DECLARATION OF PERFORMANCE

DoP 0329

for fischer frame fixing SXR/SXRL (Plastic anchor for use in concrete and masonry) EN

1. Unique identification code of the product-type: **DoP 0329**

2. Intended use/es: **Plastic anchor for multiple use in concrete and masonry for non-structural applications (base material group a b, c, d), see appendix, especially annexes B1 - B7.**

3. Manufacturer: **fischerwerke GmbH & Co. KG, Klaus-Fischer-Str. 1, 72178 Waldachtal, Germany**

4. Authorised representative: **–**

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

6. European Assessment Document: **EAD 330284-00-0604, Edition 12/2020**
   European Technical Assessment: **ETA-07/0121; 2022-12-20**
   Technical Assessment Body: **DIBt- Deutsches Institut für Bautechnik**
   Notified body/ies: **2873 TU Darmstadt**

7. Declared performance/s:

Safety in case of fire (BWR 2)

Reaction to fire: Class A1	$N_{Rk,s,fi}$ = NPD; $N_{Rk,p,fi}$ = NPD
Resistance to fire: Annex C2	

Mechanical resistance and stability (BWR 4)

Resistance to steel failure under tension loading: Annex C1	
Resistance to steel or polymer failure under shear loading: Annex C1	$V_{Rk,pol}$ = NPD
Resistance to pull-out or concrete failure or polymer failure under tension loading (base material group a): Annex C1	
Resistance in any load direction without lever arm (base material group b, c, d): see appendix, especially annexes C16 - C45	
Edge distance and spacing (base material group a): Annex B4	
Edge distance and spacing (base material group b, c, d): Annexes B5, B6	
Displacements under short-term and long-term loading: Annex C2	

Durability: Annexes A3, B1, B2

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

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

Signed for and on behalf of the manufacturer by:

Dr.-Ing. Oliver Geibig, Managing Director Business Units & Engineering

Jürgen Grün, Managing Director Chemistry & Quality

Tumlingen, 2023-01-17

This DoP has been prepared in different languages. In case there is a dispute on the interpretation the English version shall always prevail.

The Appendix includes voluntary and complementary information in English language exceeding the (language-neutrally specified) legal requirements.

Translation guidance Essential Characteristics and Performance Parameters for Annexes

Safety in case of fire (BWR 2)		
1	Reaction to fire:	-
2	Resistance to fire:	$N_{Rk,s,fi}$; $N_{Rk,p,fi}$; $F_{Rk,fi,90}$ [kN]
Mechanical resistance and stability (BWR 4)		
3	Resistance to steel failure under tension loading:	$N_{Rk,s}$ [kN]
4	Resistance to steel or polymer failure under shear loading:	$V_{Rk,s}$ [kN]; $M_{Rk,s}$ [Nm]; $V_{Rk,pol}$ [kN]
5	Resistance to pull-out or concrete failure or polymer failure under tension loading (base material group a)	$N_{Rk,p}$ [kN] / $N_{Rk,pol}$ [kN]
6	Resistance in any load direction without lever arm (base material group b,c,d):	F_{Rk} [kN]
7	Edge distance and spacing (base material group a)	c_{cr}; s_{cr}; c_{min}; s_{min}; a; h_{min} [mm]
8	Edge distance and spacing (base material group b,c,d):	c_{min}; s_{min}; h_{min} [mm]
9	Displacements under short-term and long-term loading:	δ_0; δ_∞ [mm]
Aspects of durability		
10	Durability:	-

Specific part

1 Technical description of the product

The fischer frame fixing in the range SXR 8, SXRL 8, SXR 10, SXRL 10 and SXRL 14 is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel, of galvanised steel with an additional organic layer or of stainless steel.

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

The product description is given in Annex A.

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

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchors of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C 2

3.2 Mechanical resistance and stability (BWR 4)

Essential characteristic	Performance
Resistance to steel failure under tension loading	See Annex C 1
Resistance to steel failure under shear loading	See Annex C 1
Resistance to pull-out or concrete failure under tension loading (base material group a)	See Annex C 1
Resistance in any load direction without lever arm (base material group b, c, d)	See Annexes C 16 – C 45
Edge distance and spacing (base material group a)	See Annex B 4
Edge distance and spacing (base material group b, c, d)	See Annex B 5 and B 6
Displacements under short-term and long-term loading	See Annex C 2
Durability	See Annex B 1 and B 2

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

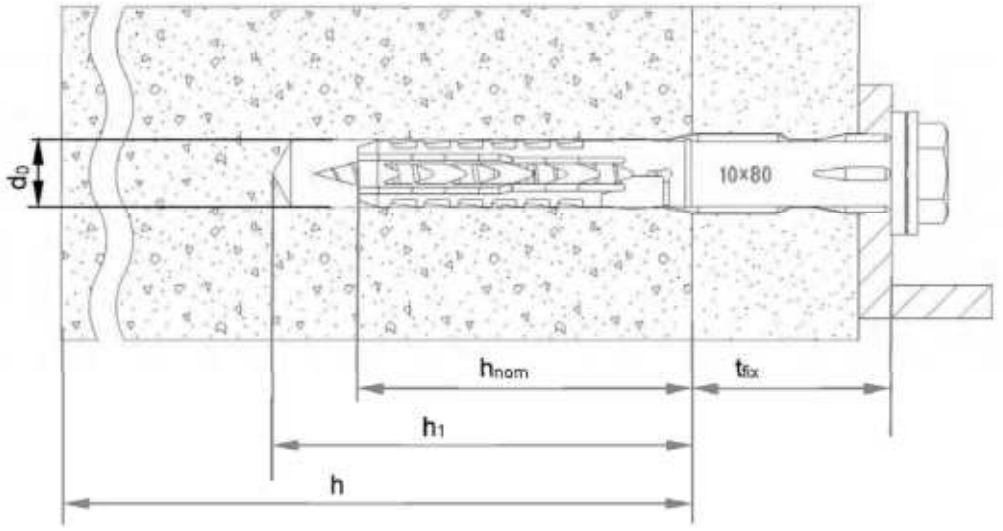
In accordance with European Assessment Document EAD 330284-00-0604 the applicable European legal act is: 97/463/EC.

The system to be applied is: 2+

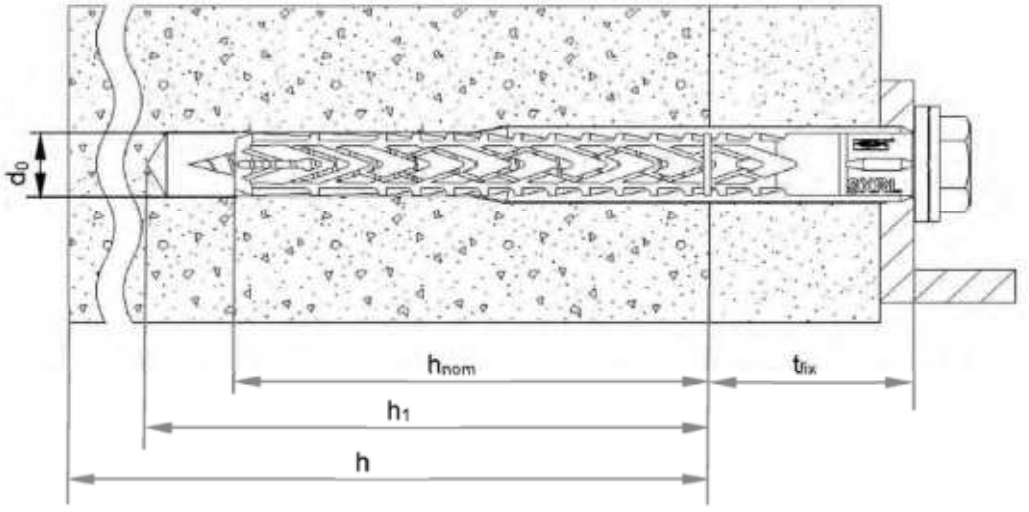
The following standards and documents are referred to in this European Technical Assessment:

- EOTA European Assessment Document EAD 330284-00-0604, edition December 2020: Plastic anchors for redundant non-structural systems in concrete and masonry
- EOTA Technical Report TR 051, Edition April 2018: Recommendations for job site tests of plastic anchors and screws
- EOTA Technical Report TR 064, Edition May 2018: Design of plastic anchors in conrete and masonry
- EN 206:2013+A1:2016: Concrete – Specification, performance, production and conformity
- EN 771-1:2011+A1:2015: Specification for masonry units – Part 1: Clay masonry units
- EN 771-2:2011+A1:2015: Specification for masonry units – Part 2: Calcium silicate
- EN 771-3:2011+A1:2015: Specification for masonry units – Part 3: Aggregate concrete masonry units (dense and lightweight aggregates)
- EN 771-4:2011+A1:2015: Specification for masonry units – Part 4: autoclaved aerated concrete masonry units
- EN 998-2:2010: Specification for mortar for masonry - Part 2: Masonry mortar
- EN 1993-1-4:2006 + A1:2015: Eurocode 3: Design of steel structures – Part 1-4: General rules - Supplementary rules for stainless steels
- EN 12602:2016: Prefabricated reinforced components of autoclaved aerated concrete
- EN ISO 4042:2018: Fasteners – Electroplated coating systems

SXR



SXRL (e.g. with h_{nom2})



Legend

h_{nom} = Overall plastic anchor embedment depth in the base material

h = Depth of drill hole to concrete surface

d_0 = Nominal drill hole diameter

h = Thickness of member (base material)

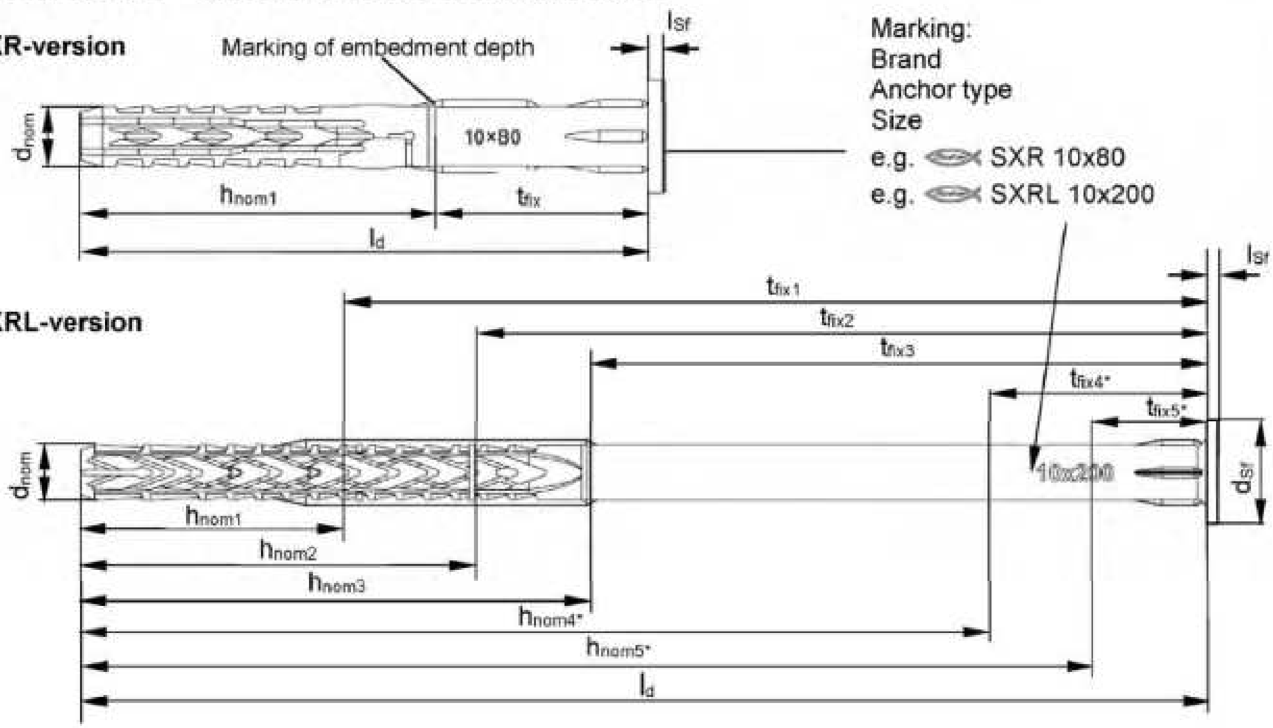
t_{fix} = Thickness of fixture and non-load bearing layer

Figures not to scale

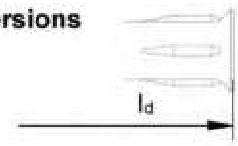
Anchor sleeves – flat collar versions of SXR and SXRL

