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European Technical Assessment Body for construction products



European Technical Assessment

ETA-16/0695 of 14 October 2025

English translation prepared by DIBt - Original version in German language

General Part

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

Trade name of the construction product

Product family to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment contains

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of

This version replaces

Deutsches Institut für Bautechnik

Injection system ChimFix ETA 1 for masonry

Metal Injection anchors for use in masonry

Rectavit N.V. Ambachtenlaan 4 **B-9080 LOCHRISTI BELGIEN**

Rectavit Plant

77 pages including 3 annexes which form an integral part of this assessment

EAD 330076-01-0604, Edition 10/2022

ETA-16/0695 issued on 24 November 2016

Z198281.25

European Technical Assessment ETA-16/0695

English translation prepared by DIBt



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Specific Part

1 Technical description of the product

The "Injection system ChimFix ETA 1 for masonry" is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar ChimFix ETA 1 or ChimFix Nordic ETA 1, a perforated sleeve and an anchor rod with hexagon nut and washer or an Internal threaded rod. The steel elements are made of zinc coated steel, stainless steel or high corrosion resistant steel.

The anchor rod is placed into a drilled hole filled with injection mortar and is anchored via the bond between steel element, injection mortar and masonry and mechanical interlock.

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 fastener 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 fastener 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 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance for static and quasi-static loading	See Annexes B 5, B 6 C 1 to C 56
Characteristic resistance and displacements for seismic loading	No performance assessed

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire under tension and shear loading with and without lever arm. Minimum edge distances and spacing	See Annexes C2, C7, C8, C13, C14, C17, C18, C19, C20, C37, C38, C43, C44, C45, C46, C51 and C52

3.3 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Content, emission and/or release of dangerous substances	No performance assessed

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

In accordance with the European Assessment Document EAD 330076-01-0604 the applicable European legal act is: [97/177/EC].

The system to be applied is: 1

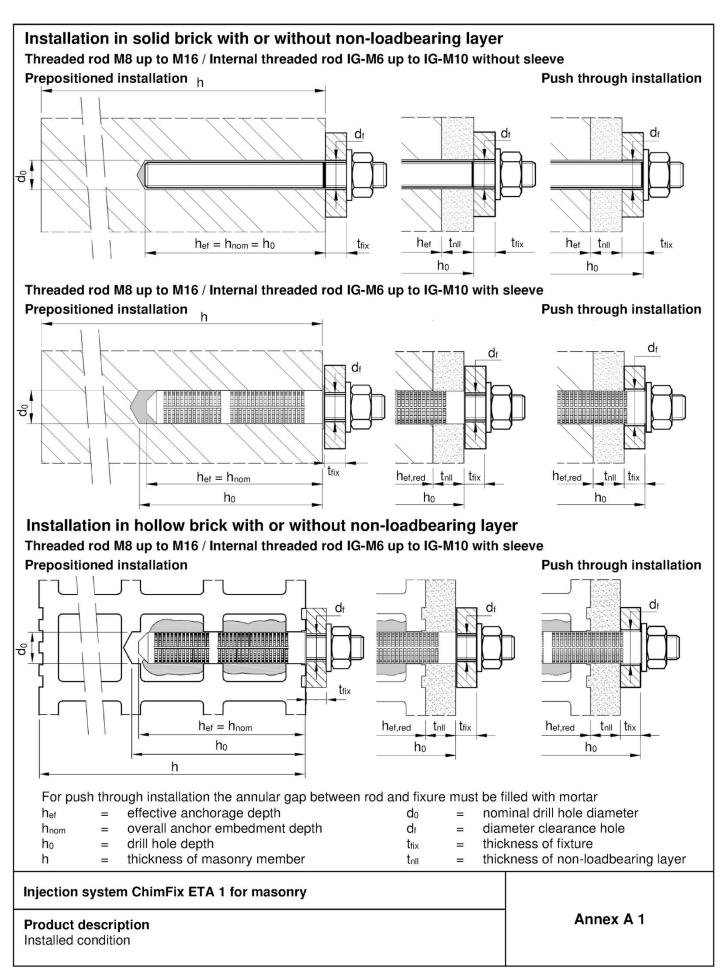
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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

Issued in Berlin on 14 October 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock Head of Section beglaubigt: Baderschneider

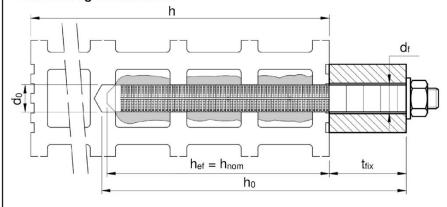


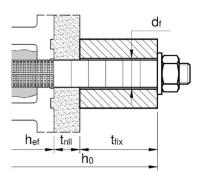




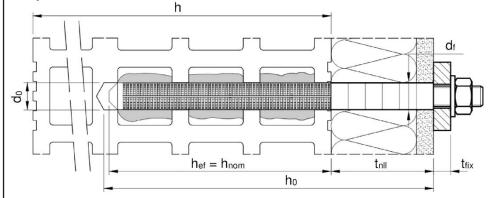
Installation in hollow brick with or without non-loadbearing layer and / or thermal isolation

Threaded rod M8 and M10 / Internal threaded rod IG-M6 with sleeve SH 16x130/330 Push through installation

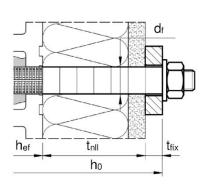




Prepositioned installation



Push through installation



hef = effective anchorage depth

h_{nom} = overall anchor embedment depth

 h_0 = drill hole depth

h = thickness of masonry member

d₀ = nominal drill hole diameter

d_f = diameter clearance hole

t_{fix} = thickness of fixture

t_{nll} = thickness of non-loadbearing layer

Injection system ChimFix ETA 1 for masonry

Product description

Installed condition

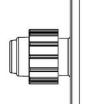
Annex A 2



Cartridge system

Coaxial Cartridge:

150 ml, 160ml, 280 ml, 300 ml up to 333 ml and 380 ml up to 420 ml



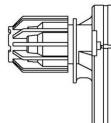
Imprint:

ChimFix ETA 1 or ChimFix Nordic ETA 1

Processing and safety instructions, shelf life, charge number, manufacturer's information, quantity information

Side-by-Side Cartridge:

235 ml, 345 ml up to 360 ml and 825 ml



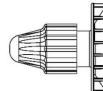
Imprint:

ChimFix ETA 1 or ChimFix Nordic ETA 1

Processing and safety instructions, shelf life, charge number, manufacturer's information, quantity information

Foil Tube Cartridge:

165 ml and 300 ml



Imprint:

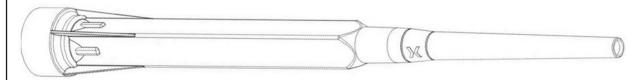
ChimFix ETA 1 or ChimFix Nordic ETA 1

Processing and safety instructions, shelf life, charge number, manufacturer's information, quantity information

Static mixer CRW 14W



Static mixer PM-19E



Mixer extension VL



Injection system ChimFix ETA 1 for masonry

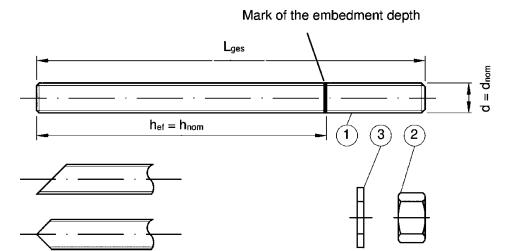
Product description

Injection system

Annex A 3



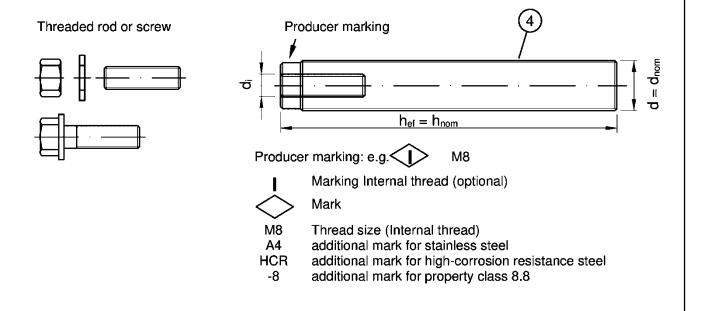
Threaded rod M8 up to M16 with washer and hexagon nut



Commercial standard rod with:

- Materials, dimensions and mechanical properties acc. to Table A1
- Inspection certificate 3.1 acc. to EN 10204:2004. The document shall be stored
- Marking of embedment depth

Internal threaded rod IG-M6 to IG-M10

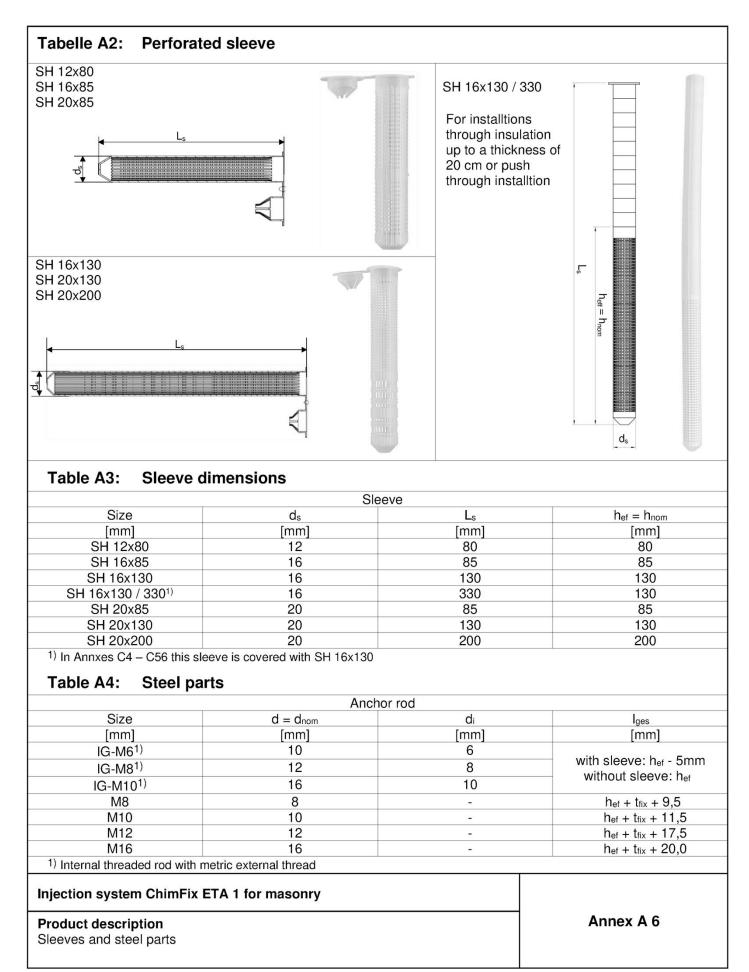


Injection system ChimFix ETA 1 for masonry	
Product description Threaded rod and Internal threaded rod	Annex A 4



art	Designation	Material						
	el, zinc plated (Steel acc. to			63:2017)				
	nc plated ≥ 5 µm	acc. to EN ISO 4042:202		EN 100 10001 0001 10				
		acc. to EN ISO 1461:202 acc. to EN ISO 17668:20		EN ISO 10684:2004+AC	5:2009 or			
31	lerardized 2 43 µm	Property class	,10	Characteristic steel ultimate tensile strength	Characteristic steel	Elongation a		
			4.6	f _{UK} = 400 N/mm ²	f _{VK} = 240 N/mm ²	A ₅ > 8%		
	Throaded red			f _{uk} = 400 N/mm ²	f _{VK} = 320 N/mm ²	A ₅ > 8%		
1	Threaded rod	acc. to		f _{uk} = 500 N/mm ²	f _{VK} = 300 N/mm ²	A ₅ > 8%		
		EN ISO 898-1:2013		f _{uk} = 500 N/mm ²	f _{VK} = 400 N/mm ²	A ₅ > 8%		
				f _{uk} = 800 N/mm ²	f _{VK} = 640 N/mm ²	$A_5 > 8\%$		
			4	for anchor rod class 4.6	_,	Λ ₅ / 0 / 0		
2	Hexagon nut	acc. to	5	for anchor rod class 5.6				
_	Tiexagon nut	EN ISO 898-2:2022	8	for anchor rod class 8.8	01 5.0			
_		Steel, zinc plated, hot-		alvanised or sherardized				
3	Washer			ISO 7089:2000, EN ISO	7093:2000 or EN IS	O 7094:2000		
	Internal threaded	Property class		Characteristic steel ultimate tensile strength		Elongation a fracture		
4	anchor rod ²⁾	acc. to	5.8	f _{uk} = 500 N/mm ²	f _{yk} = 400 N/mm ²	A ₅ > 8%		
		EN ISO 898-1:2013	8.8	f _{uk} = 800 N/mm ²	f _{VK} = 640 N/mm ²	A ₅ > 8%		
	inless steel A4 (Material 1.h corrosion resistance ste				Characteristic steel	Elongation fracture		
1	Threaded rod ¹⁾		50	f _{uk} = 500 N/mm²	f _{vk} = 210 N/mm ²	A ₅ > 8%		
1	Threaded 16d	acc. to		f _{uk} = 700 N/mm ²	f _{VK} = 450 N/mm ²	A ₅ > 8%		
		EN ISO 3506-1:2020		f _{uk} = 800 N/mm ²	f _{VK} = 600 N/mm ²	A ₅ > 8%		
				for anchor rod class 50	, yn	<u> </u>		
2	Hexagon nut1)	acc. to EN ISO 3506-1:2020						
	_	EN 150 3506-1:2020	80	for anchor rod class 80				
3	Washer	Stainless steel A2, A4 (e.g.: EN ISO 887:200		ISO 7089:2000, EN ISO				
		Property class		Characteristic steel	Characteristic steel			
4	Internal threaded	7, - 7,		ultimate tensile strength		fracture		
•	anchor rod ²⁾	acc. to		f _{uk} = 500 N/mm ²	$f_{yk} = 210 \text{ N/mm}^2$	A ₅ > 8%		
		EN ISO 3506-1:2020	70	f _{uk} = 700 N/mm ²	$f_{yk} = 450 \text{ N/mm}^2$	A ₅ > 8%		
) ι	Property class 80 only for stair Using internally threaded anch Ind strength class of the intern	or rod screws and threaded		incl. nut and washer) must	at least correspond to	the materia		
	stic perforated sleeve							
Sie	ve sleeve SH			Polypropylene (PP)				
lnj	ection system ChimFix E	TA 1 for masonry						
_	oduct description				Annex A	. 5		







Specifications of intend	ded use							
Anchorages subject to:	Static and quasi-static loads, fire exposure under tension and shear loads M8 up to M16, IG-M6 up to IG-M10 (with and without sleeve)							
Base material	Masonry group b: Solid brick masonry Masonry group c: Hollow brick masonry Masonry group d: Annex B 2							
	Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2016. For other bricks in solid masonry and in hollow masonry or in autoclaved aerated concrete, the characteristic resistance of the anchor may be determined by job site tests according to EOTA TR 053, Edition July 2022 under consideration of the β-factor according to Annex C 1, Table C1.							
Hole drilling	See Annex C 4 – C 56							
Use category	Condition d/d: Installation and use in dry masonry Condition w/w: Installation and use in dry or wet masonry (incl. w/d installation in wet masonry and use in dry masonry)							
Temperature Range	T _a : - 40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C) T _b : - 40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C) T _a : - 40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C)							

Note: The characteristic resistance for solid bricks and autoclaved aerated concrete are also valid for larger brick sizes and larger compressive strength of the masonry unit.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (all materials).
- For all other conditions according to EN 1993-1-4:2006 + A1:2015 corresponding to corrosion resistance classes to Table A1 (stainless steel and high corrosion resistant steel).

Design:

- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorages are designed in accordance with the EOTA TR 054, Edition July 2022, under the responsibility of an engineer experienced in anchorages and masonry work.
- Applies to all bricks if no other values are specified:
 - $N_{Rk} = N_{Rk,b} = N_{Rk,p} = N_{Rk,b,c} = N_{Rk,p,c}$
 - $V_{Rk} = V_{Rk,b} = V_{Rk,c,ll} = V_{Rk,c,\perp}$
- For the calculation of pulling out a brick under tension loading N_{Rk,pb} or pushing out a brick under shear loading V_{Rk,pb} see EOTA Technical Report TR 054, Edition July 2022.
- $N_{Rk,s}$, $V_{Rk,s}$ and $M^0_{Rk,s}$ see Annexes C 1 C 2
- For application with sleeve with drill bit size ≤ 15mm installed in joints not filled with mortar:
 - N_{Rk,p,j} = 0,18 * N_{Rk,p} and N_{Rk,b,j} = 0,18 * N_{Rk,b} (N_{Rk,p} = N_{Rk,b} see Annex C 4 to C 56)
 - $\bullet \quad V_{Rk,c,j} = 0,15 \ ^*V_{Rk,c} \ \text{and} \ V_{Rk,b,j} = 0,15 \ ^*V_{Rk,b} \qquad \qquad (V_{Rk,b} \ \text{see Annex C 4 to C 56; and } V_{Rk,c} \ \text{see Annex C 3})$
- Application without sleeve installed in joints not filled with mortar is not allowed.

