Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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

European Technical Assessment

ETA-17/1002 of 11 May 2022

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	TOX Facade Anchor Fassad and Fassad XL
Product family to which the construction product belongs	Plastic anchor for redundant non-structural systems in concrete and masonry
Manufacturer	TOX-Dübel-Technik GmbH Brunnenstraße 31 72505 Krauchenwies DEUTSCHLAND
Manufacturing plant	Plant 1
This European Technical Assessment contains	19 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 330284-00-0604, edition 12/2020
This version replaces	ETA-17/1002 issued on 5 October 2020

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Specific part

1 Technical description of the product

The TOX Facade Anchor in the range of Fassad 10 and Fassad XL 14 is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel or stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

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 verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchors of at least 50 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 in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C 1

3.2 Mechanical resistance and stability (BWR 4)

Essential characteristic	Performance
Resistance to steel failure under tension loading	See Annex C 1
Resistance to steel failure under shear loading	See Annex C 1
Resistance to pull-out or concrete failure under tension loading (base material group a)	See Annex C 1
Resistance in any load direction without lever arm (base material group b, c, d)	See Annexes C 2, C 3 and C 5
Edge distance and spacing (base material group a)	See Annex B 2
Edge distance and spacing (base material group b, c, d)	See Annex B 3 and B 4
Displacements under short-term and long-term loading	See Annex C 4 and C 5
Durability	See Annex B 1

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

In accordance with European Assessment Document EAD 330284-00-0604 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.

Issued in Berlin on 11 May 2022 by Deutsches Institut für Bautechnik

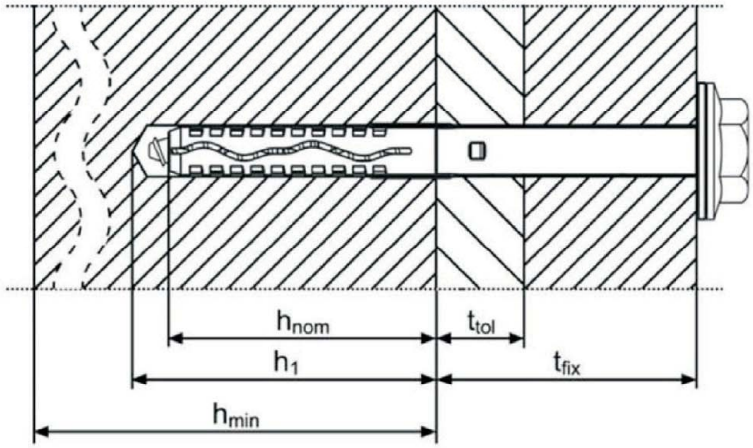
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Ziegler

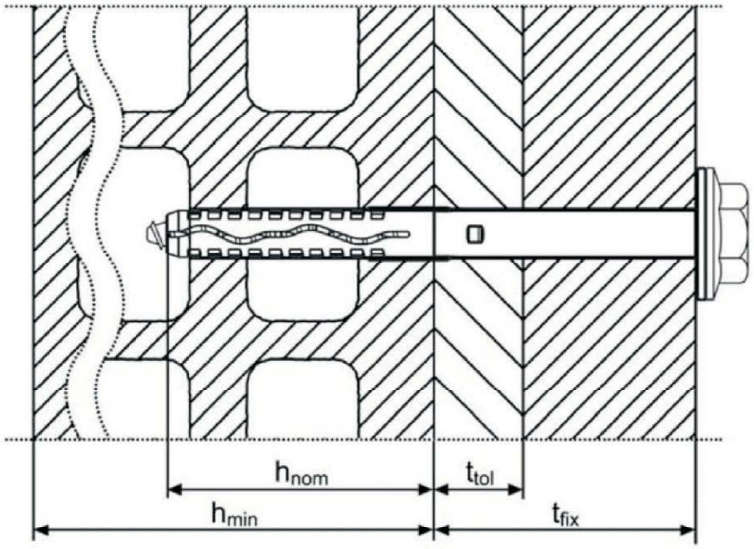
Deutsches Institut für Bautechnik DIBt

TOX Facade Anchor Fassad 10 and Fassad XL 14

Fixing in concrete and solid masonry



Fixing in hollow or perforated masonry



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)
t_{fix} = thickness of fixture
t_{tol} = thickness of layer or non-load bearing coating

