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European Technical Assessment Body for construction products



European Technical Assessment

ETA-12/0544 of 26 August 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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Metal Injection anchors for use in masonry

MUNGO Befestigungstechnik AG Webereiweg 6 4802 Strengelbach SCHWEIZ

Mungo Befestigungstechnik AG, Plant10 Germany

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

EAD 330076-01-0604, Edition 10/2022

ETA-12/0544 issued on 15 December 2016

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Specific Part

1 Technical description of the product

The "Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry" is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar MIT-SE Plus or MIT-COOL Plus, 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

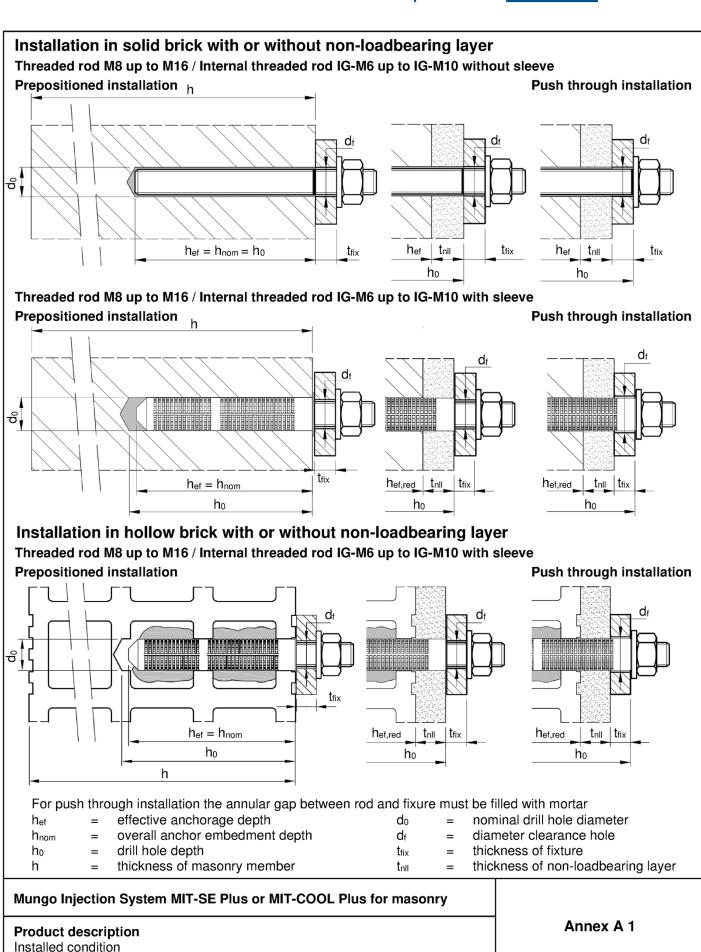
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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 26 August 2025 by Deutsches Institut für Bautechnik

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

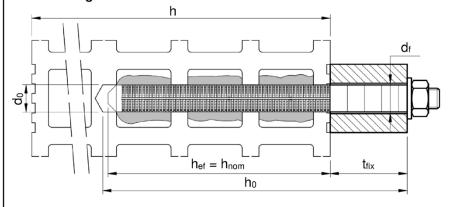


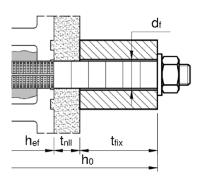




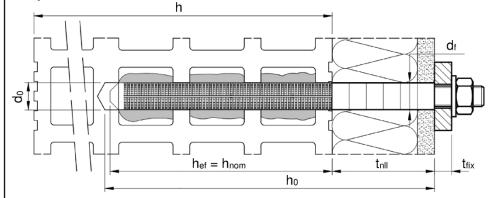
Installation in hollow brick with or without non-loadbearing layer and / or thermal isolation

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

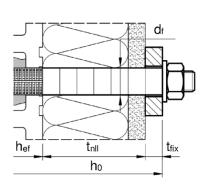




Prepositioned installation



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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Product description

Installed condition

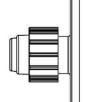
Annex A 2



Cartridge system

Coaxial Cartridge:

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



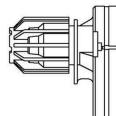
Imprint:

MIT-SE Plus or MIT-COOL Plus

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



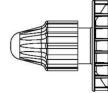
Imprint:

MIT-SE Plus or MIT-COOL Plus

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

Foil Tube Cartridge:

165 ml and 300 ml

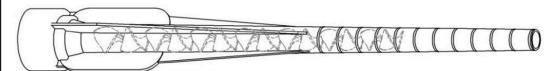


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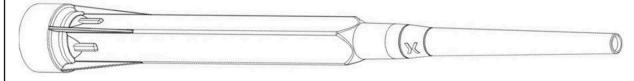
MIT-SE Plus or MIT-COOL Plus

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

Static mixer MIT-MI-2



Static mixer MIT-MI-4



Mixer extension VL



Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

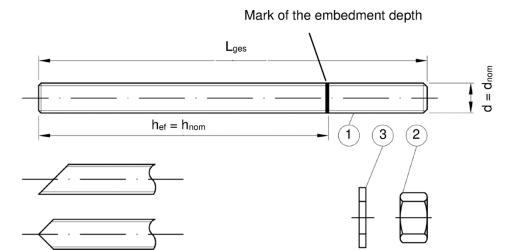
Product description

Injection system

Annex A 3



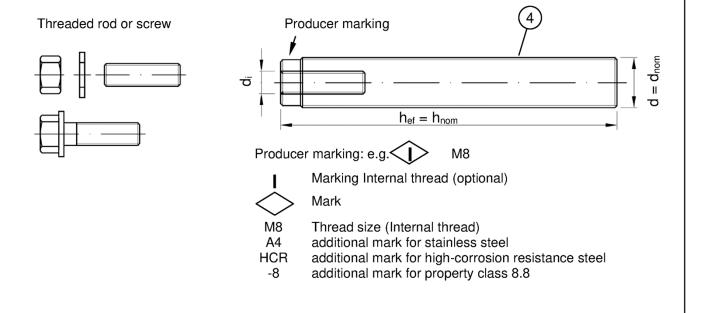
Threaded rod M8 up to M16 with washer and hexagon nut



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



Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Product description Threaded rod and Internal threaded rod	Annex A 4



arı	Designation	Material					
	el, zinc plated (Steel acc. to E		J 102	63:2017)			
		acc. to EN ISO 4042:202		00.2017)			
h	ot-dip galvanised ≥ 40 µm a	acc. to EN ISO 1461:202	22 and	d EN ISO 10684:2004+AC	C:2009 or		
s	nerardized ≥ 45 μm a	acc. to EN ISO 17668:20)16				
		Property class		Characteristic steel ultimate tensile strength	Characteristic steel	Elongation a fracture	
			16	$f_{UK} = 400 \text{ N/mm}^2$	f _{VK} = 240 N/mm ²	A ₅ > 8%	
1 Threaded rod			f _{uk} = 400 N/mm ²	f _{VK} = 320 N/mm ²	$A_5 > 8\%$		
	acc. to			,			
	EN ISO 898-1:2013		f _{uk} = 500 N/mm ²	f _{yk} = 300 N/mm ²	A ₅ > 8%		
				f _{uk} = 500 N/mm ²	$f_{yk} = 400 \text{ N/mm}^2$	A ₅ > 8%	
				f _{uk} = 800 N/mm ²	$f_{yk} = 640 \text{ N/mm}^2$	$A_5 > 8\%$	
		acc. to	4	for anchor rod class 4.6			
2	Hexagon nut	EN ISO 898-2:2022	5	for anchor rod class 5.6	or 5.8		
			8	for anchor rod class 8.8			
3	Washer			alvanised or sherardized I ISO 7089:2000, EN ISO	7093:2000 or EN IS	∩ 709 <i>4</i> ∙200¢	
_		1	J, LIV	Characteristic steel	Characteristic steel		
	Internal threaded	Property class		ultimate tensile strength		fracture	
4 anchor rod ²⁾	acc. to	5.8	f _{uk} = 500 N/mm ²	f _{VK} = 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%	
Sta	inless steel A2 (Material 1.430				,		
	inless steel A4 (Material 1.440						
Hig	h corrosion resistance steel	(Material 1.4529 or 1.45	65, a	cc. to EN 10088-1: 2023)	,		
		Property class		Characteristic steel	Characteristic steel	Elongation	
				ultimate tensile strength	yield strength	fracture	
1	Threaded rod ¹⁾	acc. to		f _{uk} = 500 N/mm ²	f _{yk} = 210 N/mm ²	A ₅ > 8%	
		EN ISO 3506-1:2020	70	f _{uk} = 700 N/mm ²	f _{yk} = 450 N/mm ²	A ₅ > 8%	
			80	$f_{uk} = 800 \text{ N/mm}^2$	$f_{yk} = 600 \text{ N/mm}^2$	$A_5 > 8\%$	
		acc. to	50	for anchor rod class 50			
2	Hexagon nut ¹⁾	EN ISO 3506-1:2020	70	for anchor rod class 70			
			80	for anchor rod class 80	30		
3	Washer	Stainless steel A2, A4		CR I ISO 7089:2000, EN ISO	7093:2000 or EN IS	:O 7094·2000	
	1		Ю, ЦТ	Characteristic steel	Characteristic steel		
	Internal threaded	Property class		ultimate tensile strength		fracture	
4	anchor rod ²⁾	acc. to	50	f _{uk} = 500 N/mm ²	f _{VK} = 210 N/mm ²	A ₅ > 8%	
•		EN ISO 3506-1:2020	70	f _{UK} = 700 N/mm ²	f _{vk} = 450 N/mm ²	A ₅ > 8%	
•		s steel A4 and HCR		un	ук		
	Property class 80 only for stainles		rods (incl. nut and washer) must	at least correspond to	the material	
) F	Property class 80 only for stainles Using internally threaded anchor i	od screws and threaded	1000 (•		
) F	Property class 80 only for stainles Using internally threaded anchor i and strength class of the internally						
) F 2) L a	Using internally threaded anchor in und strength class of the internally astic perforated sleeve						
) F) L a	Using internally threaded anchor in and strength class of the internally			Polypropylene (PP)			
) F () (Using internally threaded anchor in und strength class of the internally astic perforated sleeve			Polypropylene (PP)			
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) F ?) L a	Using internally threaded anchor in und strength class of the internally astic perforated sleeve			Polypropylene (PP)			
) F 2) U a Pla Sie	Using internally threaded anchor in the internally threaded anchor in the internally astic perforated sleeve as leeve SH	y threaded anchor rod use	ed.				
Pla Sie	Using internally threaded anchor in und strength class of the internally astic perforated sleeve	y threaded anchor rod use	ed.				
) F 2) U a Pla Sie	Using internally threaded anchor in the internally threaded anchor in the internally astic perforated sleeve as leeve SH	y threaded anchor rod use	ed.		Annex A	۸5	



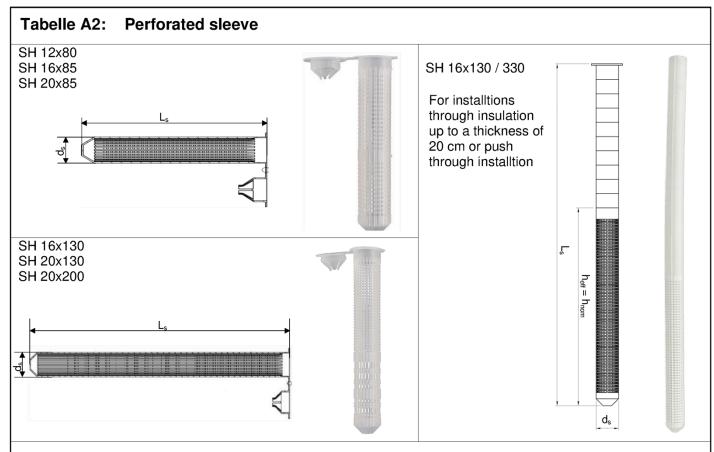


Table A3: Sleeve dimensions

	Sleeve						
Size	ds	Ls	$h_{ef} = h_{nom}$				
[mm]	[mm]	[mm]	[mm]				
SH 12x80	12	80	80				
SH 16x85	16	85	85				
SH 16x130	16	130	130				
SH 16x130 / 330 ¹⁾	16	330	130				
SH 20x85	20	85	85				
SH 20x130	20	130	130				
SH 20x200	20	200	200				