SXR-version

SXRL-version



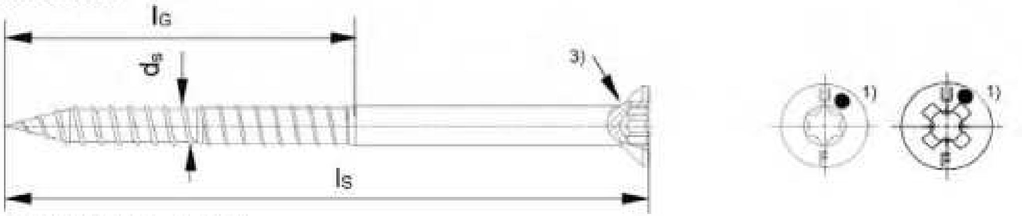
Countersunk sleeve version also available for both versions



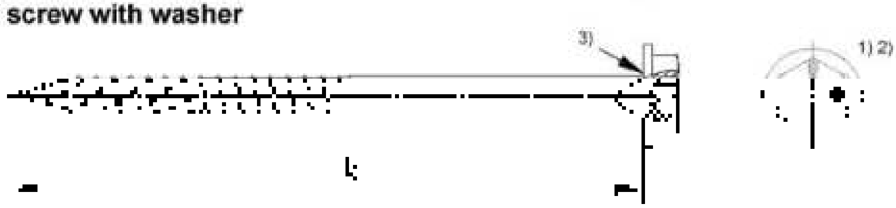
*see Table A3.1 and Annex B 7

Special Screws

Countersunk screw



Hexagonal screw with washer



Hexagonal screw

1) [illegible]
2) [illegible]
3) [illegible]

Figures not to scale

fischer frame fixing SXR / SXRL	Annex A 2
Product description Anchor types / special screws	Appendix 4 / 57

Table A3.1: Dimensions

Anchor type	Anchor sleeve											Special screw		
	h_{nom1} [mm]	h_{nom2} [mm]	h_{nom3} [mm]	h_{nom4} [mm]	h_{nom5} [mm]	d_{nom} [mm]	t_{fix} [mm]	**min. l_d [mm]**	**max. l_d [mm]**	l_{sf} [1)] [mm]	d_{sf} [1)] [mm]	d_s [mm]	l_G [mm]	l_s [mm]
SXR 8	**50**	**-**	**-**	**-**	**-**	**8**	**≥ 1**	**51**	**360**	**1,8**	**15,0**	**6**	**≥ 59**	$l_d + l_{sf}$[1)] $+ d_s$
SXRL 8	**50**	**70**	**90**	**-**	**-**	**8**	**≥ 1**	**51**	**360**	**1,8**	**15,0**	**6**	**≥ 59**	$l_d + l_{sf}$[1)] $+ d_s$
SXR 10	**50**	**-**	**-**	**-**	**-**	**10**	**≥ 1**	**51**	**360**	**2,2**	**18,5**	**7**	**≥ 57**	$l_d + l_{sf}$[1)] $+ d_s$
SXRL 10	**50**[2)]	**70**	**90**[3)4)]	**150**[4)]	**180**[4)]	**10**	**≥ 1**	**51**	**360**	**2,2**	**18,5**	**7**	**≥ 57**	$l_d + l_{sf}$[1)] $+ d_s$
SXRL 14	**-**	**70**	**90**	**-**	**-**	**14**	**≥ 1**	**71**	**600**	**3,1**	**24,0**	**10**	**≥ 63**	$l_d + l_{sf}$[1)] $+ d_s$

1) Only valid for flat collar version.
2) Marking optional.
3) Additional h_{nom} for [illegible] perforated clay brick [illegible] (see Annex C [illegible] and C [illegible]) [illegible] (see Annex C 44 and C 49)
4) Additional h_{nom} for [illegible] perforated clay brick [illegible] (see Annex C 32 and C [illegible])

Table A3.2: Materials

Name	Material
Anchor sleeve	- Polyamide, PA6, colour grey
Special screw	- Galvanised steel gvz with Zn5/Ag or Zn5/An in accordance with EN ISO 4042 **or** - Galvanised steel gvz with Zn5/Ag or Zn5/An in accordance with EN ISO 4042 with additional organic layer (Zn5/Ag/T7 or Zn5/An/T7, respectively) in three layers (total layer thickness ≥ 6 µm) **or** - Stainless steel "A2" of corrosion resistance class CRC II in accordance with EN 1993-1-4 **or** - Stainless steel "A4" or "R" of corrosion resistance class CRC III in accordance with EN 1993-1-4

Specification of intended use

Anchorages subject to:

- Static and quasi-static loads
- Redundant non-structural systems

Base materials:

- Reinforced or unreinforced concrete without fibres, strength classes ≥ C12/15 (base material group a1), as per EN 206, see Annex C1 and C3.
- Thin walled concrete components (e.g. weather shells) strength classes ≥ C12/15 (base material group a1), as per EN 206, thickness ≥ 10 mm, see Annex C1 and C3
- Pre-compressed non-reinforced normal weight concrete strength classes ≥ C20/25 (base material group a1), as per EN 206, see Annex C1 and C3.
- Solid brick masonry (base material group b1): as per EN 771-1, EN 771-2 or EN 771-3, see Annex C3 – C4, C7 – C26
  Note: The characteristic resistance are also valid for larger brick sizes and higher compressive strength of the masonry unit; all characteristic resistance values of solid brick masonry are valid for installation in the mortar joint or brick element of the units
- Hollow or perforated brick masonry (base material group b1): as per EN 771-1, EN 771-2 or EN 771-3, see Annex C5 – C15, C26 – C48 installation in brick element
  see Annex C5, C48 installation in mortar joint
- Reinforced or unreinforced aerated concrete (base material group b1): as per EN 12602 and normal reinforced autoclaved aerated concrete (base material group b1): as per EN 771-4, see Annex C15, C44 and C45
- Mortar strength class of the masonry ≥ M2,5 in accordance with EN 998-2
- For other comparable base materials of the base material group a1, b1, b2 or b3 the characteristic resistance of the anchor may be determined by job site tests in accordance with TR 051

Temperature Range:

SXR 8 and 10 and SXRL 8

- a: - 40 °C to 50 °C (max. short term temperature + 50 °C and max. long term temperature + 30 °C)
- b: - 40 °C to 80 °C (max. short term temperature + 80 °C and max. long term temperature + 50 °C)

SXR 10 and 14

- a: - 20 °C to 50 °C (max. short term temperature + 50 °C and max. long term temperature + 30 °C)
- b: - 20 °C to 80 °C (max. short term temperature + 80 °C and max. long term temperature + 50 °C)

Use conditions (Environmental conditions):

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

Design:

- The anchorages are to be designed in accordance with TR 064 under the responsibility of an engineer experienced in anchorages and concrete/masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.

Installation:

- Hole drilling by the drilling method in accordance with Annex C 1 for base material group "a" and Annex C 4 / C 5 for base material group "b", "c" and "d".
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature from SXR 8/10, SXRL 8 and SXRL 14: -5 °C to +40 °C
  SXRL 10: -20 °C to +40 °C
- Exposure to UV due to solar radiation of the not protected anchor by rendering ≤ 6 weeks.
- No ingress of water in the drill hole at temperatures < 0 °C.

Table B3.1: Installation parameters

Anchor type				SXR 8	SXRL 8	SXR 10	SXRL 10	SXRL 14
Drill hole diameter	d_0	=	[mm]	8	8	10	10	14
Cutting diameter of drill bit	d_{cut}	≤	[mm]	8,45	8,45	10,45	10,45	14,45
Overall plastic anchor embedment depth in the base material [illegible]	h_{nom}	[illegible]	[mm]	[illegible]	50	50	[illegible]	
	h_{nom}	≥	[mm]	-	[illegible]	-	[illegible]	[illegible]
	h_{nom} [illegible]	≥	[mm]	-	[illegible]	-	[illegible]	[illegible]
	h_{nom}	≥	[mm]	-	-	-	[illegible]	-
	h_{nom} [illegible]	≥	[mm]	-	-	-	[illegible]	-
Depth of drill hole to deepest point	h_1	≥	[mm]	[illegible]	50	50	60	-
	h_1	≥	[mm]		[illegible]		[illegible]	[illegible]
	h_1 [illegible]	≥	[mm]	-	[illegible]	-	[illegible]	[illegible]
	h_1 [illegible]	≥	[mm]				60	
	h_1 [illegible]	≥	[mm]		-		[illegible]	
Diameter of clearance hole in the fixture	d_f	≤	[mm]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1) [illegible]
2) [illegible]
3) [illegible]
4) Only valid for base material perforated clay brick S8 (see Annex C 32 and C 43).
5) See Table C2.1.

Table B3.2: Assignment of h_{nom}, l_d and t_{fix} for use in thin concrete slabs (e.g. weather resistant shells of external wall panels) and pre-stressed concrete core slabs

Anchor type	SXR 10 / SXRL 10			
Base material group "a"	l_d [mm]		h_{nom} ≥ 50 mm	
	SXR	SXRL	$t_{fix, min}$	$t_{fix, max}$
	52	-	1	2
	60	60	1	10
	80	80	21	30
	100	100	41	50
	120	120	61	70
	140	140	81	90
	160	160	101	110
	180	180	121	130
	200	200	141	150
	230	230	171	180
	260	260	201	210
	-	290	231	240

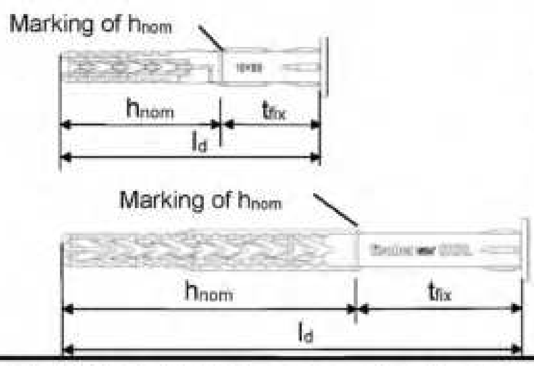


Table B3.3: Installation parameters for use in pre-stressed hollow concrete core slabs

Anchor type	SXRL 10			
	Mirror thickness	d_b	≥ [mm]	30
	Overall plastic anchor embedment depth in the base material	h_{nom}	[mm]	50 to 59

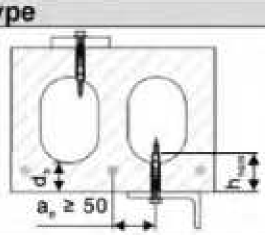


Table B4.1: Minimum thickness of member, edge distances and spacing in concrete – base material group "a"

Anchor type	Embedment depth h_{nom} [mm]	Concrete strength class	Minimum thickness of member h_{min} [mm]	Characteristic edge distance c_{cr} [mm]	Characteristic spacing s_{cr} [mm]	Minimum edge distances and spacing[1] c_{min}, s_{min} [mm]
		C12/15		70	70	s_{min} = 70 for c ≥ 70 c_{min} = 70 for s > 70
SXR 8	≥ 50		100			
		≥ C16/20		55	55	s = – 55 for c ≥ 55 c = – 55 for s ≥ 55
		C12/15		85	90	s = – 85 for c ≥ 85 c = – 95 for s ≥ 85
	≥ 50		90			
		≥ C16/20		55	75	s = – 55 for c ≥ 55 c = – 55 for s ≥ 55
SXRL 8		C12/15		85	105	s = – 85 for c ≥ 85 c = – 95 for s ≥ 85
	≥ 70		100			
		≥ C16/20		55	90	s = – 55 for c ≥ 55 c = – 55 for s ≥ 55
		C12/15		140	190	s = – 70 for c ≥ 140 c = – 140 for s ≥ 70
SXR 10	≥ 50		100[4]			
		≥ C16/20		105	90	s = – 55 for c ≥ 140 c = – 55 for s ≥ 70
		≥ C12/15		140	190	s = – 70 for c ≥ 140 c = – 140 for s ≥ 140
	≥ 50					
		C16/20		105	190	s = – 55 for c ≥ 140 c = – 55 for s ≥ 70
SXRL 10		C12/15	100[4]	140	190	s = – 70 for c ≥ 140 c = – 140 for s ≥ 140
	≥ 70[3]					
		≥ C16/20		105	195	s = – 55 for c ≥ 140 c = – 55 for s ≥ 70
		C12/15		140	135	s = – 85 for c ≥ 140 c = – 95 for s ≥ 140
SXRL 14	≥ 70[3]		110			
		≥ C16/20		105	125	s = – 55 for c ≥ 140 c = – 55 for s ≥ 70

[1] Intermediate values by linear interpolation

[2] Values valid for reinforced concrete.
Please note: values for non-reinforced concrete are h_{min} = 110 mm, c_{min} = 100 mm, s_{min} = 80 mm for concrete ≥ C16/20 and c_{min} = 140 mm, s_{min} = 110 mm for concrete C12/15.

[3] Please note: Values for non-reinforced concrete are h_{min} = 110 mm, c_{min} = 100 mm, s_{min} = 80 mm for concrete ≥ C16/20 and c_{min} = 140 mm, s_{min} = 110 mm for concrete C12/15.