TOX Facade Anchor Fassad 10 and Fassad XL 14	Annex A 1
Product description Installed condition	

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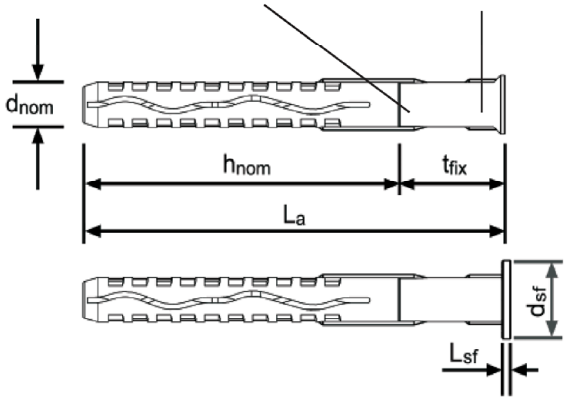
Anchor types / specific screw

Anchor sleeve Fassad 10

Marking
- Producer / Type
- drill hole diameter
- length of plastic sleeve

e.g. KtS 10x100

Marking of embedment depth

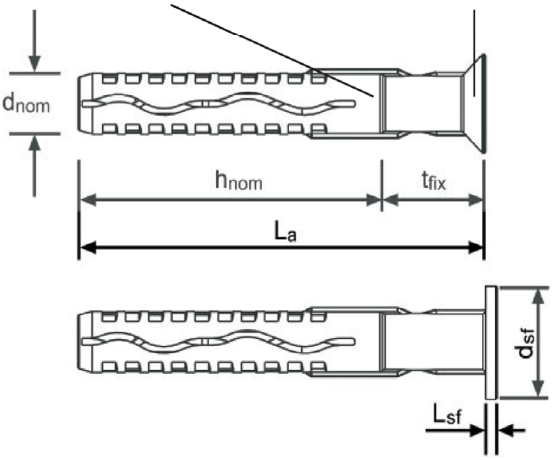


Anchor sleeve Fassad XL 14

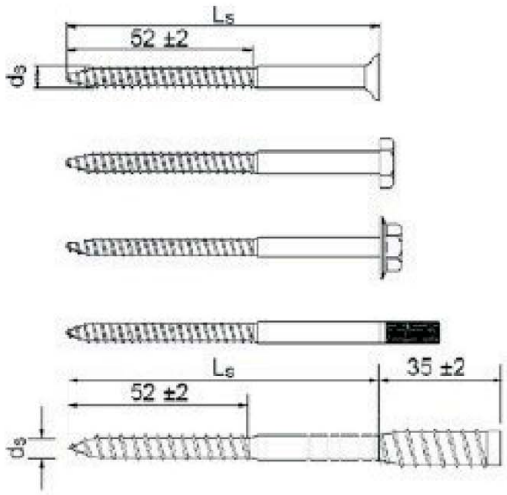
Marking
- Producer / Type
- drill hole diameter
- length of plastic sleeve

e.g. KtS 14x100

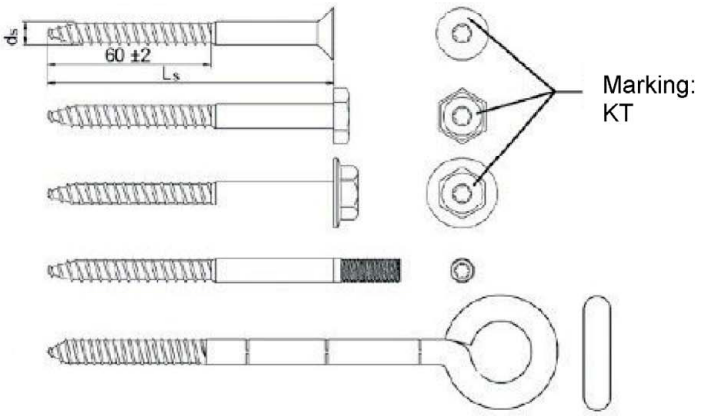
Marking of embedment depth



Special screw Fassad 10



Special screw Fassad XL 14



TOX Facade Anchor Fassad 10 and Fassad XL 14	
Product description Anchor types / specific screw marking	**Annex A 2**