¹⁾ In Annxes C4 – C56 this sleeve is covered with SH 16x130

Table A4: Steel parts

Anchor rod							
Size	$d = d_{nom}$	di	I _{ges}				
[mm]	[mm]	[mm]	[mm]				
IG-M6 ¹⁾	10	6	with all and by English				
IG-M8 ¹⁾	12	8	with sleeve: h _{ef} - 5mm without sleeve: h _{ef}				
IG-M10 ¹⁾	16	10	without sieeve. Her				
M8	8	-	$h_{ef} + t_{fix} + 9,5$				
M10	10	-	$h_{ef} + t_{fix} + 11,5$				
M12	12	-	$h_{ef} + t_{fix} + 17,5$				
M16	16	-	$h_{ef} + t_{fix} + 20,0$				

¹⁾ Internal threaded rod with metric external thread

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Product description Sleeves and steel parts	Annex A 6



Specifications of inten	Specifications of intended 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: Autoclaved Aerated Concrete	Annex B 2 Annex B 2 to B 4 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 aer concrete, the characteristic resistance of the anchor may be determined by j site tests according to EOTA TR 053, Edition July 2022 under consideration 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:
 - $N_{Rk} = N_{Rk,b} = N_{Rk,p} = N_{Rk,b,c} = N_{Rk,p,c}$
 - $V_{Rk} = V_{Rk,b} = V_{Rk,c,II} = V_{Rk,c,\perp}$
- 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.
- $N_{\text{Rk,s}},\,V_{\text{Rk,s}}$ and $M^0_{\text{Rk,s}}$ 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)
 - $V_{Rk,c,j} = 0.15 * V_{Rk,c}$ and $V_{Rk,b,j} = 0.15 * V_{Rk,b}$ ($V_{Rk,b}$ see Annex C 4 to C 56; and $V_{Rk,c}$ 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.

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Intended use Specifications	Annex B 1



	Table B1: Overview brick types and properties with corresponding fastening elements (Anchor and Sleeves)								
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 weight concrete brick acc. to Hollow light weight concrete brick acc. to EN 771-4:2011+A1:2015 EN 771-3:2011+A1:2015					ı			
AAC ρ = 0,35 - 0,60 ≥ 499x240x249 Table C4 - C10	I	M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	Table		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200		
	Hollow light v	veight con	crete bri	ck acc. to EN 771-3	:2011+A1:2015				
HBL 16DF ρ ≥ 1,0 500x250x240 Table C172 - C179		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+A1:2	2015				
KS ρ≥ 2,0 ≥ 240x115x71 Table C11 - C18		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200	Table		M8 - M16 IG-M6 - IG-M10	16x85 16x130 20x85 20x130		
KSL-8DF ρ ≥ 1,4 248x240x238 Table C26 - C32		M8 - M16 IG-M6 - IG-M10	16x130 20x130 20x200	KSL-12DF ρ≥ 1,4 498x175x238 Table C33 - C40		M8 - M16 IG-M6 - IG-M10	16x130 20x130		
	Solid	l clay brick	s acc. to	EN 771-1:2011+A1	1:2015				
Mz-1DF ρ≥ 2,0 ≥ 240x115x55 Table C41 - C47		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200			M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130 20x200		
Intended use	Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry Intended use Annex B 2								
Brick types and pr	Brick types and properties with corresponding fastening elements								



Γable B1:	Overview brick elements (Anch	types an nor and S	d prop	erties with corre (Continued)	sponding 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 bricl	ks acc. to	D 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	12x8 16x8 16x13 20x8 20x13
BGV Thermo $\rho \ge 0.6$ 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	12x8 16x8 16x13 20x8 20x13
Calibric R+ ρ ≥ 0,6 500x200x314 Table C78 - C84		M8 - M16 IG-M6 - IG-M10	12x80 16x85 16x130 20x85 20x130	Blocchi Leggeri ρ ≥ 0,6 250x120x250 Table C99 - C105		M8 - M16 IG-M6 - IG-M10	12x8 16x8 16x13 20x8 20x13
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	12x8 16x8 16x10 20x8 20x10
	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	12x8 16x8 16x13 20x8 20x13 20x20
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	12x8 16x8 16x13 20x8 20x13 20x20
ntended use	n System MIT-SE PI			<u> </u>	An	inex B 3	



Table B1:	Table B1: Overview brick types and properties with corresponding fastening elements (Anchor and Sleeves) (Continued)							
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 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	As a state of the	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	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for	masonry
Intended use Brick types and properties with corresponding fastening element	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	d ₀	[mm]	10	1	2	1	4		18
Drill hole depth	h ₀	[mm]	h _{ef} + t _{fix} 1)							
Effective anchorage depth		h _{ef}	[mm]	80	≥ 90		≥ 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 installa	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]	See Annexes C 4 – C 56						
Minimum edge di	stance	C _{min}	[mm]			See An	nexes C	4 - 0 30		

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		M12 / M16 / IG-M8 / IG-M10			
Perforated sleeve SH			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 d _f ≤ [mm]		9	7 (IG-M6) / 9 (M8) / 12 (M10)		9 (IG-M8) / 12 (IG-M10) 14 (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 S _{min} [mm]		Occ Ampaires O.A. O.50							
Minimum edge distance	c _{min}	[mm]	See Annexes C 4 – C 56						

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

Anchor size				M8 / M10 / IG-M6		M12 / M16 / IG-M8 / IG-M10	
	1	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] $h_{ef} + 5$ mm + $t_{nll} + t_{fix}$ h_0			+ 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- loadbearing layer		[mm]	45	200	45	115
Diameter of clearance hole	Diameter of Prepositioned		[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]	18		22	
Maximum installation torque		T _{inst}	[Nm]	See Annexe		s C 4 – C 56	
Minimum thickness of member		h _{min}	[mm]	195 (115)	195	195 (115)	240 (115)
Minimum spacing		s _{min}	[mm]	See Annexes C 4 – C 56			
Minimum edge of	distance	c _{min}	[mm]	300 / Hilloxed 0 4 - 0 30			

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Intended use Installation parameters	Annex B 6



Table B5: Parameter cleaning and installation tools d_0 d_{b} $d_{b,min}$ **Anchor rod** Perforated sleeve Drill bit - Ø Brush - Ø min. Brush - Ø HD, CA [mm] [mm] [mm] [mm] Autoaerted ACC and solid masonry (without sleeve) M8 **BS10** 10,5 10 M10 12 **BS12** 14 12,5 M12 14 BS14 16 14,5 M16 18 BS18 20 18,5 Solid and hollow masonry (with sleeve) M8 SH 12x80 12 **BS12** 14 12,5 SH 16x85 M8 / M10 / IG-M6 SH 16x130 16 **BS16** 18 16,5 SH 16x130/330 SH 20x85 M12 / M16 / SH 20x130 20 **BS20** 22 20,5 IG-M8 / IG-M10

Cleaning and installation tools

Hand pump (Volume ≥ 750 ml)



SH 20x200

Compressed air tool

(min 6 bar)



Brush BS



Brush extension RBL



Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Intended use Cleaning and installation tools	Annex B 7



Table B6:	Working and	curing time	- MIT-SE Plus
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Temperature in base material			Maximum working time	Minimum curing time 1)
	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
Cartridge temperature			+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 - MIT-COOL Plus

Temperature in base material		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 temperature -20°C to +10°C) +10°C

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Intended use Working and curing time	Annex B 8

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



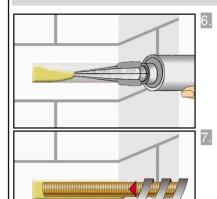
Installation instructions Drill a hole to the required embedment depth with drilling method according to Annex C 4 - C 56. Drill bit diameter according to Table B5. Blow the bore hole clean minimum 2x from the bottom or back by hand pump or compressed air tool (Annex B 7). For applications in solid masonry with a bore hole depth $h_0 > 100$ mm cleaning with compressed air is required. Attach brush BS 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 MIT-MI-2 / MIT-MI-4, 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 t_{work} (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).

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Intended use Installation instructions	Annex B 9



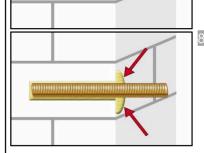
Installation instructions (continuation)

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).

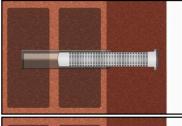
Insert the anchor rod while turning slightly up to the embedment mark.



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.

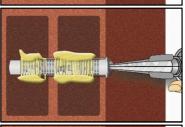
Otherwise, the installation must be repeated starting from step 6 before the maximum working time $t_{\rm work}$ has expired.

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 twork (Annex B 8).



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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Intended use

Installation instructions (continuation)

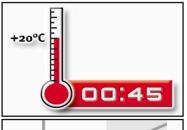
Annex B 10

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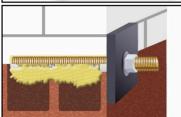
English translation prepared by DIBt



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).

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Intended use
Installation instructions (continuation)

Annex B 11



					Anc	hora	iae				β-Fa	ctor		
Base material	anchor	size	Perforate sleeve S			epth	_	Ta: 4	40°C /	24°C	Т _ь : 80°С	C / 50°C	T _c : 120°	°C / 72°C
			Siceve Si i			h _{ef}		d/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		0,9	5	0,86	0,81	0,73	0,81	0,73
	d₀ ≤ 14	mm	mm with SH		all			0,9	3	0,80	0,87	0,74	0,65	0,56
0-1-1	d₀ ≥ 16	mm	WILLI SH			all		0,9	3	0,93	0,87	0,87	0,65	0,65
Calcium silica bricks	d₀ ≤ 14	d₀ ≤ 14 mm		ы	< 10	00 m	ım 📙	0,9	3	0,80	0,87	0,74	0,65	0,56
SHORE	d₀≥16	mm	without S	,,,	2 10	00 111		0,9	3	0,93	0,87	0,87	0,65	0,65
	all siz	es	without S	Н	> 10	00 m	ım	0,9	3	0,56	0,87	0,52	0,65	0,40
			with SH	I		all		0,8	6	0,86	0,86	0,86	0,73	0,73
Clay Bricks	all sizes		without S	Н	≤ 10	00 m	ım	0,9	3	0,80	0,87	0,74	0,65	0,56
			without S	Н	> 10	00 m	ım	0,8	6	0,43	0,86	0,43	0,73	0,37
Concrete bricks	d₀ ≤ 12	mm	with and	k		all		0,9	3	0,80	0,87	0,74	0,65	0,56
Concrete bricks	d₀≥ 16	mm	without SH			an		0,9	3	0,93	0,87	0,87	0,65	0,65
Table C2:	haracte	ristic	steel resi	stan	се									
Anchor size							М8		M10	M12	M16	IG-M6	IG-M8	IG-M1
Cross section area					[m	nm²]	36,6		58	84,3	157	-	-	-
Characteristic ten	sion resis	stance	Steel failu	re ¹⁾	•					•				
			nd 4.8	N _{Rk,}	,s [k	(N]	15 (13)) 2	3 (21)	34	63	_3)	_3)	_3)
Steel, Property class	ss	5.6 aı	nd 5.8	N _{Rk,}	,s [k	(N)	18 (17)) 2	9 (27)	42	78	10	17	29
		8.8		N _{Rk,}		(N]	29 (27)) 4	6 (43)	67	125	16	27	46
Stainless steel A2,	A4 and	50	N _{Rk}			(N]	18		29	42	79	_3)	_3)	_3)
HCR, class	, ri ana	70	N _{Rk,}			(N)	26		41	59	110	14	26	41
(A2 only class 50 a	nd 70)	80				[kN] 2		46		67	126	_3)	_3)	_3)
Characteristic ten	sion resis	stance	, Partial fac								•	•		
			nd 5.6	γ _{Ms,l}]	2,0					_3)		
Steel, Property clas	SS	4.8, 5	.8 and 8.8	γ _{Ms,l}]	,			1,5				
Stainless steel A2,	A4 and	50		γ _{Ms,l}			2,86			86	_3)			
HCR, class	A4 and	70		γ _{Ms,l}							1,87			
(A2 only class 50 a	nd 70)	80		γ _{Ms,l}					1	,6			_3)	
Characteristic she	ar resista	nce, S	Steel failure			_	arm ¹⁾					1		
			nd 4.8	V ⁰ Rk	ks [k	(N]	7 (6)	1:	2 (10)	17	31	_3)	_3)	_3)
Steel, Property clas	ss	5.6 aı	nd 5.8	V^0 Rk	_{k,s} [k	(N]	9 (8)	_	5 (13)		39	5	9	15
		8.8		V^0 Rk	_{k,s} [k	(N]	15 (13)) 2	3 (21)	34	63	8	14	23
Stainless steel A2,	A4 and	50		V ⁰ Rk	_{k,s} [k	(N]	9		15	21	39	_3)	_3)	_3)
HCR, class		70		\V ⁰ Rk	_{k,s} [k	(N]	13		20	30	55	7	13	20
(A2 only class 50 a	nd 70)	80		V ⁰ Rk	k,s [k	(N]	15		23	34	63	_3)	_3)	_3)
Mungo Injection	System	MIT-S	E Plus or N			Plus	s for m	naso	onry					
Performances β-factors for job s									-			Anne	x C 1	



