



DECLARATION OF PERFORMANCE
DoP no. 0432-CPR-00554 EN

Version: 2

print date: 04.01.2021

1. Unique identification code of the product-type: **TOX Facade Anchor Fassad and Fassad XL**

2. Intended use/es:

Product	Intended use
Plastic anchor for multiple use in concrete and masonry for non-structura applications	For use in systems, such as facade systems, for attaching or anchoring elements that contribute to the stability of the systems

3. Manufacturer: **TOX-Dübel-Technik GmbH, Brunnenstraße 31, D-72505 Krauchenwies Ablach**

4. Authorised representative: --

5. System/s of AVCP: **2+**

6. a) Harmonised standard: --

Notified body/ies: --

6. b) European Assessment Document: **ETAG 020, March 2012**

European Technical Assessment: **ETA-17/1002; 05.10.2020**

Technical Assessment Body: **DIBt**

Notified body/ies: **0432 MPA NRW**

7. Declared performance/s:

Safety in case of fire (BWR 2)

Essential characteristics	Performances
Reaction to fire	Anchors satisfy requirements for class A1
Resistance to fire	See Annexes C1

Safety and accessibility (BWR 4)

Essential characteristics	Performances
Characteristic resistance for tension and shear loads	See Annex C1 - C3. C5
Durability	See Annex B1
Displacements	See Annex C4 - C5
Anchor distances and dimensions of members	See Annex B2 - B4

8. Appropriate Technical Documentation and/or Specific Technical Documentation:

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Daniel Wilhelm (Applications Engineering)
Krauchenwies-Ablach, 04.01.2021

Table B1: Installation parameters

Anchor type		10	14
Drill hole diameter	$d_0 = [\text{mm}]$	10	14
Cutting diameter of drill bit	$d_{\text{cut}} \leq [\text{mm}]$	10,45	14,45
Depth of drilled hole to deepest point ¹⁾	$h_1 \geq [\text{mm}]$	85	85
Overall plastic anchor embedment depth in the base material ^{1), 2)}	$h_{\text{nom}} \geq [\text{mm}]$	70	70
Diameter of clearance hole in the fixture	$d_r \leq [\text{mm}]$	10,5	14,5

¹⁾ See Annex A 1

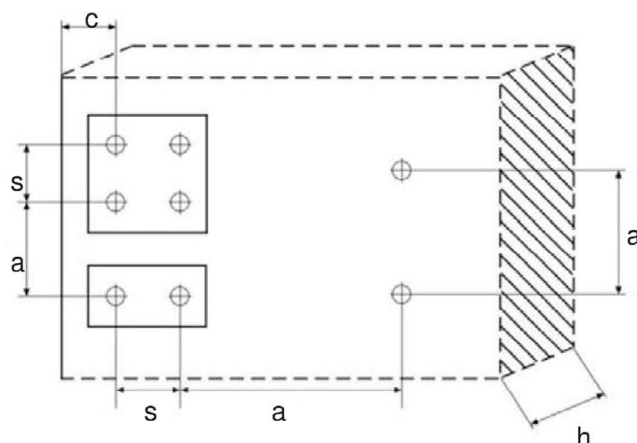
²⁾ For hollow and perforated masonry the influence of $h_{\text{nom}} > 70$ mm has to be detected by job site tests according ETAG 020 Annex B

Table B2: Minimum thickness of member, edge distance and spacing in concrete

Fixing points with a spacing $a \leq s_{\text{cr},N}$ are considered as a group with a max. characteristic resistance $N_{\text{Rk},p}$ acc. to Table C3. For $a > s_{\text{cr},N}$ the anchors are considered as single anchors, each with a characteristic resistance $N_{\text{Rk},p}$ acc. to Table C3.