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Table A1: Dimensions [mm]

Type	Anchor sleeve								Special screw [1]			
	d_{nom} [mm]	h_{nom} [mm]	$t_{fix,min}$ [mm]	$t_{fix,max}$ [mm]	$L_{a,min}$ [mm]	$L_{a,max}$ [mm]	L_{sf} [2] [mm]	d_{sf} [mm]	d_s [mm]	d_k [3] [mm]	$L_{s,min}$ [mm]	$L_{s,max}$ [mm]
10	10	70	10	230	80	300	2	18	7	5,8	90	310
14	14	70	10	290	80	360	3	26	10	8,4	90	370

1) To insure that the screw penetrates the anchor sleeve L_s must be $L_a + L_{sf} + 8$.
2) only valid for flat collar version
3) core diameter of the thread

Table A2: Materials

Name	Material
Anchor sleeve	Polyamide PA6, colour: red, grey
Special screw	Carbon steel, strength class 6.8, electrogalvanic coating Zn ≥ 5µm according to EN ISO 4042:2018
	Stainless steel according EN 10088-3:2014, material 1.4401, 1.4404 or 1.4571

TOX Facade Anchor Fassad 10 and Fassad XL 14

Product description
Dimensions and materials

Annex A 3

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Specifications of intended use

Anchorages subject to:
· Static and quasi-static loads
· Redundant non-structural systems

Base materials:
· Reinforced or unreinforced compacted normal weight concrete without fibres with strength classes ≥ C12/15 (base material group a), according to EN 206:2013+A1:2016, Annex C 1
· Solid brick masonry (base material group b), according to Annex C 2
Note: The characteristic resistance is also valid for larger brick sizes and larger compressive strength of the masonry unit.
· Hollow brick masonry (base material group c), according to Annex C 3
· Autoclaved aerated concrete (base material group d), according to Annex C 5
· Mortar strength class of the masonry ≥ M2,5 at minimum according to EN 998-2:2010.
· For other base materials of the use base material group a, b, c or d the characteristic resistance of the anchor may be determined by job size tests in accordance with TR 051:2018-04.

Temperature Range:

· Temperature range a):	-40°C to +40°C	(max. long term temperature +24°C and max. short term temperature +40°C)
· Temperature range b):	-40°C bis +80°C	(max. long term temperature +50°C and max. short term temperature +80°C)

Use conditions (Environmental conditions):
· Structures subject to dry internal conditions (zinc coated steel, stainless steel).
· The specific screw made of galvanized steel may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e. g. undercoating or body cavity protection for cars).
· Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).
· Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Design:
· The anchorages are designed in accordance with TR 051:2018-04 under the responsibility of an engineer experienced in anchorages and masonry work.
· Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
· Fasteners are only to be used for multiple use for non-structural application in accordance with TR 064:2018-05.

Installation:
· Hole drilling by the drill modes according to Annex C 1, C 2, C 3, C 5
· Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
· Installation temperature from ≥ -20°C
· Exposure to UV due to solar radiation of the anchor not protected ≤ 6 weeks
· No ingress of water in the borehole at temperatures < 0 °C.