Table C2: Characteristic steel resistance (continuation)												
Anchor size	Anchor size							IG-M6	IG-M8	IG-M10		
Cross section area	A _s	[mm²]	36,6	58	84,3	157	-	-	-			
Characteristic shear resistance, Steel failure with lever arm ¹⁾												
	4.6 and 4.8	М ⁰ _{Rk,s}	[Nm]	15 (13)	30 (27)	52	133	_3)	_3)	_3)		
Steel, Property class	5.6 and 5.8	M 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	М ⁰ Rk,s	[Nm]	30	59	105	266	_3)	_3)	_3)		
Characteristic shear resista	nce, Partial facto	r ²⁾										
Stool Proporty class	4.6 and 5.6	γ _{Ms,V}	[-]		1,6	6 7			_3)			
Steel, Property class	4.8, 5.8 and 8.8	γ _{Ms,V}	[-]				1,25					
Stainless steel A2, A4 and	50	γ _{Ms,V}	[-]		2,3	88			_3)			
HCR, class	70	γ _{Ms,V}	[-]				1,56					
(A2 only class 50 and 70)	80	$\gamma_{Ms,V}$	[-]		1,3	33			_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.

Table C3: Characteristic steel resistance under fire exposure 1)

Anchor size	Anchor size					M12	M16	IG-M6	IG-M8	IG-M10	
Characteristic tension resistance, S	teel failur	'e									
	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	
oldoo oo alla liigiloi	R120	$N_{Rk,s,fi}$	[kN]	0,5	0,8	1,2	2,2	0,1	0,5	0,8	
Characteristic shear resistance, Steel failure without lever 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	
	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								
	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.

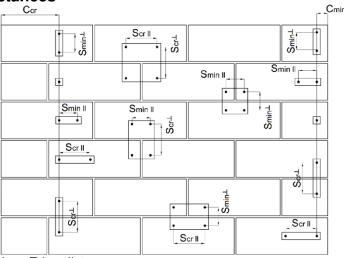
Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances	Annex C 2
Characteristic steel resistance under tension and shear load – under fire exposure	

²⁾ in absence of national regulation

³⁾ Fastener type not part of the ETA







Char. Edge distance C_{cr} Minimum Edge distance Cmin

Characteristic (minimum) spacing for anchors placed parallel to horizontal joint S_{cr,II}; (S_{min,II}) =

 $S_{cr,\perp}$; $(S_{min,\perp})$ Characteristic (minimum) spacing for anchors placed perpendicular to horizontal joint

Load direction Anchor position	Tensio	n load	Shear load p	arallel to free e V _{II}	Shear load perpendicular to free edge V ⊥		
Anchors parallel to horizontal joint s _{cr,II} ; (s _{min,II})		α_g II,N	V	α _g ,۷	V	$\alpha_{g \text{ II,V} \perp}$	
Anchors vertical to horizontal joint $s_{cr,\perp}$; $(s_{min,\perp})$		$\alpha_{g\perp,N}$	V	$\alpha_{g\perp,V\parallel}$	V •	$\alpha_{g\perp,V\perp}$	

= Reduction factor for tension loads at the free edge for $c_{min} \le c < c_{cr}$ (single anchor) $\alpha_{\text{edge},N}$

= Reduction factor for shear loads perpendicular to the free edge for $c_{min} \le c < c_{cr}$ (single anchor) $\alpha_{\text{edge,V}}$

= Reduction factor for shear loads parallel to the free edge for $c_{min} \le c < c_{cr}$ (single anchor) $lpha_{ ext{edge,V II}}$

= Group factor for anchors parallel to horizontal joint under tension load $lpha_{\mathsf{g}\,\mathsf{II},\mathsf{N}}$

= Group factor for anchors perpendicular to horizontal joint under tension load $\alpha_{g\perp,N}$

 $\alpha_{\text{g II,V II}}$ = Group factor for anchors parallel to horizontal joint under shear load parallel to the free edge

= Group factor for anchors perpendicular to horizontal joint under shear load parallel to the free edge α_{g} _, ν $_{\text{II}}$

= Group factor for anchors parallel to horizontal joint under shear load perpendicular to the free edge $\alpha_{\text{a II.V}}$

= Group factor for anchors perpendicular to hor. joint under shear load perpendicular to the free edge $\alpha_{g\,\perp,V\,\perp}$

Single anchor at the edge: resp. $N_{Rk,p,c} = \alpha_{edge,N} * N_{RK,p}$ $N_{Rk,b,c} = \alpha_{edge,N} * N_{RK,b}$

> $V_{Rk,c II} = \alpha_{edge,V II} * V_{Rk,b}$ $V_{Rk,c\perp} = \alpha_{edge,V\perp} * V_{Rk,b}$

Group of 2 anchors: $N^{g}_{Rk} = \alpha_{g,N} * N_{RK,b}$

 $V^{g}_{Rk \parallel} = \alpha_{g,V \parallel} * V_{Rk,b}$ resp. $V_{Rk} = \alpha_{g,V} * V_{Rk,b}$ (for $c \ge c_{cr}$)

 $V^{g}_{Rk,c \, II} = \alpha_{g,V \, II} * V_{Rk,b}$ resp. $V_{Rk,c\perp} = \alpha_{g,V\perp} * V_{Rk,b}$ (for $c \ge c_{min}$)

Group of 4 anchors: N^{g}_{Rk} $= \alpha_g \parallel_{N} * \alpha_g \perp_{N} * \mathbf{N}_{RK,b}$

 $V^{g}_{Rk \mid I} = \alpha_{g \mid I,V \mid I} * \alpha_{g \perp,V \mid I} * V_{Rk,b} \text{ resp. } V^{g}_{Rk \perp} = \alpha_{g \mid I,V \perp} * \alpha_{g \perp,V \perp} * V_{Rk,b} \text{ (for } c \geq c_{cr})$

 $V^{g}_{Rk,c \, \text{II}} \ = \alpha_{g \, \text{II},V \, \text{II}} \ ^{\star} \alpha_{g \, \perp,V \, \text{II}} \ ^{\star} V_{Rk,b} \ \text{ resp. } V^{g}_{Rk,c \, \perp} \ = \alpha_{g \, \text{II},V \, \perp} \ ^{\star} \alpha_{g \, \perp,V \, \perp} \ ^{\star} V_{Rk,b} \ \text{ (for } c \geq c_{min)}$

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.

Performances

Definition of the reduction- and group factors

Annex C3



Brick type: Autoclaved aerated concrete - AAC

Table C4: Stone description

	•	
Brick type		Autoclaved aerated concrete AAC
Density	ρ [kg/dm³]	0,35 – 0,6
Normalised mean compressive strenght	f _b [N/mm ²]	≥ 2, ≥ 4 or ≥ 6
Code		EN 771-4:2011+A1:2015
Producer (Country)		e.g. Porit (DE)
Brick dimensions	[mm]	≥ 499 x 240 x 249
Drilling method		Rotary drilling



Table C5: Installation parameter

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

Table C6: Reduction factors for single anchors at the edge

Tension load			Shear load							
			Perpendic	ular to the fre	ee edge	Parallel to the free edge				
+	with c ≥	αedge, N	11	with c ≥	αedge, V⊥		with c ≥	αedge, V II		
	50	0,85		50	0,12		50	0,70		
	30	0,03		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

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	1,10	•	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	· ;	210	250	2,00
Shear load		with c ≥	with s ≥	α _g II,V II	1	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
		150	300	2,00		150	250	2,00

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances Autoclaved Aerated Concrete - AAC

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

Annex C 4



Brick type: Aut	oclave	d aerat	ed concr	ete – AA	C						
					shear loa	d resista	nces				
					cteristic Res			and s ≥ s _{cr}			
	Perforated sleeve			Use condition							
	sle	Effecitve Anchorage depth					w/d	d/d			
	ited		d/d				w/w		w/d w/w		
Anchor size	fora	Anc d							All		
	Per							120°C/72°C	temperature ranges		
	d₅	h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	$N_{Rk,b} = N_{Rk,b}$	1) p	$V_{Rk,b}^{1)}$				
	[mm]	[mm]				[kN]					
	ed mear			ive strenght $f_b \ge 2 \text{ N/mm}^2$; Density $\rho \ge 0.35 \text{ kg/d}$							
M8 M10 /	-	80	1,2	0,9	0,9	0,9	0,9	0,9	1,5		
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) $N_{Rk,b,c} = N_{Rk,p,c}$ an	d V _{Rk,c II} =	= V _{Rk,c} ⊥ac	cording to An	nex C 3							
				Charac	cteristic Res	istances w	rith c≥c _{cr}	and s ≥ s _{cr}			
	eve	Effecitve Anchorage depth				Use condit	ion				
	Perforated sleeve		d/d				w/d w/w		d/d w/d w/w		
Anchor size	Perfora		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		
	d₅	h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	1)	1	$N_{Rk,b} = N_{Rk,b}$	1) p	$V_{Rk,b}^{1)}$		
	[mm]	[mm]				[kN]					
	ed mear		ssive stren	1		I		≥ 0,50 kg/d			
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) $N_{Rk,b,c} = N_{Rk,p,c}$ an	d V _{Rk,c II} =	= V _{Rk,c} ⊥ac	cording to An	nnex C 3							
Mungo Injection S	System I	MIT-SE P	lus or MIT-	COOL Plu	s for maso	nry			_		
Performances aut Characteristic Resi				AAC				Annex C	5 5		