Type		Minimum thickness of member h_{min} [mm]	Characteristic edge distance $c_{\text{cr},N}$ [mm]	Minimum edge distance c_{min} [mm]	Minimum spacing s_{min} [mm]	Characteristic spacing $s_{\text{cr},N}$ [mm]
10	Concrete C12/15	100	100	85	70	85
	Concrete \geq C16/20		70	60	50	85
14	Concrete C12/15	100	140	120	105	115
	Concrete \geq C16/20		100	85	75	115

Scheme of distance and spacing in concrete



TOX Facade Anchor Fassad 10 and Fassad XL 14

Intended use

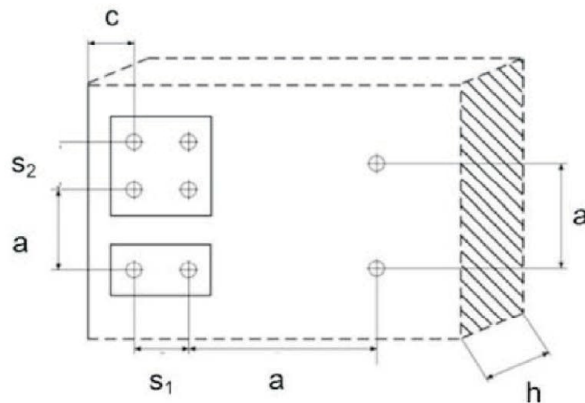
Installation parameters, edge distance and spacings for use in concrete

Annex B 2

Table B5: Minimum distances and dimensions in autoclaved aerated concrete

		10
Minimum thickness of member	h_{\min} [mm]	200
Single anchor		
Minimum allowable spacing	a_{\min} [mm]	$\max(250 \text{ mm} / s_{1,\min} / s_{2,\min})$
Minimum allowable edge distance	c_{\min} [mm]	100
Anchor Group		
Minimum allowable spacing perpendicular to free edge	$s_{1,\min}$ [mm]	200
Minimum allowable spacing parallel to free edge	$s_{2,\min}$ [mm]	400
Minimum allowable edge distance	c_{\min} [mm]	100

Scheme of distance and spacing in autoclaved aerated concrete



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Intended use

Edge distance and spacings for use in autoclaved aerated concrete

Annex B 4

Table C1: Characteristic resistance of the screw

Failure of expansion element (special screw)			10		14	
			gvz	stainless steel	gvz	stainless steel
Characteristic tension resistance	$N_{Rk,s}$	[kN]	15,0	13,5	30,2	27,1
Partial safety factor	$\gamma_{Ms}^{1)}$		1,5	1,6	1,5	1,6
Characteristic shear resistance	$V_{Rk,s}$	[kN]	7,5	6,8	15,1	13,6
Partial safety factor	$\gamma_{Ms}^{1)}$		1,25	1,33	1,25	1,33
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	12,8	11,5	36,2	32,6
Partial safety factor	$\gamma_{Ms}^{1)}$		1,25	1,33	1,25	1,33

¹⁾ In absence of other national regulations

Table C2: Values under fire exposure in concrete C20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm, fastening of facade systems

Anchor type	Fire resistance class	$F_{Rk,fi,90}$	$\gamma_{M,fi}^{1)}$
Fassad 10	R 90	0,8 kN	1,0

¹⁾ In absence of other national regulations

Table C3: Characteristic resistance by pull-out failure for use in concrete (drill method: hammer)

Pull-out failure (plastic sleeve)			10		14	
			24/40 °C	50/80 °C	24/40 °C	50/80 °C
Concrete \geq C16/20 according EN 206-1:2000						
Characteristic resistance	$N_{Rk,p}$	[kN]	5,0	3,5	7,5	5,0
Partial safety factor	$\gamma_{Mc}^{1)}$		1,8			
Concrete C12/15 according EN 206-1:2000						
Characteristic resistance	$N_{Rk,p}$	[kN]	3,5	2,5	5,0	3,5
Partial safety factor	$\gamma_{Mc}^{1)}$		1,8			

¹⁾ In absence of other national regulations

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Performances

Characteristic resistance of the screw,
Characteristic bending resistance, Characteristic resistance for use in concrete

Annex C 1

Table C4: Characteristic resistance F_{Rk} in [kN] in solid bricks (use category „b“)