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex B 1**
Intended use Specifications	

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Table B1: Installation parameters

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

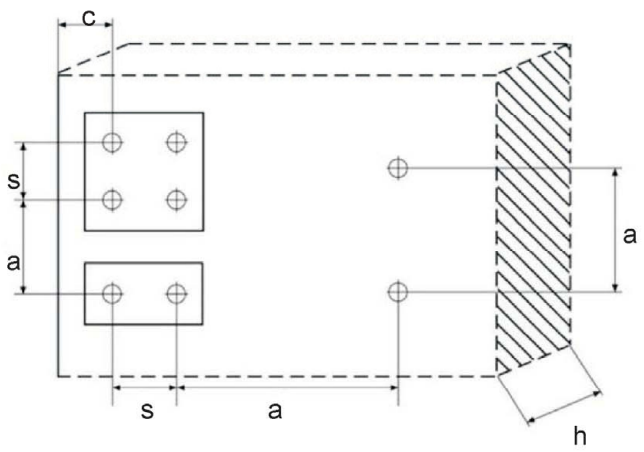
1) See Annex A 1
2) For hollow and perforated masonry the influence of $h_{nom} > 70$ mm has to be detected by job site tests according TR 051:2018-04

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

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

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

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Table B3: Minimum distance and dimensions in solid masonry

Type		10		14	
Minimum thickness of member	h_{min} [mm]	115	240 [2)]	115	240 [1)]
Single anchor					
Minimum spacing	a_{min} [mm]	max (250 mm / $s_{1,min}$ / $s_{2,min}$)			
Minimum edge distance	c_{min} [mm]	100	120 [2)]	100	200 [1)]
Anchor Group					
Minimum spacing perpendicular to free edge	$s_{1,min}$ [mm]	200	85 [2)]	200	
Minimum spacing parallel to free edge	$s_{2,min}$ [mm]	400	85 [2)]	400	
Minimum edge distance	c_{min} [mm]	100	120 [2)]	100	

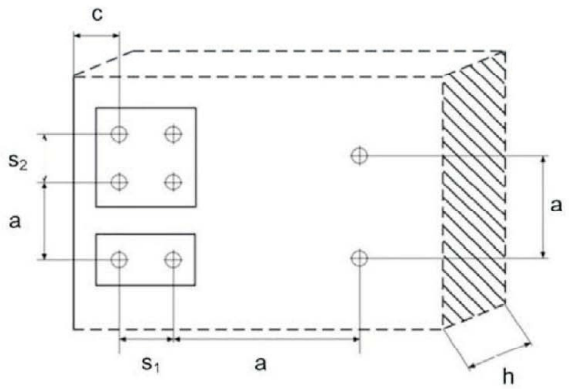
[1)] Only for KS-NF and member thickness h≥ 240 mm [see Table C4, with footnote 5]
[2)] Only for Mz-NF and KS-NF [see Table C4, with footnote 6]

Table B4: Minimum distance and dimensions in hollow or perforated masonry (only for 10)

Type		10 in HLz-2DF[1)]	10 in KSL-8DF [1)]
Minimum thickness of member	h_{min} [mm]	115	115
Single anchor			
Minimum spacing	a_{min} [mm]	max (250 mm / $s_{1,min}$ / $s_{2,min}$)	
Minimum edge distance	c_{min} [mm]	100	60
Anchor Group			
Minimum spacing perpendicular to free edge	$s_{1,min}$ [mm]	100	100
Minimum spacing parallel to free edge	$s_{2,min}$ [mm]	100	100
Minimum edge distance	c_{min} [mm]	100	60

[1)] Information for base material, see Table C5

Scheme of distance and spacing in solid masonry



TOX Facade Anchor Fassad 10 and Fassad XL 14

Intended use
Edge distance and spacings for use in masonry and hollow or perforated masonry

Annex B 3

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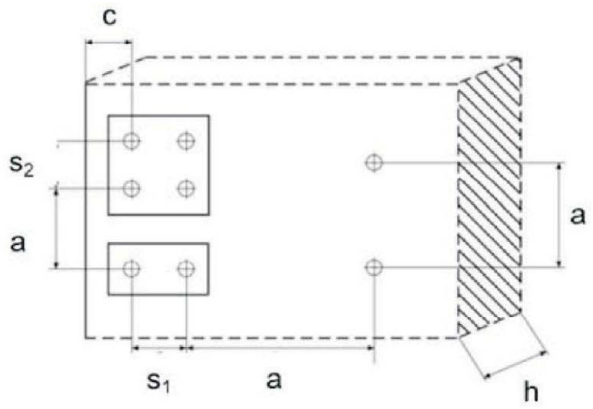
Table B5: Minimum distances and dimensions in autoclaved aerated concrete