Brick type: Autoclaved aerated concrete – AAC												
			Characteristic Resistances with c ≥ c _{cr} and s ≥ s _{cr}									
				Use condition								
	d sleeve	Effecitve Anchorage depth	d/d				d/d w/d w/w					
Anchor size	Perforated sleeve	Ef 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			
	"	h _{ef}	N	$N_{Rk,b} = N_{Rk,p}^{1}$ $N_{Rk,b} = N_{Rk,p}^{1}$				V _{Rk,b} ¹⁾				
		[mm]				[kN]						
Normalis	ed mear	compre	ssive strer	ight f _b ≥ 6	N/mm²;		Density ρ	≥ 0,60 kg/c	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 $V_{Rk,c \parallel} = V_{Rk,c} \perp$ according to Annex C 3

Table C10: 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	0,1	0,1*N _{Rk} / 2,8	2 *δN0	0,3	0,3*V _{Rk} / 2,8	1,5*δvo
M16	all	,	,	_ = = = = = = = = = = = = = = = = = = =	0,1	0,1*V _{Rk} /2,8	1,5*δ∨0

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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		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	/er	$(f_b / 28)^{0,5} \le 1,0$
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]	Im] ≤ 10 ≤ 10 ≤ 15 ≤ 15 ≤ 10 ≤ 10 ≤ 1						
Char. Edge distance (under fire conditions)	Ccr; (Ccr,fi)	[mm]	150 (2 h_{ef}) (for shear loads perpendicular to the free edge: $c_{cr} = 240$: 240)
Minimum Edge Distance	Cmin	[mm]	60						
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]				240 (4 h _{ef}))		
(under fire conditions)	$S_{cr, \perp; (S_{cr,fi, \perp})}$	[mm]	150 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	75						
		-							

Table C13: Reduction factors for single anchors at the edge

-	Tension load			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 Ar	nchor position p	arallel to hor. jo	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	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	130	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 ≥	αg II,V ⊥		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		150	240	2,00		150	150	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $h_{ef} = 200$ mm 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 $s \ge s_{cr}$								
	g e	a e		Use condition								
	Perforated sleeve	Effecitve Anchorage depth		d/d	d/d		w/d					
	8	fec Shc		u, u			w/w		w/w (w/d)			
Anchor size	ltec	And And							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				
	erf								ranges			
	۵.	h _{ef}	1	$N_{Rk,b} = N_{Rk,j}$	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 / IG-M10	-	200	9,0	8,5	6,5	5,5	5,0	4,0	7,0			
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	δη / Ν	δΝο δΝ∝		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 / 2.5	0*8	0,3	0,3*V _{Rk} /3,5	1,5*δvo
M16	all	0,1	0,1*N _{Rk} / 3,5	2*δΝο	0,1	0,1*V _{Rk} /3,5	1,5*δνο

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

						-				
		Effective	Characteristic Resistances							
Ancheroize	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]		[k	N]					
M8	-	80								
M10 / IG-M6	-	≥ 90	0,48	0,41	0,34	0,30				
M12 / IG-M8	-	≥ 100	0,46	0,41	0,34	0,30				
M16 / IG-M10	-	≥ 100								
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	0,26	- '/	- '/				

¹⁾ no performance assessed

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances solid calcium silica brick KS-NF Characteristic Resistances and Displacements	Annex C 8

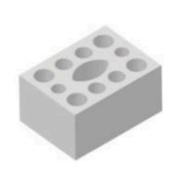
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



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/mm²]	≥ 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



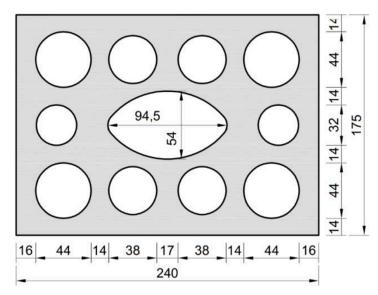


Table C20: Installation parameter

Table 0201 Indianati	o pa								
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	Tinst	[Nm]	≤5 ≤5 ≤8 ≤8 ≤5 ≤8 ≤8						≤ 8
Char. Edge distance	Ccr	[mm]	120	(for shear	loads perp	endicular t	the free	edge: c _{cr} =	240)
Minimum Edge Distance	Cmin	[mm]	60						
Characteristic Specing	Scr, II	[mm]				240			
Characteristic Spacing Scr, ⊥ [mm] Scr, ⊥ [mm]						120			
Minimum Spacing	Smin, II;	[mm]		120					
William Spacing	Smin, ⊥	[]				120			

Table C21: 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	0,30	<u> </u>	60	1,00			
	120	1,00		240	1,00		120	1,00			

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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	ļ	with c ≥	with s ≥	αg⊥, N	
	60 120 1,50	1,50		60	120	1,00		
	120	120	2,00		00	120	1,00	
	120	240	2,00		120	120	2,00	

Table C23: Factors for anchor groups under shear load

3										
	Anchor	Anchor position parallel 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		00	120	0,30		
edge	•	120	240	240 2,00		240	120	2,00		
Shear load	-	with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II		
parallel to the	••	60	120	1,00	•	60	120	1,00		
free edge		120	120	1,60	•	00	120	1,00		
l lice cage		120	240	2,00	4	120	120	2,00		

Table C24: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
			Use condition									
Anchor size	Perforated sleeve	Effecitve Anchorage depth	d/d				d/d w/d w/w					
		erforate E An	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]						
		Normalis	sed mean c	ed mean compressive 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 16	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

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*δΝο	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	,	,		0,31	0,31*V _{Rk} / 3,5	1,5 *δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c \parallel} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow	Calcium silica	brick KSL-8DF
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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



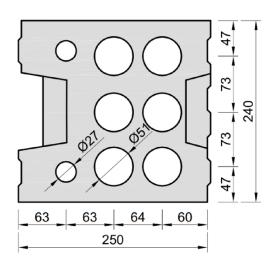


Table C27: Installation parameter

	- Indianation parameter									
Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	Tinst	[Nm]	≤5 ≤5 ≤8 ≤8 ≤5 ≤8 ≤8						≤ 8	
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	Scr, ⊥	[mm]				120				
Minimum Spacing	Smin, II;	[mm]	50							
William Spacing	Smin, ⊥	[[,,,,,,,]				30				

Table C28: Reduction factors for single anchors at the edge

Tension 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	0,30	1 •	50	1,00	
	120	1,00		250	1,00		120	1,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

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	1,00	•	50	50	1,00	
	120	250	2,00		120	120	2,00	

Table C30: 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 ≥	α _g ⊥,ν 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 $s \ge s_{cr}$								
				Use condition								
	eve	Effecitve Anchorage depth					w/d		d/d			
Anchor size	sle	Effecitve Anchorage depth		d/d			w/d					
	g	± 2 ⊅							w/w			
	Perforated sleeve	A B							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	$J_{Rk,b} = N_{Rk,p}$	2)	1	V _{Rk,b} ²⁾					
		[mm]		[kN]								
		Normalis	sed mean d	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

Anchoroiza	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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c | II} = V_{Rk,c} \perp$ 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	$(f_b / 12)^{0.75} \le 1.0$			
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		



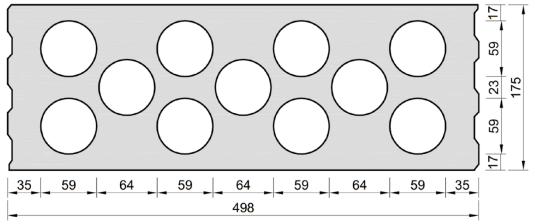


Table C34: Installation parameter

Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[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)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	120 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50						

Table C35: Reduction factors for single anchors at the edge

Tension load	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	0,45	•	50	1,00	
	120	1,00		500	1,00		120	1,00	

Table C36: Factors for anchor groups under tension load

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow calcium silica brick KSL-12DF	Annex C 13
Description of the stone, Installation parameters, Reductionfactors	

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 ≥ $\alpha_{\text{g II,V}\,\perp}$ $\alpha_{\text{g}}\, \bot,\, \text{V}\, \bot$ 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 α_g 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

1 44010 0001 01												
	g l			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
Anchor size		a e		Use condition								
	sleeve	ffecitve ichorag depth		d/d			w/d		d/d			
	<u>8</u>			u/u			w/w		w/w (w/d)			
	ted	Effecitve Anchorage depth							All			
	Perforated		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	2) p	$V_{Rk,b}^{(2)}$				
		[mm]				[kN]						
		Normalis	sed mean c	ompressi	ve strength	f _b ≥ 12 N/	mm² 1)					
M8 / M10/ IG-M6	SH 16	130	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

Ancheroize	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	2,10			0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

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

						•			
		Effective	Characteristic Resistances						
Anabar aiza	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				_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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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	$(f_b / 20)^{0.5} \le 1.0$		
Code		EN 771-1:2011+A1:2015	
Producer (Country)		e.g. Wienerberger (DE)	
Brick dimensions	[mm]	≥ 240 x 115 x 55	
Drilling method		Hammer drilling	

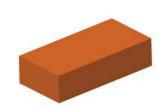


Table C42: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10	
Installation torque T _{inst}		[Nm]	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10	≤ 10
Char. Edge distance	Ccr	[mm]	m] 150 (for shear loads perpendicular to the free edge: $c_{cr} = 24$					240)	
Minimum Edge Distance	Cmin	[mm]	60						
Characteriatic Charing	Scr, II	[mm]	240						
Characteristic Spacing	[mm]	130							
Minimum Spacing	[mm]	65							

Table C43: Reduction factors for single anchors at the edge

7	ension load		Shear load						
'	ension load		Perpendicular to the free edge			Parallel to the free edge			
	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		150	1,00	

Table C44: 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	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 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	65	0,40		60	65	0,30	
to the free		240	65	2,00		240	65	2,00	
edge		240	240	2,00	i	240	130	2,00	
Shoor load	Shear load parallel to the	with c ≥	with s ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II	
parallel to the		60	65	1,75	•	60	65	1,10	
free edge		150	65	2,00	•	150	65	2,00	
l liee eage		150	240	2,00	- 	150	130	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances solid clay brick 1DF Description of the stone, Installation parameters, Reduction- and Group factors	Annex C 15



Brick type: Solid clay brick 1DF									
Table C46: Characteristic values of tension and shear load resistances									
				Charac	cteristic Res	sistances w	rith c≥c _{cr}	and s ≥ s _{cr}	
	40					Use condit	ion		
	eve	age h					w/d		d/d
	s S B	Effecitve Anchorage depth		d/d		w/a w/w			w/d
Anchor size	ted	Fff Anc d							w/w All
	ora 	Perforated sleeve Effecitve Anchorage	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	
	Perf								ranges
		h _{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)	1	$N_{Rk,b} = N_{Rk,b}$	2) p	$V_{Rk,b}^{(2)}$
		[mm]	[kN]						
		Normalis	sed mean c	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	. 05	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	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	0,1	0,1*N _{Rk} / 3,5	2*δN0	0,3	0,3*V _{Rk} / 3,5	1,5*δνο
M16	all	,		= 3110	0,1	0,1*V _{Rk} /3,5	1,5*δνο

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

Solid clay brick Mz- 2DF		
≥ 2,0		
≥ 28		
$(f_b / 28)^{0,5} \le 1,0$		
EN 771-1:2011+A1:2015		
e.g. Wienerberger (DE)		
≥ 240 x 115 x 113		
Hammer drilling		

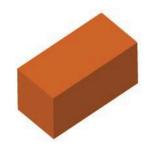


Table C49: Installation parameter

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	0 (0 %)	[mm]				150 (2 h _{ef})		
(under fire conditions)	C _{cr;} (C _{cr,fi})	[[[]]]	(for shear loads perpendicular to the free 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

Tension load			Shear load perpendicular to 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		50	1.00
	150 ¹⁾	1,00		125	0,50	Ţ	50	1,00
	180	1,00		240	1,00]	150	1,00