[4] Also valid for thin concrete slabs and prestressed hollow concrete core slabs see Table B3.3 h ≥ 40 mm, h_{nom} = 50 mm to 59 mm.

Fixing points with a spacing a ≤ s_{cr} are considered as a group with a maximum characteristic resistance $N_{Rk,p}$ according to Table C1.2. For a spacing a > s_{cr} the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ according to Table C1.2.

Scheme of edge distances and spacing for base material group a

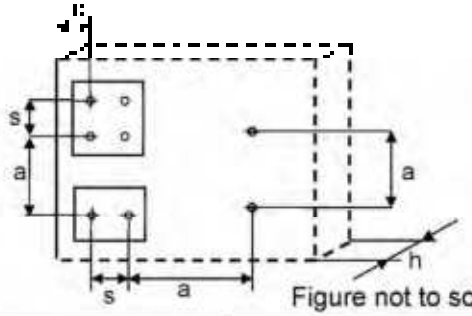


Figure not to scale

fischer frame fixing SXR / SXRL

Intended use
Minimum thickness of member, edge distances and spacing for use in concrete

Annex B 4

Table B5.1: Minimum thickness of member, edge distances and spacing in solid and hollow or perforated masonry – base material group "b" and "c"

Anchor type			SXR 8	SXRL 8	SXR 10	SXRL 10	SXRL 14
Minimum thickness of member[1)]	h_{min}	[mm]	100	115	100	110	115
Distance between anchor groups and / or single anchors	a_{min}	[mm]	250	250	250	250	250
Single anchor							
Minimum edge distance[2)]	c_{min}	[mm]	100	100	100	100	100
Anchor group							
Minimum spacing perpendicular to free edge[2)]	$s_{1,min}$	[mm]	100[3)]	100[3)]	100[3)]	100[3)]	100[3)]
Minimum spacing parallel to free edge[2)]	$s_{2,min}$	[mm]	100[3)]	100[3)]	100[3)]	100[3)]	100[3)]
Minimum edge distance[2)]	c_{min}	[mm]	100	100	100	100	100

1) Thickness of member see Annex C 3 – C 20
2) [illegible]
3) [illegible]

Scheme of edge distances and spacing in solid and hollow or perforated brick masonry (base material group "b" and "c") and in reinforced autoclaved aerated concrete (base material group "d")

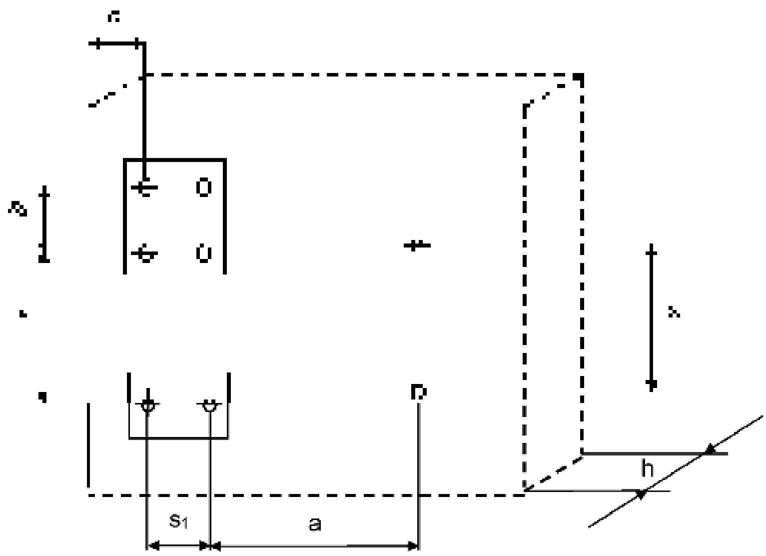


Figure not to scale

Table B6.1: Minimum thickness of member, edge distances and spacing in unreinforced autoclaved aerated concrete - base material group "d"

Anchor type			SXRL 8		SXR 10	SXRL 10	SXRL 14		
Compressive strength	f_{ck}	[N/mm²]	≥ 2 to < 6	≥ 6	≥ 2	≥ 2	≥ 2 to < 6	≥ 6	
Nominal embedment depth	h_{nom} ≥	[mm]	70 and 90		90	70	90	70	90
Minimum thickness of member[1]	h_{min}	[mm]	175		200	100	120	175	200
Minimum distance between anchor groups and / or single anchors	a_{min}	[mm]	250		400	250	250		
Single anchor									
Minimum edge distance	c_{min}	[mm]	60	80	100	120	80	100	120
Anchor group									
Minimum spacing perpendicular to free edge	$s_{1,min}$	[mm]	80	110	200	100 / 120[2]	80	80	100
Minimum spacing parallel to free edge	$s_{2,min}$	[mm]	80	110	400	100 / 120[2]	80	100	80	125
Minimum edge distance	c_{min}	[mm]	80	110	100	120	120	120	120

1) See Table B6.2
2) Only valid for autoclaved aerated concrete ≥ 2,0 N/mm²

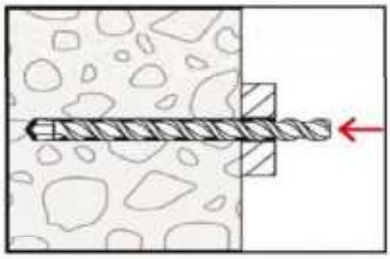
Table B6.2: Minimum thickness of member, edge distances and spacing in reinforced autoclaved aerated concrete - base material group "d"

Anchor type [size x h_{nom}]			SXRL 10 x 70		SXRL 10 x 90	
Compressive strength[1]	f_{ck}	[N/mm²]	≥ 2	≥ 6	≥ 2	≥ 6
Minimum spacing between anchor groups and / or single anchors	a_{min}	[mm]	250	250	250	250
Single anchor						
Minimum thickness of member	h_{min}	[mm]	100	240	120	240
Minimum edge distance	$c_{1,min}$	[mm]	120	120	120	120
Minimum edge distance perpendicular to $c_{1,min}$	$c_{2,min}$	[mm]	180	180	180	180
Anchor group						
Minimum thickness of member	h_{min}	[mm]	175	240	175	240
Minimum edge distance	$c_{1,min}$	[mm]	100	120	100	120
Minimum edge distance perpendicular to $c_{1,min}$	$c_{2,min}$	[mm]	150	180	150	180
Minimum spacing perpendicular to free edge	$s_{1,min}$	[mm]	100	120	100	120
Minimum spacing parallel to free edge	$s_{2,min}$	[mm]	100	120	100	120

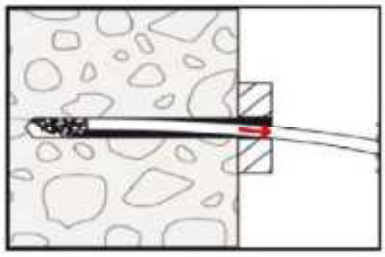
1) See Table B6.2

Scheme of edge distances and spacing see Annex B 5

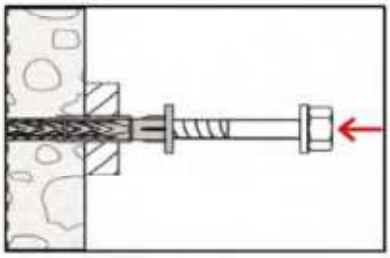
Installation instructions



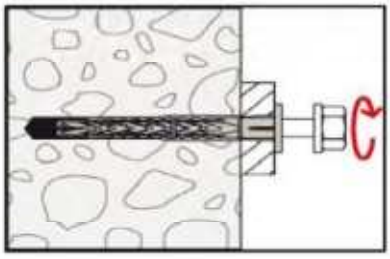
1. Drill the bore hole according to Table B3.1 using the drilling method described in the corresponding Annex C.



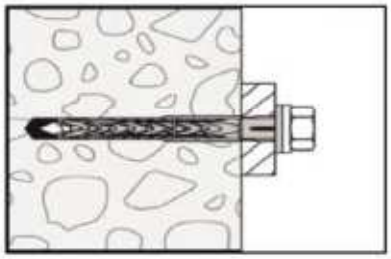
2. Base material group „a", „b", „d": Remove dust from borehole.



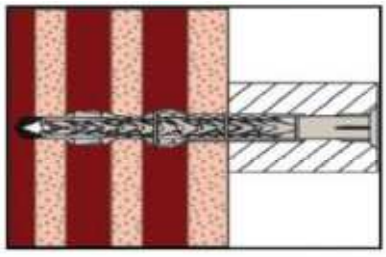
3. Insert anchor (screw and sleeve) by using a hammer until the collar of the plastic sleeve is flush with the surface of the fixture. In case of using brick S8 (see Table A3.1 footnote 4), additional embedment depths h_{nom} 150mm or h_{nom} 180 mm may be taken by measuring the anchorage depth and the fixture height. The corresponding length of anchor should be taken.



4. The screw is screwed-in until the head of the screw touches the sleeve. The anchor is correctly mounted, when the head of the screw fits tight on the surface and cannot be screwed-in any further.



5. Correctly installed anchor in concrete.



6. Correctly installed anchor in hollow or perforated masonry.

fischer frame fixing SXR / SXRL

Intended use
Installation instructions

Annex B 7

Table C1.1: Characteristic resistance of the screw

Failure of expansion element (special screw)		SXR 8 / SXRL 8		SXR 10 / SXRL 10		SXRL 14	
		galvanised steel	stainless steel	galvanised steel	stainless steel	galvanised steel	stainless steel
Characteristic tension resistance	$N_{Rk,s}$ [kN]	14,8	14,3	21,7 24,9[2)]	21,7	43,4	42,0
Partial factor	γ_{Ms} [1)] [-]	1,50	1,55	1,55	1,55	1,50	1,55
Characteristic shear resistance	$V_{Rk,s}$ [kN]	7,4	7,1	10,8 12,4[2)]	10,8	21,7	21,0
Partial factor	γ_{Ms} [1)] [-]	1,25	1,29	1,29	1,29	1,25	1,29

Characteristic bending resistance of the screw

Overall plastic anchor embedment depth in the base material [mm]						h_{nom2} 70	h_{nom3} 90	h_{nom2} 70	h_{nom3} 90
Characteristic bending resistance	$M_{Rk,s}$ [Nm]	12,4	12,0	20,6 23,6[2)]	20,6	48,7	62,5	47,0	60,5
Partial factor	γ_{Ms} [1)] [-]	1,25	1,29	1,29	1,29	1,25		1,29	

1) In absence of other national regulations.
2) Only for SXRL 10: "High load" screw version on request only for countersunk screws – head marking is ●●

Table C1.2: Characteristic resistance due to pullout-failure for use in concrete - base material group "a"[1)]

Pull-out failure (plastic sleeve)			SXR 8	SXRL 8		SXR 10	SXRL 10		SXRL 14
Embedment depth h_{nom} [mm]		≥	50	50	70	50	50	70	70
Concrete ≥ C12/15									
Characteristic tension resistance 30/50 °C	$N_{Rk,p}$ [kN]		3,0	4,0	5,0	5,0	5,5	8,0	8,5
Characteristic tension resistance 50/80 °C	$N_{Rk,p}$ [kN]		2,6 3,0[3)]	4,0	5,0	4,5	5,0	6,5	8,0
Concrete ≥ C12/15 (e.g. weather resistant shells of external wall panels)									
Characteristic tension resistance 30/50 °C	$N_{Rk,p}$ [kN]	h ≥ 40 mm	4)	5)	5)	3,5	2,5 3,0[3)]	4)	5)
Characteristic tension resistance 50/80 °C	$N_{Rk,p}$ [kN]	h ≥ 40 mm	4)	5)	5)	3,0	2,5 3,0[3)]	4)	5)
Concrete ≥ C16/65 in pre-stressed concrete core slabs									
Characteristic resistance 50/80 °C	$N_{Rk,p}$ [kN]	d_b ≥ 30 mm	4)	5)	5)	4)	3,5 4,0[3)]	4)	5)
		d_b ≥ 40 mm	5)	5)	5)	5)	5,5 6,0[4)]	5)	5)
Partial factor	γ_{Mc} [2)] [-]		1,8						

1) Drilling method: Hammer drilling.
2) In absence of other national regulations.
3) Only valid for concrete ≥ C50/60
4) Only valid for temperature short term 50/80 °C
5) No performance assessed

Table C2.1: Displacements[1] under tension and shear loading in concrete and masonry

Displacements under			Tension load[2]		Shear load[2]	
Anchor type	h_{nom} [mm]	F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
SXR 8	50	1,2	0,65	1,30	1,02	1,53
SXRL 8	50	1,6	0,56	1,12	2,00	3,00
	70	2,0	0,64	1,28	2,30	3,45
SXR 10	50	2,0	1,29	2,58	1,15[3]/3,05[4]	1,74[3]/4,58[4]
SXRL 10	50	2,2	0,58	1,16	1,96	2,94
	70	3,2	1,74	3,48	1,69[3]/3,13[4]	2,54[3]/4,69[4]
	90	3,2	1,74	3,48	1,69[3]/3,13[4]	2,54[3]/4,69[4]
SXRL 14	70	3,4	0,39	0,63	2,79	4,19
	90	3,4	0,39	0,63	2,79	4,19

1) Valid for all ranges of temperatures.
2) Intermediate values by linear interpolation.
3) Valid for diameter in the clearance hole ≤ 10,5 mm (see Table B3.1).
4) Valid for diameter in the clearance hole = 12,5 mm (see Table B3.1).