		10
Minimum thickness of member	h_{min} [mm]	200
Single anchor		
Minimum allowable spacing	a_{min} [mm]	max (250 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



TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex B 4**
Intended use Edge distance and spacings for use in autoclaved aerated concrete	

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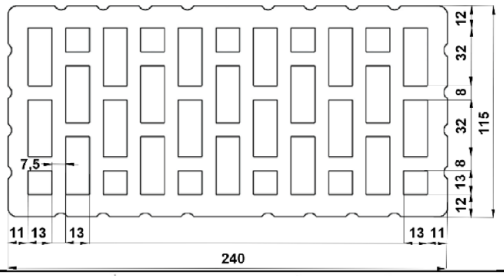
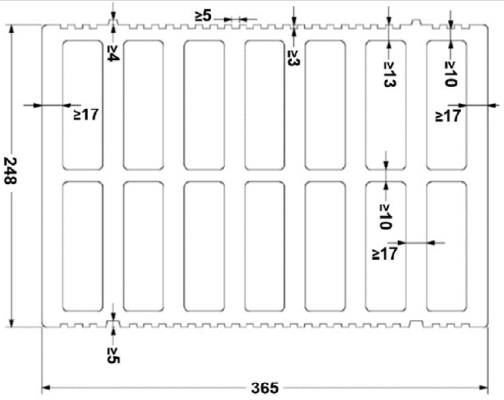
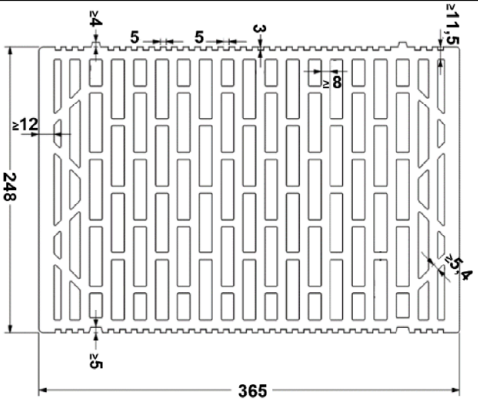
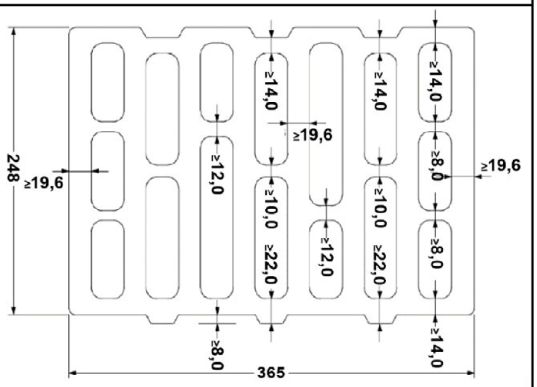
Table B6: Geometry of hollow bricks (see Table C5, Annex C3)

Brick No.	Base material	Size	Geometry (dimensions in mm)
No.1	Clay brick HLz as per EN 771-1:2011+ A1:2015	2DF (240x115x115)	
No.2	Hochlochziegel Hlz as per EN 771-1:2011+ A1:2015 e.g. Schlagmann Poroton S8	12DF (248x365x249)	
No.3	Hochlochziegel Hlz as per EN 771-1:2011+ A1:2015 e.g. Schlagmann S9	12DF (248x365x249)	
No.4	Clay brick Hlz as per EN 771-1:2011+ A1:2015 e.g. Schlagmann FZ9	12DF (248x365x249)	

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex B 5**
Intended use Geometry of stones	