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

Table C51: 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 ≥	$lpha_g oldsymbol{\perp}$, N	
1	50 ¹⁾	50	1,50		50 ¹⁾	50	0,80	
150 ¹⁾	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		180 ²⁾	100	2.00	
	240 ²⁾	240	2,00			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 perpendicular to the free edge		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	$\alpha_{g\perp}, v_{\perp}$	
		50	50	0,40		50	50	0,20	
	240	50	1,20		240	50	0,60		
		240 240	240	2,00		240	125	1,00	
Leage			2,00		240	240	2,00		
Shear load	1	with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II	
parallel to the free edge	• •	50	50	1,20	•	50	50	1,00	
			240	2,00	•	50	125	1,00	
		150	150 240			150	240	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

Tuble 666. Characteristic values of terioren and shear road resistances												
		Effective Anchorage depth		Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
			Use condition									
Anchor size	Perforated sleeve		d/d			w/d w/w			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}	$N_{Rk,b} = N_{Rk,p}$			1	$V_{Rk,b} = N_{Rk,b}$	2) p	V _{Rk,b} ²⁾			
		[mm]		[kN]								
	Normalised mean compressive strength f _b ≥ 28 N/mm ^{2 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	0.0	0.0	7.5	0.0	0.0	7.5	0.5			
M8 / M10/ IG-M6	SH 16	≥ 85	9,0	9,0	7,5	9,0	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	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	0,1	0,1*N _{Rk} / 3,5	2*δΝο	0,3	0,3*V _{Rk} / 3,5	1,5*δνο
M16	all	,	-, -, -, -, -	2 0110	0,1	0,1*V _{Rk} /3,5	1,5*δvo

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

						•			
			Characteristic Resistances						
Anchor size	Perforated	Anchorage depth	$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$						
Andrior size	sleeve	h_{ef}	R30	R60	R90	R120			
		[mm]	[kN]						
M8	-	80							
M10 / IG-M6	-	≥ 90	0.51	0,44	0,36	0,33			
M12 / IG-M8	-	≥ 100	0,51	0,44	0,30	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	SH 16	130	0,92	0,74	0,57	0,49			
M12 / M16 /	CH 20	≥ 85	0,36	0,26	0,15	0,10			
IG-M8 /IG-M10	SH 20	≥ 130	0,92	0,74	0,57	0,49			

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances solid clay brick 2DF Characteristic Resistances and Displacements	Annex C 18

²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \mid I} = V_{Rk,c} \perp$ 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	



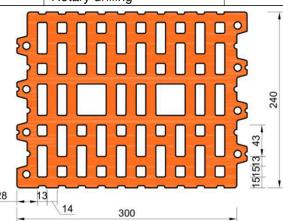


Table C57: Installation parameter

	•										
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)	c _{cr,fi}) [mm] (for shear loads perpo					120 (2 h _{ef}) endicular to the free edge: c _{cr} = 300)				
Minimum Edge Distance	Cmin	[mm]	m] 50								
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]			;	300 (4 h _{ef})				
(under fire conditions)	[mm]	250 (4 h _{ef})									
Minimum Spacing	Smin, II; Smin, ⊥	[mm]		• • • • • • • • • • • • • • • • • • • •							

Table C58: Reduction factors for single anchors at the edge

Tension load					Shea	ır load			
<u>'</u>	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	0,20	 	50	1,00	
	120	1,00		300	1,00	-	120	1,00	

Table C59: Factors for anchor groups under tension load

An	chor position p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$lpha_{g\perp}$, N	
• •	50	50	1,55		50	50	1,00	
	120	300	2,00		120	250	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances hollow clay brick HLZ 10DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 19

Table C61:



Brick type: Hollow clay brick 10 DF												
Table C60:	Factors for anchor groups under shear load											
	Anchor	Anchor position parallel 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	0,30		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				

				Charac	cteristic Res	sistances w	vith c≥c _{cr} a	and s ≥ s _{cr}	
		d sleeve ffective chorage depth				Use condit	ion		
	sleev		d/d				w/d w/w		d/d w/d w/w
Anchor size	erforated	Eff Anc d	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
		hof	_	Janus – Naus	2)		Nous - Nou	2)	V _{P1+1} 2)

Characteristic values of tension and shear load resistances

		[mm]		[kN]							
Normalised mean compressive strength f _b ≥ 20 N/mm ^{2 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) Far lawer compre		watha waai	atamaaa ma	نا منال بمم مط	ad b., tba aa.			to Toble OF	C For stones		

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

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

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	1 SH 20		0,57	0,39	0,21	0,12				

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick HLZ 10DF Group factors, characteristic Resistances and Displacements	Annex C 20

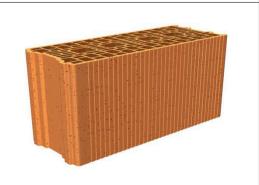
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c | II} = V_{Rk,c} \perp$ according to Annex C 3



Brick type: Hollow Clay brick Porotherm Homebric

Table C64: Stone description

Brick type		Hollow clay brick Porotherm Homebric
Density	ρ [kg/dm³]	≥ 0,70
Normalised mean compressive strenght	f _b [N/mm²]	≥ 10
Conversion factor for low strengths	ver compressive	$(f_b / 10)^{0.5} \le 1.0$
Code		EN 771-1:2011+A1:2015
Producer (Country)		e.g. Wienerberger (FR)
Brick dimensions	[mm]	500 x 200 x 300
Drilling method		Rotary drilling



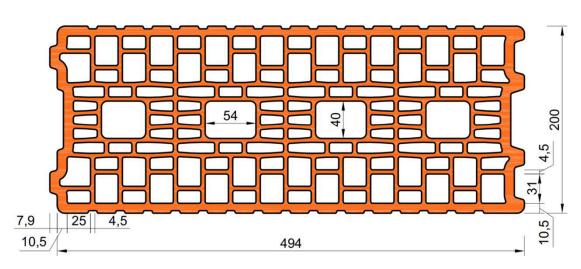


Table C65: Installation parameter

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 (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	[mm]	300							
Minimum Spacing	[mm]	120							
g	Smin, ⊥	[]				0			

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				
1	with c ≥	αedge, N	1	with c ≥	αedge, V⊥		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		

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 Anchor position parallel to hor. joint Anchor position perpendicular to hor. joint with $c \ge with s \ge \alpha_{g \text{ II}, N}$ with $c \ge with s \ge \alpha_{g \text{ II}, N}$ 120 120 120 120 120 120 120 130

 with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, 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

	5											
	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	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				2,00				
Shear load		with c ≥	with s ≥	αg II,V II		with c ≥	with s ≥	αg ⊥,V II				
parallel to the free edge	• •	120	100	1,00	1	120	100	1,00				
		120	500	2,00		120	300	2,00				

Table C69: Characteristic values of tension and shear load resistances

				Charac	cteristic Res	sistances w	rith c≥c _{cr} a	and s ≥ s _{cr}				
		Effective Anchorage depth	Use condition									
Anchor size	Perforated sleeve		d/d			w/d w/w			d/d W/d w/w		d/d w/d w/w	
	rate	무							All			
	Perfo	erto	40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C				
									ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			1	$V_{Rk,b}^{(2)}$					
		[mm]				[kN]						
		Normalis	sed 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	30 10	130		1,5					3,5			
M12 / M16/	M12 / M16/				1,	2			4,0			
IG-M8 / IG-M10	SH 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

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	,	,	_ = 1.10	0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c|II} = V_{Rk,c} \perp$ 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

CodeEN 771-1:2011+A1:2015Producer (Country)e.g. Leroux (FR)Brick dimensions[mm]500 x 200 x 314Drilling methodRotary drilling



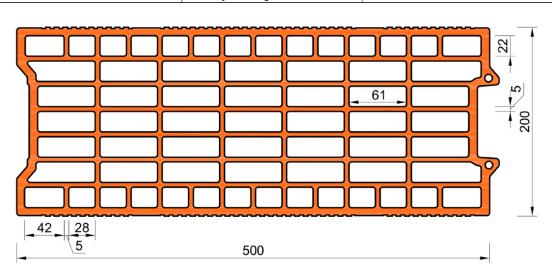


Table C72:	Installation	narameter

Table O/ 21 Indianati	o pa										
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 (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]		315							
Minimum Spacing	Smin, II;	[mm]		120							
- William Spacing	Smin, ⊥	נייייין		120							

Table C73: Reduction factors for single anchors at the edge

Tension load			Shear load							
'	ension load		Perpendic	ular to the fre	ee edge	Parallel to the free edge				
+	with c ≥	αedge, N	1	with c ≥	αedge, V⊥		with c ≥	αedge, V II		
•	120	1,00	-	120	0,30		120	0,60		
	120	1,00	1,00	250	0,60	Į Į	120	0,00		
·	120	1,00	+	500	1,00		250	1,00		

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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			
1	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, 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

1	Table 6.6. Table 16. anone groups and a rough											
	Anchor	position pa	rallel to hor.	. joint	Anchor p	Anchor position perpendicular to hor. joint						
Shear load		with c ≥	with s ≥	αg II,V ⊥		with c ≥	with s ≥	$\alpha_g \perp$, $\vee \perp$				
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

			Characteristic Resistances with c ≥ c _{cr} and s ≥ s _{cr}								
		Effective Anchorage depth	Use condition								
Anchor size	Perforated sleeve		d/d				d/d w/d w/w				
									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}	$N_{Rk,b} = N_{Rk,p}^{2}$			1	$N_{Rk,b} = N_{Rk,j}$	2) p	$V_{Rk,b}^{(2)}$		
		[mm]				[kN]					
		Normalis	sed mean d	compressi	ve strength	f _b ≥ 10 N/	mm² 1)				
M8	SH 12	80			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					4,0		
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

	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*δ∨0

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick BGV Thermo Group factors, characteristic Resistances and Displacements	Annex C 24

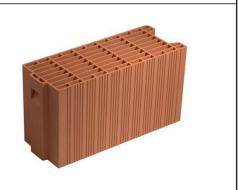
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c \, II} = V_{Rk,c} \perp$ according to Annex C 3



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/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. Leroux (FR)
Brick dimensions	[mm]	500 x 200 x 314
Drilling method		Rotary drilling



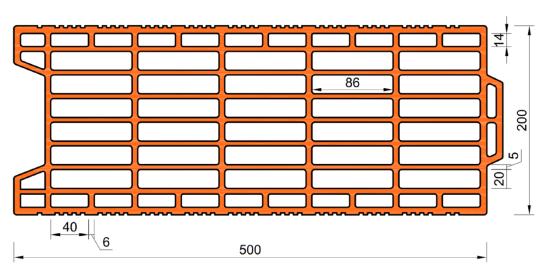


Table C79: Installation parameter

Table 0.0. Instantation parameter											
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]	m] 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								
Smin, 1		[]				0					

Table C80: Reduction factors for single anchors at the edge

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	/

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

An	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 ≥	α _{g ⊥, 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

<u> </u>									
	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 ≥	$\alpha_g \perp$, $\vee \perp$	
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 C83: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
Anabaraina	Perforated sleeve	Effective Anchorage depth			w/d w/w			d/d w/d w/w			
Anchor size	rate	Ar							. All		
	<u></u> و		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		
) el								ranges		
		h _{ef}	1	$N_{Rk,b} = N_{Rk,p}$	2)	ı	$N_{Rk,b} = N_{Rk,i}$	2) p	$V_{Rk,b}^{(2)}$		
		[mm]				[kN]					
		Normalis	sed mean	compressi	ve strengt	h f _b ≥ 12 N	/mm² 1)				
M8	SH 12	80	1,2	1,2	0,9	1,2	1,2	0,9	4,0		
M8 / M10/	SH 16	≥ 85	1,2	1,2	0,9	1,2	1,2	0,9	5,5		
IG-M6	SH 16	130	1,5	1,5	1,2	1,5	1,5	1,2	5,5		
M12 / M16	SH 30	≥ 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	,	,	_ = 5.16	0,31	0,31*V _{Rk} / 3,5	1,5*δνο