Installation:

- Anchor Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

Injection system ChimFix ETA 1 for masonry	
Intended use Specifications	Annex B 1



Naming Density [kg/dm³] Dimensions LxBxH [mm] Annex	Picture	Anchor rods	Perforated sleeve	Naming Density [kg/dm³] Dimensions LxBxH [mm] Annex	Picture	Anchor rods	Perforated sleeve
Hollow light weigh		icc. to		Hollow light weigh EN 771-3:2011+A1		acc. to	
AAC ρ = 0,35 - 0,60 ≥ 499x240x249 Table C4 - C10	1	M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	VBL ρ≥ 0,6 ≥ 240x300x113 Table C187 - C193		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x13 20x85 20x13 20x20
	Hollow light v	weight con	crete bri	ck acc. to EN 771-3	3:2011+A1:2015		
HBL 16DF ρ ≥ 1,0 500x250x240 Table C172 - C179	P. Carlo	M8 - M16 IG-M6 - IG-M10	16x85 16x130 20x85 20x130 20x200	Bloc creux B40 ρ ≥ 0,8 495x195x190 Table C180 - C186	EEE	M8 - M16 IG-M6 - IG-M10	16x130 20x130
	Calcium si	lica bricks	acc. to E	N 771-2:2011+A1:	2015		
KS ρ ≥ 2,0 ≥ 240x115x71 Table C11 - C18		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	KSL-3DF ρ≥ 1,4 240x175x113 Table C19 - C25		M8 - M16 IG-M6 - IG-M10	16x85 16x13 20x85 20x13
KSL-8DF ρ≥ 1,4 248x240x238 Table C26 - C32	888	M8 - M16 IG-M6 - IG-M10	16x130 20x130 20x200	KSL-12DF ρ≥ 1,4 498x175x238 Table C33 - C40		M8 - M16 IG-M6 - IG-M10	16x13 20x13
	Solie	d clay brick	s acc. to	EN 771-1:2011+A	1:2015		
Mz-1DF ρ ≥ 2,0 ≥ 240x115x55 Table C41 - C47		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	Mz - 2 DF ρ ≥ 2,0 ≥ 240x115x113 Table C48 - C55		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x13 20x85 20x13 20x20
Interties accept	OhimFin FT 4 4 4						
Injection system ChimFix ETA 1 for masonry							



Table B1:	Overview brick elements (Anch	types an nor and S	d propole	erties with corre	esponding fast	ening			
Naming Density [kg/dm³] Dimensions LxBxH [mm] Annex	Picture	Anchor rods	Perforated sleeve	Naming Density [kg/dm³] Dimensions LxBxH [mm] Annex	Picture	Anchor rods	Perforated sleeve		
	Hollo	w clay brick	ks acc. to	EN 771-1:2011+A	1:2015				
HIz-10DF ρ≥ 1,25 300x240x249 Table C56 - C63		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	I I abic		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130		
BGV Thermo ρ ≥ 0,6 500x200x314 Table C71 - C77		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130	Brique creuse C40 ρ≥ 0,7 500x200x200 Table C92 - C98		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130		
Calibric R+ ρ ≥ 0,6 500x200x314 Table C78 - C84		M8 - M16 16 IG-M6 - 16 IG-M10 20	M8 - M16 16x85 IG-M6 - 16x130 IG-M10 20x85	M8 - M16 16x85 16x130 20x85 20x130		Blocchi Leggeri ρ ≥ 0,6 250x120x250 Table C99 - C105		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130
Urbanbric ρ ≥ 0,7 560x200x274 Table C85 - C91		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130	Doppio Uni ρ≥ 0,9 250x120x120 Table C106 - C112		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130		
	Hollow clay brick	s with ther	mal insu	lation acc. to EN 7	71-1:2011+A1:201	5			
Coriso WS07 ρ≥ 0,55 248x365x249 Mineral wool Table C113 - C119		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	T8P ρ ≥ 0,56 248x365x249 Perlite Table C128 - C134		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200		
T7MW ρ≥ 0,59 248x365x249 Mineral wool Table C120 - C127		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	MZ90-G ρ ≥ 0,68 248x365x249 Mineral wool Table C135 - C141		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200		
Intended use	njection system ChimFix ETA 1 for masonry								



	Table B1: Overview brick types and properties with corresponding fastening elements (Anchor and Sleeves) (Continued)									
Naming Density [kg/dm³] Dimensions LxBxH [mm] Annex		Anchor rods	Naming LxBxH [mm] Annex		Picture	Anchor rods	Perforated sleeve			
	Hollow clay brick	s with ther	mal insu	lation acc. to EN 7	71-1:2011+A1:201	5				
Poroton FZ7,5 ρ≥ 0,90 248x365x249 Mineral wool Table C142 - C149		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	Poroton FZ9 ρ ≥ 0,90 248x365x249 Mineral wool Table C150 - C157	The State of the S	M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200			
Poroton S9 ρ ≥ 0,85 248x365x249 Perlite Table C158 - C164		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	Thermopor TV8+ ρ ≥ 0,70 248x365x249 Mineral wool Table C165 - C171		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200			

Injection system ChimFix ETA 1 for masonry	
Intended use Brick types and properties with corresponding fastening elements	Annex B 4



Table B2:	•	Installation parameters in autoaerted AAC and solid masonry (without sleeve) for prepositioned or push through installation									
Anchor size				M8	M10	IG-M6	M12	IG-M8	M16	IG-M10	
Nominal drill hole	e diameter	do	[mm]	10	1	2	1	4		18	
Drill hole depth	Fill hole depth h_0 [mm] $h_{ef} + t_{fix}$ h_{ef}										
Effective anchor	h _{ef}	[mm]	80	≥ 90 ≥ 100			100	≥ 100			
Diameter of	Prepositioned installation	d _f ≤	[mm]	9	12	7	14	9	18	12	
clearance hole in the fixture	Push through installation	d _f ≤	[mm]	12	14	14	16	16	20	20	
Maximum install	ation torque	T _{inst}	[Nm]	See Annexes C 4 – C 56							
Minimum thickness of member h _{min} [mm]				h _{ef} + 30							
Minimum spacing S _{min} [mm]		[mm]			Soo An	novos C	4 C E E				
Minimum edge distance											

¹⁾ Consider t_{fix} in case of push through installation.

Table B3: Installation parameters in solid and hollow brick (with perforated sleeve) for prepositioned installation

Anchor size	M8		M8 / M10 IG-M6	1	M12 / M16 / IG-M8 / IG-M10				
Perf	12x80	16x85	16x130	16x130/330	20x85	20x130	20x200		
Nominal drill hole diameter	d ₀	[mm]	12	16	16	16	20	20	20
Drill hole depth	h ₀	[mm]	85	90	135	330	90	135	205
Effective anchorage depth	h _{ef}	[mm]	80	85	130	130	85	130	200
Diameter of clearance hole in the fixture	9					-M8) / 12 (IG-M10) / (M12) / 18 (M16)			
Maximum installation torque	T _{inst}	[Nm]	See Annexes C 4 – C 56						
Minimum thickness of member	h _{min}	[mm]	115	115	195	195	115	195	240
Minimum spacing	[mm]			Soo Ar	novos C	4 C EC			
Minimum edge distance	c _{min}	[mm]	mm] See Annexes C 4 – C 56						

Injection system ChimFix ETA 1 for masonry	
Intended use Installation parameters	Annex B 5



Table B4: Installation parameters in solid and hollow bricks (with perforated sleeve) for prepositioned installation through non-load-bearing layers and/or push-through installation

l											
Anchor size					M10 / M6	M12 / M16 / IG-M8 / IG-M10					
	F	Perforated sle	eve SH	16x130	16x130/330	20x130	20x200				
Nominal drill hol	e diameter	d ₀	[mm]	16	16	20	20				
Drill hole depth		h ₀	[mm]		h _{ef} + 5mm	+ t _{nll} + t _{fix} 1)					
Effective embedment	Prepositioned installation	h _{ef}	[mm]	130	130	130	200				
depth	Push through installation	h _{ef}	[mm]	85	130	85	85				
Maximum thickn loadbearing laye	Maximum thickness of non- oadbearing layer			45	45 200		115				
Diameter of clearance hole	Prepositioned installation	d _f ≤	[mm]	7 (IG-M6) / 9 (M8) / 12 (M10)		9 (IG-M8) / 12 (IG-M10) / 14 (M12) / 18 (M16)					
in the fixture	Push through installation	d _f ≤	[mm]	1	8	2	22				
Maximum install	T _{inst}	[Nm]		See Annexe	es C 4 – C 56						
Minimum thickne	Minimum thickness of member			195 (115)	195	195 (115)	240 (115)				
Minimum spacin	g	S _{min}	[mm]		See Anneve	c C 4 – C 56					
Minimum edge o	distance	c _{min}	[mm]	See Annexes C 4 – C 56							

¹⁾ Consider $t_{\mbox{nll}}$ and/or $t_{\mbox{fix}}$ in case of non-loadbearing layers and/or push through installation.

Injection system ChimFix ETA 1 for masonry	
Intended use Installation parameters	Annex B 6



Anchor rod	Perforated sleeve	HD, CA Brush - Ø			d _{b,min} min. Brush - Ø		
[mm]		[mm]		[mm]	[mm]		
	Autoaerted ACC	and solid maso		t sleeve)			
M8	-	10	RBT10	12	10,5		
M10	-	12	RBT12	14	12,5		
M12	-	14	RBT14	16	14,5		
M16	-	18	RBT18	20	18,5		
17.12		hollow masonry			1		
M8	SH 12x80	12	RBT12	14	12,5		
M8 / M10 / IG-M6	SH 16x85 SH 16x130	16	RBT16	18	16,5		
M12 / M16 / IG-M8 / IG-M10	SH 16x130/330 SH 20x85 SH 20x130 SH 20x200	20	RBT20	22	20,5		
Cleaning and inst land pump Volume ≥ 750 ml)	allation tools	Carrossas	ompressed nin 6 bar)	air tool			
Brush RBT							

Injection system ChimFix ETA 1 for masonry	
Intended use Cleaning and installation tools	Annex B 7



Tempera	ture in bas	e material	Maximum working time	Minimum curing time 1)		
Tempera	iture iii bas	e material	waxiiiuiii workiiig tiiile	willing time 7		
	Т		t _{work}	t _{cure}		
- 10 °C	to	- 6 °C	90 min ²⁾	24 h		
- 5°C	to	- 1 °C	90 min	14 h		
0°C	to	+ 4 °C	45 min	7 h		
+ 5°C	to	+ 9°C	25 min	2 h		
+ 10 °C	to	+ 19°C	15 min	80 min		
+ 20 °C	to	+ 24 °C	6 min	45 min		
+ 25 °C	to	+ 29 °C	4 min	25 min		
+ 30 °C	to	+ 39 °C	2 min	20 min		
	+ 40 °C		1,5 min	15 min		
Cart	ridge tempe	rature	+5°C to +40°C			

¹⁾ The minimum curing time is only valid for dry base material. In wet base material the curing time must be doubled.

Table B7: Working and curing time - ChimFix Nordic ETA 1

Tempera	ture in bas	e material	Maximum working time	Minimum curing time 1)		
	Т		t _{work}	t _{cure}		
- 20 °C	to	- 16 °C	75 min	24 h		
- 15°C	to	- 11 °C	55 min	16 h		
- 10°C	to	- 6°C	35 min	10 h		
- 5 °C	to	- 1 °C	20 min	5 h		
0°C	to	+ 4 °C	10 min	2,5 h		
+ 5 °C	to	+ 9 °C	6 min	80 min		
	+ 10 °C		6 min	60 min		
Cart	ridge tempe	rature	-20°C to +10°C			

¹⁾ The minimum curing time is only valid for dry base material. In wet base material the curing time must be doubled.

Injection system ChimFix ETA 1 for masonry	
Intended use Working and curing time	Annex B 8

²⁾ Cartridge temperature must be at minimum +15°C

Intended use

Installation instructions



Installation instructions Drill a hole to the required embedment depth with drilling method according to Annex C 4 - C 56. Drill bit diameter according to Table B5. Blow the bore hole clean minimum 2x from the bottom or back by hand pump or compressed air tool (Annex B 7). For applications in solid masonry with a bore hole depth $h_0 > 100$ mm cleaning with compressed air is required. Attach brush RBT according to Table B5 to a drilling machine or a cordless screwdriver. Brush the bore hole minimum 2x with brush over the entire embedment depth in a twisting motion (if necessary, use a brush extension RBL). Finally blow the bore hole clean minimum 2x from the bottom or back by hand pump or compressed air tool (Annex B 7). For applications in solid masonry with a bore hole depth $h_0 > 100$ mm cleaning with compressed air is required. Screw on static-mixing nozzle CRW 14W / PM-19E, and load the cartridge into an appropriate dispensing tool. If necessary, cut off the foil tube clip before use. For every working interruption longer than the maximum working time twork (Annex B 8) as well as for new cartridges, a new static-mixer shall be used. Mark setting position on the anchor rod. Consider t_{nll} and/or t_{fix} in case of installation through non-loadbearing layers and/or push through installation. The anchor rod shall be free of dirt, grease, oil or other foreign material. $h_{ef} + (t_{nll}) + (t_{fix})$ Not proper mixed mortar is not sufficient for fastening. Dispense and discard mortar until an uniform grey colour is shown (at least 3 full strokes; for foil tube cartridges at least 6 full strokes). Injection system ChimFix ETA 1 for masonry

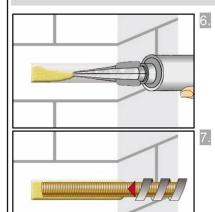
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Annex B 9



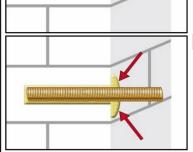
Installation instructions (continuation)

Installation without sleeve



Starting at bottom of the hole and fill the hole up to approximately two-thirds with adhesive. (If necessary, a mixer nozzle extension VL shall be used.) Slowly withdraw of the static mixing nozzle avoid creating air pockets Observe the temperature related working time t_{work} (Annex B 8).

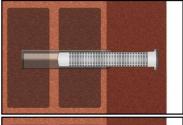
Insert the anchor rod while turning slightly up to the embedment mark.



Annular gap between anchor rod and base material must be completely filled with mortar. For push through installation the annular gap between anchor rod and fixture must be filled with mortar.

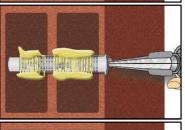
Otherwise, the installation must be repeated starting from step 6 before the maximum working time $\rm t_{\rm work}$ has expired.

Installation with sleeve



Insert the perforated sleeve into the hole flush with the surface of the masonry. Never modify the sleeve in anchoring area $(h_{\rm ef})$.

For installation with sleeve SH 16x130/330 through a non-load-bearing layer and/or fixture the clamping area may be reduced to the thickness of the non-load-bearing layer and/or attachment.



Starting from the bottom or back fill the sleeve with mortar. (If necessary, a mixer nozzle extension VL shall be used.)

Refer to the cartridge label or the technical data sheet for the exact amount of mortar. For push-through installation through the fixture the sleeve must also be completely filled with mortar up to the fixture.

Observe the temperature related working time t_{work} (Annex B 8).



Insert the anchor rod with a slight twist up to the mark

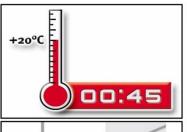
Injection system ChimFix ETA 1 for masonry	
Intended use Installation instructions (continuation)	Annex B 10

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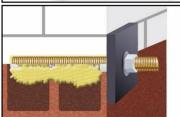
English translation prepared by DIBt



Installation instructions (continuation)



Temperature related curing time t_{cure} (Annex B 8) must be observed. Do not move or load the fastener during curing time.



Install the fixture by using a calibrated torque wrench. Observe maximum installation torque (Annex C 4 to C 56).

Injection system ChimFix ETA 1 for masonry

Intended use
Installation instructions (continuation)

Annex B 11



Table C1: β	-iactoi I	oi jul	o-site testi	ing t	u i i c	ici ici	131011	-	aunig					
			Perforate	Anchora						β-Factor				
Base material	anchor	anchor size					T _a : 40°C / 2		24°C	T _b : 80°C	C / 50°C	T _c : 120°	°C / 72°C	
			sleeve SH		h _{ef}			(d/d	w/d w/w	d/d	w/d w/w	d/d	w/d w/w
Autoclaved aerated concrete	all siz	es	with and without S			all		0	,95	0,86	0,81	0,73	0,81	0,73
	d₀ ≤ 14	mm	with SH			all		0	,93	0,80	0,87	0,74	0,65	0,56
0.1.	d₀≥ 16	mm	WILLISH			all		0	,93	0,93	0,87	0,87	0,65	0,65
Calcium silica bricks d₀ ≤ 14		mm	without S	ы	_	100 m	.m.	0	,93	0,80	0,87	0,74	0,65	0,56
Silono	d₀≥16	mm	Williout S	11		: 100 11	""	0	,93	0,93	0,87	0,87	0,65	0,65
	all siz	es	without S	Н	>	100 m	ım	0	,93	0,56	0,87	0,52	0,65	0,40
			with SH			all		0	,86	0,86	0,86	0,86	0,73	0,73
Clay Bricks	all siz	es	without S	Н	≤	100 m	ım	0	,93	0,80	0,87	0,74	0,65	0,56
			without S	Н	>	100 m	ım	0	,86	0,43	0,86	0,43	0,73	0,37
O a may at a lawister	d₀ ≤ 12	mm	with and	t		-II		0	,93	0,80	0,87	0,74	0,65	0,56
Concrete bricks	d₀≥ 16	mm	without S	H		all		0	,93	0,93	0,87	0,87	0,65	0,65
							•		,					
Table C2: C	haracte	ristic	steel resi	stan	се									
Anchor size							M8		M10	M12	M16	IG-M6	IG-M8	IG-M10
Cross section area				A _s		[mm²]	36,6	3	58	84,3	157	-	-	-
Characteristic tens	sion resis	tance	Steel failu			,						1	1	
Ondiadonotio ton	3.01.100.0		nd 4.8	N _{Rk}		[kN]	15 (1	3)	23 (21)	34	63	_3)	_3)	_3)
Steel, Property clas	e		nd 5.8	N _{Rk}		[kN]	18 (1		29 (27)	+	78	10	17	29
Oteel, I Toperty clas	.5	8.8				[kN]	+		46 (43)	_	125	16	27	46
		50		N _{Rk,s}			29 (27) 18		29	42	79	_3)	_3)	_3)
Stainless steel A2,	A4 and			N _{Rk}		[kN]					_ 	ļ		
HCR, class (A2 only class 50 ar	nd 70)	70	N _R			[kN]	_		41	59	110	_3)	_3 ₃	41
· · · · · · · · · · · · · · · · · · ·		80		N _{Rk}			29 46		67	126				
Characteristic tens	sion resis					l						1	_3)	
Steel, Property clas	s		nd 5.6	γ _{Ms} ,	^Y Ms,N [-]				- 2	2,0				
, , ,			5.8 and 8.8	γ _{Ms} ,							1,5			
Stainless steel A2,	A4 and	50		γMs,	,N	[-]	2,86			_3)				
HCR, class	1 70)	70		γ _{Ms} ,	,N	[-]					1,87			
(A2 only class 50 ar		80		γ _{Ms} ,				,6	_3)					
Characteristic she	ar resista	1		with	out	lever	arm ¹⁾	1						
		4.6 aı	nd 4.8	V ⁰ R	lk,s	[kN]	7 (6)	12 (10)	17	31	_3)	_3)	_3)
Steel, Property clas	s	5.6 aı	nd 5.8	V_{R}	lk,s	[kN]	9 (8)	15 (13)	21	39	5	9	15
		8.8		V_R	k,s	[kN]	15 (1	3)	23 (21)	34	63	8	14	23
Stainless steel A2,	A4 and	50		V_R	lk,s	[kN]	9		15	21	39	_3)	_3)	_3)
HCR, class		70		V^0 R	lk,s	[kN]	13		20	30	55	7	13	20
(A2 only class 50 ar	nd 70)	80		V ⁰ R	lk,s	[kN]	15		23	34	63	_3)	_3)	_3)
Injection system	ChimFix	c ETA	1 for maso											
Performances β-factors for job s Characteristic ste	_				l sh	ear loa	.d					Anne	x C 1	



Table C2: Characte	Table C2: Characteristic steel resistance (continuation)											
Anchor size				M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Cross section area	As	[mm²]	36,6	58	84,3	157	-	-	-			
Characteristic shear resista	nce, Steel failure	with lev	er arm	1)								
	4.6 and 4.8	M ⁰ Rk,s	[Nm]	15 (13)	30 (27)	52	133	_3)	_3)	_3)		
Steel, Property class	5.6 and 5.8	М ⁰ Rk,s	[Nm]	19 (16)	37 (33)	65	166	8	19	37		
	8.8	М ⁰ Rk,s	[Nm]	30 (26)	60 (53)	105	266	12	30	60		
Stainless steel A2, A4 and	50	М ⁰ Rk,s	[Nm]	19	37	66	167	_3)	_3)	_3)		
HCR, class	70	М ⁰ Rk,s	[Nm]	26	52	92	232	11	26	52		
(A2 only class 50 and 70)	80	M ⁰ Rk,s	[Nm]	30	59	105	266	_3)	_3)	_3)		
Characteristic shear resista	ınce, Partial facto	r ²⁾						•				
Stool Property class	4.6 and 5.6	γ _{Ms,V}	[-]		1,6	57			_3)			
Steel, Property class	4.8, 5.8 and 8.8	γ _{Ms,V}	[-]				1,25					
Stainless steel A2, A4 and	50	γMs,V	[-]		2,3	18			_3)			
HCR, class	70	γ _{Ms,V}	[-]				1,56					
(A2 only class 50 and 70)	80	γ _{Ms,V}	[-]		1,3	3			_3)			

¹⁾ Values are only valid for the given stress area A_s. Values in brackets are valid for undersized threaded rods with smaller stress area A_s for hot-dip galvanised threaded rods according to EN ISO 10684:2004+AC:2009.