Table C2.2: Displacements[1] under tension and shear loading in autoclaved aerated concrete

Displacements under					Tension load[2]		Shear load[2]	
Anchor type	Base material type	f_{ck} / $f_{cm,dect}$ [N/mm²]	h_{nom} [mm]	F [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
SXRL 8	unreinforced autoclaved aerated concrete	≥ 2	70/90	0,14/0,21	0,45/0,55	0,90/1,10	0,28/0,42	0,42/0,63
		≥ 6	70/90	1,07	0,73/0,80	1,46/1,60	2,14	3,21
SXR 10		≥ 2	50	0,32	0,03	0,06	0,21	0,31
SXRL 10		≥ 2	70/90	0,32	0,23	0,46	0,64	0,96
		≥ 6	70/90	1,43	0,65	1,30	2,86	4,29
SXRL 14		≥ 2	70/90	0,32/0,43	0,19/0,25	0,38/0,50	0,64/0,86	0,96/1,29
		≥ 3	70/90	0,60/0,77	0,23/0,31	0,45/0,63	1,19/1,54	1,79/2,31
		≥ 4	70/90	0,88/1,11	0,26/0,38	0,53/0,76	1,75/2,22	2,62/3,33
		≥ 6	70/90	1,43/1,79	0,34/0,51	0,68/1,02	2,86/3,58	4,29/5,37
SXRL 10	reinforced autoclaved aerated concrete	≥ 2	70/90	0,18	0,14/0,33	0,28/0,66	0,36	0,54
		≥ 6	70/90	1,07/1,25	0,49/0,73	0,98/1,46	2,14/2,50	3,21/3,75

1) Valid for all ranges of temperatures.
2) Intermediate values by linear interpolation.

Table C2.3: Values under fire exposure in concrete C20/25 to C50/60 in any load direction (no permanent centric tension load, shear load without lever arm) fastening of façade systems

Anchor type	Fire resistance class	$F_{Rk,fi,90}$	$\gamma_{M,fi}$[1]
SXR 10 / SXRL 10 / SXRL 14	R 90	0,8 kN	1,0

1) In absence of other national regulations.

If one-side fire load, see table B4.1 for edge distance.
In case of fire attack from more than one side, minimum edge distance shall be ≥ 300 mm or 2 h_{ef}, the bigger value is decisive.

Table C3.1: Summary of concrete – base material group "a" and solid bricks – base material group "b"[1]

Base material	Format	Dimensions (L x W x H) [mm]	Mean compressive strength as per EN 771 [N/mm²]	Bulk density ρ [kg/dm³]	See Annex
Concrete ≥ C12/15 as per EN 206					C 1
Weather resistant shells of external wall panels ≥ C16/20 as per EN 206					C 1
Prestressed concrete core slabs ≥ C45/55 as per EN 206					C 1
Clay brick Mz as per EN 771-1, e.g. Schlagmann, DE	2 DF	240 x 115 x 113	≥ 10	≥ 1,8	C 16
Clay brick Mz, as per EN 771-1, e.g. Wienerberger, UK	DF	240 x 115 x 52	≥ 10	≥ 1,8	C 17
Clay brick Mz as per EN 771-1, e.g. Schlagmann, DE e.g. [illegible], DE	NF	240 x 115 x 71	≥ 10	≥ 1,8	C 18
Clay brick Mz, as per EN 771-1, e.g. Schlagmann, DE	2 DF	240 x 115 x 113	≥ 10	≥ 2,4	C 19
Calcium silicate solid brick KS as per EN 771-2, e.g. KS Wemding, DE	NF	240 x 115 x 71	≥ 10	≥ 1,8	C 19 C 20
Calcium silicate solid brick KS as per EN 771-2, e.g. Meyer Lesingen, DE	2 DF	240 x 115 x 113	≥ 10	≥ 2,0	C 20
Calcium silicate solid brick KS as per EN 771-2, e.g. KS Wemding, DE	12 DF	498 x 175 x 240	≥ 10	≥ 1,8	C 21
Calcium silicate solid brick KS as per EN 771-2, e.g. KS Wemding, DE	8 DF	498 x 115 x 240	≥ 10	≥ 2,0	C 22
Calcium silicate solid brick KS XL-PE, as per EN 771-2, e.g. KS Wemding, DE	XL-PE	998 x 100 x 498	≥ 10	≥ 2,0	C 22

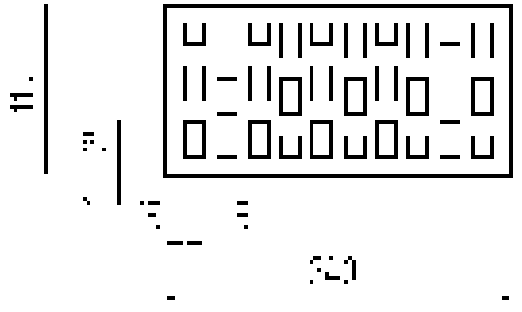
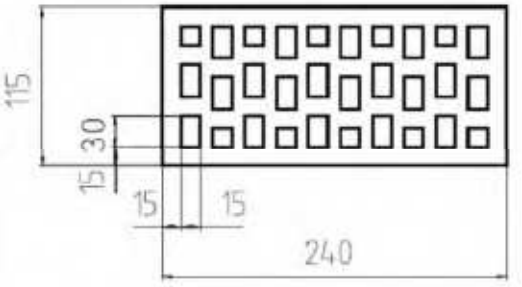
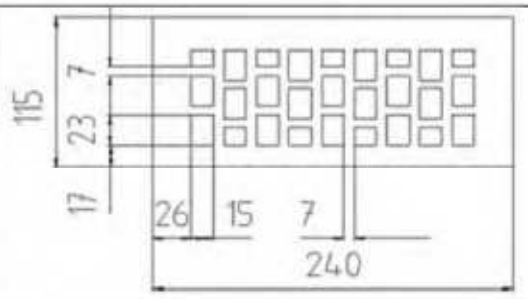
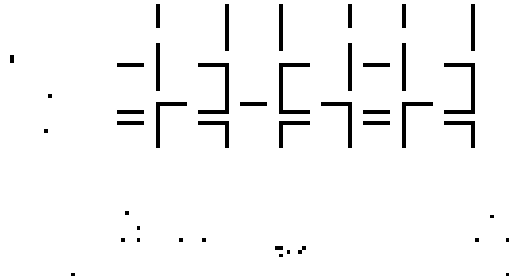
1) Vertical perforation < 15% cross section reduced by perforation vertically to the bearing plane

Table C4.1: Summary of solid bricks – base material group "b"[1)]

Base material	Format	Dimensions (L x W x H) [mm]	Mean compressive strength as per EN 771 [N/mm²]	Bulk density ρ [kg/dm³]	See Annex
Lightweight solid brick Vbl as per EN 771-3, e.g. [illegible]	2 DF	240 x 115 x 113	≥ 2.5	≥ 1.2	C 23
Lightweight solid brick Vbl as per EN 771-3, e.g. KLB, DE	9 D[illegible]	190 x 1[illegible] x 240	≥ 2.5	≥ 1.0	C 23 C 24
Lightweight solid brick Vbl as per EN 771-3, e.g. KLB, DE	6 DF	2[illegible] x 240 x 240	≥ [illegible]	≥ 1.4	C [illegible]
Lightweight solid brick Vbl as per EN 771-3, e.g. [illegible] DE	16 DF	500 x 240 x 248	≥ 1.3	≥ 0.6	C 25
Lightweight solid brick concrete Vbl, as per EN 771-3, e.g. [illegible] UK		440 x 100 x 215	≥ 2.5	≥ 1.4	C 26
Solid brick normal concrete Vbn, as per EN 771-3, e.g. [illegible] DE	-	240 x 245 x 240	≥ 5	≥ 1.[illegible]	C [illegible]
Lightweight solid brick Vbn, as per EN 771-3, e.g. [illegible] UK	-	440 x 100 x 215	≥ 7.5	≥ 1.6	C 28

1) [illegible]

Table C.4.1: Summary of hollow or perforated bricks – base material group 1[a)]

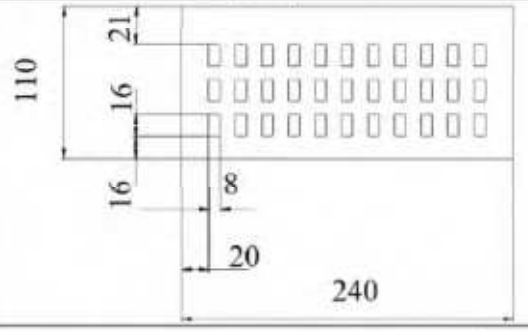
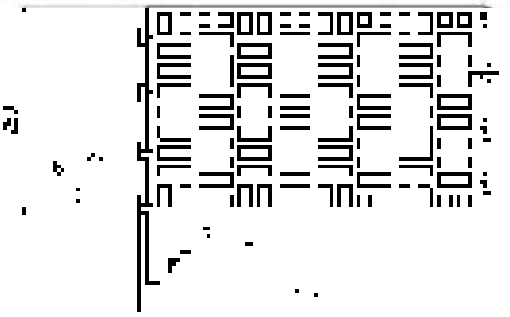
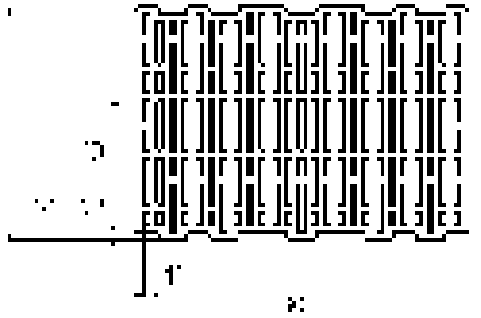
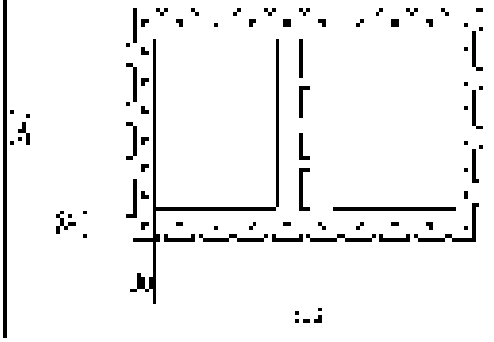
Base material	Format Dimensions (l x w x h) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz 2 DF as per EN 771-1 *e.g. Wienerberger, DE*	2 DF 240 x 115 x 113		≥ 10 / ≥ 1,0	C 27
Perforated clay brick **HLz** as per EN 771-1, *e.g. Wienerberger, DE*	2 DF 240 x 115 x 113		≥ 10 / ≥ 1,0	C 27
Perforated clay brick **VHLz** as per EN 771-1, *e.g. Wienerberger, DE*	NF 240 x 115 x 71		≥ 20 / ≥ 1,6	C 28
Perforated clay brick VHLz as per EN 771-1, *e.g. Wienerberger, DE*	2 DF 240 x 115 x 113		≥ 20 / ≥ 1,6	C 28

a) Vertically perforated, ≤ 15 % and ≤ 30 % gross cross-section reduction, perforations vertically to bearing area.