Base material	Min. DF or min. Size (L x W x H) [mm]	Bulk density ρ [kg/dm ³]	Min. compr- essive strength f_b [N/mm ²]	Drill me- thod	Thick- ness of wall h [mm]	Comment	Characteristic resistance F_{Rk} [kN]			
							10		14	
							24/40 °C	50/80 °C	24/40 °C	50/80 °C
Clay brick Mz EN 771-1:2011	NF (240x115x71)	1,8	20	H ¹⁾	115		4,0 6,0 ⁴⁾	3,5	4,5 7,5 ⁵⁾	4,5 5,0 ⁵⁾
			10				3,0 4,5 ⁴⁾	2,5	3,0 5,0 ⁵⁾	3,0 3,5 ⁵⁾
			20		240		6,0 ⁶⁾	3,5 ⁶⁾	8)	
			10				5,0 ⁶⁾	2,5 ⁶⁾		
Solid sand lime brick KS EN 771-2:2011	NF (240x115x71)	1,8	20	H ¹⁾	115	Vertical perforation up to 15%	1,5	1,5	1,5	1,5
			10				1,2	1,2	1,2	1,2
			20		240		6,0 ⁶⁾	4,0 ⁶⁾	9,0 ⁵⁾	6,0 ⁵⁾
			10				5,0 ⁶⁾	3,0 ⁶⁾	6,0 ⁵⁾	4,0 ⁵⁾
Solid sand- lime brick KS EN 771-2:2011	2DF (240x115x112)	2,0	20	H ¹⁾	115	Vertical perforation up to 15%	4,0 6,0 ⁴⁾	4,0	4,5 9,0 ⁵⁾	4,5 9,0 ⁵⁾
			10				3,0 4,5 ⁴⁾	3,0	3,0 6,0 ⁵⁾	3,0 6,0 ⁵⁾
Lightweight solid brick acc. to EN 771-3:2011	8DF (497x115x249)	2,0	20	H ¹⁾	115		3,0	1,5	8)	
Partial safety factor ³⁾					γ_{Mm}	2,5				

- 1) Hammer drilling
- 2) Rotary drilling
- 3) In absence of other national regulations
- 4) Only valid for an edge distance $c \geq 150$ mm
- 5) Only valid for an edge distance $c \geq 200$ mm
- 6) Only valid for an edge distance $c \geq 120$ mm
- 7) Cut brick for reveal
- 8) No performance assessed

TOX Facade Anchor Fassad 10 and Fassad XL 14

Performances

Characteristic resistance for use in solid masonry

Annex C 2

Table C5: Characteristic resistance F_{Rk} in [kN] in hollow or perforated masonry (use category „c“)

Base material	Min. DF or min. Size (L x W x H) [mm]	Bulk density ρ [kg/dm ³]	Min. compressive strength f_b [N/mm ²]	Drill method	Thickness of wall h [mm]	Comment	Characteristic resistance F_{Rk} [kN]			
							10		14	
							24/40 °C	50/80 °C	24/40 °C	50/80 °C
Hollow clay brick HLz EN 771-1:2011	2DF (240x115x115)	1,0	12	R ²⁾	115	Brick no. 1	1,5	0,75	8)	
Hollow clay brick HLz EN 771-1:2011	12DF (248x365x249)	0,75	10	R ²⁾	365	Brick no. 2 e.g. Schlagmann Poroton S8	0,3	0,1	8)	
Hollow clay brick HLz EN 771-1:2011	12DF (248x365x249)	0,85	12	R ²⁾	365	Brick no. 3 e.g. Schlagmann Poroton S9	0,5	0,2	8)	
Hollow clay brick HLz EN 771-1:2011	12DF (248x365x249)	0,75	10	R ²⁾	365	Brick no. 4 e.g. Schlagmann Poroton FZ9	1,2	0,6	8)	
Ceiling clay brick HLz DIN EN 15037-3:2011-07	(250x530x210)	0,8	10	R ²⁾	210	Brick no. 5	0,9	0,4	8)	
Hollow sand-lime brick KSL EN 771-2:2011	8DF (250x240x237) Annex B5, Figure 2	1,4	12	R ²⁾	115 ²⁾	Vertical perforation $\geq 15\%$ and $\leq 50\%$, outer web thickness $\geq 21,5$ mm	1,2	0,6	8)	
Ceiling acc. to DIN EN 15037-2:2011-07	(250x550x180)	1,4	2	R ²⁾	180	Brick no. 7 e.g. Schnuch SB-Baustoffe GmbH	0,4	0,2	8)	
Lightweight hollow brick Hbl EN 771-3:2011	16 DF (497x240x249)	0,8	5	R ²⁾	240	Brick no. 8 e.g. Jakob Stockschläder GmbH & Co. Kg	0,6	0,3	8)	
Partial safety factor ³⁾					γ_{Mm}	2,5				