- 2) in absence of national regulation
- 3) Fastener type not part of the ETA

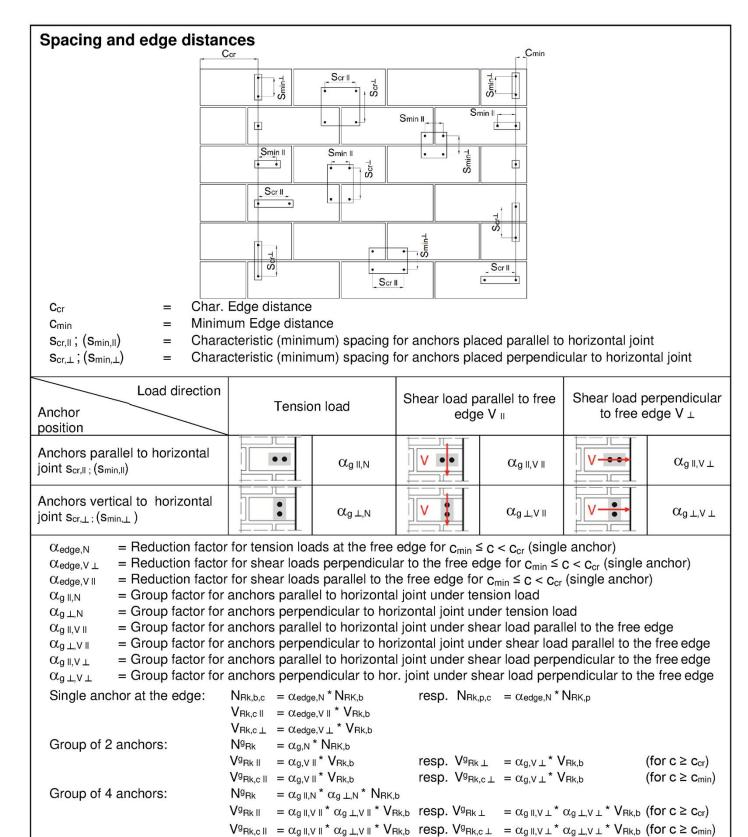
Table C3: Characteristic steel resistance under fire exposure 1)

Anchor size				М8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Characteristic tension resistance, S	teel failui	re								
	R30	N _{Rk,s,fi}	[kN]	1,1	1,7	3,0	5,7	0,3	1,1	1,7
Steel, Property class 5.8, and higher; Stainless steel A2, A4 and HCR,	R60	N _{Rk,s,fi}	[kN]	0,9	1,4	2,3	4,2	0,2	0,9	1,4
class 50 and higher	R90	N _{Rk,s,fi}	[kN]	0,7	1,0	1,6	3,0	0,2	0,7	1,0
3	R120	N _{Rk,s,fi}	[kN]	0,5	0,8	1,2	2,2	0,1	0,5	0,8
Characteristic shear resistance, Ste	el failure	without	lever a	arm						
	R30	$V_{Rk,s,fi}$	[kN]	1,1	1,7	3,0	5,7	0,3	1,1	1,7
Steel, Property class 5.8, and higher; Stainless steel A2, A4 and HCR,	R60	V _{Rk,s,fi}	[kN]	0,9	1,4	2,3	4,2	0,2	0,9	1,4
class 50 and higher	R90	V _{Rk,s,fi}	[kN]	0,7	1,0	1,6	3,0	0,2	0,7	1,0
3	R120	$V_{Rk,s,fi}$	[kN]	0,5	0,8	1,2	2,2	0,1	0,5	0,8
Characteristic shear resistance, Ste	el failure	with lev	er arm	1						
	R30	M _{Rk,s,fi}	[Nm]	1,1	2,2	4,7	12,0	0,2	1,1	2,2
Steel, Property class 5.8, and higher;	R60	M _{Rk,s,fi}	[Nm]	0,9	1,8	3,5	9,0	0,2	0,9	1,8
Stainless steel A2, A4 and HCR, class 50 and higher	R90	M _{Rk,s,fi}	[Nm]	0,7	1,3	2,5	6,3	0,1	0,7	1,3
	R120	M _{Rk,s,fi}	[Nm]	0,5	1,0	1,8	4,7	0,1	0,5	1,0

¹⁾ partial factor in case of fire is 1,0 for all steel types and load directions.

Injection system ChimFix ETA 1 for masonry	
Performances	Annex C 2
Characteristic steel resistance under tension and shear load – under fire exposure	





Injection system ChimFix ETA 1 for masonry	
Performances Definition of the reduction- and group factors	Annex C 3

Equations depend on anchor position and load direction (see table above). Reduction factor, group factor and

resistances see annex C 4 - C 56. Reduction for installation in joints see annex B 1.



Brick type: Autoclaved aerated concrete - AAC

Table C4: Stone description

	Autoclaved aerated concrete AAC
ρ [kg/dm³]	0,35 – 0,6
f _b [N/mm ²]	≥ 2, ≥ 4 or ≥ 6
	EN 771-4:2011+A1:2015
	e.g. Porit (DE)
[mm]	≥ 499 x 240 x 249
	Rotary drilling
	f _b [N/mm²]



Table C5: Installation parameter

	P									
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10	
Installation torque	Tinst	[Nm]	≤5 ≤5 ≤10 ≤10 ≤5 ≤5						≤ 10	
Char. Edge distance	Ccr	[mm]	150 (for shear loads perpendicular to the free edge: ccr = 210)							
Minimum Edge Distance	Cmin	[mm]	50							
Characteristic Cassins	Scr, II	[mm]	300							
Characteristic Spacing	Scr, ⊥	[mm]				250				
Minimum Spacing	Smin, II;	[mm]				50				
William Spacing	Smin, ⊥	[mini	JU							

Table C6: Reduction factors for single anchors at the edge

-	ension load		Shear load								
Tension load			Perpendic	ular to the fr	ee edge	Paralle	el to the free	edge			
	with c ≥	αedge, N		with c ≥	αedge, V⊥	1	with c ≥	αedge, V II			
	50	0,85		50	0,12	I	50	0,70			
	30	0,65		125	0,50	Ţ	125	0,85			
	150	1,00	.;	210	1,00		150	1,00			

Table C7: Factors for anchor groups under tension load

And	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint					
1	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N		
	50	50	1,10	•	50	50	0,75		
	150	50	1,25		150	50	0,90		
	150	300	2,00		150	250	2,00		

Table C8: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint			
Shear load		with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$
perpendicular	•••	50	50	0,20		50	50	0,25
to the free		210	50	1,60		210	50	1,80
edge		210	300	2,00	· j · · · · · · · · · · · · · · · · · ·	210	250	2,00
Shear load		with c ≥	with s ≥	αg II,V II	ļ	with c ≥	with s ≥	α _g ⊥,ν II
parallel to the		50	50	1,15	•	50	50	0,80
free edge		150	50	1,60		150	50	1,10
l lice cage	.,	150	300	2,00]	150	250	2,00

Injection system ChimFix ETA 1 for masonry

Performances Autoclaved Aerated Concrete - AAC

Description of the stone, Installation parameters, Reduction- and Group factors

Annex C 4



	O O			Charac	cteristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}	
) še					Use condit	ion		
	Perforated sleeve	Effecitve Anchorage depth		d/d			w/d w/w	d/d w/d w/w	
Anchor size	Perfor	Anc	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All
	ds	h _{ef}	N	$N_{Rk,b} = N_{Rk,p}$	1)	ı	$N_{Rk,b} = N_{Rk,i}$	1) p	V _{Rk,b} ¹⁾
	[mm]	[mm]				[kN]			
	ed mear		ssive stren	T	N/mm²;	Г		≥ 0,35 kg/d	
M8	-	80	1,2	0,9	0,9	0,9	0,9	0,9	1,5
M10 / IG-M6	-	90	1,2	0,9	0,9	0,9	0,9	0,9	2,5
M12 / M16 / IG-M8 / IG-M10	-	100	2,0	1,5	1,5	1,5	1,5	1,5	2,5
M8	SH 12	80	1,2	0,9	0,9	0,9	0,9	0,9	1,5
M8 / M10/ IG-M6	SH 16	≥ 85	1,2	0,9	0,9	0,9	0,9	0,9	2,5
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	2,0	1,5	1,5	1,5	1,5	1,5	2,5
1) $N_{Rk,b,c} = N_{Rk,p,c}$ ar	nd V _{Rk,c II} =	= V _{Rk,c} ⊥ace	cording to Ar	nnex C 3					
		4)		Charac	cteristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}	
	eve	Effecitve Anchorage depth				Use condit	ion	<u> </u>	
	Perforated sleeve			d/d			w/d w/w		d/d w/d w/w
Anchor size	Perfor		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperatu ranges
	ds	h _{ef}	N	1)		$V_{Rk,b}^{1)}$			
	[mm]	[mm]		$N_{Rk,b} = N_{Rk,p}$		[kN]	$N_{Rk,b} = N_{Rk,j}$		·
	ed mear		ssive stren	T	N/mm²;	1		≥ 0,50 kg/d	lm³
M8	-	80	3,0	2,5	2,0	2,5	2,0	2,0	4,5
M10 / IG-M6	-	90	3,0	2,5	2,0	2,5	2,0	2,0	7,5
M12 / M16 / IG-M8 / IG-M10	-	100	5,0	4,5	4,0	4,5	4,0	4,0	7,5
M8	SH 12	80	3,0	2,5	2,0	2,5	2,0	2,0	4,5
M8 / M10/ IG-M6	SH 16	≥ 85	3,0	2,5	2,0	2,5	2,0	2,0	7,5
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	5,0	4,5	4,0	4,5	4,0	4,0	7,5
1) $N_{Rk,b,c} = N_{Rk,p,c}$ ar	nd V _{Rk,c II} =	= V _{Rk,c} ⊥ace	cording to Ar	nnex C 3					
Injection system	ChimFix	ETA 1 fo	r masonry	'					
Performances au		aaratad	conorato	A A C			1	Annex C	5



Brick type: Au	toclave	d aerat	ed concr	ete – AA	C						
			Characteristic Resistances with c ≥ c _{cr} and s ≥ s _{cr}								
sleeve					,	Use condit	ion				
	d sleeve	Effecitve Anchorage depth		d/d			w/d w/w				
Anchor size	Perforated sleeve	And	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges		
	L L	h _{ef}	N	Jrk,b = Nrk,p	1)	1	$N_{Rk,b} = N_{Rk,b}$	1) p	$V_{Rk,b}^{1)}$		
		[mm]		,		[kN]					
Normalis	ed mear	compre	ssive stren	ight f _b ≥ 6	N/mm²;		Density ρ	≥ 0,60 kg/d	lm³		
M8	-	80	4,0	3,5	3,0	3,5	3,0	3,0	6,0		
M10 / IG-M6	•	90	4,0	3,5	3,0	3,5	3,0	3,0	10,0		
M12 / M16 / IG-M8 / IG-M10	-	100	7,0	6,0	5,5	6,5	5,5	5,5	10,0		
M8	SH 12	80	4,0	3,5	3,0	3,5	3,0	3,0	6,0		
M8 / M10/ IG-M6	SH 16	≥ 85	4,0	3,5	3,0	3,5	3,0	3,0	10,0		
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	7,0	6,0	5,5	6,5	5,5	5,5	10,0		

¹⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|II} = V_{Rk,c} \perp$ according to Annex C 3

Table C10: Displacements

Anohor oizo	hef	δn / N	δΝ0	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,1	0,1*N _{Rk} / 2,8	2*δΝο	0,3	0,3*V _{Rk} / 2,8	1,5*δ∨0
M16	all	,	5, 1 1.1 =, 0		0,1	0,1*V _{Rk} /2,8	1,5*δvo

Injection system ChimFix ETA 1 for masonry

Performances autoclaved aerated concrete – AAC
Characteristic Resistances and Displacements

Annex C 6



Brick type: Solid calcium silica brick KS-NF

Table C11: Stone description

Brick type	2.7	Solid calcium silica brick KS-NF
Density	ρ [kg/dm³]	≥ 2,0
Normalised mean compressive strenght	f _b [N/mm²]	≥ 28
Conversion factor for low compressive strengths	ver	$(f_b / 28)^{0,5} \le 1,0$
Code		EN 771-2:2011+A1:2015
Producer (Country)		e.g. Wemding (DE)
Brick dimensions	[mm]	≥ 240 x 115 x 71
Drilling method		Hammer drilling



Table C12: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm] ≤ 10 ≤ 10 ≤ 15 ≤				≤ 15	≤ 10	≤ 10	≤ 10
Char. Edge distance (under fire conditions)	Cer; (Cer,fi)	[mm]	150 (2 h_{ef}) (for shear loads perpendicular to the free edge: $c_{cr} = 240$)						
Minimum Edge Distance	Cmin	[mm]	60						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]				240 (4 hef))		
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	150 (4 h _{ef})						
Minimum Spacing S _{min, II} ; S _{min, ⊥} [mm] 75									

Table C13: Reduction factors for single anchors at the edge

Tension load			Shear load pe	rpendicular t	o free edge	Shear load parallel to free edge		
	with c ≥	αedge, N		with c ≥	αedge, V ⊥		with c ≥	αedge, V II
	60 ¹⁾	0,50		60	0,30		60	0,60
•	100 ¹⁾	0,50	→	100	0,50		100	1,00
	150 ¹⁾	1,00		240	1,00		150	1.00
	180	1,00		240	1,00		130	1,00

¹⁾ All applications, except for hef = 200mm and without sleeve

Table C14: Factors for anchor groups under tension load

Ar	nchor position pa	arallel to hor. joi	int	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$\alpha_{g\perp,N}$	
60 ¹⁾ 75 150 ¹⁾ 75 150 ¹⁾ 240	75	0,70		60 ¹⁾	75	1,15		
	150 ¹⁾	75	1,40		150 ¹⁾	75	2,00	
	150 ¹⁾	240	2,00		150 ¹⁾	150	2,00	
	180 ²⁾	75	1,00		180 ²⁾	75	1,15	
	180 ²⁾	240	1,70		180 ²⁾	150	2,00	
	240 ²⁾	240	2,00		100-7	150	2,00	

¹⁾ All applications, except for hef = 200mm and without sleeve

Table C15: Factors for anchor groups under shear load

	Ancho	r position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint				
Shear load		with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$	
perpendicular	•••	60	75	0,75		60	75	0,90	
to the free		150	75	2,00		150	75	2,00	
edge		150	240	2,00		150	150	2,00	
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II	
parallel to the	• •	60	75	2,00	•	60	75	2,00	
free edge		150	75	2,00	•	150	75	2,00	
l liee eage		150	240	2.00		150	150	2.00	

Injection system ChimFix ETA 1 for masonry

Performances solid calcium silica brick KS-NF

Description of the stone, Installation parameters, Reduction- and Group factors

Annex C7

²⁾ Only for application with hef = 200mm and without sleeve



Brick type: Solid calcium silica brick KS-NF

Table C16: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
	go .		Use condition								
	Perforated sleeve	Effecitve Anchorage depth		d/d			d/d				
	S	育芸草					w/w		w/w (w/d)		
Anchor size	tec	# ₹ C							All		
	ora		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C			
	e l								ranges		
	ď	h _{ef}	ľ	$N_{Rk,b} = N_{Rk,i}$	2) p	1	$N_{Rk,b} = N_{Rk,b}$	2) p	$V_{Rk,b}^{2)}$		
		[mm]				[kN]]				
		Normalis	ed mean c	ompressi	ve strength	f _b ≥ 28 N/	mm² 1)				
M8	-	80									
M10 / IG-M6	-	≥ 90	7,0	6,5	5,0	6,0	5,5	4,0			
M12 / IG-M8	-	≥ 100									
M16 / IG-M10	-	≥ 100	7,0	6,5	5,0	7,0	6,5	5,0			
M10/M12/M16/											
IG-M6 / IG-M8 /	-	200	9,0	8,5	6,5	5,5	5,0	4,0	7,0		
IG-M10			_		_						
M8	SH 12	80	7,0	6,5	5,0	6,0	5,5	4,0			
M8 / M10/ IG-M6	SH 16	≥ 85									
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	7,0	6,5	5,0	7,0	6,5	5,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C11. For stones with higher strengths, the shown values are valid without conversion.