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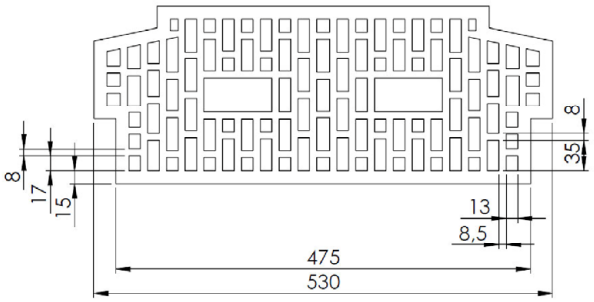
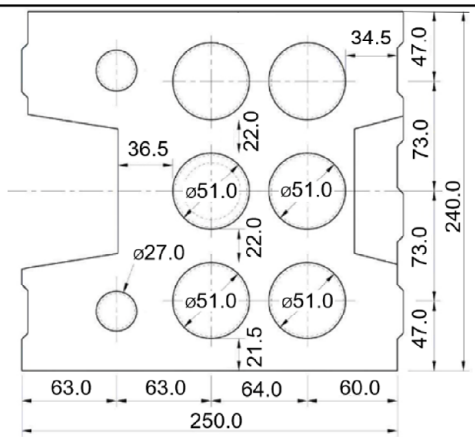
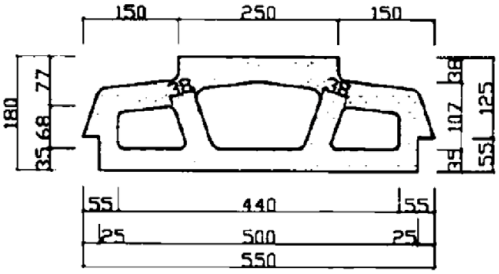
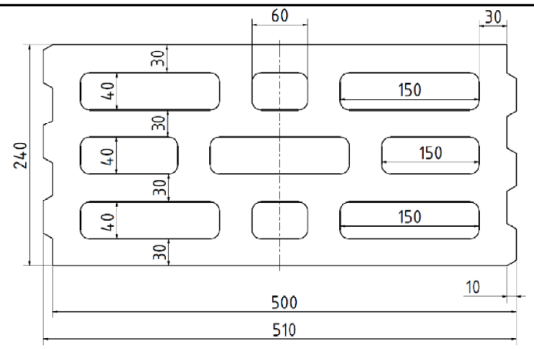
Table B7: Geometry of hollow bricks (see Table C5, Annex C3)

Brick No.	Base material	Size	Geometry (dimensions in mm)
No.5	Ceiling clay brick HLz as per EN 15037-3:2009+A1:2011 e.g. Wienerberger	(250x530x210)	
No.6	Hollow calcium silicate brick KSL as per EN 771-2:2011+ A1:2015	8DF (250x240x237)	
No.7	Ceiling hollow brick lightweight concrete as per EN 15037-3:2009+A1:2011 e.g. Schnuch SB-Baustoffe GmbH	(250x550x180)	
No.8	Hollow brick lightweight concrete Hbl as per EN 771-3:2011+ A1:2015 e.g. Jakob Stockschläder GmbH & Co. KG	16 DF (497x240x249)	

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex B 6**
Intended use Geometry of stones	

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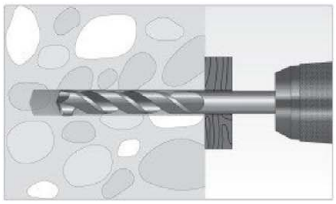
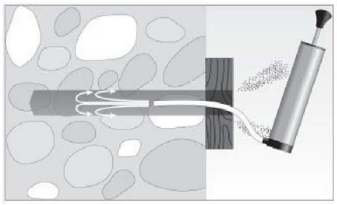
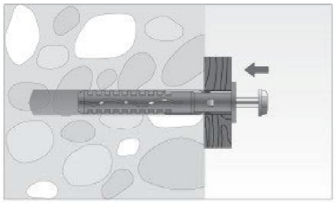
Installation instructions