Figures not to scale

fischer frame fixing SXR / SXRI	
Performance Summary of base materials hollow or perforated bricks	Annex C 5 Appendix 17 / 57

Table C4.1: Summary of hollow or perforated bricks – base material group "c)"

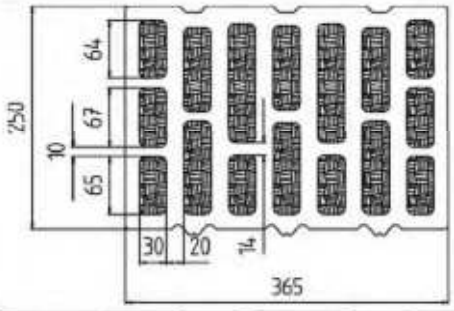
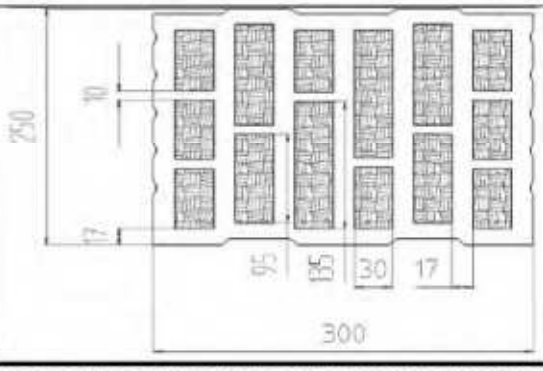
Basic material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz as per EN 771 -1, *e.g. Wienerberger, BS, DE*	DF 240 x 110 x 52		≥ 10 / ≥ 1,5	C 29
Perforated clay brick HLz as per EN 771 -1, *e.g. Schlagmann*	8 DF 440 x 300 x 240		≥ 5,0 / ≥ 0,9	C 29
Perforated clay brick HLz as per EN 771 -1, *e.g. Schlagmann*	10 DF 275 x 300 x 240		≥ 5,0 / ≥ 0,9	C 29
Perforated clay brick HLz as per EN 771 -1, *e.g. Schlagmann*	15 DF 365 x 300 x 240		≥ 5,0 / ≥ 0,9	C 29

1) Vertically perforated with ≤ 15 % and ≤ 50 % gross cross-section reduction, or perforated vertically and horizontally

Figures not to scale

fischer frame fixing SXR / SXRI	
Performance Summary of base materials hollow or perforated bricks	Annex C 6 Appendix 18 / 57

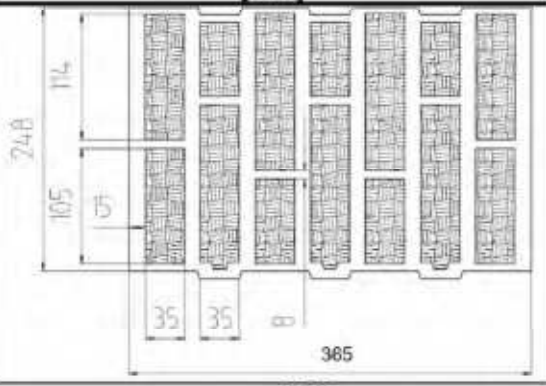
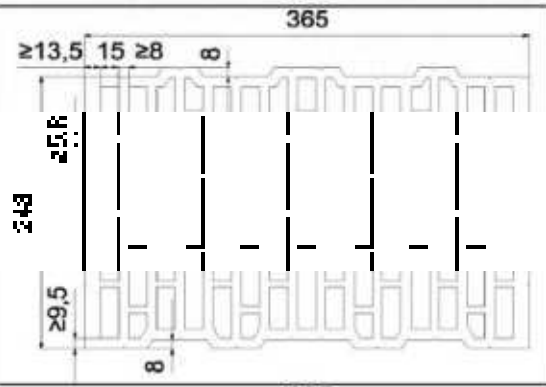
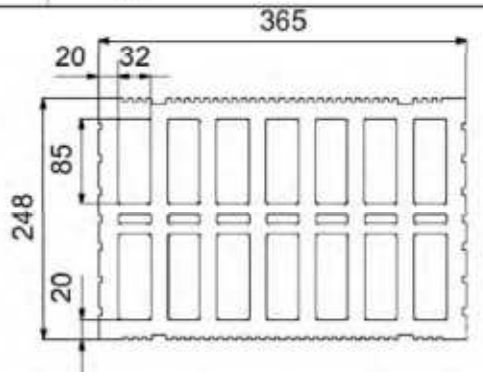
Table C7.1: Summary of hollow or perforated bricks – base material group 1[1)]

Base material	Format/ Dimensions (l x w x h) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz as per EN 771-1, *e.g. Schlagmann, DE*	3 DF 240 x 175 x 113		≥ 7,5 / ≥ 1,0	C 30
Perforated clay brick HLz as per EN 771-1, *e.g. Schlagmann Poroton S11, DE*	12 DF 250 x 365 x 240		≥ 5 / ≥ 0,8	C 31
Perforated clay brick HLz as per EN 771-1, *e.g. Schlagmann Poroton S10, DE*	10 DF 250 x 300 x 240		≥ 5 / ≥ 0,7	C 31

1) Vertically perforation > 15 % and ≤ 50 %, cross section reduced by perforation vertically to the resting area.

Figures not to scale

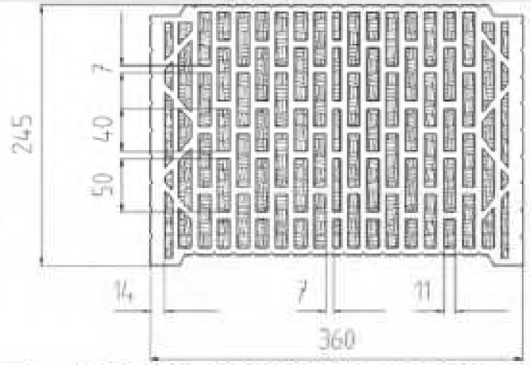
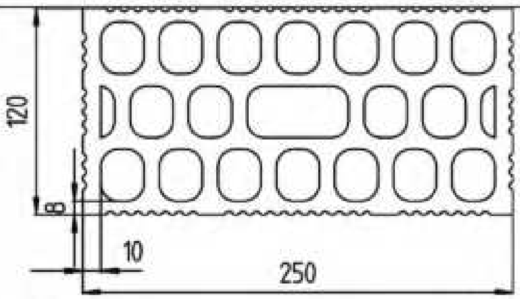
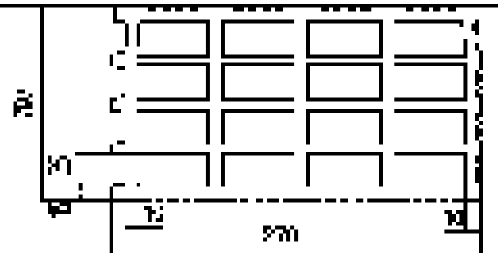
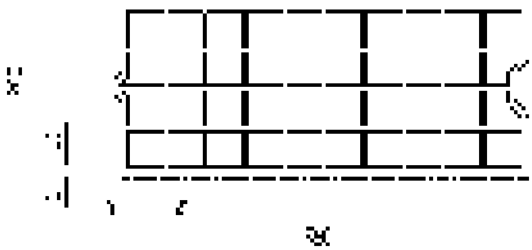
Table C8.1: Summary of hollow or perforated bricks – base material group 1 [1]

Base material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz as per EN 771-1, *e.g. Schlagmann Poroton T8, DE*	12 DF 248 x 365 x 249		≥ 2,5 / ≥ 0,6	C 31
Perforated clay brick HLz as per EN 771-1 *e.g. Schlagmann, DE*	248 x 365 x 249		≥ 7,5 / ≥ 0,75	C 32 C 42 (header side)
Perforated clay brick HLz as per EN 771-1, *e.g. Schlagmann S8 Halbziegel LZ, DE*	248/123 x 365 x 249		≥ 5 / ≥ 0,75	C 32 C 43 (header side)

[1] Vertically perforated or ≤ 15 % and ≤ 25 % gross section not vertically perforated or vertical perforation ≤ 25 %

Figures not to scale

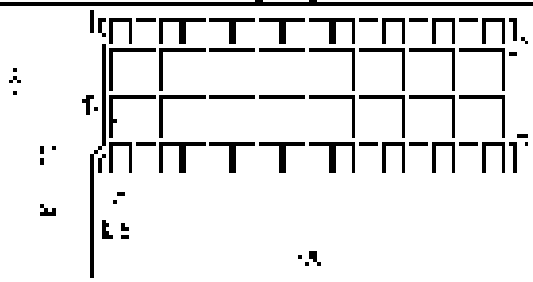
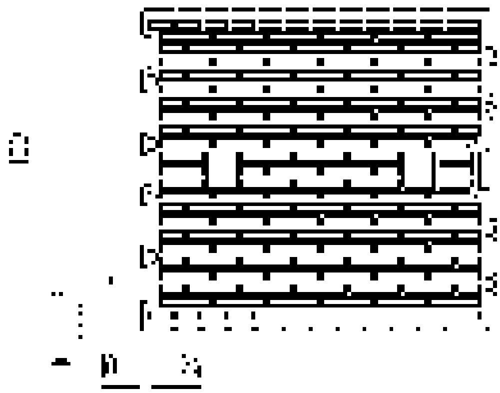
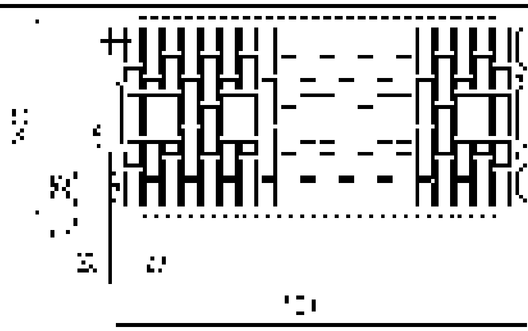
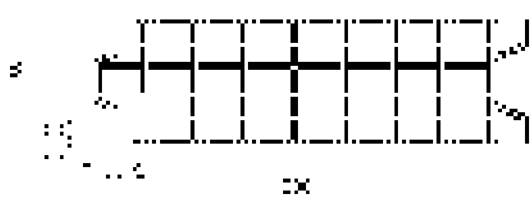
Table C9.1: Summary of hollow or perforated bricks – base material group "c"[1]

Base material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean com-pressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz as per EN 771-1, *e.g. Hörl & Hartmann Coriso WS 09, DE*	10 DF 245 x 365 x 249		≥ 2,5 / ≥ 0,8	C 33
Perforated clay brick HLz as per EN 771-1, *e.g. Doppio Uni IT Wienerberger, IT*	250 x 120 x 190		≥ 7,5 / ≥ 0,9	C 33
Perforated clay brick HLz as per EN 771-1, e.g. Imerys [illegible], FR	500 x 200 x [illegible]		≥ 5 / ≥ 0,6	C 34
Perforated clay brick HLz as per EN 771-1, e.g. Imerys [illegible], FR	560 x 200 x 275		≥ 5 / ≥ 0,6	C 34

[1] [illegible]

Figures not to scale

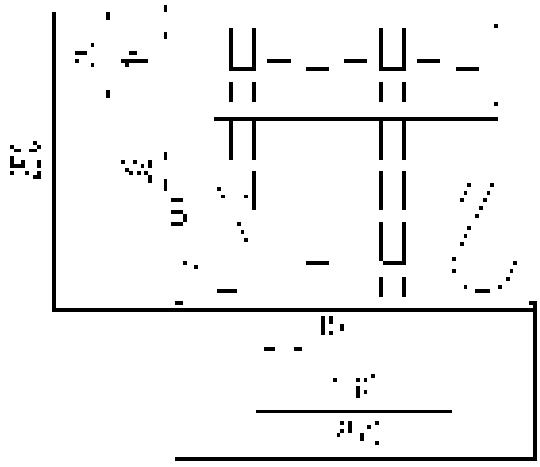
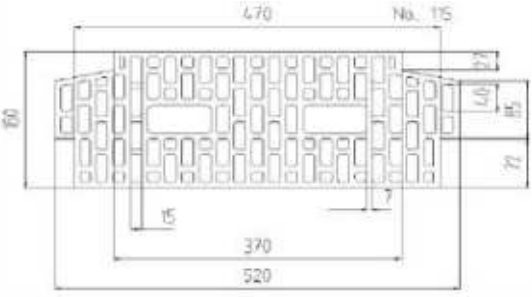
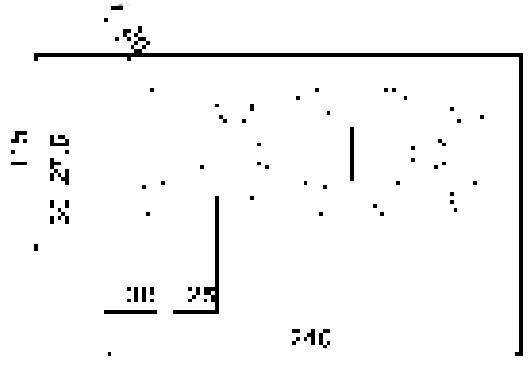
Table C10.1: Summary of hollow or perforated bricks – base material group "c"[1]

Base material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay brick HLz as per EN 771-1, e.g. Bouyer Leroux, FR	370 x 200 x 315		≥ 5 / ≥ 0,6	C 34
Perforated clay brick HLz as per EN 771-1 e.g. Wienerberger Porotherm 30 R, FR	370 x 240 x 250		≥ 7,5 / ≥ 0,7	C 35
Perforated clay brick HLz as per EN 771-1 e.g. Wienerberger Porotherm GF R20, FR	300 x 250 x 275		≥ 5 / ≥ 0,7	C 35
Perforated clay brick HLz as per EN 771-1, e.g. Terreal Calibric, FR	300 x 200 x 220		≥ 5 / ≥ 0,7	C 36

1) Vertically perforation [illegible]