Table C17: Displacements

Anchor size	hef	δn / N	δΝ0	δN∞	δv / V	δνο	δ∨∞
	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0.1	0,1*N _{Rk} / 3,5	2*δΝο	0,3	0,3*V _{Rk} /3,5	1,5*δ∨ο
M16	all	0,1			0,1	0,1*V _{Rk} /3,5	1,5*δ∨o

Table C18: Characteristic values of tension and shear load resistances under fire exposure

						*		
		Effective		Characteristic	c Resistances			
A mahay aima	Perforated	anchorage depth		$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$				
Anchor size	sleeve	h _{ef}	R30	R60	R90	R120		
	1	[mm]	[kN]					
M8	-	80						
M10 / IG-M6	-	≥ 90	0.40	044	0,34	0,30		
M12 / IG-M8	-	≥ 100	0,48 0,41		0,54	0,30		
M16 / IG-M10	-	≥ 100				I		
M8	SH 12	80						
M8 / M10 /IG-M6	SH 16	≥ 85	0,47	0,26	_ 1)	_ 1)		
M12 / M16 / IG-M8 /IG-M10	SH 20	≥ 85	0,47	0,20	- '/	- 17		

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances solid calcium silica brick KS-NF Characteristic Resistances and Displacements	Annex C 8

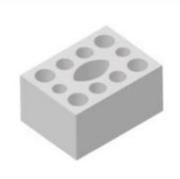
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \mid I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Calcium silica brick KSL-3DF

Table C19: Stone description

Brick type		Hollow calcium silica brick KSL-3DF
Density	ρ [kg/dm³]	≥ 1,4
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 14
Conversion factor for low compressive strengths	ver	$(f_b / 14)^{0.75} \le 1.0$
Code		EN 771-2:2011+A1:2015
Producer (Country)		e.g. KS-Wemding (DE)
Brick dimensions	[mm]	≥ 240 x 175 x 113
Drilling method		Rotary drilling



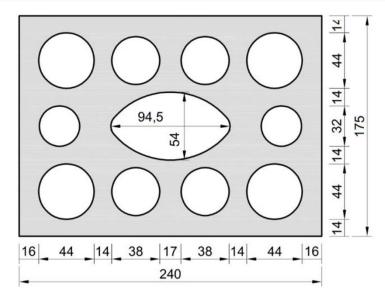


Table C20: Installation parameter

Table OLO. Illotaliati	Tuble 020. Installation parameter												
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10				
Installation torque	Tinst	[Nm]	≤ 5	≤ 5	≤ 8	≤ 8	≤ 5	≤ 8	≤ 8				
Char. Edge distance	Ccr	[mm]											
Minimum Edge Distance	Cmin	[mm]	60										
Characteristic Spacing	Scr, II	[mm]	240										
Characteristic Spacing	Scr, ⊥	[mm]	120										
Minimum Spacing	Smin, II;	[mm]	120										
Villimani Spacing	Smin, ⊥	[iiiiii]	120										

Table C21: Reduction factors for single anchors at the edge

Tension load			Shear load							
'	ension load		Perpendic	ular to the fr	Paralle	Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	60	1,00	→	60	0,30	1	60	1,00		
	120	1,00		240	1,00		120	1,00		

Injection system ChimFix ETA 1 for masonry

Performances hollow calcium silica brick KSL-3DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 9



Brick type: Hollow Calcium silica brick KSL-3DF

Table C22: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$\alpha_g \perp$, N	
	60	120	1,50		60	120	1,00	
	120	120	2,00	60	120	1,00		
	120	240	2,00	1	120	120	2,00	

Table C23: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load		with c ≥	with s ≥	αg II,V ⊥	1	with c ≥	with s ≥	αg⊥, V⊥	
perpendicular		60	120	0,30		60	120	0,30	
to the free		120	120	1,00			1.—.5	0,30	
edge		120	240	2,00		240	120	2,00	
Shear load	-	with c ≥	with s ≥	αg II,V II	<u> </u>	with c ≥	with s ≥	αg ⊥,V II	
parallel to the	••	60	120	1,00	•	60	120	1,00	
free edge		120	120	1,60	•	60	120	1,00	
		120	240	2,00		120	120	2,00	

Table C24: Characteristic values of tension and shear load resistances

				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
		Effecitve Anchorage depth		Use condition								
Anchor size	Perforated sleeve		d/d				d/d w/d w/w					
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
	L L	h _{ef}	N	$N_{Rk,b} = N_{Rk,p}^{2)}$			$N_{Rk,b} = N_{Rk,b}$	2) p	V _{Rk,b} ²⁾			
		[mm]				[kN]						
		Normalis	ed mean c	ompressi	ve strength	f _b ≥ 14 N/	mm ^{2 1)}					
M8 / M10/	SH 16	≥ 85	2,5	2,5	1,5	2,5	2,5	1,5	6,0			
IG-M6	SH 10	130	2,5	2,5	2,0	2,5	2,5	2,0	6,0			
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	6,5	6,0	4,5	6,5	6,0	4,5	6,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C19. For stones with higher strengths, the shown values are valid without conversion.

Table C25: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all			- 3.10	0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow calcium silica brick KSL-3DF Group factors, characteristic Resistances and Displacements	Annex C 10

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|I} = V_{Rk,c} \perp$ according to Annex C 3



Table C26: Stone description

Brick type		Hollow Calcium silica brick KSL-8DF
Density	ρ [kg/dm³]	≥ 1,4
Normalised mean compressive strenght	f_b [N/mm ²]	≥ 12
Conversion factor for low compressive strengths	ver	$(f_b / 12)^{0.75} \le 1.0$
Code		EN 771-2:2011+A1:2015
Producer (Country)		e.g. KS-Wemding (DE)
Brick dimensions	[mm]	≥ 248 x 240 x 238
Drilling method		Rotary drilling



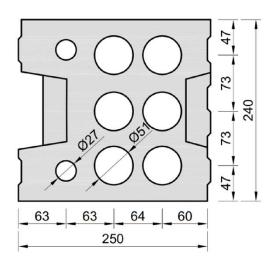


Table C27: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10					
Installation torque	Tinst	[Nm]	≤ 5	≤ 5	≤ 8	≤ 8	≤ 5	≤ 8	≤ 8				
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 250)										
Minimum Edge Distance	Cmin	[mm]	50										
Characteristic Spacing	Scr, II	[mm]	250										
Characteristic Spacing	Scr, ⊥	[mm]	120										
Minimum Spacing	Smin, II;	[mm]	50										
William Spacing	Smin, ⊥	framil				50							

Table C28: Reduction factors for single anchors at the edge

Tension load			Shear load							
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	50	1,00	→	50	0,30	<u> </u>	50	1,00		
	120	1,00		250	1,00		120	1,00		

Injection system ChimFix ETA 1 for masonry

Performances hollow calcium silica brick KSL-8DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 11



Brick type: Hollow Calcium silica brick KSL-8DF Table C29: Factors for anchor groups under tension load Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint with c ≥ with s ≥ with c ≥ with s ≥ αg II, N $\alpha_{g\,\perp,\,N}$ 50 50 1,00 50 50 1,00 120 250 120 2,00 120 2,00

Table C30:	30: Factors for anchor groups under shear load											
	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint							
Shear load		with c ≥	with s ≥	αg II,V ⊥	1	with c ≥	with s ≥	$\alpha_g \perp$, $\vee \perp$				
perpendicular	•••	50	50	0,45		50	50	0,45				
to the free		250	50	1,15		250	50	1,20				
edge	.,	250	250	2,00		250	250	2,00				
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II				
parallel to the	•	50	50	1,30		50	50	1,00				
free edge		120	250	2,00		120	250	2,00				

Table C31: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
		Effecitve Anchorage depth		Use condition								
	eve						w/d		d/d			
Anchor size	sle	Effecitve Anchorage depth		d/d				w/d				
	Q	# D 0					w/w					
Afficitor Size	Perforated sleeve	An	40°C/24°C						All			
				80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	Temperature			
									ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			1	V _{Rk,b} ²⁾					
		[mm]				[kN]						
		Normalis	sed mean c	ompressi	ve strength	f _b ≥ 12 N/	mm² 1)					
M8 / M10/ IG-M6	SH 16	130	5,0	4,5	3,5	5,0	4,5	3,5	3,5			
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 130	5,0	4,5	3,5	5,0	4,5	3,5	6,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C26. For stones with higher strengths, the shown values are valid without conversion.

Table C32: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δΝο	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	,		_ = 5,10	0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Injection system ChimFix ETA 1 for masonry	
Performances hollow calcium silica brick KSL-8DF Group factors, characteristic Resistances and Displacements	Annex C 12

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|l} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Calcium silica brick KSL-12DF

Table C33: Stone description

Brick type		Hollow Calcium silica brick KSL-12DF
Density	ρ [kg/dm³]	≥ 1,4
Normalised mean compressive strenght	f_b [N/mm 2]	≥ 12
Conversion factor for low strengths	ver compressive	$(f_b / 12)^{0.75} \le 1.0$
Code		EN 771-2:2011+A1:2015
Producer (Country)		e.g. KS-Wemding (DE)
Brick dimensions	[mm]	≥ 498 x 175 x 238
Drilling method		Rotary drilling



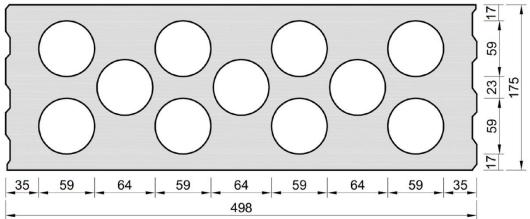


Table C34: Installation parameter

Anchor size			M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	Tinst	[Nm]	≤ 4	≤ 4	≤ 5	≤ 5	≤ 4	≤ 5	≤ 5
Char. Edge distance (under fire conditions)	Ccr; (Ccr,fi)	[mm]	120 (2 h_{ef}) (for shear loads perpendicular to the free edge: $c_{cr} = 500$)						= 500)
Minimum Edge Distance	Cmin	[mm]	50						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]				500 (4 h _{ef})		
(under fire conditions)	$S_{cr, \perp;}(S_{cr,fi, \perp})$	[mm]	nm] 120 (4 h _{ef})						
Minimum Spacing	[mm]	50							

Table C35: Reduction factors for single anchors at the edge

Tension load	é V	Shear load						
			Perpendic	ular to the fr	ee edge	Parallel to the free edge		
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II
•	50	1,00		50	0,45		50	1,00
	120	1,00		500	1,00		120	1,00

Table C36: Factors for anchor groups under tension load

Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$\alpha_{g\perp\!\!\!\!\perp,N}$	
• •	50	50	1,50		50	50	1,00	
	120	500	2,00		120	240	2,00	

Injection	system	ChimFix	(EIA1	tor	masonry

Performances hollow calcium silica brick KSL-12DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 13

free edge



120

250

2,00

Brick type: Hollow Calcium silica brick KSL-12DF Table C37: Factors for anchor groups under shear load Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint Shear load with c ≥ with s ≥ with c ≥ with s ≥ α_g II,V \perp $\alpha_{g\,\perp,\,V\,\perp}$ perpendicular 0,55 0,50 50 50 50 50 to the free 500 50 1,00 500 50 1,00 edae 500 500 2,00 500 250 2,00 with c ≥ with s ≥ with c ≥ with s ≥ Shear load αg II,V II $\alpha_{g\perp,V\;II}$ parallel to the 50 50 2,00 50 50 1,30

2,00

Table C38: Characteristic values of tension and shear load resistances

500

120

				Charac	cteristic Res	istances w	rith c≥c _{cr} a	and s ≥ s _{cr}				
	e e	a e	Use condition									
	ee/	ffecitve Ichorag depth		d/d			w/d		d/d			
	S	er pe		u/u			w/w		w/w (w/d)			
Anchor size	Perforated sleeve	Effective Anchorage							All			
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
									ranges			
		h _{ef}	$N_{Bk,b} = N_{Bk,p}^{2}$			1	$V_{Rk,b}^{(2)}$					
		[mm]			[kN]							
		Normalis	ed mean c	ompressi	ve strength	f _b ≥ 12 N/	mm² 1)					
M8 / M10/ IG-M6	SH 16	130	3,5	3,5	2,5	3,5	3,5	2,5	3,5			
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 130	3,5	3,5	2,5	3,5	3,5	2,5	7,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C33. For stones with higher strengths, the shown values are valid without conversion.

Table C39: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
7 11101101 0120	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	100 E 50000	northeanthean second all the second and the second	3110	0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Table C40: Characteristic values of tension and shear load resistances under fire exposure

		Effective		Characteristic F	Resistances	ATTEL		
A	Perforated anchorage depth sleeve hef		$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$					
Anchor size			R30	R60	R90	R120		
		[mm]	[kN]					
M8 / M10 /IG-M6	SH 16	130				_1)		
M12 / IG-M8	SH 20	≥ 130	0,37	0,27	0,17	-17		
M16 / IG-M10	SH 20	≥ 130				0,12		

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances hollow calcium silica brick KSL-12DF Group factors, characteristic Resistances and Displacements	Annex C 14

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Solid clay brick 1DF

Table C41: Stone description

Brick type		Solid clay brick Mz-1DF
Density	ρ [kg/dm³]	≥ 2,0
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 20
Conversion factor for low strengths	er compressive	$(f_b / 20)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (DE)
Brick dimensions	[mm]	≥ 240 x 115 x 55
Drilling method	SEA CO.	Hammer drilling

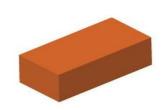


Table C42: Installation parameter

Anchor size	-	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	Tinst	[Nm]	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Char. Edge distance	Ccr	[mm]	150 (for shear loads perpendicular to the free edge: $c_{cr} = 240$)						
Minimum Edge Distance	Cmin	[mm]	60						
Characteristic Cassing	Scr, II	[mm]		240					
Characteristic Spacing	Scr, ⊥	[mm]	130						
Minimum Spacing	Smin, II;	[mm]	65						
Triminani Opaonig	Smin, ⊥	[]				00			

Table C43: Reduction factors for single anchors at the edge

Tension load			Shear load						
			Perpendicular to the free edge			Parallel to the free edge			
1 11	with c ≥	αedge, N	1	with c ≥	αedge, V⊥		with c ≥	αedge, V II	
	60	0,75		60	0,10		60	0,30	
	150	1,00		100	0,50	Ţ	100	0,65	
· †	180	1,00		240	1,00	ļI	150	1,00	

Table C44: Factors for anchor groups under tension load

Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint			
	with c ≥	with s ≥	αg II, N	1	with c ≥	with s ≥	αg⊥, N
	60	65	0,85		60	65	1,00
	150	65	1,15		150	65	1,20
	150	240	2,00		150	130	2,00

Table C45: Factors for anchor groups under shear load

	Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint			
Shear load	1	with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp}, v_{\perp}$
perpendicular	•••	60	65	0,40		60	65	0,30
to the free		240	65	2,00		240	65	2,00
edge		240	240	2,00		240	130	2,00
Shear load parallel to the free edge		with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II
		60	65	1,75	•	60	65	1,10
		150	65	2,00		150	65	2,00
		150	240	2,00	I	150	130	2,00

Injection system ChimFix ETA 1 for masonry	
Performances solid clay brick 1DF Description of the stone, Installation parameters, Reduction- and Group factors	Annex C 15



Brick type: Sol	id clay	brick 1	DF									
Table C46: Ch	naracte	ristic val	ues of ter	nsion and	shear loa	d resista	nces					
			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
			Use condition									
Anchor size	Perforated sleeve	Effecitve Anchorage depth					w/d		d/d			
	sle	Effecitve inchoragi depth		d/d			w/d w/w					
	ated	And							All			
	fors	·	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	°C 120°C/72°C				
	- Jer								ranges			
	_	h _{ef}	١	$N_{Rk,b} = N_{Rk,p}^{2)}$			$N_{Rk,b} = N_{Rk,j}$	2) p	V _{Rk,b} ²⁾			
		[mm]				[kN]						
		Normalis	sed mean o	ompressi	ve strength	f _b ≥ 20 N/	mm² 1)					
M8	-	80										
M10 / IG-M6	-	≥ 90	7,0	6,0	6,0	7,0	6,0	6,0	8,0			
M12 / IG-M8	-	≥ 100										
M16 / IG-M10	-	≥ 100	8,0	6,5	6,5	8,0	6,5	6,5	12,0			
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16		7,0	6,0	6,0	7,0	6,0	6,0	8,0			
M12 / IG-M8	SH 20	≥ 85										
M16 / IG-M10	SH 20	≥ 85	8,0	6,5	6,5	8,0	6,5	6,5	12,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C41. For stones with higher strengths, the shown values are valid without conversion.

Table C47: Displacements

Anchor size	hef	δ _N / N	δΝο	δN∞	δy / V	δνο	δ∨∞
Alichor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,1	0,1*N _{Rk} / 3,5	2*δη0	0,3	0,3*V _{Rk} / 3,5	1,5*δ∨ο
M16	all		,		0,1	0,1*V _{Rk} /3,5	1,5*δ∨ο

Injection system ChimFix ETA 1 for masonry	
Performances solid clay brick 1DF Characteristic Resistances and Displacements	Annex C 16

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Solid clay brick 2DF

Table C48: Stone description

Brick type		Solid clay brick Mz- 2DF	
Density	ρ [kg/dm³]	≥ 2,0	
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 28	
Conversion factor for lowe strengths	$(f_b / 28)^{0,5} \le 1,0$		
Code		EN 771-1:2011+A1:2015	
Producer (Country)		e.g. Wienerberger (DE)	
Brick dimensions	[mm]	≥ 240 x 115 x 113	
Drilling method	2000	Hammer drilling	

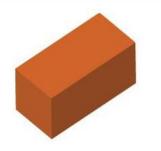


Table C49: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	Tinst	[Nm]	Nm] ≤ 10 ≤ 10 ≤ 10 ≤ 10					≤ 10	≤ 10		
Char. Edge distance	0 (0 %)	[mm]	150 (2 h _{ef})								
(under fire conditions)	C _{cr;} (C _{cr,fi})	[iiiiii]	edge: c _{cr} =	= 240)							
Minimum Edge Distance	Cmin	[mm]	50								
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]	240 (4 h _{ef})								
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	240 (4 h _{ef})								
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50								

Table C50: Reduction factors for single anchors at the edge

Τ	ension load		Shear load pe	rpendicular t	o free edge	Shear load parallel to free edge			
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II	
	50 ¹⁾	1,00	-	50	0,20	T	50	1.00	
	150 ¹⁾	1,00		125	0,50	Ţ	50	1,00	
- 	180	1,00		240	1,00	1 . 	150	1,00	

¹⁾ All applications, except for hef = 200mm and without sleeve

Table C51: Factors for anchor groups under tension load

Anchor position parallel to hor. joint				Ancho	Anchor position perpendicular to hor. joint			
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
	50 ¹⁾	50	1,50	1	50 ¹⁾	50	0,80	
	150 ¹⁾	240	2,00	•	150 ¹⁾	240	2,00	
	180 ²⁾	60	1,00		180 ²⁾	60	1,00	
	180 ²⁾	240	1,55		1002)	100	2,00	
	240 ²⁾	240	2,00		180 ²⁾	120	2,00	

¹⁾ All applications, except for hef = 200mm and without sleeve

Table C52: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint			
Shear load		with c ≥	with s ≥	α _g II,V ⊥	wp. :	with c ≥	with s ≥	$\alpha_{g\perp}, v_{\perp}$
perpendicular to the free edge		50	50	0,40		50	50	0,20
	•••	240	50	1,20	-	240	50	0,60 5 1,00
		240	240	2,00		240	125	1,00
eage		240	240	2,00		240	240	2,00
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II
parallel to the	• •	50	50	1,20	•	50	50	1,00
free edge	1	150	240	2,00		50	125	1,00
li ee eage		130	240	2,00	ļ	150	240	2,00

Injection system ChimFix ETA 1 for masonry

Performances solid clay brick 2DF

Description of the stone, Installation parameters, Reduction- and Group factors

Annex C 17

²⁾ Only for application with hef = 200mm and without sleeve



Brick type: Solid clay brick 2DF

Table C53: Characteristic values of tension and shear load resistances

Table 055. Of	iui uctoi	iotic vai	uco oi tci	ioioii aila	Silcai Ioa	u icolota	11003					
	Perforated sleeve		Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
		ited sleeve Effective Anchorage	Use condition									
Anchor size			d/d				d/d w/d w/w					
	erforate	Ar	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			ı	$N_{Rk,b} = N_{Rk,b}$	2) p	V _{Rk,b} ²⁾			
		[mm]				[kN]		•				
		Normalis	sed mean d	ompressi	ve strength	f _b ≥ 28 N/	mm² 1)					
M8	-	80	0.0	0.0	7.5	0.0	0.0	7.5	0.5			
M10 / IG-M6	-	≥ 90	9,0	9,0	7,5	9,0	9,0	7,5	9,5			
M12 / IG-M8	-	≥ 100	9,0	9,0	7,5	9,0	9,0	7,5	12			
M16 / IG-M10	-	≥ 100	9,0	9,0	7,5	9,0	9,0	7,5	12 ³⁾			
M10 / M12 / IG-M6 / IG-M8	-	200	11,5	11,5	10,0	6,0	6,0	5,0	8,0			
M16 / IG-M10	-	200	11,5	11,5	10,0	6,0	6,0	5,0	12,0			
M8	SH 12	80	9,0	م ا	7,5	9,0	9,0	7,5	0.5			
M8 / M10/ IG-M6	SH 16	≥ 85	3,0	9,0	7,5	3,0	9,0	7,5	9,5			
M12 / IG-M8	SH 20	≥ 85	9,0	9,0	7,5	9,0	9,0	7,5	12,0			
M16 / IG-M10	SH 20	≥ 85	9,0	9,0	7,5	9,0	9,0	7,5	12,0 ³⁾			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C48. For stones with higher strengths, the shown values are valid without conversion.