- 1) Hammer drilling
- 2) Rotary drilling
- 3) In absence of other national regulations
- 4) Only valid for an edge distance $c \geq 150$ mm
- 5) Only valid for an edge distance $c \geq 200$ mm
- 6) Only valid for an edge distance $c \geq 120$ mm
- 7) Cut brick for reveal
- 8) No performance assessed

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Performances

Characteristic resistance for use in hollow or perforated masonry

Annex C 3

Table C6: Displacements under tension and shear loading in concrete

Type	Tension load			Shear load		
	F ¹⁾ [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	F ¹⁾ [kN]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
10	1,98	0,2	0,4	2,98	1,0	1,5
14	2,98	0,4	0,6	6,11	3,0	4,5

¹⁾ Intermediate values by linear interpolation

Table C7: Displacements under tension and shear loading in solid and hollow/perforated masonry

Type	Base material ¹⁾	F [kN]	Displacements [mm]			
			Tension load		Shear load	
			δ_{NO}	$\delta_{N\infty}$	δ_{VO}	$\delta_{V\infty}$
10	Clay brick Mz EN 771-1:2011	1,71	0,2	0,4	1,4	2,1
	Solid sand-lime brick NF EN 7712:2011	0,43	0,2	0,4	0,4	0,5
	Solid sand-lime brick 2DF EN 771-2:2011	1,71	0,2	0,4	1,4	2,1
	Solid lightweight concrete EN 771-3:2011	0,86	0,2	0,4	0,7	1,1
	Hollow clay brick HLz EN 771-1:2011	0,43	0,1	0,2	0,9	1,3
	Hollow clay brick HLz S8 EN 771-1:2011	0,09	0,03	0,1	0,1	0,1
	Hollow clay brick HLz S9 EN 771-1:2011	0,14	0,1	0,1	0,1	0,2
	Hollow clay brick HLz FZ9 EN 771-1:2011	0,34	0,1	0,1	0,3	0,4
	Ceiling clay brick HLz DIN EN 15037-3:2011-07	0,26	0,1	0,2	0,2	0,3
	Hollow sand-lime brick KSL EN 771-2:2011	0,34	0,2	0,4	0,7	1,0
	Ceiling lightweight brick DIN EN 15037-2:2011-07	0,11	0,1	0,1	0,1	0,1
	Lightweight hollow brick EN 771-3:2011	0,17	0,1	0,2	0,1	0,2
14	Clay brick Mz EN 771-1:2011	2,14	0,2	0,4	1,8	2,7
	Solid sand-lime brick KS-NF EN 771-2:2011	0,43	0,1	0,2	0,4	0,5
	Solid sand-lime brick 2DF EN 771-2:2011	2,57	0,1	0,2	2,1	3,2
	Solid sand-lime brick KS EN 771-2:2011 (240 x 240 x 71)	2,57	1,1	2,2	2,1	3,2

¹⁾ Information for base material masonry: see Annex C 2, Table C4

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Performances

Displacements under tension and shear loading in concrete, solid and hollow or perforated masonry

Annex C 4

Table C8: Characteristic resistance F_{Rk} in [kN] in autoclaved aerated concrete (use category „d“)

Type	Base material	Bulk density ρ [kg/m ³]	Minimum compressive strength f_b [N/mm ²]	Drill method	Characteristic resistance F_{Rk} [kN]	
					24/40 °C	50/80 °C
10	uncracked autoclaved aerated concrete (blocks)	≥ 350	1,8	R ²⁾	0,9	0,75
	EN 771-4:2011	≥ 650	5,4	R ²⁾	2,5	2,5
	Partial safety factor ¹⁾	$\gamma_{M,AAC}$			2,0	

¹⁾ In absence of other national regulations

²⁾ Rotary drilling

Table C9: Displacements under tension and shear loading autoclaved aerated concrete

Type	Base material	Tension load			Shear load		
		$F^{1)}$ [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	$F^{1)}$ [kN]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
10	autoclaved aerated concrete $f_b \geq 1,8$ N/mm ²	0,3	0,2	0,4	0,3	0,6	1,0
	autoclaved aerated concrete $f_b \geq 5,4$ N/mm ²	0,9	0,2	0,4	0,9	1,8	2,7

¹⁾ Intermediate values by linear interpolation

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Performances

Characteristic resistance and displacements for use in autoclaved aerated concrete

Annex C 5