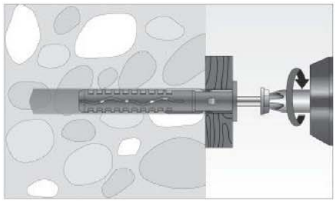
1. Drill a hole



2. Clean drill-hole



3. Put the plug into the drill-hole



4. Screw in tight the anchor plate

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex B 7**
Intended use Installation instructions	

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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	γ_{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	γ_{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	γ_{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 ≥ C16/20 in accordance with EN 206:2013+A1:2016						
Characteristic resistance	$N_{Rk,p}$	[kN]	5,0	3,5	7,5	5,0
Partial safety factor	γ_{Mc} 1)		1,8			
Concrete C12/15 in accordance with EN 206:2013+A1:2016						
Characteristic resistance	$N_{Rk,p}$	[kN]	3,5	2,5	5,0	3,5
Partial safety factor	γ_{Mc} 1)		1,8			

1) In absence of other national regulations

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex C 1**
Performances Characteristic resistance of the screw, Characteristic bending resistance, Characteristic resistance for use in concrete	

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Table C4: Characteristic resistance F_{Rk} in [kN] in solid bricks (base material group b)

Base material	Min. DF or min. Size (L x W x H) [mm]	Bulk density ρ [kg/dm³]	Min. compr-essive strength f_b [N/mm²]	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 + A1:2015	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]	7)	
			10				5,0 [6]	2,5 [6]		
Solid sand lime brick KS EN 771-2:2011 + A1:2015	NF (240x115x71)	1,8	20	H [1]	115	Cross section up to 15% reduced by perforation vertically to the resting area	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 + A1:2015	2DF (240x115x112)	2,0	20	H [1]	115	Cross section up to 15% reduced by perforation vertically to the resting area	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 EN 771-3:2011 + A1:2015	8DF (497x115x249)	2,0	20	H [1]	115		3,0	1,5	7)	
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 ≥ 150 mm
5) Only valid for an edge distance c ≥ 200 mm
6) Only valid for an edge distance c ≥ 120 mm
7) No performance assessed

TOX Facade Anchor Fassad 10 and Fassad XL 14	
Performances Characteristic resistance for use in solid masonry	**Annex C 2**

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Table C5: Characteristic resistance F_{Rk} in [kN] in hollow or perforated masonry (base material group c)

Base material	DF or size (L x W x H) [mm]	Bulk density ρ [kg/dm³]	Min. compressive strength f_b [N/mm²]	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 +A1:2015	2DF (240x115x115)	1,0	12	R[2)]	115	Brick no. 1	1,5	0,75	[7)]	
Hollow clay brick HLz EN 771-1:2011 +A1:2015	12DF (248x365x249)	0,75	10	R[2)]	365	Brick no. 2 e.g. Schlag-mann Poroton S8	0,3	0,1	[7)]	
Hollow clay brick HLz EN 771-1:2011 + A1:2015	12DF (248x365x249)	0,85	12	R[2)]	365	Brick no. 3 e.g. Schlag-mann Poroton S9	0,5	0,2	[7)]	
Hollow clay brick HLz EN 771-1:2011 + A1:2015	12DF (248x365x249)	0,75	10	R[2)]	365	Brick no. 4 e.g. Schlag-mann Poroton FZ9	1,2	0,6	[7)]	
Ceiling clay brick HLz EN 15037-3: 2009+A1:2011	(250x530x210)	0,8	10	R[2)]	210	Brick no. 5	0,9	0,4	[7)]	
Hollow sand-lime brick KSL EN 771-2:2011 + A1:2015	8DF (250x240x237)	1,4	12	R[2)]	240	Brick no. 6	1,2	0,6	[7)]	
Ceiling acc. to EN 15037-3: 2009+A1:2011	(250x550x180)	1,4	2	R[2)]	180	Brick no. 7 e.g Schnuch SB-Baustoffe GmbH	0,4	0,2	[7)]	
Lightweight hollow brick Hbl EN 771-3:2011 + A1:2015	16 DF (497x240x249)	0,8	5	R[2)]	240	Brick no. 8 e.g. Jakob Stock-schläder GmbH & Co. KG	0,6	0,3	[7)]	
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 ≥ 150 mm
5) Only valid for an edge distance c ≥ 200 mm
6) Only valid for an edge distance c ≥ 120 mm
7) No performance assessed