Table C54: Displacements

Anchor size	hef	δn / N	δΝ0	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,1	0,1*N _{Rk} / 3,5	2*δΝ0	0,3	0,3*V _{Rk} / 3,5	1,5*δνο
M16	all	•	,		0,1	0,1*V _{Rk} /3,5	1,5*δνο

Table C55: Characteristic values of tension and shear load resistances under fire exposure

						•				
		Effecitve		Characteristic	Resistances					
Anchor size	Perforated	Anchorage depth		$N_{Rk,b,fi} = N_{R}$	$k,p,fi = V_{Rk,b,fi}$					
Afficitor Size	sleeve	h _{ef}	R30	R60	R90	R120				
		[mm]		[k	N]					
M8	-	80								
M10 / IG-M6	-	≥ 90	0.51	0.44	0.00	0.00				
M12 / IG-M8	-	≥ 100	0,51	0,44	0,36	0,33				
M16 / IG-M10	-	≥ 100								
M8	SH 12	80	0,36	0,26	0,15	0,10				
M8 / M10 /IG-	SH 16	≥ 85	0,36	0,26	0,15	0,10				
M6	30 16	130	0,92	0,74	0,57	0,49				
M12 / M16 /	SH 20	≥ 85	0,36	0,26	0,15	0,10				
IG-M8 /IG-M10	J 3F 20	≥ 130	0,92	0,74	0,57	0,49				

Performances solid clay brick 2DF

Characteristic Resistances and Displacements

Annex C 18

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \parallel} = V_{Rk,c} \perp$ according to Annex C 3

³⁾ Valid for all stone strengths with min. 10 N/mm²



Brick type: Hollow clay brick 10 DF

Table C56: Stone description

Brick type		Hollow clay brick HLZ-10DF	
Density	ρ [kg/dm³]	≥ 1,25	
Normalised mean compressive strenght	f _b [N/mm²]	≥ 20	
Conversion factor for low strengths	$(f_b / 20)^{0.5} \le 1.0$		
Code		EN 771-1:2011+A1:2015	
Producer (Country)		e.g. Wienerberger (DE)	
Brick dimensions	[mm]	300 x 240 x 249	
Drilling method		Rotary drilling	



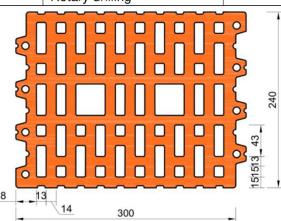


Table C57: Installation parameter

		92. 25		3	5		00	85	23
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm]	≤ 5	≤ 10	≤ 10	≤ 10	≤ 5	≤ 5	≤ 10
Char. Edge distance (under fire conditions)	Cer; (Cer,fi)	[mm]	(for shear loads perpendicular to the free edge. C _{cr} = 300)						: 300)
Minimum Edge Distance	Cmin	[mm]	50						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]	300 (4 h _{ef})						
(under fire conditions)	$Scr, \perp; (Scr,fi, \perp)$	[mm]	250 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50						

Table C58: Reduction factors for single anchors at the edge

Tension load			Shear load							
Terision load			Perpendic	ular to the fr	ee edge	Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	50	1,00		50	0,20	•	50	1,00		
	120	1,00		300	1,00		120	1,00		

Table C59: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, N}	
• •	50	50	1,55		50	50	1,00	
	120	300	2,00		120	250	2,00	

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick HLZ 10DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 19



Brick type: Hollow clay brick 10 DF											
Table C60:	Factors for anchor groups under shear load										
	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint						
Shear load		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$			
perpendicular	•••	50	50	0,30		50	50	0,20			
to the free		300	50	1,40		300	50	1,00			
edge		300	300	2,00		300	250	2,00			
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II			
parallel to the	•	50	50	1,85		50	50	1,00			
free edge		120	300	2,00		120	250	2,00			

Table C61: Characteristic values of tension and shear load resistances

				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
				Use condition								
	eve	Effective Anchorage depth					w/d		d/d			
		ffectiv ichora depth		d/d			w/w		w/d			
Anchor size	Ö	# 5 8				VV/ VV			w/w			
Anchor Size	ate	Ā							All			
	Perforated sleeve	Ď	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
									ranges			
	"	h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			1	2) p	$V_{Rk,b}^{(2)}$				
		[mm]				[kN]						
		Normalis	sed mean o	ompressi	ve strength	f _b ≥ 20 N/	mm² 1)					
M8	SH 12	80	0.5	0.5	0.0	0.5	0.5	0.0	0.0			
M8 / M10/ IG-M6	SH 16	≥ 85	2,5	2,5	2,0	2,5	2,5	2,0	8,0			
M12 / IG-M8	SH 20	≥ 85	5,0	5,0	4,5	5,0	5,0	4,5	8,0			
M16 / IG-M10	SH 20	≥ 85	5,0	5,0	4,5	5,0	5,0	4,5	11,5			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C56. For stones with higher strengths, the shown values are valid without conversion.

Table C62: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Table C63: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve	Characteristic Resistances					
Anchor size	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$					
Anchor size	sleeve	h _{ef}	R30	R60	R90	R120		
		[mm]	[kN]					
M8 / M10 /IG-M6	SH 16	130						
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,57	0,39	0,21	0,12		

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick HLZ 10DF Group factors, characteristic Resistances and Displacements	Annex C 20

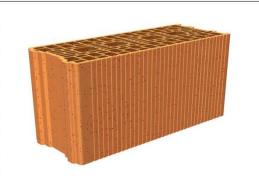
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Clay brick Porotherm Homebric

Table C64: Stone description

	Hollow clay brick Porotherm Homebric		
[kg/dm ³]	≥ 0,70		
[N/mm²]	≥ 10		
Conversion factor for lower compressive strengths			
	EN 771-1:2011+A1:2015		
	e.g. Wienerberger (FR)		
mm]	500 x 200 x 300		
	Rotary drilling		
	[N/mm²] compressive		



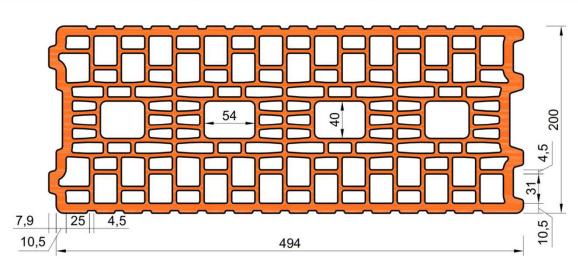


Table C65: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	Tinst	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2		
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 500)						500)		
Minimum Edge Distance	Cmin	[mm]	120								
Characteristic Spacing	Scr, II	[mm]	500								
Characteristic Spacing	Scr, ⊥	[mm]	300								
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	120								

Table C66: Reduction factors for single anchors at the edge

Tension load		Shear load						
Tension load			Perpendic	ular to the fr	ee edge	Parallel to the free edge		
11	with c ≥	αedge, N	+	with c ≥	αedge, V⊥	ļ <u>1</u>	with c ≥	αedge, V II
	120	1,00		120	0,30	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	120	0,60
	120	1,00		250	0,60	Ţ	120	0,00
	120	1,00		500	1,00		200	1,00

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick Porotherm Homebric

Description of the stone, Installation parameters, Reductionfactors

Annex C 21



Brick type: Hollow Clay brick Porotherm Homebric

Table C67: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
11	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
	120	100	1,00		120	100	1,00	
	200	100	2,00		200	100	1,20	
	120	500	2,00	·	120	300	2,00	

Table C68: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load perpendicular to the free edge		with c ≥	with s ≥	αg II,V ⊥		with c ≥	with s ≥	$\alpha_g \perp$, v \perp	
		120	100	0,30		120	100	0,30	
	•••	250	100	0,60		250	100	0,60	
		500	100	1,00		120	300	2,00	
		120	500	2,00		120		2,00	
Shear load parallel to the free edge		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
	• •	120	100	1,00		120	100	1,00	
		120	500	2,00		120	300	2,00	

Table C69: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
			Use condition									
	eve	Effective Anchorage depth					w/d		d/d			
	<u>e</u>	ffectiv chora depth		d/d			w/u w/w		w/d			
Anahar aiza	ğ	g:#e						w/w				
Auchor asis and a seeve	ate	A							All			
	for		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
	Per								ranges			
	_	h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			1	2) p	V _{Rk,b} ²⁾				
		[mm]				[kN]						
		Normalis	ed mean c	ompressiv	ve strength	f _b ≥ 10 N/	mm² 1)					
M8	SH 12	80			1,	2			3,0			
M8 / M10/	SH 16	≥ 85			1,	2			3,0			
IG-M6	SH 10	130			1,5				3,5			
M12 / M16/	SH 20	≥ 85		1,2					4,0			
IG-M8 / IG-M10	3H 20	≥ 130			1,	5			4,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C64. For stones with higher strengths, the shown values are valid without conversion.

Table C70: Displacements

Anghar siza	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	A 15	2 2 33 33 33 33 33 33		0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Porotherm Homebric Group factors, characteristic Resistances and Displacements	Annex C 22

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Clay brick BGV Thermo Table C71: Stone description Hollow clay brick Brick type **BGV Thermo** Density ρ [kg/dm³] ≥ 0,60 Normalised mean f_b [N/mm²] ≥ 10 compressive strenght Conversion factor for lower compressive $(f_b / 10)^{0,5} \le 1,0$ strengths EN 771-1:2011+A1:2015 Code Producer (Country) e.g. Leroux (FR) [mm] Brick dimensions 500 x 200 x 314 Drilling method Rotary drilling

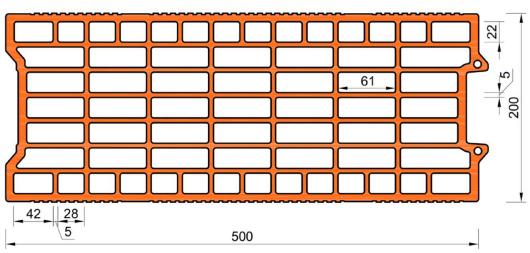


Table C72: Installation parameter											
Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2			
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: $c_{cr} = 500$)								
Minimum Edge Distance	Cmin	[mm]	120								
Characteristic Spacing	Scr, II	[mm]		500							
Characteristic Spacing	Scr, ⊥	[mm]				315					
Minimum Spacing S _{min,} S _{min,}		[mm]				120					

Table C73: Reduction factors for single anchors at the edge

Tension load			Shear load							
			Perpendic	ular to the fr	ee edge	Parallel to the free edge				
+	with c ≥	αedge, N	11	with c ≥	αedge, V⊥	+	with c ≥	αedge, V II		
	120	120 1,00		120	0,30	1	120	0,60		
	120			250	0,60	Į Į	120	0,00		
	120	1,00	.,	500	1,00		250	1,00		

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick BGV Thermo Description of the stone, Installation parameters, Reductionfactors	Annex C 23



Brick type: Hollow Clay brick BGV Thermo

Table C74: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
·	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
	120	100	1,00		120	100	1,00	
	200	100	1,70		200	100	1,10	
	120	500	2,00		120	315	2,00	

Table C75: Factors for anchor groups under shear load

10.0.0	- and or or or an order of an order of an order or order order												
	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint								
Shear load		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	αg ⊥, V ⊥					
perpendicular to the free	•••	120	100	1,00	•	120	100	1,00					
edge	. [:	120	500	2,00		120	315	2,00					
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II					
parallel to the	•	120	100	1,00		120	100	1,00					
free edge		120	500	2,00		120	315	2,00					

Table C76: Characteristic values of tension and shear load resistances

		The second secon										
			Characteristic Resistances with c ≥ c _{cr} and s ≥ s _{cr}									
		Effecitve Anchorage depth	Use condition									
Anchor size	Perforated sleeve		d/d				d/d w/d w/w					
	ate	ΑĀ							All			
	Perfor		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
									ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			1	$N_{Rk,b} = N_{Rk,p}$	2) p	$V_{Rk,b}^{(2)}$			
		[mm]				[kN]						
		Normalis	sed mean d	ompressi	ve strength	f _b ≥ 10 N/	mm² 1)					
M8	SH 12	80		6578	0,	9			3,5			
M8 / M10/	SH 16	≥ 85			0,	9			3,5			
IG-M6	IG-M6		2	,0	1,5	2	,0	1,5	4,0			
M12/M16	SH 20 ≥ 85			0.),9					
IG-M8 / IG-M10	3H 20	≥ 130	2	,0	1,5	2	,0	1,5	4,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C71. For stones with higher strengths, the shown values are valid without conversion.

Table C77: Displacements

Anchor size	hef	δn / N	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δΝο	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all		The property of the second sec		0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick BGV Thermo Group factors, characteristic Resistances and Displacements	Annex C 24

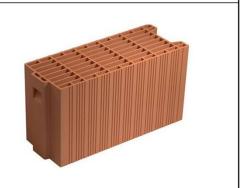
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \perp according to Annex C 3$



Brick type: Hollow Clay brick Calibric R+

Table C78: Stone description

Brick type		Hollow clay brick Calibric R+
Density	ρ [kg/dm³]	≥ 0,60
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 12
Conversion factor for low strengths	ver compressive	$(f_b / 12)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Leroux (FR)
Brick dimensions	[mm]	500 x 200 x 314
Drilling method		Rotary drilling



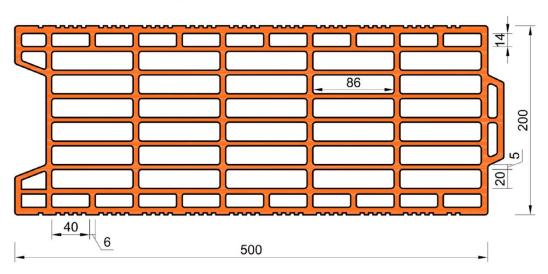


Table C79: Installation parameter

	l								
Anchor size		[-]	M8 M10 M12 M16 IG-M6 IG-M8 IG-M10						
Installation torque	T _{inst}	[Nm]	≤2 ≤2 ≤2 ≤2 ≤2 ≤2 ≤2						
Char. Edge distance	Ccr	[mm]	120	120 (for shear loads perpendicular to the free edge: c _{cr} = 500)					
Minimum Edge Distance	Cmin	[mm]	120						
Characteristic Spacing Scr, II		[mm]		500					
Characteristic Spacing	Scr, ⊥	[mm]	315						
Minimum Spacing	Smin, II;	[mm]				120			
mmmam spasing	Smin, ⊥	[]				0			

Table C80: Reduction factors for single anchors at the edge

Tension load			Shear load						
			Perpendicular to the free edge			Parallel to the free edge			
1	with c ≥	αedge, N		with c ≥	αedge, V⊥	1	with c ≥	αedge, V II	
	120	1,00		120	0,15	I	120	0,30	
	120	1,00		250	0,30	Ţ	120	0,30	
	120	1,00		500	1,00		250	1,00	

Injection system ChimFix ETA 1 for masonry	Injection	system	ChimFix	ETA 1	for masonry
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Performances hollow clay brick Calibric R+

Description of the stone, Installation parameters, Reductionfactors

Annex C 25



Brick type: Hollow Clay brick Calibric R+ Table C81: Factors for anchor groups under tension load Anchor position parallel to hor. joint Anchor position perpendicular

Anchor position parallel to nor, joint				Ancho	r position perp	endicular to no	r. joint
·	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N
	120	100	1,00	•	120	100	1,00
	175	100	1,70		175	100	1,10
	120	500	2,00	· · · · · · · · · · · · · · · · · ·	120	315	2,00

Table C82: Factors for anchor groups under shear load

	S SENDONIA CONTROLL NO. BRITISHING CO. BRITISHING SANDERS CONTROLL CONTROL CON									
	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint					
Shear load		with c ≥	with s ≥	αg II,V ⊥		with c ≥	with s ≥	αg⊥, V⊥		
perpendicular to the free	•••	120	100	1,00	•	120	100	1,00		
edge		120	500	2,00		120	315	2,00		
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II		
parallel to the	• •	120	100	1,00		120	100	1,00		
free edge		120	500	2,00		120	315	2,00		

Table C83: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$							
			Use condition							
A malagy oing	Perforated sleeve	Effective Anchorage depth	d/d			w/d w/w			d/d w/d w/w	
Anchor size	rate	Ā							All	
	9		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature	
	Per	Je							ranges	
		h _{ef}	1	$N_{Rk,b} = N_{Rk,p}$	2)	1	$N_{Rk,b} = N_{Rk,j}$	2) p	$V_{Rk,b}^{2)}$	
		[mm]		×		[kN]				
	500	Normalis	sed mean o	compressi	ve strengt	h f _b ≥ 12 N	/mm² ¹⁾	5)	v	
M8	SH 12	80	1,2	1,2	0,9	1,2	1,2	0,9	4,0	
M8 / M10/	CLL1C	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	5,5	
IG-M6	SH 16	SH 16 130	1,5	1,5	1,2	1,5	1,5	1,2	5,5	
M12 / M16	SH 20	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	8,5	
IG-M8 /IG-M10	SH 20	≥ 130	1,5	1,5	1,2	1,5	1,5	1,2	8,5	

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C78. For stones with higher strengths, the shown values are valid without conversion.