Figures not to scale

Table C11.1: Summary of hollow or perforated bricks – base material group 1 [1]

Base material	Format/ Dimensions (l x w x h) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Perforated clay ceiling brick as per EN 15037-3, *e.g. Hörl & Hartmann ceiling brick, DE*	250 x 250 x [illegible]		[illegible]	C 35
Perforated clay ceiling brick as per EN 15037-3, *e.g. Hörl & Hartmann block for beam-and-block ceilings, DE*	520 x 180 x 250		≥ 2,5 / ≥ 0,7	C 36
Hollow calcium silicate brick KSV as per EN 771-2, *e.g. KS Quadro, DE*	2 DF 240 x 115 x 113		[illegible]	C 37

1) Volume of perforation > 15 % and ≤ 50 %, gross cross-section reduction of perforation vertical to bearing area

Figures not to scale

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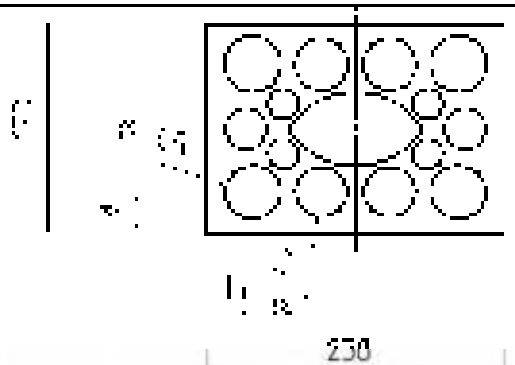
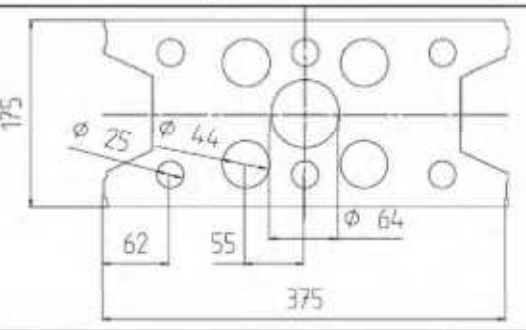
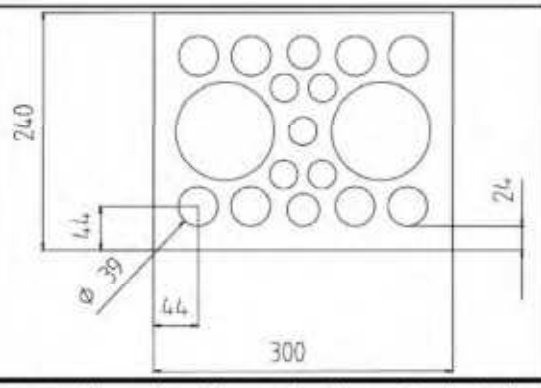
Performance Summary of base materials hollow or perforated bricks	Annex C 11 Appendix 23 / 57

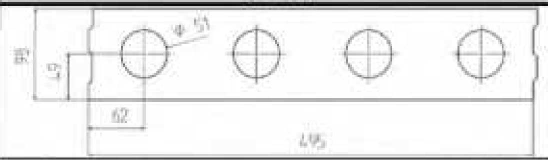
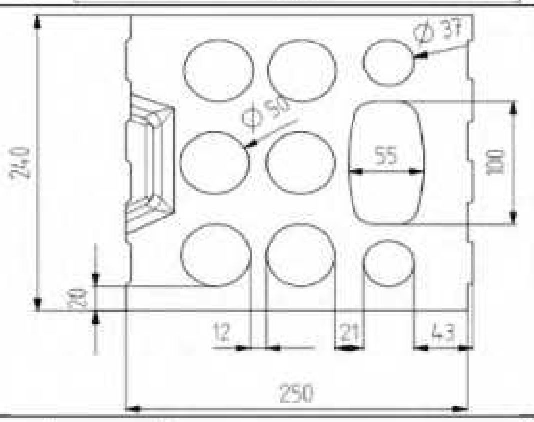
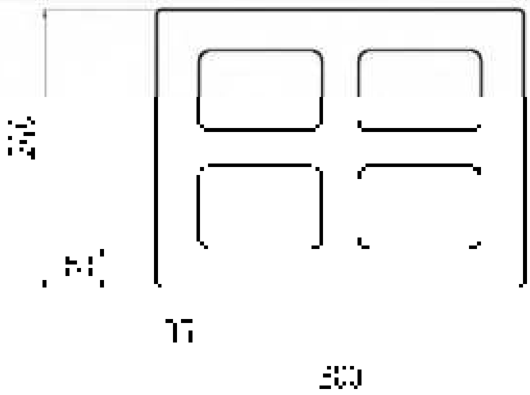
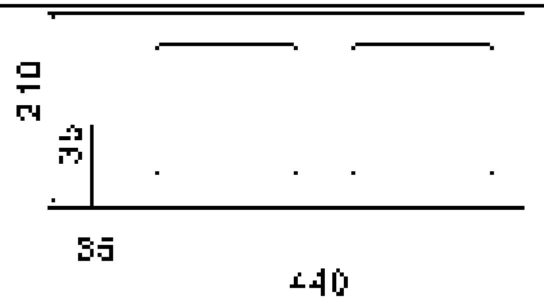
Table C 12.1: Summary of hollow or perforated bricks – base material group 1 [1)]

Base material	Format/ Dimensions (l x w x h) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Hollow calcium silicate brick KSL as per EN 771-2, *e.g. KS Wemding, GF*	2 DF 240 x 175 x 113		≥ 7,5 / ≥ 1,4	C 38
Hollow calcium silicate brick KSL as per EN 771-2, *e.g. KS Wemding, DE*	9 DF 375 x 175 x 248		≥ 10 / ≥ 1,6	C 38
Hollow calcium silicate brick KSL as per EN 771-2, *e.g. KS Wemding, DE*	5 DF 300 x 240 x 113		≥ 7,5 / ≥ 1,4	C 38

1) Vertically perforation > 15 % and ≤ 50 %, cross section reduced by perforation vertically to the resting area.

Figures not to scale

Table C10.1: Summary of hollow or perforated bricks – base material group "c"[1]

Base material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Hollow calcium silicate brick KSL as per EN 771-2, *e.g. KS Wemding, P10, DE*	495 x 98 x 245		≥ 2,5 / ≥1,2	C 39
Hollow calcium silicate brick KSL as per EN 771-2, *e.g. KS Wemding, DE*	9 DF 250 x 240 x 240		≥ 7,5 / ≥ 1,4	C 39
Hollow brick light-weight concrete Hbl as per EN 771-3, [illegible]	[illegible] x 240 x 240		[illegible]	[illegible]
Hollow brick light-weight concrete Hbl as per EN 771-3, [illegible]	440 x [illegible] x 210		[illegible]	[illegible]

[1] [illegible]

Figures not to scale

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Performances
Summary of base materials hollow or perforated bricks

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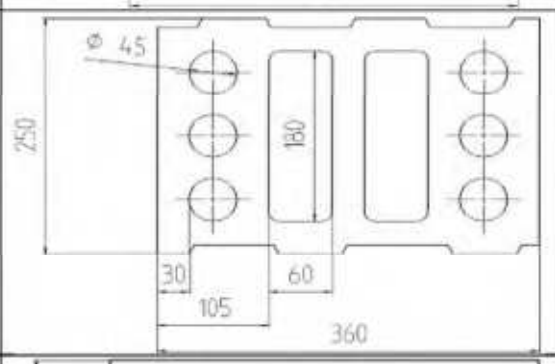
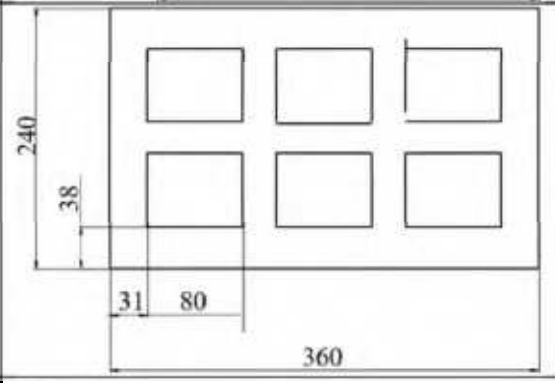
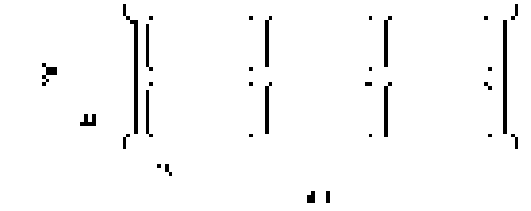
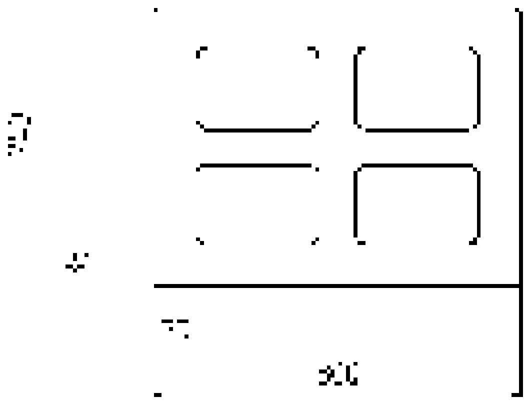
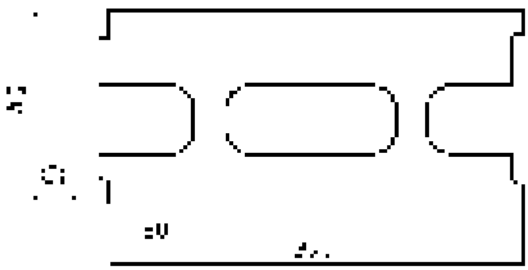
Table C14.1: Summary of hollow or perforated bricks – base material group "c"[1]

Base material	Format/ Dimensions (l x w x h) [mm]	Brick drawing [mm]	Mean compressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Hollow brick light-weight concrete Hbl as per EN 771-3 e.g. Zeschal, DE	500 x 240 x 240		≥ 2,5 / ≥ 0,9	C 40
Hollow brick light-weight concrete Hbl as per EN 771-3, *e.g. KLB, DE*	360 x 250 x 250		≥ 2,5 / ≥ 0,9	C 41
Hollow brick light-weight concrete Hbl as per EN 771-3, *e.g. KLB, DE*	360 x 240 x 240		≥ 2,5 / ≥ 1,0	C 41
Hollow brick light-weight concrete Hbl as per EN 771-3 e.g. Leca Perpaing, FR	500 x 200 x 200		≥ 2,5 / ≥ 0,9	C 41

[1] Vertically perforated with ≤ 15 % and ≤ 50 % gross cross-section of bricks; horizontally perforated with ≤ 50 % gross cross-section

Figures not to scale

Table C15.1: Summary of hollow or perforated bricks – base material group "c"[1]

Base material	Format/ Dimensions (L x W x H) [mm]	Brick drawing [mm]	Mean com-pressive strength as per EN 771 [N/mm²] / bulk density ρ [kg/dm³]	See Annex
Hollow brick normal concrete Hbn as per EN 771-3 e.g. [illegible]	[illegible] x 240 x 240		≥ 2,5 / ≥ [illegible]	C [illegible]
Heat insulation brick WDB e.g. [illegible]	[illegible] x 240 x 240		≥ 2,5 / ≥ 0,7	C [illegible]

[1] [illegible]

Table C16.2: Summary of autoclaved aerated concrete – base material group "d"

Base material	Format [mm]	Dimensions (L x W x H) [mm]	Mean compressive strength as per EN 771 [N/mm²]	Bulk density ρ [kg/dm³]	See Annex
Unreinforced autoclaved aerated concrete, as per EN 771-4					C 44
Reinforced autoclaved aerated concrete, AAC as per EN 12602					C 45

Figures not to scale

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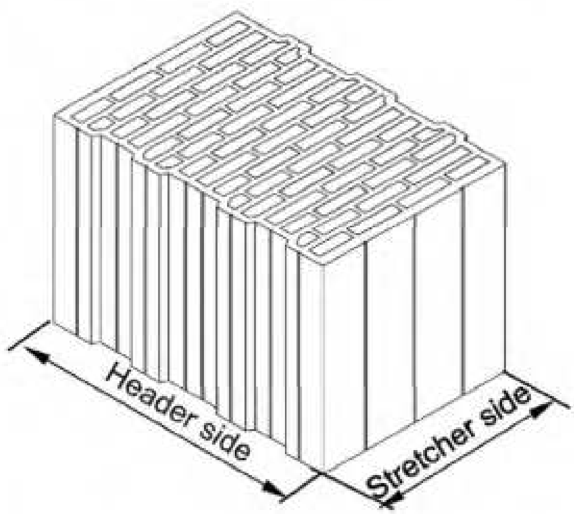
Performances Summary of base materials hollow or perforated bricks and autoclaved aerated concrete	Appendix 27 / 57