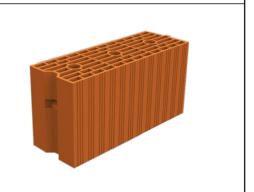
Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow Clay brick Calibric R+ Group factors, characteristic Resistances and Displacements	Annex C 26

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



Brick type: Hollow Clay brick Urbanbric Table C85: Stone description

Brick type		Hollow clay brick Urbanbric
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. Imerys (FR)
Brick dimensions	[mm]	560 x 200 x 274
Drilling method		Rotary drilling
I		



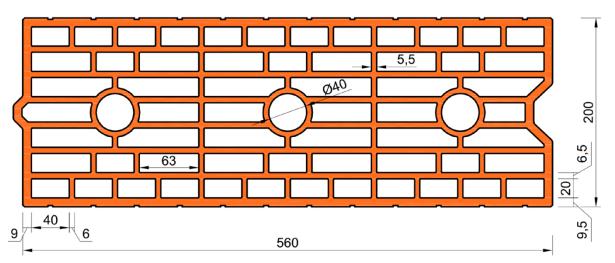


Table C86: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	T _{inst}	[Nm]	≤2 ≤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]	560							
Characteristic Spacing	Scr, ⊥	[mm]	275							
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	100							

Table C87: Reduction factors for single anchors at the edge

Tension load			Shear load						
'	ension load		Perpendicular to the free edge Parallel to the			ge Parallel to the free edge		edge	
1	with c ≥	αedge, N	!1	with c ≥	αedge, V⊥		with c ≥	αedge, V II	
	120	1,00		120	0,25	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	120	0,50	
	120	1,00		250	0,50	Į Į	120	0,50	
	120	1,00	1	500	1,00		250	1,00	

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 p	arallel to hor. jo	oint	Anchor position perpendicular to hor. joint				
11	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$\alpha_g \perp$, N	
	120	100	1,00		120	100	1,00	
	185	100	1,90		185	100	1,10	
· parameter de la constant	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		with c ≥	with s ≥	α _g II,V ⊥		with c ≥	with s ≥	$\alpha_g \perp$, $\vee \perp$
perpendicular to the free	•••	120	100	1,00	-	120	100	1,00
edge		120	560	2,00		120	275	2,00
Shear load		with c ≥	with s ≥	α _g 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	560	2,00		120	275	2,00

Table C90: 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		d/d			d/d w/d w/w					
Anchor size	erforate	A E	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	$N_{Rk,b} = N_{Rk,p}^{2}$		1	$V_{Rk,b}^{(2)}$					
		[mm]				[kN]						
		Normalis	ed mean c	ompressi	ve strength	f _b ≥ 12 N/	mm² 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	30 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	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 *δN0	0,55	0,55*V _{Rk} / 3,5	1,5*δνο
M16	all	,	,,	_ = 0.10	0,31	0,31*V _{Rk} / 3,5	1,5 *δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c | I} = V_{Rk,c} \perp$ 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	$(f_b / 12)^{0.5} \le 1.0$		
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	



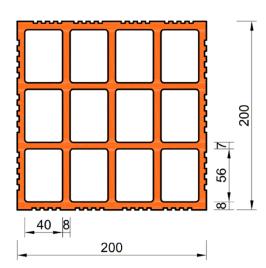


Table C93: Installation parameter

Anchor size			M8	M10	M12	M16	IG-M6	IG-M8	IG-M10
Installation torque	T _{inst}	[Nm]] \(\leq 2 \) \(\					≤ 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]				200			
Minimum Spacing	Smin, II;	[mm]	200						
Williman Spacing	Smin, ⊥	[[,,,,,,,]	200						

Table C94: Reduction factors for single anchors at the edge

Tension load	k		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
•	120	1,00		120	0,83	1 !	120	1,00
	120	1,00		500	1,00		250	1,00

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick Brique Creuse C40 Description of the stone, Installation parameters, Reductionfactors	Annex C 29



Brick type:	Hollo	w Cla	av brick	Brid	ane d	creuse	e C	40								
Table C95:			r ancho		-				loa	d						
			arallel to								nor po	ositio	n perper	ndicul	ar to hor.	joint
	with		with s		Т	λg II, N						with			ıs≥	α _{g ⊥, N}
••	120	0	500)		2,00		120)	2	00	2,00			
Table C96:	Facto	ors fo	r ancho	r gro	ups	under	she	ear lo	oad							
		Ancho	r position	n para	llel to	hor. joi	nt			Α	ncho	r pos	ition per	pendi	cular to l	nor. joint
Shear load			with c	≥ with s ≥		; ≥	αg II,	V⊥	1 [with c ≥	١ ١	with s ≥	α _{g ⊥} , v ⊥
perpendicular to the free edge		•••	120		500		2,0	0		•		120		200	2,00	
Shear load			with c	≥	with s	; ≥	αg II,	V II					with c ≥	\	with s ≥	αg ⊥,V II
parallel to the free edge		• •	120		500		2,0	0			ļ		120		200	2,00
Table C97: Characteristic values of tension and shear load resistances																
						Cha	arac	terist	tic R	esi	stanc	es w	ith c≥c	_{cr} and	ls≥s _{cr}	
	Use condition															
		d sleeve	Effective Anchorage depth	d/d							w/d w/w				d/d w/d w/w	
Anchor size		Perforated sleeve	A P	40°C/24°C 80°C		80°C/50	0°C			·C			80°C/50°	°C 12	0°C/72°C	All temperature ranges
			h _{ef}		Ν	$J_{Rk,b} = N$	l _{Rk,p}	2)				١	$N_{Rk,b} = N$	2) Rk,p		$V_{Rk,b}^{(2)}$
			[mm]									۸]_				
			Normalis	ed m	ean c	ompre	ssiv	/e sti	reng	th	f _b ≥ 1	12 N/	mm² 1)			
M8	S	H 12	80													
M8 / M10/ IG-M6	S	H 16	≥ 85	1	,2	1,2		0,9		1,2		2	1,2		0,9	1,5
M12 / M16 / IG-M8 / IG-M1	0	H 20	≥ 85													
 For lower cor with higher st N_{Rk,b,c} = N_{Rk,p} 	rengths ,c and V	s, the sl / _{Rk,c II} =	hown valu V _{Rk,c} ⊥ac	es are	valid v	without o	conv			onv	ersior/	n fact	or accord	ing to	Table C9	2. For stones
Table C98:	Disp	lacem	Ι.													
Ancho	r size		hef		N / N		δN		_		√∞ .m.1		/ / V		δV0	δ∨∞
M8 – N	M12 /		[mm]	Lin	m/kN]		[mr	Ш		[III]	ım]		n/kN]		[mm]	[mm]
IG-M6 -	– M10		all	_ (0,13	0,13	3*N _F	_{Rk} / 3,	,5	2*8	5N0		,55		*V _{Rk} / 3,5	, , , , , , ,
M1	all									0	,31	0,31	*V _{Rk} / 3,5	5 1,5*δνο		
Mungo Injection Performances Group factors, ch	hollo	w clay	brick B	rique	Creus	se C40		s for	mas	on	nry		-	A	nnex 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/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. Wienerberger (IT)
Brick dimensions	[mm]	250 x 120 x 250
Drilling method		Rotary drilling



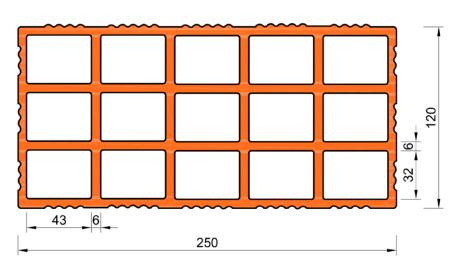


Table C100: Installation parameter

Table 0100. Illotaliati	on pan	unicici								
Anchor size		[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10	
Installation torque	Tinst	[Nm]	≤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]	-							
Minimum Spacing	Smin, II;	[mm]	100							
·······	Smin, ⊥	[]								

Table C101: 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	0,40	1 •	60	0,40			
	120	1,00		250	1,00		120	1,00			

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

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 ≥	$lpha_{g\perp}$, 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 perpendicular to the free edge	-	with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{g\perp,V\perp}$		
		60	100	0,40		60	100	0,40		
		250	100	1,00		250	100	1,00		
	1	250	250	2,00		250	250	2,00		
Shear load		with c ≥	with s ≥	α _g II,V II	1	with c ≥	with s ≥	α _{g ⊥,} ν II		
parallel to the	••	60	100	0,40	•	60	100	0,40		
free edge		120	100	1,00		120	100	1,00		
		120	250	2,00		120	250	2,00		

Table C104: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$										
		Effective Anchorage depth	Use condition										
Anchor size	d sleeve			d/d			d/d w/d w/w						
	Perforated sleeve	An	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	$N_{Rk,b} = N_{Rk,p}^{2}$			$N_{Rk,b} = N_{Rk,p}$	2) p	$V_{Rk,b}^{(2)}$				
		[mm]				[kN]							
		Normalis	sed mean d	ompressi	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

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*δΝ0	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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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/dm³]	≥ 0,90
Normalised mean compressive strenght	f _b [N/mm²]	≥ 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



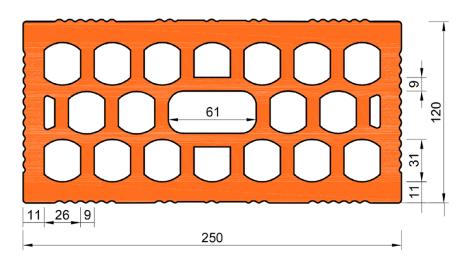


Table C107: Installation parameter

Anchor size				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]	100									
Characteristic Spacing	Scr, II	[mm]	250									
Characteristic Spacing	Scr, ⊥	[mm]				120		≤ 2				
Minimum Spacing	Smin, II;	[mm]		100								
Willimum Spacing	Smin, ⊥	[111111]		100								

Table C108: Reduction factors for single anchors at the edge

Tension load			Snearload						
'	ension load		Perpendicular to the free edge			Parallel to the free edge			
	with c ≥	αedge, 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	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for maso	nry
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 ≥	$lpha_{g\perp,N}$
• •	100	100	1,00		100	120	2,00
	120	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 ≥	with s ≥	α _g II,V ⊥		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 ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,} ν II
parallel to the free edge		100	100	1,00		100	100	1,00
		120	250	2,00		120	120	2,00

Table C111: 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		
	sle	Effective Anchorage depth		d/d			w/w		w/d		
Anchor size	l g	# 5 A							w/w		
Anchor size	ate	Ā							All		
	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	temperature		
									ranges		
	h _{ef}		$N_{Rk,b} = N_{Rk,p}^{2}$			1	$N_{Rk,b} = N_{Rk,i}$	2) p	$V_{Rk,b}^{(2)}$		
		[mm]				[kN]					
		Normalis	sed mean d	compressiv	ve strength	f _b ≥ 28 N/	mm² 1)				
M8	SH 12	80									
M8 / M10/	SH 16	≥ 85									
IG-M6	511 10	_ 00	1,2	1,2	0,9	1,2	1,2	0,9	2,5		
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 85									
1) = .		·			1		·				

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

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*δvo
M16	all	,	,	_ = 1.10	0,31	0,31*V _{Rk} / 3,5	1,5*δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c \, II} = V_{Rk,c} \perp$ 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/mm²]	≥ 6
Conversion factor for lowe strengths	er 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



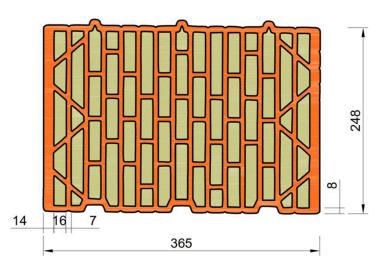


Table C114: Installation parameter

Table 61111 Indianation 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]	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							
Willimani Spacing	Smin, ⊥	[111111]				30				

