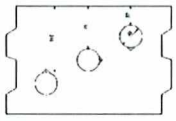
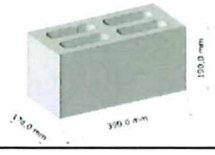
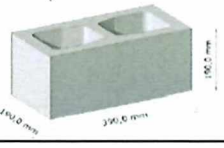
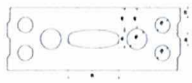
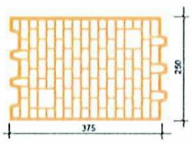
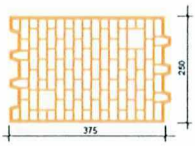
Table C3.6: Displacements for ISOTHERM FIX-MT

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]		$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]	
				h_{ef} = 30 mm	h_{ef} = 70 mm	h_{ef} = 30 mm	h_{ef} = 70 mm
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	0,20	0,30	0,39	0,45
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	0,33	0,50	0,15	0,22
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	0,33	0,50	0,15	0,22
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	0,20	0,30	0,07	0,11
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	0,20	0,40	0,12	0,21
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	0,23	0,47	0,12	0,21

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

Table C3.7: Displacements for ISOTHERM FIX-W

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]	$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]
				h_{ef} = 50 mm	h_{ef} = 50 mm
A	Concrete C12/15	–	–	0,23	0,05
	Concrete C16/20 – C50/60	–	–	0,33	0,07
	Thin concrete members C16/20 – C50/60	–	–	0,33	0,07
B	Clay brick MZ 	≥ 1,80	≥ 15,0	0,27	0,06
	Calcium silicate brick KS 	≥ 1,80	≥ 15,0	0,27	0,06
C	Calcium silicate hollow block KSL  a [1] = 40 mm	≥ 1,60	≥ 12,0	0,23	0,06
	Verticaly perforated porosited block Porotherm 25  a [1] = 12 mm	≥ 0,80	≥ 15,0	0,13	0,06
	Verticaly perforated porosited block Porotherm 25  a [1] = 17 mm	≥ 0,80	≥ 15,0	0,17	0,06

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required

ISOTHERM FIX-PA, ISOTHERM FIX-S, ISOTHERM FIX-M, ISOTHERM FIX-MT and ISOTHERM FIX-W	**Annex C3** of European Technical Assessment ETA-25/0135
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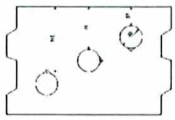
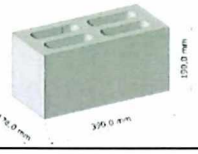
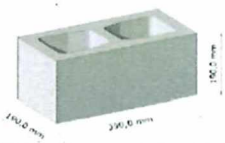
Table C3.8: Displacements for ISOTHERM FIX-W

Base material group	Base material	Bulk density [kg/dm³]	Compressive strength [N/mm²]	$\frac{N_{Rk}}{3}$ [kN]	$\delta\left(\frac{N_{Rk}}{3}\right)$ [mm]
				h_{ef} = 50 mm	h_{ef} = 50 mm
C	Lightweight concrete hollow block HBL a [1] = 33 mm 	≥ 0,80	≥ 2,0	0,17	0,06
	Lightweight concrete hollow block Tekno Amerblok PK17,8 a [1] = 30 mm 	≥ 1,50	≥ 25,0	0,33	0,07
	Lightweight concrete hollow block Tekno Amerblok PK19 a [1] = 30 mm 	≥ 1,10	≥ 20,0	0,33	0,07
D	Lightweight concrete block LAC	≥ 0,88	≥ 5,0	0,17	0,07
E	Autoclaved aerated concrete block AAC2	≥ 0,35	≥ 2,0	0,17	0,07
	Autoclaved aerated concrete block AAC7	≥ 0,65	≥ 5,0	0,20	0,07

[1] Minimum values "a". For elements with lower value of "a" the load tests on the construction site are required