TOX Facade Anchor Fassad 10 and Fassad XL 14

Performances
Characteristic resistance for use in hollow or perforated masonry

Annex C 3

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Table C6: Displacements under tension and shear loading in concrete

Type	Tension load			Shear load		
	N [1] [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	V [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 = N = V [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+ A1:2015	1,71	0,2	0,4	1,4	2,1
	Solid sand-lime brick KS-NF EN 771-2:2011+ A1:2015	0,43	0,2	0,4	0,4	0,5
	Solid sand-lime brick KS-2DF EN 771-2:2011+ A1:2015	1,71	0,2	0,4	1,4	2,1
	Solid lightweight concrete Vbl EN 771-3:2011+ A1:2015	0,86	0,2	0,4	0,7	1,1
	Hollow clay brick HLz EN 771-1:2011+ A1:2015	0,43	0,1	0,2	0,9	1,3
	Hollow clay brick HLz S8 EN 771-1:2011+ A1:2015	0,09	0,03	0,1	0,1	0,1
	Hollow clay brick HLz S9 EN 771-1:2011+ A1:2015	0,14	0,1	0,1	0,1	0,2
	Hollow clay brick HLz FZ9 EN 771-1:2011+ A1:2015	0,34	0,1	0,1	0,3	0,4
	Ceiling clay brick HLz EN 15037-3:2009+A1:2011	0,26	0,1	0,2	0,2	0,3
	Hollow sand-lime brick KSL EN 771-2:2011+ A1:2015	0,34	0,2	0,4	0,7	1,0
	Ceiling lightweight brick VBL EN 15037-3:2009+A1:2011	0,11	0,1	0,1	0,1	0,1
	Lightweight hollow brick Hbl 2 EN 771-3:2011+ A1:2015	0,17	0,1	0,2	0,1	0,2
14	Clay brick Mz EN 771-1:2011+ A1:2015	2,14	0,2	0,4	1,8	2,7
	Solid sand-lime brick KS-NF EN 771-2:2011+ A1:2015	0,43	0,1	0,2	0,4	0,5
	Solid sand-lime brick KS-2DF EN 771-2:2011+ A1:2015	2,57	0,1	0,2	2,1	3,2
	Solid sand-lime brick KS EN 771-2:2011+ A1:2015	2,57	1,1	2,2	2,1	3,2

[1] Information for base material masonry: see Annex C 2, Table C4 and Annex C3, Table C5

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

Annex C 4

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Table C8: Characteristic resistance F_{Rk} in [kN] in autoclaved aerated concrete (base material group d)

Type	Base material	Bulk density ρ [kg/m³]	Minimum compressive strength f_{ck} [N/mm²]	Drill method	Characteristic resistance F_{Rk} [kN]	
					24/40 °C	50/80 °C
10	uncracked autoclaved aerated concrete (blocks) EN 771-4:2011 +A1:2015	≥ 350	1,8	R [2)]	0,9	0,75
		≥ 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 = N [1)] [kN]	δ_{NO} [mm]	$\delta_{N\infty}$ [mm]	F = V [1)] [kN]	δ_{VO} [mm]	$\delta_{V\infty}$ [mm]
10	autoclaved aerated concrete $f_{ck} \geq 1{,}8$ N/mm²	0,3	0,2	0,4	0,3	0,6	1,0
	autoclaved aerated concrete $f_{ck} \geq 5{,}4$ N/mm²	0,9	0,2	0,4	0,9	1,8	2,7

1) Intermediate values by linear interpolation

TOX Facade Anchor Fassad 10 and Fassad XL 14	**Annex C 5**
Performances Characteristic resistance and displacements for use in autoclaved aerated concrete	