Footnotes for Annex C 17 – C 43

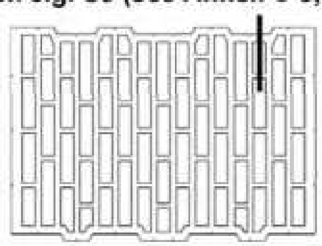
1) In absence of other national regulations
2) Only valid for temperature range ≤ 50 °C.
3) Only valid for edge distances $c \geq 150$ mm; intermediate values by linear interpolation.
4) Only valid for edge distance $c \geq 200$ mm; intermediate values by linear interpolation.
5) Only valid for edge distance $c \geq 150$ mm for temperature range 30/50 °C; intermediate values by linear interpolation.
6) Only valid for edge distance $c \geq 200$ mm for temperature range 30/50 °C; intermediate values by linear interpolation.
7) Only valid for spacing $s \geq 250$ mm
8) Only valid for spacing $s \geq 200$ mm for temperature range 30/50 °C
9) The characteristic resistance of lower [illegible] can also be taken for next higher [illegible].
10) No performance assessed.
11) The characteristic resistance F_{Rk} is taken from the lower compressive strength of the masonry unit.
12) The characteristic resistance F_{Rk} is only valid for shear loads V without lever arm, for single anchors with $c \geq$ 250 mm in the header side.
13) Only valid for $h_{ef} \geq 240$ mm
14) The compressive strength of the single brick must not be less than 80% of the mean compressive strength.
15) The lowest load of two consecutive embedment depths may be used for the intermediate embedment depths.
16) If the compressive strength of the base material according to EN 771-1, EN 771-2 or EN 771-3 on the construction site is lower than the mean compressive strength given in the tables according to Annex C 17 – C 43, F_{Rk} shall be calculated as follows:

$$F_{Rk, construction\ site} = F_{Rk}\ (Table\ C\ [illegible]) \cdot \frac{Mean\ compressive\ strength\ (construction\ site)}{Mean\ compressive\ strength\ (Table\ C\ [illegible])}$$

Detailed design of header side and stretcher side



Possible position of the anchor in the header side of brick e.g. S9 (see Annex C 8, C 43)



Possible Position of the anchor in the stretcher side of brick e.g. S9 (see Annex C 8, C 32)

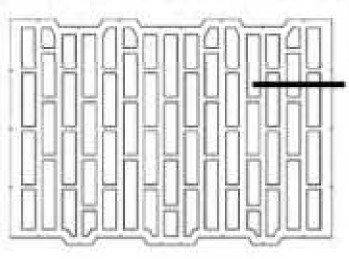


Table C17.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Clay brick Mz; ρ ≥ 1,8 as per EN 771-1 *e.g. Schlagmann, DE* **3 DF** (240x175x113) Hammer drilling	10/8	**0,90** **1,20**[2]	10)	10)	10)	**0,90** **1,50**[4]	10)	10)	10)	10)
	12,5/10	**1,20** **1,50**[2]	10)	10)	10)	**1,20** **1,50**[4] **2,00**[6]	10)	10)	10)	10)
	15/12	**1,50** **2,00**[2]	10)	10)	10)	**1,50** **2,00**[4] **2,50**[6]	10)	10)	10)	10)
	20/16	**2,00** **2,50**[2]	10)	10)	10)	**2,00** **2,50**[4] **3,00**[6]	10)	10)	10)	10)
	24,7	**2,50** **3,00**[2]	10)	10)	10)	**2,50** **3,50**[4] **4,00**[6]	10)	10)	10)	10)
Clay brick Mz; ρ ≥ 1,8 as per EN 771-1 *e.g.Wienerberger, DK* **DF** (240x115x52) Hammer drilling	10/8	**0,90**[7]	**0,90** **1,20**[4]	**0,90** **1,20**[2]	9)	10)	**1,50**[7]	10)	10)	10)
	12,5/10	**0,90**[7] **1,20**[8]	**1,20** **1,50**[3]	**1,20** **1,50**[2]	9)	**1,20**[7]	**2,00**[7]	**2,00**[7]	10)	10)
	15/12	**1,20**[7] **1,50**[8]	**1,20** **1,50**[2] **2,00**[4]	**1,50** **2,00**[2]	9)	**1,20**[7] **1,50**[8]	**2,50**[7]	**2,00**[7] **2,50**[8]	10)	10)
	20/16	**1,50**[7] **2,00**[8]	**1,50** **2,00**[2] **2,50**[4]	**2,00** **2,50**[2]	9)	**1,50**[7] **2,00**[8]	**3,50**[7]	**3,00**[7]	10)	10)
	25/20	**2,00**[7] **2,50**[8]	**2,00** **2,50**[2] **3,00**[4] **3,50**[6]	**2,50** **3,50**[2]	9)	**2,00**[7] **2,50**[8]	**4,00**[7] **4,50**[5][7]	**4,00**[7]	10)	10)
	26,7	**2,00**[7] **2,50**[8]	**2,50** **3,00**[4] **3,50**[6]	**3,00** **3,50**[2]	9)	**2,00**[7] **2,50**[8]	**4,00**[7] **4,50**[3][7] **5,00**[5][7]	**4,00**[7]	10)	10)
	35/28	**3,00**[7]	11)	11)	11)	**3,00**[7] **3,50**[8]	11)	**5,50**[7]	10)	10)
	45/36	**3,00**[7]	11)	11)	11)	**4,00**[7] **4,50**[8]	11)	**6,50**[7] **7,00**[8]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C18.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Clay brick Mz; ρ ≥ 1,8 as per EN 771-1 *e.g. Schlagmann, DE* *e.g. Ebersdobler, DE* **NF** (240x115x71) Hammer drilling	10/8	0,75[7] 0,90[8]	0,90	1,20 1,50[2]	9)	10)	1,20[7] 1,50[8]	3,00 3,50[4][7]	1,50 2,00[6]	9)
	12,5/10	0,90[7] 1,20[8]	1,20	1,50 2,00[2]	9)	0,90[7] 1,20[3][7]	1,50[7] 2,00[8]	3,50 4,00[7] 4,50[4][7]	2,00 2,50[6]	9)
	15/12	1,20[7] 1,50[8]	1,50	2,00 2,50[2]	9)	1,20[7] 1,50[8]	2,00[7]	4,00 4,50[2] 5,50[4][7]	2,50 3,00[6]	9)
	18,5/-	1,20[7] 1,50[8]	1,50	2,00 2,50[2]	9)	1,20[7] 1,50[8]	2,00[7]	5,00 5,50[2] 6,00[7] 6,50[4][7] 7,00[6][8]	2,50 3,00[6]	9)
	20/16	1,50[7] 2,00[8]	2,00	2,50 3,50[2]	9)	1,50[7] 2,00[8]	2,50[7] 3,00[8]	11)	3,00 3,50[2]	9)
	25/20	2,00[7] 2,50[8]	2,50	3,00 4,00[2]	9)	2,00[7] 2,50[8]	3,50[7]	11)	4,00 4,50[2]	9)
	35/28	2,50[7] 3,00[8]	3,00 3,50[2]	4,50 5,00[2]	9)	3,00[7] 3,50[8]	4,50[7] 5,00[8]	11)	5,50 6,00[2] 6,50[6]	9)
	35,4	3,00[7]	3,00 3,50[2]	4,50 5,00[2]	9)	3,00[7] 3,50[8]	4,50[7] 5,00[8]	11)	5,50 6,00[2] 6,50[6]	9)
	38,4	11)	3,50 4,00[2]	5,00	9)	3,50[7] 4,00[8]	5,00[7]	11)	6,00 7,00[5]	9)
	45/36	11)	11)	11)	11)	4,00[7] 4,50[8]	11)	11)	11)	11)
	60/48	11)	11)	11)	11)	5,00[7]	11)	11)	11)	11)
		11)	11)	11)	11)	5,00[7]	11)	11)	11)	11)
Partial factor	γ_{Mm}[1] [-]	2,5								

Footnotes see Annex C 16.

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Performances
Characteristic resistance in solid masonry

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Table C19.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Clay brick Mz; **ρ ≥ 2,2** as per EN 771-1 *e.g. Schlagmann, DE* **2 DF** (240x115x113) Hammer drilling	10/8	10)	10)	10)	10)	**1,20**[7]	10)	10)	10)	10)
	12,5/10	10)	10)	10)	10)	**1,50**[7]	10)	10)	10)	10)
	15/12	10)	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	10)	10)	10)
	20/16	10)	10)	10)	10)	**2,00**[7] **2,50**[8]	10)	10)	10)	10)
	25/20	10)	10)	10)	10)	**3,00**[7]	10)	10)	10)	10)
	26,4	10)	10)	10)	10)	**3,00**[7] **3,50**[8]	10)	10)	10)	10)
Calcium silicate solid brick KS; **ρ ≥ 1,8** as per EN 771-2 *e.g. KS Wemding, DE* **NF** (240x115x71) Hammer drilling	10/8	**1,20**	**0,50** **0,75**[7] **0,90**[8]	**0,50** **0,60**[7] **0,90**[8]	9)	**0,90**[7] **2,00**[4][7]	10)	**1,50** **2,00**[4]	**1,20** **1,50**[7]	9)
	12,5/10	**1,20** **1,50**[2]	**0,60** **0,90**[7] **1,20**[8]	**0,60** **0,75**[7] **0,90**[8]	9)	**1,20**[7] **2,00**[4][7] **2,50**[6][8]	10)	**2,00** **2,50**[4]	**1,50** **2,00**[7]	9)
	15/12	**1,50** **2,00**[2]	**0,75** **1,20**[7]	**0,75** **0,90**[7] **1,20**[8]	9)	**1,50**[7] **2,50**[4][7] **3,00**[6][8]	10)	**2,50** **3,00**[4]	**2,00** **2,50**[8]	9)
	20/16	**2,00** **2,50**[2]	**0,90** **1,50**[7]	**0,90** **1,20**[7] **1,50**[8]	9)	**2,00**[7] **3,50**[4][7] **4,00**[6][8]	10)	**3,50** **4,00**[4] **4,50**[6]	**2,50** **3,00**[7] **3,50**[8]	9)
	25/20	**2,50** **3,00**[2]	**1,20** **2,00**[7]	**1,20** **1,50**[7] **2,00**[8]	9)	**2,50**[7] **4,50**[4][7] **5,00**[6][8]	10)	**4,00** **5,00**[4] **5,50**[6]	**3,00** **3,50**[7] **4,50**[8]	9)
	27,0	**2,50** **3,00**[2]	**1,20** **2,00**[7]	**1,20** **1,50**[7] **2,00**[8]	9)	**3,00**[7] **5,00**[4][7]	10)	**4,00** **5,00**[4] **5,50**[6]	**3,00** **3,50**[7] **4,50**[8]	9)
	35/28	**3,00**	**2,00** **2,50**[7] **3,00**[8]	**2,00** **3,00**[8]	9)	11)	10)	**5,50** **6,00**[3] **6,50**[4] **7,50**[6]	**4,50** **5,50**[7] **6,00**[8]	9)
	37,4/-	**3,00**	**2,00** **3,00**[7]	**2,00** **2,50**[7] **3,00**[8]	9)	11)	10)	**5,50** **6,00**[3] **6,50**[4] **8,00**[6]	**5,00** **5,50**[7] **6,00**[8] **6,50**[5][8]	9)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Fortsetzung Anlage C 19