Table C84: Displacements

Anghor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow Clay brick Calibric R+ Group factors, characteristic Resistances and Displacements	Annex C 26

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \bot according to Annex C 3$



Brick type: Hollow Clay brick Urbanbric Stone description Table C85: Hollow clay brick Brick type Urbanbric Density ≥ 0,70 ρ [kg/dm³] Normalised mean f_b [N/mm²] ≥ 12 compressive strenght Conversion factor for lower compressive $(f_b / 12)^{0.5} \le 1.0$ strengths EN 771-1:2011+A1:2015 Code Producer (Country) e.g. Imerys (FR) [mm] **Brick dimensions** 560 x 200 x 274 Drilling method Rotary drilling 5,5 040 5 63 9 40_ 9,5 560 Table C86: Installation parameter M12 Anchor size M10 IG-M6 IG-M8 IG-M10 [-] **M8** M16 Tinst ≤ 2 ≤ 2 ≤ 2 ≤ 2 ≤ 2 ≤ 2 ≤ 2 Installation torque [Nm] Char. Edge distance 120 (for shear loads perpendicular to the free edge: $c_{cr} = 500$) Ccr [mm] Minimum Edge Distance 120 [mm] Cmin [mm] 560 Scr, II Characteristic Spacing 275 [mm] Scr, ⊥ Smin, II; Minimum Spacing [mm] 100 Smin, \bot Table C87: Reduction factors for single anchors at the edge Shear load Tension load Perpendicular to the free edge Parallel to the free edge with c ≥ with c ≥ with c ≥ αedge, V⊥ αedge, V II αedge, N 120 0,25 120 1,00 120 0,50 250 0,50 500 250 120 1,00 1.00 1.00

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Urbanbric Description of the stone, Installation parameters, Reductionfactors	Annex C 27



Brick type: Hollow Clay brick Urbanbric

Table C88: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint			
4	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N
	120	100	1,00	•	120	100	1,00
	185	100	1,90		185	100	1,10
	120	560	2,00	·	120	275	2,00

Table C89: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load perpendicular to the free edge		with c ≥	with s ≥	αg II,V ⊥		with c ≥	with s ≥	αg⊥, V⊥	
	•••	120	100	1,00		120	100	1,00	
		120	560	2,00		120	275	2,00	
Shear load parallel to the free edge		with c ≥	with s ≥	α _g II,V II	*	with c ≥	with s ≥	αg ⊥,V II	
		120	100	1,00		120	100	1,00	
		120	560	2,00		120	275	2,00	

Table C90: Characteristic values of tension and shear load resistances

		Effective Anchorage depth		Charac	cteristic Res	Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$											
)ì	Use conditi	on										
Anchor size	Perforated sleeve			d/d			d/d w/d w/w										
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges								
		h _{ef}	١	$J_{Rk,b} = N_{Rk,p}$	2)	1	2)	$V_{Rk,b}^{(2)}$									
		[mm]				[kN]											
		Normalis	ed mean c	ompressi	ve strength	f _b ≥ 12 N/	mm ^{2 1)}										
M8	SH 12	80	1,2	1,2	0,9	1,2	1,2	0,9	4,5								
M8 / M10/	SH 16	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	4,5								
IG-M6	SH 10	130	3,0	3,0	2,5	3,0	3,0	2,5	4,5								
M12 / M16	SH 20	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	5,0								
IG-M8 / IG-M10	3H 20	≥ 130	3,0	3,0	2,5	3,0	3,0	2,5	5,0								

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C85. For stones with higher strengths, the shown values are valid without conversion.

Table C91: Displacements

Anchor size	hef	δ_N / N	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all			_ 3110	0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Urbanbric Group factors, characteristic Resistances and Displacements	Annex C 28

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Clay brick Brique creuse C40

Table C92: Stone description

Brick type		Hollow clay brick Brique creuse C40
Density	ρ [kg/dm³]	≥ 0,70
Normalised mean compressive strenght	f _b [N/mm²]	≥ 12
Conversion factor for low strengths	er compressive	$(f_b / 12)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Terreal (FR)
Brick dimensions	[mm]	500 x 200 x 200
Drilling method		Rotary drilling



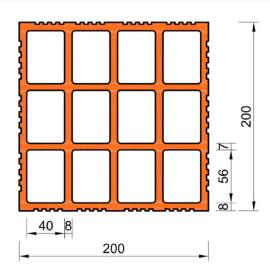


Table C93: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	Tinst	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2		
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 500)								
Minimum Edge Distance	Cmin	[mm]	120								
Characteristic Spacing	Scr, II	[mm]	500								
Characteristic Spacing	Scr, ⊥	[mm]	200								
Minimum Spacing	Smin, II;	[mm]	200								
William Spacing	Smin, ⊥	[mm]	200								

Table C94: Reduction factors for single anchors at the edge

l	Tension load			Shear load							
l				Perpendic	ular to the fr	ee edge	Parallel to the free edge				
ſ		with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
l	•	120	1,00		120	0,83	<u> </u>	120	1,00		
		120	1,00		500	1,00		250	1,00		

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Brique Creuse C40 Description of the stone, Installation parameters, Reductionfactors	Annex C 29



Brick type:	Hol	low Cla	ay brick	k Brid	que c	reuse	C40							
Table C95:			or ancho			ınder te	ensi					30M - Wardings (MACA) at 11 control (MACA)	. December 1	. Too Look
Ancr			arallel to					F	Ancr				dicular to hor	. joint
	wit	th c ≥	with	S≥	α	g II, N	- h		• Wit		with o	2 ≥	with s ≥	αg⊥, N
	1	120	500	0	2	2,00		120)	200	2,00	
Table C96:	Fac	ctors fo	or ancho	r gro	ups u	ınder s	hear	load	ł					
		Ancho	or positio	n para	llel to l	hor. join	t		Α	nchor	pos	ition per _l	pendicular to	hor. joint
Shear load					with s	i≥ α _{g II,V}		1		1	1	with c ≥	with s ≥	αg⊥, V⊥
perpendicular to the free edge		•••	120		500	2	2,00					120	200	2,00
Shear load	H		with c	; ≥	with s	≥ α	g II,V II				1	with c ≥	with s ≥	α _{g ⊥,} ν II
parallel to the free edge		••	120		500	2	2,00			,		120	200	2,00
Table C97:	Ch	aracter	istic val	lues c	of ten	sion ar	d sh	near l	oac	d resi	star	nces	·	
						Char	acter	istic F	Resi	stance	es w	ith c≥c _c	_r and s ≥ s _{cr}	
		o l	m.						Ļ	Jse co	nditi	on		
		96	Effective Anchorage depth			۵/۵						w/d		d/d
		18	feci			d/d						w/w		w/d w/w
Anchor size		atec	An											All
	Perforated sleeve			40°C/				0°C/72	2°C	40°C/2		25000000	C 120°C/72°C	temperature ranges
		_	h _{ef}		Ν	$R_{k,b} = N_F$	2) k,p				١	$J_{Rk,b} = N_{I}$	2) Rk,p	V _{Rk,b} ²⁾
			[mm]								N]			
04-10-10-10-10-10-10-10-10-10-10-10-10-10-			Normalis	sed m	ean c	ompres	sive	stren	gth	f _b ≥ 1:	2 N/ı	mm² 1)	-	1
M8		SH 12	80	-										
M8 / M10/ IG-M6		SH 16	≥ 85	1	,2	1,2	1,2		0,9		2	1,2	0,9	1,5
M12 / M16 / IG-M8 / IG-M1	0	SH 20	≥ 85											
 For lower cor with higher st 	treng	ths, the s	hown valu	ies are	valid w	ithout co			conv	ersion	facto	or accord	ng to Table C9	92. For stones
$2) N_{Rk,b,c} = N_{Rk,p}$	o,c and	d V _{Rk,c II} =	= V _{Rk,c} ⊥ac	cording	to Anı	nex C 3								
Table C98:	Dis	splacen	nents											
Ancho	r size	e	hef	00 000	и / N	-	δΝ0		δι	1979	0.000	/ V	δνο	δ∨∞
M8 – I			[mm]] [m	m/kN]	[mm]		[m	m]	[mn	n/kN]	[mm]	[mm]
IG-M6			all	_),13	0,13*	N _{Rk} /	3,5	2*8	SNO _	0	55	0,55*V _{Rk} / 3,	5 1,5*δvo
M16 a								1000			0	31	0,31*V _{Rk} / 3,5	5 1,5*δvo
Injection syste	em C	ChimFix	ETA 1 fo	or mas	sonry									
Performances Group factors, cl													Annex C	30



Brick type: Hollow Clay brick Blocchi Leggeri

Table C99: Stone description

Brick type		Hollow clay brick Blocchi Leggeri
Density	ρ [kg/dm³]	≥ 0,60
Normalised mean compressive strenght	f_b [N/mm 2]	≥ 12
Conversion factor for low strengths	ver compressive	$(f_b / 12)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (IT)
Brick dimensions	[mm]	250 x 120 x 250
Drilling method		Rotary drilling



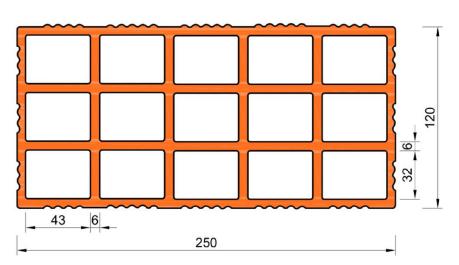


Table C100: Installation parameter

Table 6160. Installation parameter												
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	Tinst	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤2			
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 250)									
Minimum Edge Distance	Cmin	[mm]	60									
Characteristic Spacing	Scr, II	[mm]	250									
Characteristic Spacing	Scr, ⊥	[mm]	250									
Minimum Spacing	Smin, II;	[mm]	100									
William Spacing	Smin, ⊥	[[[]]]				100	'					

Table C101: Reduction factors for single anchors at the edge

т	ension load		Shear load								
'	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	60	1,00	→	60	0,40] <u>•</u>	60	0,40			
	120	1,00		250	1,00		120	1,00			

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Blocchi Leggeri Description of the stone, Installation parameters, Reductionfactors	Annex C 31



Brick type: Hollow Clay brick Blocchi Leggeri Table C102: Factors for anchor groups under tension load Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint with c ≥ with s ≥ with c ≥ with s ≥ αg II, N $\alpha_{g\perp,\,N}$ 60 100 1,00 60 100 2,00 120 250 2,00 120 250 2,00

Table C103: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	α _{g ⊥, V ⊥}	
perpendicular to the free	•••	60	100	0,40	•	60	100	0,40	
edge		250	100	1,00		250	100	1,00	
cage		250	250	2,00		250	250	2,00	
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II	
parallel to the	• •	60	100	0,40	•	60	100	0,40	
free edge	—	120	100	1,00		120	100	1,00	
9 -	•	120	250	2,00	4	120	250	2,00	

Table C104: Characteristic values of tension and shear load resistances

				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$							
					i i	Use condit	ion				
Analogueiga	d sleeve	Effective Anchorage depth	d/d				d/d w/d w/w				
Anchor size	Perforated sleeve		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges		
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			1	$N_{Rk,b} = N_{Rk,p}^{(2)}$				
		[mm]				[kN]					
		Normalis	sed mean c	ompressiv	ve strength	f _b ≥ 12 N/	mm² 1)				
M8	SH 12	80									
M8 / M10/ IG-M6	SH 16	≥ 85	0,6	0,6	0,6	0,6	0,6	0,6	3,5		
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85				**			**		

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C99. For stones with higher strengths, the shown values are valid without conversion.

Table C105: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all			- 5,10	0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Blocchi Leggeri Group factors, characteristic Resistances and Displacements	Annex C 32

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \bot according to Annex C 3$



Brick type: Hollow Clay brick Doppio Uni

Table C106: Stone description

Brick type		Hollow clay brick Doppio Uni
Density	ρ [kg/dm ³]	≥ 0,90
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 28
Conversion factor for low strengths	er compressive	$(f_b / 28)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (IT)
Brick dimensions	[mm]	250 x 120 x 120
Drilling method		Rotary drilling



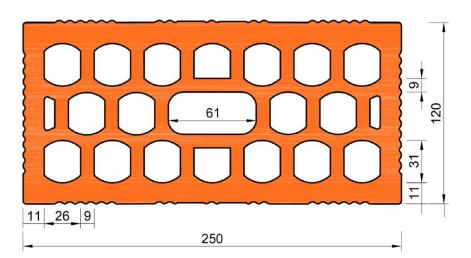


Table C107: Installation parameter

2. 36-023-03-07 - 36-030-03-03 - 37-03-03-03-03-03-03-03-03-03-03-03-03-03-										
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10	
Installation torque	Tinst	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤2	
Char. Edge distance	Ccr						250)			
Minimum Edge Distance	Cmin	[mm]	100							
Characteristic Spacing	Scr, II	[mm]	250							
Characteristic Spacing	Scr, ⊥	[mm]				120				
Minimum Spacing	Smin, II;	[mm]	100							
Williman Spacing	Smin, ⊥	[iiiiii]	100							

Table C108: Reduction factors for single anchors at the edge

т	ension load		Shear load						
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge			
with c ≥ α _{edge, N}				with c ≥	αedge, V⊥		with c ≥	αedge, V II	
•	100	1,00	→	100	0,50	<u> </u>	100	1,00	
120 1,00			250	1,00		120	1,00		

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Doppio Uni Description of the stone, Installation parameters, Reductionfactors	Annex C 33



Brick type: Hollow Clay brick Doppio Uni

Table C109: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
• •	100 100 1,00 120 250 2,00	1,00		100	120	2,00		
		250	2,00		120	120	2,00	

Table C110: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load	with c \geq with s \geq $\alpha_{g \parallel, V \perp}$			with c ≥	with s ≥	$\alpha_g \perp$, v \perp			
perpendicular	•••	100	100	1,00		100	100	1,00	
to the free edge		250	250	2,00		250	120	2,00	
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II	
parallel to the	•	100	100	1,00		100	100	1,00	
free edge		120	250	2,00		120	120	2,00	

Table C111: Characteristic values of tension and shear load resistances

14.5.0 0 0.					000						
			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
			Use condition								
	Perforated sleeve	Effective Anchorage depth	d/d				d/d w/d w/w				
Anchor size	atec	Anc							All		
	fora				40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	
	Per								ranges		
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			١	$V_{Rk,b}^{(2)}$				
		[mm]	[kN]								
		Normalis	sed mean c	ompressiv	e strength	f _b ≥ 28 N/	mm² ¹⁾				
M8	SH 12	80									
M8 / M10/ IG-M6	SH 16	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	2,5		
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85									

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C106. For stones with higher strengths, the shown values are valid without conversion.

Table C112: Displacements

Anghor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δvo
M16	all	100 * 9000			0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Doppio Uni Group factors, characteristic Resistances and Displacements	Annex C 34

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \bot$ according to Annex C 3



Brick type: Hollow clay brick Coriso WS07 with insulation

Table C113: Stone description

Brick type		Hollow clay brick Coriso WS07
Insulationmaterial		Rock wool
Density	ρ [kg/dm³]	≥ 0,55
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 6
Conversion factor for lowe strengths	r compressive	$(f_b / 6)^{0,5} \le 1,0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Unipor (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



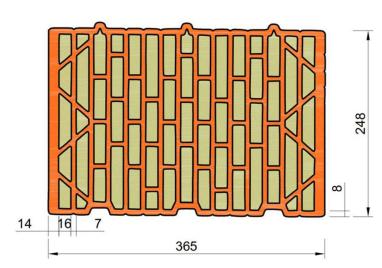


Table C114: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	Tinst	[Nm]	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5
Char. Edge distance	Ccr	[mm]	nm] 120 (for shear loads perpendicular to the free edge: c _{cr} = 250)						
Minimum Edge Distance	Cmin	[mm]	nm] 50						
Characteristic Spacing	Scr, II	[mm] 250							
Characteristic Spacing	Scr, ⊥	[mm]	250						
Minimum Spacing	Smin, II;	[mm]				50			
William Opacing	Smin, ⊥	[iiiiii]	30						

Table C115: Reduction factors for single anchors at the edge

Tension load			Shear load						
'	ension load		Perpendic	ular to the fr	ee edge Parallel to the free edge			edge	
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II	
•	50	1,00		50	0,30	1	50	1,00	
	120	1,00		250	1,00		120	1,00	

Injection system ChimFix ETA 1 for masonry	Injection	system	ChimFix	ETA 1	for masonry
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Performances hollow clay brick Coriso WS07 with insulationDescription of the stone, Installation parameters, Reduction factors

Annex C 35



Brick type: Hollow clay brick Coriso WS07 with insulation

Table C116: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint			
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N
• •	50	50	1,50		50	50	1,00
	120	250	2,00		120	250	2,00

Table C117: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint			
Shear load		with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$
perpendicular	•••	50	50	0,40		50	50	0,40
to the free		250	50	1,00		250	50	1,20
edge	.,	250	250	2,00		250	250	2,00
Shear load		with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II
parallel to the	•	50	50	1,65		50	50	1,00
free edge		120	250	2,00		120	250	2,00

Table C118: Characteristic values of tension and shear load resistances

				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$							
				Use condition							
	Perforated sleeve	Effective Anchorage depth					w/d		d/d		
	sle	Effective inchorag depth		d/d			w/w		w/d		
Anchor size	g	# 5 5							w/w		
Andrior Size	ate	ΑĀ							All		
	- jē		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature		
	Je.								ranges		
	-	h _{ef}	Ν	$I_{Rk,b} = N_{Rk,p}$	2)	N	$N_{Rk,b} = N_{Rk,p}$	2)	$V_{Rk,b}^{(2)}$		
		[mm]				[kN]					
		Normali	sed mean d	compressi	ve strengtl	n f _b ≥6 N/n	nm² ¹⁾				
M8	SH 12	80		1000							
M8 / M10/ IG-M6	SH 16	≥ 85	1,5	1,5	1,5	1,5	1,5	1,5	5,0		
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	92								

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C113. For stones with higher strengths, the shown values are valid without conversion.