Table C115: Reduction factors for single anchors at the edge

Tension load			Shear load							
'	ension load	Perpendicular to the free edge Paral				Parallel to the free 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		

Mungo Injection System	MIT-SE Plus or MIT-COOL	Plus for masonry

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

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	1,50		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 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 ≥	αg 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 $s \ge s_{cr}$									
		Effective Anchorage depth		Use condition								
Anchor size	d sleeve			d/d		w/d w/w			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}	$N_{Rk,b} = N_{Rk,p}^{2)}$			1	$N_{Rk,b} = N_{Rk,p}$	2)	$V_{Rk,b}^{(2)}$			
		[mm]				[kN]						
		Normali	sed mean compressive strength f _b ≥ 6 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										

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

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	,	,		0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c \, II} = V_{Rk,c} \bot according to Annex C 3$



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



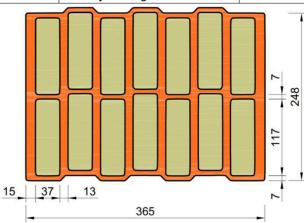


Table C121: Installation parameter

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 s)	[mm]				120 (2 h _{ef})		
(under fire conditions)	Ccr; (Ccr,fi)	[mm] (for shear loads perpendicular to the free edge: $c_{cr} = 2$							= 250)
Minimum Edge Distance	C _{min}	[mm]				50			
Characteristic Spacing	Scr, II; (Scr,fi, II)	[mm]				250 (4 h _{ef})		
(under fire conditions)	$S_{cr, \perp; (S_{cr,fi, \perp})}$	[mm]	m] 250 (4 h _{ef})						
Minimum Spacing $s_{min, ll}$; $s_{min, \perp}$ [mm] 50									

Table C122: Reduction factors for single anchors at the edge

Tension load			Shear load							
'	ension 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	0,35	•	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 ≥	$\alpha_{g\perp}$, N	
• •	50	50	1,40	•	50	50	1,15	
	120	250	2,00		120	250	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances hollow clay brick T7 MW with insulation

Description of the stone, Installation parameters, Reductionfactors

Annex C 37

free edge



120

250

2,00

Brick type:	Brick type: Hollow clay brick T7 MW with insulation												
Table C124: Factors for anchor groups under shear load													
	Anchor	Anchor position parallel 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	0,60		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 ≥	αg ⊥,V II					
parallel to the	• •	50	50	2.00	1	50	50	1.20					

2,00

Table C125: Characteristic values of tension and shear load resistances

250

120

				Charac	teristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}				
				Use condition								
	Perforated sleeve	Effective Anchorage depth					w/d		d/d			
	l se	ffectiv ichora depth		d/d			w/u w/w		w/d			
Anchor size	000	Effective inchoragi depth					w/w					
Andrior Size	ate	ΑĀ							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			
e)er								ranges			
	_	h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			1	$N_{Rk,b} = N_{Rk,b}$	2) p	$V_{Rk,b}^{(2)}$			
		[mm]		[kN]								
		Normali	sed mean o	compressi	ve strengtl	n f _b ≥8 N/n	nm² ¹⁾					
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	0.0	0.0	4.5		0.0		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 C120. For stones with higher strengths, the shown values are valid without conversion.

Table C126: Displacements

Anchor size	hef	δη / Ν	δΝο	δN∞	δv / V	δνο	δ∨∞
Afficitor 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 C127: Characteristic values of tension and shear load resistances under fire exposure

		Effecitve	Effecitve Characteristic Resistances						
Anghar siza	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	0,64	0,37	0,11	_1)			

¹⁾ no performance assessed

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick T7 MW with insulation Group factors, characteristic Resistances and Displacements	Annex C 38

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 T8 P with insulation

Table C128: Stone description

	Hollow clay brick T8 P
	Perlite
kg/dm³]	≥ 0,56
N/mm²]	≥ 6
mpressive	$(f_b / 6)^{0,5} \le 1,0$
	EN 771-1:2011+A1:2015
	e.g. Wienerberger (DE)
m]	248 x 365 x 249
	Rotary drilling
	N/mm²] mpressive



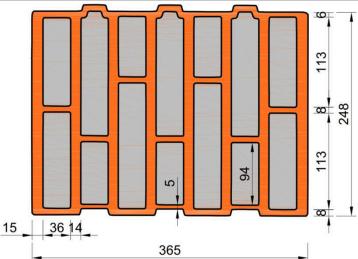


Table C129: Installation parameter

Table Cizer inicianati	o pa.	41110101								
Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	Tinst	[Nm]	≤ 4	≤4 ≤4 ≤10 ≤10 ≤4 ≤4 ≤4						
Char. Edge distance	Ccr	[mm]	120	(for shear	loads perp	endicular t	o the free e	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, ⊥	[[,,,,,,]				30				

Table C130: Reduction factors for single anchors at the edge

Description of the stone, Installation parameters, Reductionfactors

Tension load				Shear load							
rension 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			

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick T8 P with insulation	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	Ancho	or position perp	endicular to ho	r. joint
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	$lpha_{g\perp}$, 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	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 ≥	$\alpha_{\text{g}}\bot,\text{v}\bot$	
perpendicular	•••	50	50	0,40		50	50	0,30	
		250	50	1,35		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 free edge	•	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

		Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$										
			Use condition									
Analaguaiga	d sleeve	Effective Anchorage depth	d/d				d/d w/d w/w					
Anchor size	Perforated sleeve	erforate E An	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}	$N_{\text{Rk,b}} = N_{\text{Rk,p}}^{2)}$			1	V _{Rk,b} ²⁾					
		[mm]				[kN]						
	_	Normali	sed mean o	compressi	ve strengtl	n f _b ≥ 6 N/n	nm² 1)					
M8	SH 12	80										
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∨∞
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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c \mid I} = V_{Rk,c} \perp$ 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



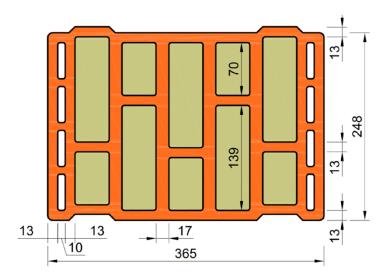


Table C136: Installation parameter

Table Creek moteriati	on pan	41110101							
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 perp	endicular t	the free	edge: c _{cr} =	250)
Minimum Edge Distance	Cmin	[mm]				50			
Characteristic Specing	Scr, II	[mm]				250			
Characteristic Spacing $s_{cr, \perp}$ [mm] 250									
Minimum Spacing	Smin, II;	[mm]				50			
William Spacing	Smin, ⊥	[111111]				30			

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		

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick Thermoplan MZ90-G with insulation Description of the stone, Installation parameters, Reductionfactors	Annex C 41



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	Anchor position perpendicular to hor. joint				
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, 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	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	0,75		50	50	0,50	
		250	50	2,00		250	50	1,70	
		250	250	2,00	1	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

				Charac	teristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}			
		Effective 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		
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2}$			1	V _{Rk,b} ²⁾				
		[mm]				[kN]					
		Normalis	ed 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

Anghar aiza	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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 lowe 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



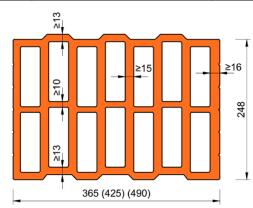


Table C143: Installation parameter

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)	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]			:	250 (4 h _{ef})		
(under fire conditions)	Scr, ⊥; (Scr,fi, ⊥)	[mm]	250 (4 h _{ef})						
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50						

Table C144: 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	1	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 ≥	$lpha_{g\perp}$, N	
• •	50	50	1,40		50	50	1,15	
	120	250	2,00		120	250	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

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

Annex C 43

free edge



120

250

2,00

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 with c ≥ with s ≥ with c ≥ with s ≥ lphag II,V $oldsymbol{\perp}$ $\alpha_{\text{g}}\, \bot,\, \text{V}\, \bot$ Shear load 50 50 0,60 50 50 0,40 perpendicular to the free 250 50 1,55 250 50 1,00 edge 250 250 2,00 250 250 2,00 with s ≥ with c ≥ 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 C147: Characteristic values of tension and shear load resistances

250

120

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
				Use condition								
	Perforated sleeve	Effective Anchorage depth					w/d		d/d			
	Se Se	ffectiv ichora depth		d/d			w/u w/w		w/d			
Anchor size	ğ	e de					w/w					
Alichol Size	ate	Ā							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			
	Pel								ranges			
		h _{ef}	$N_{Rk,b} = N_{Rk,p}^{2)}$			N	$N_{Rk,b} = N_{Rk,p}$	2)	$V_{Rk,b}^{(2)}$			
		[mm]				[kN]						
		Normali	sed mean d	compressi	ve strengtl	h f _b ≥8 N/n	nm² ¹⁾					
M8	SH 12	80										
M8 / M10/ IG-M6	SH 16	≥ 85	20	2.0	1.5	2.0		1.5	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 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*δΝ0	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 C149: 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		R30	R60	R90	R120			
				[kN]					
M8 / M10 /IG-M6	SH 16	130							
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,64	0,37	0,11	_1)			

¹⁾ no performance assessed

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c|II} = V_{Rk,c} \perp according to Annex C 3$



Brick type: Hollow clay brick Poroton FZ9 with insulation

Table C150: Stone description

	Hollow clay brick Poroton FZ9		
	Rock wool		
ρ [kg/dm³]	≥ 0,90		
f _b [N/mm ²]	≥ 10		
Conversion factor for lower compressive strengths			
	EN 771-1:2011+A1:2015		
	e.g. Schlagmann (DE)		
[mm]	248 x 365 x 249		
	Rotary drilling		
	f _b [N/mm²] r compressive		



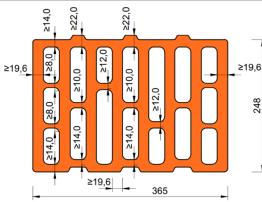


Table C151: Installation parameter

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	Ccr; (Ccr,fi)	[mm]				120 (2 h _{ef}	,						
(under fire conditions)	Ger; (Ger, 11)	[[,,,,,,,]	(for s	hear load	s perpen	dicular to	the free 6	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)	$S_{cr, \perp;}(S_{cr,fi, \perp})$	[mm]	250 (4 h _{ef})										
Minimum Spacing	Smin, II; Smin, ⊥	[mm]	50										

Table C152: 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] <u>+</u>	50	1,00	
	120	1,00		250	1,00		120	1,00	

Table C153: 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 ≥	α _{g ⊥, N}
• •	50	50	1,40		50	50	1,15
	120	250	2,00		120	250	2,00

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 pa	rallel to hor.	joint	Anchor p	nchor position perpendicular to hor. joint with $c \ge with s \ge \alpha_{g \perp, V \perp}$		
Shear load	-	with c ≥	with s ≥	α _g II,V ⊥	1	with c ≥	with s ≥	$\alpha_{\text{g}\perp,\text{V}\perp}$
perpendicular	•••	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 ≥	α _g II,V II		with c ≥	with s ≥	α _{g ⊥,V II}
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

145.0 0.001 0.			400 O. 10.		011041 104	u . 00.0tu.					
				Charac	teristic Res	istances w	ith c≥c _{cr} a	and s ≥ s _{cr}			
	40			Use condition							
	Perforated sleeve	Effective Anchorage depth					w/d		d/d		
	sle	ffectiv ichora depth		d/d		w/w			d/d w/d w/w All		
Anchor size	<u>8</u>							Г	W/W		
7 (1101101 0120	ate	₽ ₹									
	Į į		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								w/d w/w All temperature ranges V _{Rk,b} ²⁾		
	"		$N_{Rk,b} = N_{Rk,p}^{2)}$			N	$N_{Rk,b} = N_{Rk,p}^{(2)}$				
		[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	2.0	2.0	1.5	0.0	0.0	1.5	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	δΝ0	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

Table C157: 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		R30	R60	R90	R120			
				[kN]					
M8 / M10 /IG-M6	SH 16	130							
M12 / M16 / IG-M8 IG-M10	SH 20	≥ 130	0,64	0,37	0,11	_1)			

¹⁾ no performance assessed

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick Poroton FZ9 with insulation Group factors, characteristic Resistances and Displacements	Annex C 46

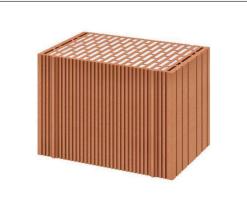
²⁾ $N_{Rk,b,c} = N_{Rk,p,c}$ and $V_{Rk,c|l} = V_{Rk,c} \perp$ according to Annex C 3



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



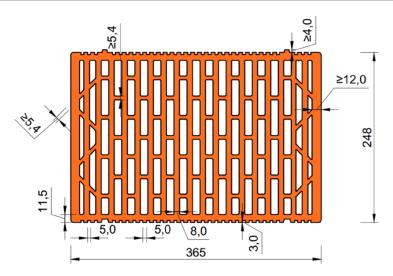


Table C159: Installation parameter

Tubic 0100. Illotaliati	Tuble 0100. Installation parameter										
Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10			
Installation torque	T _{inst}	[Nm]						≤ 5			
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, II;	[mm]	50								
William Spacing	Smin, ⊥	[[,,,,,,]	50								

Table C160: Reduction factors for single anchors at the edge

Tension 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	0,30	1 •	50	1,00			
	120	1,00		250	1,00		120	1,00			

Mungo Injection System	MIT-SE Plus or MIT-COOL	Plus 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 ≥	α _{g ⊥, 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 ≥	$\alpha_{\text{g}}\bot,\text{v}\bot$
	•••	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 free edge	•	50	50	1,65		50	50	1,00
		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 $s \ge s_{cr}$										
				Use condition									
Anchor size	Perforated sleeve	Effective Anchorage depth					w/d		d/d				
	se	ffectiv ichora depth		d/d			w/w		w/d				
	D D	풀달하							w/w				
	ate	ΑĀ							All				
	l ĝ		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				
) et								ranges				
		h_{ef}	N	$J_{Rk,b} = N_{Rk,p}$	2)	N	$N_{Rk,b} = N_{Rk,p}^{2}$						
		[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	1,5	1,5	1,5	1,5	1,5	1,5	5,0				
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 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*δvo
M16	all	,		_ = 5110	0,31	0,31*V _{Rk} / 3,5	1,5 *δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $V_{Rk,c \, II} = V_{Rk,c} \bot according to Annex C 3$



Brick type: Hollow clay brick Thermopor TV8+ with insulation

Table C165: Stone description

	-		
Brick type		Hollow clay brick Thermopor TV8+	
Insulation material		Rock wool	
Density	ρ [kg/dm³]	≥ 0,70	
Normalised mean compressive strenght	f _b [N/mm²]	≥ 10	
Conversion factor for lowe strengths	$(f_b / 10)^{0,5} \le 1,0$		
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	



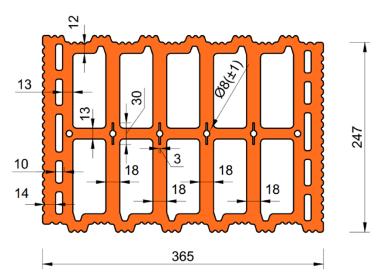


Table C166: Installation parameter

Table 0100. 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]				250				
Minimum Spacing	Smin, II;	[mm]	50			50	50			
Williman Spacing	Smin, ⊥	[]	30							

Table C167: Reduction factors for single anchors at the edge

Tension 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	0,25	<u> </u>	50	1,00		
	120	1,00		250	1,00		120	1,00		

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry	
Performances hollow clay brick Thermopor TV8+ with insulation	Annex C 49
Description of the stone Installation parameters. Reduction factors	



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	Ancho	or position perp	endicular to ho	r. joint
	with c ≥	with s ≥	αg II, N		with c ≥	with s ≥	α _{g ⊥, 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 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	0,75		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 C170: Characteristic values of tension and shear load resistances

				Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$								
	0	Effective Anchorage depth	Use condition									
Anchor size	d sleeve		d/d			w/d w/w			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 L	h _{ef}	$N_{Rk,b} = N_{Rk,p}^{(2)}$			1	$N_{Rk,b} = N_{Rk,j}$	2) p	V _{Rk,b} ²⁾			
		[mm]				[kN]						
		Normalis	ed 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∨∞
	[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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

	Hollow light weight concrete brick HBL 16DF			
ρ [kg/dm³]	≥ 1,0			
f _b [N/mm²]	≥ 3,1			
Conversion factor for lower compressive strengths				
	EN 771-3:2011+A1:2015			
	e.g. KLB Klimaleichtblock (DE)			
[mm]	500 x 250 x 240			
	Rotary drilling			
	f _b [N/mm²] er compressive			



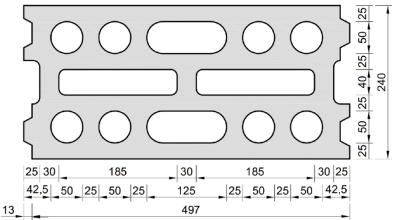


Table C173: Installation parameter

Anchor size			M8	M10	M12	M16	IG-M6	IG-M8	IG-M10		
Installation torque	T _{inst}	[Nm]	≤ 2	≤ 2	≤ 5	≤ 5	≤ 2	≤ 5	≤ 5		
Char. Edge distance	C _{cr;} (C _{cr,fi})	[mm]				120 (2 h _{ef}	,				
(under fire conditions)	Ger; (Ger, ii)	[[,,,,,,,]	(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							
'	rension 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 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 ≥	$\alpha_{g\perp,N}$
• •	50	50	2,00		50	50	1,55
	120	500	2,00		120	250	2,00

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances hollow light weight concrete brick HBL 16DF

Description of the stone, Installation parameters, Reductionfactors

Annex C 51

free edge



120

250

2,00

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 c ≥ with s ≥ lphag II,V $oldsymbol{\perp}$ $\alpha_{\text{g}}\, \bot,\, \text{V}\, \bot$ Shear load 50 50 0,60 50 50 0,35 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 1,30 50 parallel to the 50 1,00 50 120 250 2,00

2,00

Table C177: Characteristic values of tension and shear load resistances

500

120

The second secon												
		Effective Anchorage depth	Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$									
	40			Use condition								
	eve						w/d		d/d w/d			
	<u>s</u>	Effective inchorag depth		d/d			w/w					
Anchor size	<u>#</u> 2 6							w/w				
Alichor Size	Perforated sleeve	A P	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	ed mean c	ompressiv	e strength	f _b ≥ 3,1 N/	mm ^{2 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	- 4-	1.0	3,0			
M16 / IG-M10	SH 20	≥ 85	1,5	1,5	1,2		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

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	,		- 5110	0,31	0,31*V _{Rk} / 3,5	1,5*δ∨0

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

		Effecitve Characteristic Resistances								
Anchor size	Perforated	Anchorage depth		$N_{Rk,b,fi} = N_{Rk,p,fi} = V_{Rk,b,fi}$						
Anchor Size	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	-17	-17				
M16 / IG-M10	SH 20	≥ 130	0,29	0,21	0,12	₋ 1)				

¹⁾ no performance assessed

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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	f₀ [N/mm²]	≥ 5,2
Conversion factor for low 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



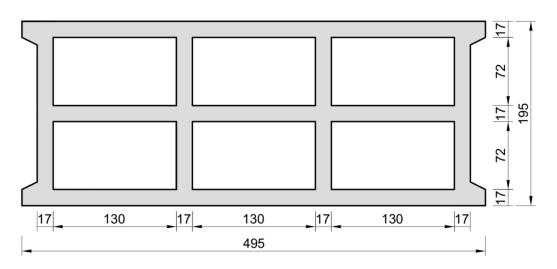


Table C181: Installation parameter

Anchor size	[-]	M8	M10	M12	M16	IG-M6	IG-M8	IG-M10	
Installation torque	T _{inst}	[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 Specing	Scr, II	[mm]		170					
Characteristic Spacing Scr, 1		[mm]	200						
Minimum Spacing	Smin, II;	[mm]	50						
Williman Spacing	Smin, ⊥	[[,,,,,,,]		50					

Table C182: Reduction factors for single anchors at the edge

Tension load			Snear load						
Terision 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	0,35	<u> </u> [50	1,00	
	120	1,00		170	1,00		120	1,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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

Anchor position parallel to hor. joint				Anchor position perpendicular to hor. joint			
11	with c ≥	with s ≥	αg II, N	· · · · · · · · · · · · · · · · · · ·	with c ≥	with s ≥	$\alpha_g \perp$, 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

3 - 1									
	Anchor	position pa	rallel to hor.	. joint	Anchor p	osition perpe	endicular to h	or. joint	
Shear load	+	with c ≥	with s ≥	αg II,V ⊥		with c ≥	with s ≥	$\alpha_g \perp$, v \perp	
perpendicular	•••	50	50	0,55		50	50	0,35	
to the free		120	50	1,30		120	50	0,85	
edge	•	120	170	2,00		120	200	2,00	
	+	with c ≥ with s ≥ α _{g 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 2,00		50	200	2,00			
	- 	120	7 170 2,00		120	200	2,00		

Table C185: Characteristic values of tension and shear load resistances

			Characteristic Resistances with $c \ge c_{cr}$ and $s \ge s_{cr}$										
				Use condition									
	Size Size Anchorage Anchorage Anchorage	ffective ichorage depth	chorage depth pp				d/d w/d w/w						
Anchor size		An	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)		$V_{Rk,b}^{(2)}$						
		[mm]				[kN]							
		Normalis	ed mean c	ompressiv	e strength	f _b ≥ 5,2 N/	mm ^{2 1)}						
M8 / M10/ IG-M6	SH 16	130	2,0	1.5	1.2	2.0	1.5	1.0	6,0				
M12 / M16 / IG-M8 / IG-M10	SH 20	≥ 130	2,0	1,5	1,2	2,0	1,5	1,2	0,0				

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

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*δ∨0

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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/mm²]	≥ 2
Conversion factor for low strengths	er compressive	$(f_b / 2)^{0.5} \le 1.0$
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 6 1001 motaliation 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]	150								
Minimum Edge Distance	Cmin	[mm]	60								
Characteristic Chasins	Scr, II	[mm]		300							
Characteristic Spacing	Scr, ⊥	[mm]	300								
Minimum Spacing	Smin, II;	[mm]	120								
William Spacing	Smin, ⊥	[[[]]	120								

Table C189: 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		
•	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 ≥	α _{g ⊥, 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	· i · · · · · · · · · · · · · · · · · ·	150	300	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	120	0,40		60	120	0,40	
		100	120	1,00		100	120	1,00	
		150	300	2,00		150	300	2,00	

Mungo Injection System MIT-SE Plus or MIT-COOL Plus 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 $s \ge s_{cr}$									
Anchor size Sleeve		Effective Anchorage depth	Use condition									
	d sleeve			d/d			w/d w/w	d/d w/d w/w				
	enorate E An	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}		$J_{Rk,b} = N_{Rk,p}$	2)	1	$N_{Rk,b} = N_{Rk,b}$	2) p	V _{Rk,b} ²⁾			
		[mm]		, ,		[kN]						
		Normali	sed mean d	compressi	ive strengtl	n f _b ≥ 2 N/r	nm² 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							2.0			
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	δη / Ν	δΝο	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*δΝ0	0,3	0,3*V _{Rk} / 3,5	1,5*δνο
M16	all	,			0,1	0,1*V _{Rk} /3,5	1,5*δvo

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

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