Table C119: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor Size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	. 1775,750.00			0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Injection system ChimFix ETA 1 for masonry	
Performances hollow Clay brick Coriso WS07 with insulation Group factors, characteristic Resistances and Displacements	Annex C 36

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow clay brick T7 MW with insulation

Table C120: Stone description

Brick type		Hollow clay brick T7 MW
Insulation material		Rock wool
Density	ρ [kg/dm³]	≥ 0,59
Normalised mean compressive strenght	f_b [N/mm 2]	≥ 8
Conversion factor for lowe strengths	er compressive	$(f_b / 8)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



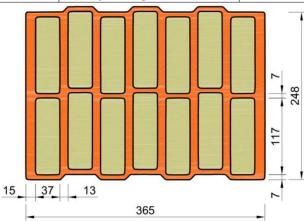


Table C121: Installation parameter

an									
Anchor size	303100311003101100000 312000 10 0003810			M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm]	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5
Char. Edge distance (under fire conditions)	Ccr; (Ccr,fi)	[mm]	(for s	shoar load		120 (2 h _{ef}	•	odae. c	- 250)
Minimum Edge Distance	Cmin	[mm]	(for shear loads perpendicular to the free edge: $c_{cr} = 2$						- 230)
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]				250 (4 h _{ef})		
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]				250 (4 h _{ef}			
Minimum Spacing	Smin, II; Smin, ⊥	[mm]				50			
1									

Table C122: Reduction factors for single anchors at the edge

_	ension load		Shear load								
'	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	50	1,00		50	0,35	 	50	1,00			
	120	1,00		250	1,00		120	1,00			

Table C123: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint					
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N		
• •	50	50	1,40		50	50	1,15		
	120	250	2,00		120	250	2,00		

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick T7 MW with insulation

Description of the stone, Installation parameters, Reductionfactors

Annex C 37



	2001 19800	occurrence of the property of the control		parallel to	under she hor. joint			chor po	sition pe	rpendicular to	hor. joint
Shear load			, with c	≥ with s	s ≥ α _{g II}	,V		,	with c ≥	with s ≥	α _{g ⊥, V ⊥}
perpendicular	h	•	50	50	0,6	60			50	50	0,40
to the free			250	50	1,5	55	<u></u>		250	50	1,00
edge	.,		250	250	2,0	00		4/4-4-4-4	250	250	2,00
Shear load	F		with c	≥ with s	s≥ α _{g II}	,V II	1		with c ≥	with s ≥	α _{g ⊥,} ν II
parallel to the		•	50	50	2,0	00			50	50	1,20
free edge			120	250	2,0	00		11	120	250	2,00
Table C125:	Ch	aracter	istic val	ues of ter	sion and	shear	load	resista	ances		
					Charac	cteristic l	Resis	tances	with c≥ c	c _{cr} and s ≥ s _{cr}	
			σ.				Ųs	se cond	ition		
Anchor size Sleeve		Effective Anchorage depth	161					w/d		d/d	
		ted sleeve	ect hor ept	d/d					w/w		w/d
Anchor size		ted	A P				ļ.				w/w All
		ora		40°C/24°C	80°C/50°C	120°C/72	2°C 4	0°C/24°0	80°C/50	°C 120°C/72°C	100 100 100 100 100 100 100 100 100 100
		Perf		90,000 - 100,000,000,000,000		St. Chromodata Se (Shrineada, Se Co.)			in pro-clark backship in the control of the control		ranges
			h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)			$N_{Rk,b} = N$	J _{Rk,p} ²⁾	V _{Rk,b} ²⁾
			[mm]					[kN]			
			Normali	sed mean	compress	ive strer	igth f	f _b ≥ 8 N	/mm² 1)		
M8		SH 12	80								
M8 / M10/ IG-N	И6	SH 16	≥ 85	0.0	0.0	, -		0.0	0.0	4.5	3,0
M12 / IG-M8		SH 20	≥ 85	2,0	2,0	1,5		2,0	2,0	1,5	
M16 / IG-M10)	SH 20	≥ 85								4,5
 For lower corwith higher s N_{Rk,b,c} = N_{Rk,p} 	treng	ths, the s	hown value	es are valid	without conv		conve	ersion fac	ctor accord	ding to Table C1	20. For ston
Table C126:			ements	J							
		sp.uo	hef	δη / Ν	δι	ın	δN•	S	sy / V	δνο	δ∨∞
Anaha	r siz	Δ	1161	OIV / IV	UI UI	NU	CIV	-	, v / v	OVO	000

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Table C127: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve		Characteristic Resistances				
Anchor size	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$					
Anchor size	sleeve	h _{ef}	R30	R60	R90	R120		
		[mm]	[kN]					
M8 / M10 /IG-M6	SH 16	130				100000		
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,64	0,37	0,11	-1)		

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick T7 MW with in Group factors, characteristic Resistances and Dis	Annex C 38



Brick type: Hollow clay brick T8 P with insulation

Table C128: Stone description

Brick type		Hollow clay brick T8 P
Insulation material		Perlite
Density	ρ [kg/dm³]	≥ 0,56
Normalised mean compressive strenght	f _b [N/mm²]	≥ 6
Conversion factor for lowe strengths	r compressive	$(f_b / 6)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



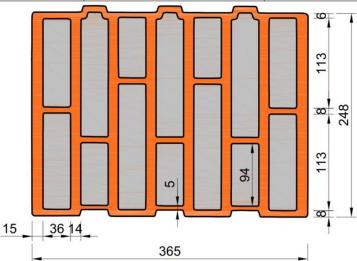


Table C129: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	T _{inst}	[Nm]	≤ 4 ≤ 4 ≤ 10 ≤ 10 ≤ 4 ≤ 4						≤ 4		
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 250)								
Minimum Edge Distance	Cmin	[mm]	50								
Characteristic Spacing	Scr, II	[mm]	250								
Characteristic Spacing	Scr, ⊥	[mm]	m] 250								
Minimum Spacing	Smin, II;	[mm]				50					
William Spacing	Smin, ⊥	[]				50					

Table C130: Reduction factors for single anchors at the edge

Tension load			Shear load								
_ '	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	50	1,00	→	50	0,25] <u>†</u>	50	1,00			
	120	1,00		250	1,00		120	1,00			

Injection	n system	ChimFix	ETA 1	for	masonry
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Performances hollow clay brick T8 P with insulation

Description of the stone, Installation parameters, Reductionfactors

Annex C 39



Brick type: Hollow clay brick T8 P with insulation

Table C131: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint					
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N		
• •	50	50	1,30		50	50	1,10		
	120	250	2,00		120	250	2,00		

Table C132: Factors for anchor groups under shear load

	Anchor	Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint			
Shear load perpendicular to the free edge	+	with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$	
	•••	50	50	0,40		50	50	0,30	
		250	50	1,35		250	50	1,20	
	.,	250	250	2,00		250	250	2,00	
Shear load parallel to the free edge		with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _g ⊥,ν II	
	•	50	50	1,70		50	50	1,00	
		120	250	2,00		120	250	2,00	

Table C133: Characteristic values of tension and shear load resistances

Table 0100.	ilaiacte	istic vai	ucs of ter	Sion and	Silcui lou	u i coiota	1003					
				Charac	cteristic Res	sistances w	rith c≥c _{cr} a	and s ≥ s _{cr}				
		Effective Anchorage depth		Use condition								
Anchor size	d sleeve			d/d			d/d w/d w/w					
	Perforated sleeve		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
	L	h _{ef}	N	$I_{Rk,b} = N_{Rk,p}$	2)	1	$N_{Rk,b} = N_{Rk,p}$	2)	$V_{Rk,b}^{(2)}$			
		[mm]				[kN]						
	_	Normali	sed mean d	compressi	ve strengtl	h f _b ≥6 N/r	nm² 1)					
M8	SH 12	80		3005								
M8 / M10/ IG-M6	SH 16	≥ 85	1,5	1,5	1,5	1,5	1,5	1,5	4,5			
M12 / IG-M8	SH 20	≥ 85										
M16 / IG-M10	SH 20	≥ 85	2,5	2,5	2,0	2,5	2,5	2,0	7,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C128. For stones with higher strengths, the shown values are valid without conversion.

Table C134: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Afficior size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δΝ0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	1000) 100,0000			0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick T8 P with insulation Group factors, characteristic Resistances and Displacements	Annex C 40

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \bot according to Annex C 3$



Brick type: Hollow clay brick Thermoplan MZ90-G with insulation

Table C135: Stone description

Brick type		Hollow clay brick Thermoplan MZ90-G
Insulation material		Rock wool
Density	ρ [kg/dm³]	≥ 0,68
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 12
Conversion factor for lowe strengths	er compressive	$(f_b / 12)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Mein Ziegelhaus (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



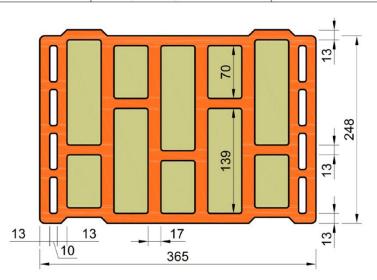


Table C136: Installation parameter

Table Greet Interange	on pan	41110101								
Anchor size	30000 71-3800 01-300 1-3000 1-3000					M16	IG-M6	IG-M8	IG-M10	
Installation torque	Tinst	[Nm]	≤ 4	≤ 4	≤ 10	≤ 10	≤ 4	≤ 4	≤ 4	
Char. Edge distance	Ccr	[mm]	120	120 (for shear loads perpendicular to the free edge: $c_{cr} = 250$)						
Minimum Edge Distance	Cmin	[mm]	50							
Characteristic Spacing	Scr, II	[mm]	250							
Characteristic Spacing	Scr, ⊥	[mm]	250							
Minimum Spacing	Smin, II;	[mm]				50				
William Spacing	Smin, ⊥	[iiiiii]				50				

Table C137: Reduction factors for single anchors at the edge

Tension load			Shear load								
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	50	1,00	→	50	0,25	1	50	1,00			
	120	1,00		250	1,00		120	1,00			

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Thermoplan MZ90-G with insulation	Annex C 41
Description of the stone, Installation parameters, Reductionfactors	



Brick type: Hollow clay brick Thermoplan MZ90-G with insulation

Table C138: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Ancho	r position perp	endicular to ho	r. joint
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N
• •	50	50	1,00		50	50	1,00
	120	250	2,00		120	250	2,00

Table C139: Factors for anchor groups under shear load

	Anchor	Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint			
Shear load perpendicular to the free edge	+	with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g}\bot,v\bot$	
	•••	50	50	0,75		50	50	0,50	
		250	50	2,00		250	50	1,70	
	.,	250	250	2,00		250	250	2,00	
Shear load		with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
parallel to the free edge	•	50	50	1,65		50	50	1,15	
		120	250	2,00		120	250	2,00	

Table C140: Characteristic values of tension and shear load resistances

5. 37-45-37-17-37-1 Mark 2014 St. 400-400-400-400-400-400-400-400-400-400	T						HELVER'S CONTROL					
			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
				Use condition								
	Perforated sleeve	Effective Anchorage depth					w/d		d/d			
	S e	Effective Anchorage depth		d/d			w/w		w/d			
Anchor size	g	# 5 A					•••		w/w			
Tage of the same	ate	ΑĀ							All			
	-Ĵo		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
) er								ranges			
	_	h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)	1	$N_{Rk,b} = N_{Rk,j}$	2)	$V_{Rk,b}^{(2)}$			
		[mm]				[kN]						
		Normalis	sed mean c	ompressiv	e strength	f _b ≥ 12 N/	mm² 1)					
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	3,0	3,0	2,5	3,0	3,0	2,5	4,0			
M12 / IG-M8	SH 20	≥ 85										
M16 / IG-M10	SH 20	≥ 85	3,5	3,5	3,0	3,5	3,5	3,0	7,5			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C135. For stones with higher strengths, the shown values are valid without conversion.

Table C141: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	, , , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , , ,		0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Thermoplan MZ90-G with insulation Group factors, characteristic Resistances and Displacements	Annex C 42

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \mid I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow clay brick Poroton FZ7,5 with insulation

Table C142: Stone description

Brick type		Hollow clay brick Poroton FZ7,5
Insulation material		Rock wool
Density	ρ [kg/dm³]	≥ 0,70
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 8
Conversion factor for low strengths	er compressive	$(f_b / 8)^{0,5} \le 1,0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Schlagmann (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



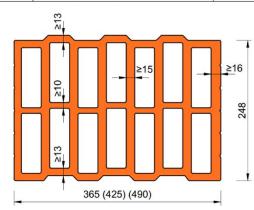


Table C143: Installation parameter

Analasu sina		гэ	140	N440	1440	1440	IO MC	10 140	10 1440
Anchor size	~	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm]	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5
Char. Edge distance	0 (0 %)	[mm]				120 (2 h _{ef})	w	
(under fire conditions)	Ccr; (Ccr,fi)	[mm]	(for shear loads perpendicular to the free edge: c _{cr} = 250)						
Minimum Edge Distance	Cmin	[mm]	50						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]			- :	250 (4 h _{ef})		
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	250 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50						
5/25 9/50									

Table C144: Reduction factors for single anchors at the edge

Tension load			Shear load						
			Perpendic	ular to the fr	ee edge	Parallel to the free edge			
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II	
•	50	1,00		50	0,35	 	50	1,00	
	120	1,00		250	1,00		120	1,00	

Table C145: Factors for anchor groups under tension load

Anchor position parallel to hor. joint			Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg ⊥, N
• •	50	50	1,40		50	50	1,15
	120	250	2,00		120	250	2,00

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick Poroton FZ7,5 with insulation Description of the stone, Installation parameters, Reductionfactors

Annex C 43



Brick type: Hollow clay brick Poroton FZ7,5 with insulation									
Table C146: Factors for anchor groups under shear load									
	Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint								
Shear load perpendicular		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$	
	•••	50	50	0,60		50	50	0,40	
to the free		250	50	1,55		250	50	1,00	
edge		250	250	2,00		250	250	2,00	
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
parallel to the	•	50	50	2,00	1	50	50	1,20	
free edge		120	250	2,00		120	250	2,00	

Table C147: Characteristic values of tension and shear load resistances

				Charac	teristic Res	istances w	ith c > c	and e > e				
				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$ Use condition								
	0	40										
) ye	age 1					/ما		d/d			
	<u> </u>	cti ora		d/d			w/d w/w		w/d			
	o o	ffectiv ichora depth					w/w					
Anchor size	ate	Effective Anchorage depth							All			
	ors		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	9.000			
	Perforated sleeve		138 (41.750) (8	The second secon	Accession to the beautiful to the second second	0.000 0.0000 0.0000 0.000			ranges			
	h _{ef}		$N_{Rk,b} = N_{Rk,p}^{2}$			$N_{Rk,b} = N_{Rk,p}^{2)}$			V _{Rk,b} ²⁾			
		[mm]		[kN]								
		Normali	sed mean	compressi	ve strengtl	h f _b ≥8 N/r	nm² 1)					
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	0.0	0.0	1.5	2,0	0.0	1,5	3,0			
M12 / IG-M8	SH 20	≥ 85	2,0	2,0	1,5		2,0					
M16 / IG-M10	SH 20	≥ 85							4,5			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C142. For stones with higher strengths, the shown values are valid without conversion.

Table C148: Displacements

Anghor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δΝο	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Table C149: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve	Characteristic Resistances					
I Anchor size I	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$					
	sleeve	h _{ef}	R30	R60	R90	R120		
		[mm]	[kN]					
M8 / M10 /IG-M6	SH 16	130				100000		
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,64	0,37	0,11	-1)		

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Poroton FZ7,5 with insulation Group factors, characteristic Resistances and Displacements	Annex C 44

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \mid I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow clay brick Poroton FZ9 with insulation

Table C150: Stone description

AL POLICE AND		
Brick type		Hollow clay brick Poroton FZ9
Insulation material		Rock wool
Density	ρ [kg/dm³]	≥ 0,90
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 10
Conversion factor for lowe strengths	er compressive	$(f_b / 10)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Schlagmann (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



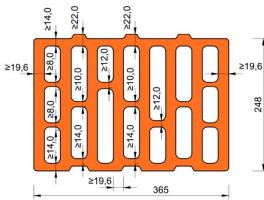


Table C151: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm]	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5
Char. Edge distance (under fire conditions)	C _{cr;} (C _{cr,fi})	[mm]	120 (2 h_{ef}) (for shear loads perpendicular to the free edge: $c_{cr} = 250$)					= 250)	
Minimum Edge Distance	Cmin	[mm]	50						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]			:	250 (4 h _{ef})		
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	250 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]							

Table C152: Reduction factors for single anchors at the edge

,	ension load			Shear load							
	ension load		Perpendic	ular to the fro	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	50	1,00	→	50	0,35	<u> </u>	50	1,00			
	120	1,00		250	1,00		120	1,00			

Table C153: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
• •	50	50	1,40		50	50	1,15	
	120	250	2,00		120	250	2,00	

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick Poroton FZ9 with insulationDescription of the stone, Installation parameters, Reduction factors

Annex C 45

free edge



120

250

2,00

Brick type: Hollow clay brick Poroton FZ9 with insulation Table C154: Factors for anchor groups under shear load Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint with c ≥ with s ≥ with s ≥ with c ≥ α_g II,V \perp $\alpha_{\text{g}}\,\bot,\,\text{V}\,\bot$ Shear load 0,40 50 50 0,60 50 50 perpendicular to the free 250 50 1,55 250 50 1,00 edge 250 250 2,00 250 250 2,00 with c ≥ with s ≥ with c ≥ with s ≥ αg II,V II αg ⊥,V II Shear load parallel to the 50 50 2,00 50 50 1,20

2,00

Table C155: Characteristic values of tension and shear load resistances

250

120

			Characteristic Resistances with c ≥ c _{cr} and s ≥ s _{cr}									
	Perforated sleeve	Effective Anchorage depth		Use condition								
Anchor size				d/d			w/d w/w					
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
	<u> </u>	h _{ef}	$N_{\text{Rk,b}} = N_{\text{Rk,p}}^{2)}$			1	V _{Rk,b} = N _{Rk,i}	2)	V _{Rk,b} ²⁾			
		[mm]				[kN]						
		Normalis	ed mean c	ed mean compressive strength f _b ≥ 10 N/mm ^{2 1)}								
M8	SH 12	80		A-100								
M8 / M10/ IG-M6	SH 16	≥ 85	0.0	0.0	4.5	0.0	0.0	4.5	3,0			
M12 / IG-M8	SH 20	≥ 85	2,0	2,0	1,5	2,0	2,0	1,5				
M16 / IG-M10	SH 20	≥ 85							4,5			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C150. For stones with higher strengths, the shown values are valid without conversion.

Table C156: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δvo
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Table C157: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve	Characteristic Resistances						
Analasu sins	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$						
Anchor size	sleeve	h _{ef}	R30	R60	R90	R120			
		[mm]							
M8 / M10 /IG-M6	SH 16	130				100000			
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,64	0,37	0,11	_1)			

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Poroton FZ9 with insulation Group factors, characteristic Resistances and Displacements	Annex C 46

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow clay brick Poroton S9 with insulation

Table C158: Stone description

Brick type		Hollow clay brick Poroton S9
Insulationmaterial		Perlite
Density	ρ [kg/dm³]	≥ 0,85
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 12
Conversion factor for lowe strengths	er compressive	$(f_b / 12)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Schlagmann (DE)
Brick dimensions	[mm]	248 x 365 x 249
Drilling method		Rotary drilling



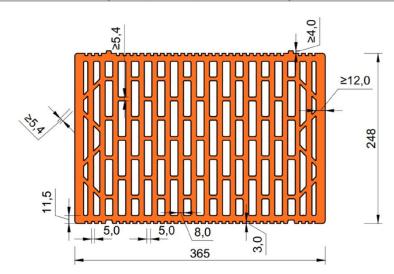


Table C159: Installation parameter

Table 6 1001 motamati	Table 6 1001 Instantation parameter											
Anchor size	[-] M8 M10 M12 M16 IG-M6 IG-M8 IG-M1								IG-M10			
Installation torque	Tinst	[Nm]	≤ 5	≤ 5	≤ 10	≤ 10	≤ 5	≤ 5	≤ 5			
Char. Edge distance	Ccr	[mm]	120	(for shear	loads perp	endicular t	the free	edge: c _{cr} =	250)			
Minimum Edge Distance	Cmin	[mm]	50									
Characteristic Spacing	Scr, II	[mm]				250						
Characteristic Spacing	s _{cr, ⊥} [mm] 250											
Minimum Spacing	Smin, II;	[mm]				50						
William Spacing	Smin, ⊥	[mm]				30						

Table C160: Reduction factors for single anchors at the edge

Tension load			Shear load							
_ '	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	50	1,00	→	50	0,30] <u>†</u>	50	1,00		
	120	1,00		250	1,00		120	1,00		

Injection system ChimFix ETA 1 for masonry

Performances hollow clay brick Poroton S9 with insulation

Description of the stone, Installation parameters, Reductionfactors

Annex C 47



Brick type: Hollow clay brick Poroton S9 with insulation

Table C161: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
• •	50	50	1,50		50	50	1,00	
	120	250	2,00		120	250	2,00	

Table C162: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint				
Shear load perpendicular to the free edge		with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$	
		50	50	0,40		50	50	0,40	
		250	50	1,00		250	50	1,20	
		250	250	2,00		250	250	2,00	
Shear load		with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
parallel to the	•	50	50	1,65		50	50	1,00	
free edge		120	250	2,00		120	250	2,00	

Table C163: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
		Effective Anchorage depth		Use condition								
	Perforated sleeve						w/d		d/d			
	sle	Effective inchorag depth		d/d			w/w		w/d			
Anchor size	g	# 5 9	- 4						w/w			
Anchor size	ate	ΑĀ							All			
	l fe		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
) e								ranges			
	-	h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			N	$J_{Rk,b} = N_{Rk,p}$	2)	$V_{Rk,b}^{(2)}$			
		[mm]		[kN]								
		Normalis	sed mean compressive strength f _b ≥ 12 N/mm ^{2 1)}									
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	1,5	1,5	1,5	1,5	1,5	1,5	5,0			
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85	92									

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C158. For stones with higher strengths, the shown values are valid without conversion.

Table C164: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor Size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	. 1775,750.00			0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Poroton S9 with insulation Group factors, characteristic Resistances and Displacements	Annex C 48

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow clay brick Thermopor TV8+ with insulation

Table C165: Stone description

Brick type		Hollow clay brick		
Zilon typo	Thermopor TV8+			
Insulation material		Rock wool		
Density	ρ [kg/dm³]	≥ 0,70		
Normalised mean	f _b [N/mm²]	≥ 10		
compressive strenght				
Conversion factor for lower	er compressive	$(f_b / 10)^{0.5} \le 1.0$		
strengths		(10.11)		
Code		EN 771-1:2011+A1:2015		
Producer (Country)		e.g. THERMOPOR GmbH (DE)		
Brick dimensions	[mm]	248 x 365 x 249		
Drilling method		Rotary drilling		



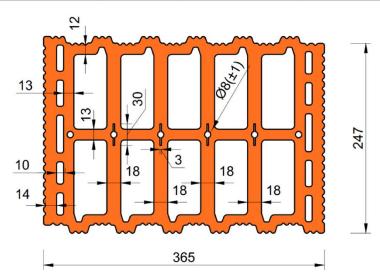


Table C166: Installation parameter

Table 6100. Installation parameter									
Anchor size		[-]	M8	M8 M10 M12 M16 IG-M6 IG-I					IG-M10
Installation torque	Tinst	[Nm]	≤ 4	≤ 4	≤ 10	≤ 10	≤ 4	≤ 4	≤ 4
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 250)						
Minimum Edge Distance	Cmin	[mm]	50						
Characteristic Spacing	Scr, II	[mm]	250						
Characteristic Spacing	Scr, ⊥	[mm]	250						
Minimum Spacing Smin,		[mm]				50			
William Spacing	Smin, ⊥	[iiiiii]				30			

Table C167: Reduction factors for single anchors at the edge

Tension load				Shear load						
Tension load			Perpendicular to the free edge			Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	50	1,00	→	50	0,25	1	50	1,00		
	120	1,00		250	1,00		120	1,00		

In	ection	system	ChimFix	ETA 1	for	masonry	9
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Performances hollow clay brick Thermopor TV8+ with insulation

Description of the stone, Installation parameters, Reductionfactors

Annex C 49



Brick type: Hollow clay brick Thermopor TV8+ with insulation

Table C168: Factors for anchor groups under tension load

An	chor position pa	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
• •	50	50	1,00		50	50	1,00	
	120	250	2,00		120	250	2,00	

Table C169: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint			
Shear load	· · · · · · · · · · · · · · · · · · ·	with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	αg⊥, V⊥
perpendicular	•••	50	50	0,75		50	50	0,50
to the free		250	50	2,00		250	50	1,70
edge		250	250	2,00		250	250	2,00
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,V II}
parallel to the free edge		50	50	1,65]	50	50	1,15
		120	250	2,00		120	250	2,00

Table C170: Characteristic values of tension and shear load resistances

							CHE PAGE A CONTROL					
				Charac	teristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}				
			Use condition									
A malagy size	d sleeve	Effective Anchorage depth	. d/d w/d w/w					d/d w/d w/w				
Anchor size	Perforated sleeve Effective Anchorage		erforate	erforate	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges	
	ш.	h _{ef}	$N_{Bk,b} = N_{Bk,p}^{2}$			1	$N_{Rk,b} = N_{Rk,p}^{2)}$					
		[mm]				[kN]						
		Normalis	sed mean c	ompressiv	e strength	f _b ≥ 10 N/	mm² 1)					
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	3,0	3,0	2,5	3,0	3,0	2,5	3,5			
M12 / IG-M8	SH 20	≥ 85										
M16 / IG-M10	SH 20	≥ 85	3,5	3,5	3,0	3,5	3,5	3,0	7,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C165. For stones with higher strengths, the shown values are valid without conversion.

Table C171: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	, , , , , , , , , , , , , , , , , , , ,	,		0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Injection system ChimFix ETA 1 for masonry	
Performances hollow clay brick Thermopor TV8+ with insulation Group factors, characteristic Resistances and Displacements	Annex C 50

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \mid I} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow light weight concrete brick HBL 16DF

Table C172: Stone description

Brick type		Hollow light weight concrete brick HBL 16DF
Density	ρ [kg/dm³]	≥ 1,0
Normalised mean compressive strenght	f _b [N/mm²]	≥ 3,1
Conversion factor for low strengths	$(f_b/3,1)^{0,5} \le 1,0$	
Code		EN 771-3:2011+A1:2015
Producer (Country)		e.g. KLB Klimaleichtblock (DE)
Brick dimensions	[mm]	500 x 250 x 240
Drilling method		Rotary drilling



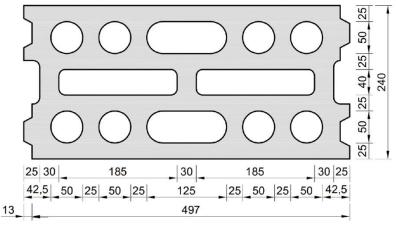


Table C173: Installation parameter

SI CONTRACTOR OF											
Anchor size			M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	T _{inst}	[Nm]	n] ≤2 ≤2 ≤5 ≤5 ≤2					≤ 5	≤ 5		
Char. Edge distance (under fire conditions)	Ccr; (Ccr,fi)	[mm]	120 (2 h_{ef}) (for shear loads perpendicular to the free edge: $c_{cr} = 250$)								
Minimum Edge Distance	Cmin	[mm]	50								
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]	500 (4 h _{ef})								
(under fire conditions)	$S_{cr, \perp; (S_{cr,fi, \perp})}$	[mm]	250 (4 h _{ef})								
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50								

Table C174: Reduction factors for single anchors at the edge

Tension load			Shear load								
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	50	1,00		50	0,30	<u> </u>	50	1,00			
	120	1.00		250	1.00		120	1.00			

Table C175: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, N}	
• •	50	50	2,00		50	50	1,55	
	120	500	2,00		120	250	2,00	

Injection system ChimFix ETA 1 for masonry

Performances hollow light weight concrete brick HBL 16DFDescription of the stone, Installation parameters, Reduction factors

Annex C 51



Brick type: Hollow light weight concrete brick HBL 16DF Table C176: Factors for anchor groups under shear load Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint with c ≥ with s ≥ with s ≥ αg II,V⊥ with c ≥ $\alpha_{\text{g}}\,\bot,\,\text{V}\,\bot$ Shear load 0,35 50 50 0,60 50 50 perpendicular to the free 120 50 2,00 120 50 1,15 edge 120 500 2,00 120 250 2,00 with c ≥ with s ≥ with c ≥ with s ≥ αg II,V II αg ⊥,V II Shear load 50 50 1,30 parallel to the 50 50 1,00 120 250 2,00 free edge 120 500 2,00 120 250 2,00

Table C177: Characteristic values of tension and shear load resistances

62 Cabbataghacoro 8300 F.2992. 2000.0-09 5000-000	PARTIE INTO DESCRIPTION OF A SERVICE			ADDITION OF THE PROPERTY OF TH	Contracting and the angular members of the between							
		Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$										
	40		Use condition									
	Perforated sleeve	Effective Anchorage depth						d/d				
	S _e	ffectiv Ichora depth		d/d				w/d				
Anchor size		# 5 8					w/w					
Anchor size	ate	An	40°C/24°C						All			
	Je Je			80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	temperature			
	l e								ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			N	$V_{Rk,b}^{(2)}$					
		[mm]				[kN]						
		Normalis	ed mean c	ompressiv	e strength	f _b ≥ 3,1 N/	mm² 1)					
M8 / M10/ IG-M6	SH 16	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	2,0			
M12 / IG-M8	SH 20	≥ 85	1 5	1.5	1.0	1.5	1.5	10	3,0			
M16 / IG-M10	SH 20	≥ 85	1,5	1,5	1,2	1,5	1,5	1,2	5,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C172. For stones with higher strengths, the shown values are valid without conversion.

Table C178: Displacements

Anghor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Anchor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	200 • ANTON		_ = 5110	0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Table C179: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve	Characteristic Resistances						
Anchor size	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$						
	sleeve	h _{ef}	R30	R60	R90	R120			
		[mm]	[kN]						
M8 / M10 / IG-M6	SH 16	130	0,29	0.21	_1)	_1)			
M12 / IG-M8	SH 20	≥ 130	0,29	0,21	-1/	-1)			
M16 / IG-M10	SH 20	≥ 130	0,29	0,21	0,12	_1)			

¹⁾ no performance assessed

Injection system ChimFix ETA 1 for masonry	
Performances hollow light weight concrete brick HBL 16DF Group factors, characteristic Resistances and Displacements	Annex C 52

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow concrete brick Bloc Creux B40

Table C180: Stone description

Brick type		Hollow concrete brick Bloc Creux B40	
Density	ρ [kg/dm³]	≥ 0,8	
Normalised mean compressive strenght	f_b [N/mm 2]	≥ 5,2	
Conversion factor for lowe strengths	$(f_b / 5,2)^{0,5} \le 1,0$		
Code		EN 772-1	
Producer (Country)		e.g. Leroux (FR)	
Brick dimensions	[mm]	500 x 200 x 200	
Drilling method		Rotary drilling	



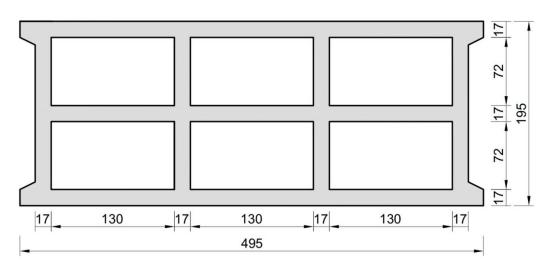


Table C181: Installation parameter

© 2000 (2000 € 0000 000 000 000 000 000 000 000											
Anchor size				M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	Tinst	[Nm]	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4	≤ 4		
Char. Edge distance	Ccr	[mm]	120 (for shear loads perpendicular to the free edge: c _{cr} = 170)								
Minimum Edge Distance	Cmin	[mm]	50								
Characteristic Spacing	Scr, II	[mm]	170								
Characteristic Spacing	Scr, ⊥	[mm]	200								
Minimum Spacing	Smin, II;	[mm]	50								
William Spacing	Smin, ⊥	[[iiiiii]	50								

Table C182: Reduction factors for single anchors at the edge

Tension load			Shear load							
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge				
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	50	1,00		50	0,35	<u> </u>	50	1,00		
	120	1,00		170	1,00		120	1,00		

Injection system ChimFix ETA 1 for masonry	
Performances hollow concrete brick Bloc Creux B40 Description of the stone, Installation parameters, Reductionfactors	Annex C 53



Brick type: Hollow concrete brick Bloc Creux B40

Table C183: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint			
1	with c ≥	with s ≥	αg II, N	1	with c ≥	with s ≥	αg⊥, N
• •	50	50	1,50	•	50	50	1,40
	50	170	2,00		50	200	2,00
	120	170	2,00		120	200	2,00

Table C184: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	joint	Anchor position perpendicular to hor. joint			
Shear load perpendicular to the free edge		with c ≥	with s ≥	αg II,V ⊥	1	with c ≥	with s ≥	αg ⊥, V ⊥
	•••	50	50	0,55		50	50	0,35
		120	50	1,30		120	50	0,85
		120	170	2,00		120	200	2,00
		with c ≥	with s ≥	αg II,V II	1	with c ≥	with s ≥	αg ⊥,V II
Shear load	••	50	50	1,10	•	50	50	1,00
parallel to the free edge		120 170	170	2,00	•	50	200	2,00
	· · · · · · · · · · · · · · · · · · ·		2,00		120	200	2,00	

Table C185: Characteristic values of tension and shear load resistances

	Perfor ated sleeve	ated H 2	Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
				Use condition								
Anchor size				d/d			d/d w/d w/w					
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
		h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)	N	V _{Rk,b} ²⁾					
		[mm]		[kN]								
		Normalis	ed mean c	ompressiv	e strength	$f_b \geq 5,2 \text{ N/}$	mm ^{2 1)}					
M8 / M10/ IG-M6	SH 16	130	2,0	1.5	1.2	2,0	1,5	1.2	6.0			
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 130	2,0	1,5	1,2	2,0	1,5	1,2	6,0			

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C180. For stones with higher strengths, the shown values are valid without conversion.

Table C186: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,13	0,13*N _{Rk} / 3,5	2*δΝο	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all				0,31	0,31*V _{Rk} / 3,5	1,5*δνο

Injection system ChimFix ETA 1 for masonry	
Performances hollow concrete brick Bloc Creux B40 Group factors, characteristic Resistances and Displacements	Annex C 54

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Solid light weight concrete brick

Table C187: Stone description

Brick type		Solid light weight concrete brick	
Density	ρ [kg/dm³]	≥ 0,6	
Normalised mean compressive strenght	f_b [N/mm ²]	≥ 2	
Conversion factor for low strengths	$(f_b / 2)^{0,5} \le 1,0$		
Code		EN 771-3:2011+A1:2015	
Producer (Country)		e.g. Bisotherm (DE)	
Brick dimensions	[mm]	≥ 240 x 300 x 113	
Drilling method		Rotary drilling	



Table C188: Installation parameter

Table Creek motanati	on pan										
Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	Tinst	[Nm]	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2		
Char. Edge distance	Ccr	[mm]	150								
Minimum Edge Distance	Cmin	[mm]	60								
Characteristic Spacing	Scr, II	[mm]	300								
Characteristic Spacing	Scr, ⊥	[mm]	300								
Minimum Spacing	Smin, II;	[mm]				120					
I willing opacing	Smin, ⊥	[mm]				120					

Table C189: Reduction factors for single anchors at the edge

Tension load			Shear load								
	ension load		Perpendic	ular to the fr	ee edge	Parallel to the free edge					
	with c ≥	αedge, N		with c ≥	αedge, V⊥		with c ≥	αedge, V II			
•	60	1,00	→	60	0,25	1 !	60	0,40			
	150	1,00		150	1,00		100	1,00			

Table C190: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	αg⊥, N	
• •	60	120	1,00		60	120	1,00	
	150	300	2,00		150	300	2,00	

Table C191: Factors for anchor groups under shear load

	Anchor	position pa	rallel to hor.	. joint	Anchor position perpendicular to hor. joint				
Shear load perpendicular to the free edge	·	with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	$\alpha_g \perp$, v \perp	
	•••	60	120	0,25		60	120	0,25	
		150	120	1,00		150	120	1,00	
	•	150	300	2,00		150	300	2,00	
	·!	with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
Shear load		60	120	0,40	*	60	120	0,40	
parallel to the free edge		100	120	1,00		100	120	1,00	
	- 	150	300	2,00		150	300	2,00	

Injection system ChimFix ETA 1 for masonry

Performances solid light weight concrete brick

Description of the stone, Installation parameters, Reduction- and Group factors

Annex C 55



Brick type: Solid light weight concrete brick

Table C192: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
	_	Perforated sleeve Effective Anchorage depth	Use condition									
Anchor size	d sleeve			d/d			d/d w/d w/w					
	erforate		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	All temperature ranges			
	"	h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)	1	V _{Rk,b} ²⁾					
		[mm]				[kN]	$N_{Rk,b} = N_{Rk,b}$					
Normalised mean compressive strength f _b ≥ 2 N/mm ^{2 1)}												
M8	-	80										
M10 / IG-M6	-	90	3,0	2,5	2,0	2,5	2,0	1,5				
M12 / M16 / IG-M8 / IG-M10	-	100										
M8	SH 12	80							3,0			
M8 / M10/ IG-M6	SH 16	≥ 85	2,5	2,5	2,0	2,5	2,0	1,5				
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85		,-				, , , , , , , , , , , , , , , , , , ,				

¹⁾ For lower compressive strengths resistances must be multiplied by the conversion factor according to Table C187. For stones with higher strengths, the shown values are valid without conversion.

Table C193: Displacements

Anchor size	hef	δ _N / N	δΝο	δN∞	δv / V	δνο	δ∨∞
Alichor size	[mm]	[mm/kN]	[mm]	[mm]	[mm/kN]	[mm]	[mm]
M8 – M12 / IG-M6 – M10	all	0,1	0,1*N _{Rk} / 3,5	2*δN0	0,3	0,3*V _{Rk} /3,5	1,5*δ∨ο
M16	all	,	,		0,1	0,1*V _{Rk} /3,5	1,5*δ∨0

Performances solid light weight concrete brick
Characteristic Resistances and Displacements

Annex C 56

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|II} = V_{Rk,c} \perp$ according to Annex C 3