Table C20.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Calcium silicate solid brick KS; ρ ≥ 2,0 as per EN 771-2 *e.g. KS Wemding, DE* **NF** (240x115x71) Hammer drilling	10/8	**1,20** **1,50**[2]	10)	10)	10)	**0,90**	**1,20**[7]	9)	10)	10)
	12,5/10	**1,20** **1,50**[2]	10)	10)	10)	**1,20**	**1,50**[7]	9)	10)	10)
	15/12	**1,50** **2,00**[2]	10)	10)	10)	**1,20** **1,50**[2]	**1,50**[7] **2,00**[8]	9)	10)	10)
	20/16	**2,00** **2,50**[2]	10)	10)	10)	**1,50** **2,00**[2]	**2,00**[7] **2,50**[8]	9)	10)	10)
	25/20	**2,50** **3,00**[2]	10)	10)	10)	**2,00** **2,50**[2]	**3,00**[7]	9)	10)	10)
	35/28	**3,00**	10)	10)	10)	**3,00** **3,50**[2]	**4,00**[7] **4,50**[8]	9)	10)	10)
	37,2/-	**3,00**	10)	10)	10)	**3,00** **3,50**[2]	**4,00**[7] **4,50**[8]	9)	10)	10)
	45/36	11)	10)	10)	10)	**4,00** **4,50**[2]	11)	11)	10)	10)
	54,6/-	11)	10)	10)	10)	**5,00**	11)	11)	10)	10)
Calcium silicate solid brick KS; ρ ≥ 2,0 as per EN 771-2 *e.g. Bayer Esslingen, Hermann Peter, DE* **2 DF** (240x115x113) Hammer drilling	10/8	10)	10)	10)	10)	10)	**2,00** **2,50**[2]	9)	10)	10)
	12,5/10	10)	10)	10)	10)	10)	**2,50** **3,00**[2]	9)	10)	10)
	15/12	10)	10)	10)	10)	10)	**3,00**	9)	10)	10)
	20/16	10)	10)	10)	10)	10)	**3,50**	9)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C21.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Calcium silicate solid brick KS; ρ ≥ 1,8 as per EN 771-2 *e.g. KS Wemding, DE* **12 DF** (495x175x240) Hammer drilling	10/8	10)	10)	10)	10)	10)	10)	**4,00**[7]	**3,50**[7] **5,00**[3][7] **5,50**[5][8]	9)
	12,5/10	10)	10)	10)	10)	10)	10)	**5,00**[7]	**4,00**[7] **6,00**[3][7] **6,50**[5][8] **7,00**[6][8]	9)
	15/12	10)	10)	10)	10)	10)	10)	**6,00**[7]	**4,50**[7] **7,00**[3][7] **7,50**[4][7] **8,50**[6][8]	9)
	20/16	10)	10)	10)	10)	10)	10)	**6,50**[7] **8,50**[8]	**5,00**[7] **8,50**[3][7] **10,00**[4][7]	9)
	23,5/-	10)	10)	10)	10)	10)	10)	**6,50**[7] **8,50**[8]	**5,50**[7] **9,00**[3][7] **10,00**[4][7]	9)
Calcium silicate solid brick KS; ρ ≥ 2,0 as per EN 771-2 *e.g. KS Wemding, DE* **12 DF** (495x175x240) Hammer drilling	10/8	**1,50**	10)	10)	10)	**2,00**	10)	10)	10)	10)
	12,5/10	**1,50** **2,00**[2]	10)	10)	10)	**2,50** **3,00**[2]	10)	10)	10)	10)
	15/12	**2,00** **2,50**[2]	10)	10)	10)	**3,00** **3,50**[2]	10)	10)	10)	10)
	20/16	**3,00**	10)	10)	10)	**4,00** **4,50**[2]	10)	10)	10)	10)
	25/20	**3,00**	10)	10)	10)	**5,00**	10)	10)	10)	10)
	33,9/-	**3,00**	10)	10)	10)	**5,00**	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C22.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Calcium silicate solid brick KS; ρ ≥ 2,0 as per EN 771-2 *e.g. KS Wemding, DE* **8 DF** (495x115x240) Hammer drilling	10/8	10)	**2,00**[7]	**2,50**[7] **3,50**[5][8]	9)	10)	**2,50**[7] **3,00**[6][8]	9)	10)	10)
	12,5/10	10)	**2,50**[7]	**3,00**[7] **3,50**[3][7] **4,50**[5][8]	9)	10)	**3,00**[7] **3,50**[4][7] **4,00**[6][8]	9)	10)	10)
	15/12	10)	**3,00**[7] **3,50**[5][8]	**3,00**[7] **3,50**[3][7] **5,00**[5][8]	9)	10)	**3,00**[7] **4,00**[4][7] **4,50**[6][8]	9)	10)	10)
	20/16	10)	**3,50**[7] **4,00**[3][7]	**4,00**[7] **5,00**[3][7]	9)	10)	**3,50**[7] **5,50**[4][7]	9)	10)	10)
	22,2/-	10)	**3,50**[7] **4,00**[3][7]	**4,00**[7] **5,00**[3][7]	9)	10)	**4,00**[7] **5,50**[4][7]	9)	10)	10)
Calcium silicate solid brick KS XL-PE; ρ ≥ 2,0 as per EN 771-2 *e.g. KS Wemding, DE* (998x150x498) Hammer drilling	10/8	10)	10)	10)	10)	10)	**2,50**	9)	10)	10)
	12,5/10	10)	10)	10)	10)	10)	**3,00**	9)	10)	10)
	15/12	10)	10)	10)	10)	10)	**3,50**	9)	10)	10)
	20/16	10)	10)	10)	10)	10)	**4,50**	9)	10)	10)
	25/20	10)	10)	10)	10)	10)	**5,50** **6,00**[12]	9)	10)	10)
	31,3/-	10)	10)	10)	10)	10)	**5,50** **7,50**[12]	9)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C23.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Lightweight solid brick Vbl; ρ ≥ 1,2 as per EN 771-3 *e.g. KLB, DE* **2 DF** (240x115x113) Hammer drilling	2,5/2	**0,50**[7]	**0,60**	**0,90**[3] **1,20**[5]	9)	**0,75**[7] **0,90**[8]	**0,50** **0,60**[2]	9)	**1,20** **1,50**[2]	9)
	2,7/-	**0,75**[7] **0,90**[8]	**0,60**	**1,20**[3] **1,50**[5]	9)	10)	**0,60**	9)	**2,00** **2,50**[3]	9)
Lightweight solid brick Vbl; ρ ≥ 1,4 as per EN 771-3 *e.g. KLB, DE* **2 DF** (240x115x113) Hammer drilling	2,5/2	10)	10)	10)	10)	10)	10)	**1,50** **2,50**[12]	10)	10)
	5/4	10)	10)	10)	10)	10)	10)	**3,50** **5,00**[12]	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,0 as per EN 771-3 *e.g. KLB, DE* **8 DF** (490x115x240) Hammer drilling	2,5/2	**1,20**	10)	10)	10)	10)	10)	10)	10)	10)
	3,1	**1,50**	10)	10)	10)	10)	10)	10)	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,2 as per EN 771-3 *e.g. KLB, DE* **8 DF** (490x115x240) Hammer drilling	2,5/2	10)	10)	10)	10)	**1,20**	10)	10)	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,6 as per EN 771-3 *e.g. KLB, DE* **8 DF** (490x115x240) Hammer drilling	2,5/2	10)	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	10)	10)	10)
	5/4	10)	10)	10)	10)	**2,00**[7] **2,00**[8] **2,50**[5][8]	10)	10)	10)	10)
	7,5/6	10)	10)	10)	10)	**2,50**[7] **3,00**[3][7] **3,50**[5][8]	10)	10)	10)	10)
	9,0/-	10)	10)	10)	10)	**2,50**[7] **3,50**[3][7] **4,00**[5][8]	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C24.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Lightweight solid brick Vbl; ρ ≥ 1,8 as per EN 771-3 *e.g. KLB, DE* **8 DF** (490x240x115) Hammer drilling	5/4	**1,50**[7] **2,00**[5)8)]	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
	7,5/6	**2,00**[7] **2,50**[3)7)]	10)	10)	10)	10)	10)	**2,50**[7] **3,00**[5)8)]	10)	10)
	10/8	**2,50**[7] **3,00**[3)7)]	10)	10)	10)	10)	10)	**3,00**[7] **3,50**[3)7)]	10)	10)
	12,5/10	**2,50**[7]	10)	10)	10)	10)	10)	**3,00**[7] **4,50**[3)7)]	10)	10)
	13,42/-	**3,00**[7]	10)	10)	10)	10)	10)	**3,50**[7] **5,00**[3)7)]	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,4 as per EN 771-3 *e.g. KLB, DE* **8 DF** (245x240x240) Hammer drilling	5/4	**0,50**[7] **0,60**[8)]	10)	10)	10)	**2,00**[7]	10)	10)	10)	10)
	7,5/6	**0,75**[7] **0,90**[8)]	10)	10)	10)	**2,50**[7]	10)	10)	10)	10)
	8,65/-	**0,90**[7]	10)	10)	10)	**2,50**[7]	10)	10)	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,6 as per EN 771-3 *e.g. KLB, DE* **8 DF** (245x240x240) Hammer drilling	2,5/2	10)	**0,60**[7] **0,75**[8)]	**0,90**[7] **1,20**[8)]	9)	**1,20**[7] **1,50**[5)8)]	**0,90**[7] **1,20**[6)8)]	**2,00**[7]	**1,50**[7] **2,00**[3)7)]	9)
	5/4	10)	**1,20**[7] **1,50**[8)]	**2,00**[7] **2,50**[5)8)]	9)	**2,00**[7] **2,50**[3)7)] **3,00**[5)8)]	**2,00**[7]	**3,50**[7] **4,00**[8)] **4,50**[12)]	**2,50**[7] **3,50**[3)7)] **4,50**[5)8)]	9)
	7,5/6	10)	**2,00**[7]	**2,50**[7] **3,00**[3)7)] **4,00**[5)8)]	9)	**2,50**[7] **4,00**[3)7)] **4,50**[5)8)]	**2,50**[7] **3,00**[4)5)7)] **3,50**[6)8)]	**5,50**[7] **6,00**[8)] **6,50**[12)]	**3,00**[7] **5,50**[3)7)] **6,50**[6)8)]	9)
	10/8	10)	**2,50**[7]	**3,00**[7] **4,00**[3)7)] **5,00**[5)8)]	9)	**2,50**[7] **4,00**[3)7)] **4,50**[5)8)]	**3,00**[7] **3,50**[3)7)] **4,00**[4)5)7)] **4,50**[6)8)]	**7,50**[7] **8,00**[8)] **9,00**[12)]	**3,50**[7] **6,50**[3)7)] **7,50**[4)7)] **8,50**[6)8)]	9)
	11/-	10)	**2,50**[7] **3,00**[8)]	**3,00**[7] **4,50**[3)7)] **5,00**[5)8)]	9)	11)	**3,00**[7] **4,00**[3)7)] **4,50**[4)5)7)] **5,00**[6)8)]	**6,50**[7] **8,50**[8)] **10,00**[12)]	**4,00**[7] **7,00**[3)7)] **8,00**[4)7)] **9,50**[6)8)]	9)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C25.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Lightweight solid brick Vbl; ρ ≥ 0,8 as per EN 771-3, *e.g. Liapor Super-K, DE* **16 DF** (500x240x248) Hammer drilling	1,8/2	10)	10)	10)	10)	10)	10)	**0,40**[7]	10)	10)
	2,2/-	10)	10)	10)	10)	10)	10)	**0,50**[7]	10)	10)
Lightweight solid brick Vbl; ρ ≥ 1,4 as per EN 771-3, *e.g. Tarmac, UK* (440x100x215) Hammer drilling	2,5/2	10)	10)	10)	10)	**0,90**[7]	10)	**1,20**[7]	10)	10)
	5/4	10)	10)	10)	10)	**1,50**[7]	10)	**2,00**[7] **2,50**[4)7]	10)	10)
	7,3/-	10)	10)	10)	10)	**2,00**[7] **2,50**[3)7] **3,00**[5)8]	10)	**2,00**[7] **3,50**[4)7] **4,00**[6)8]	10)	10)
Solid brick normal concrete Vbn; ρ ≥ 1,8 as per EN 771-3 *e.g. Adolf Blatt, DE* (240x245x240) Hammer drilling	5/4	**1,50**[7]	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	10)	10)	10)
	7,5/6	**2,00**[7] **2,50**[8]	10)	10)	10)	**2,50**[7] **3,00**[5)8]	10)	10)	10)	10)
	10/8	**3,00**[7]	10)	10)	10)	**3,00**[7] **3,50**[3)7] **4,00**[5)8]	10)	10)	10)	10)
	12,5/10	**3,00**[7]	10)	10)	10)	**3,50**[7] **4,00**[3)7] **5,00**[5)8]	10)	10)	10)	10)
	15/12	**3,00**[7]	10)	10)	10)	**3,50**[7] **5,00**[3)7] **5,00**[5)8]	10)	10)	10)	10)
	17,0/-	**3,00**[7]	10)	10)	10)	**4,00**[7] **5,00**[3)7] **5,00**[5)8]	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

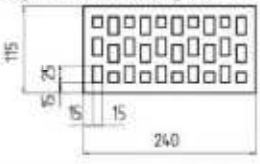
Footnotes see Annex C 16.

Table C26.1: Characteristic resistance F_{Rk}[16] in [kN] for use in solid masonry - base material group "b"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 50	≥ 70	≥ 70	≥ 90
Solid brick normal concrete Vbn; ρ ≥ 1,8 as per EN 771-3 *e.g. Tarmac, UK* (440x100x215) Hammer drilling	7,5/6	10)	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	**2,50**[7] **4,50**[12]	10)	10)
	10/8	10)	10)	10)	10)	**2,00**[7] **2,50**[8]	10)	**3,50**[7] **6,00**[12]	10)	10)
	12,5/10	10)	10)	10)	10)	**2,50**[7] **3,00**[5][8]	10)	**4,00**[7] **4,50**[8] **7,50**[12]	10)	10)
	15/12	10)	10)	10)	10)	**3,00**[7] **3,50**[5][8]	10)	**5,00**[7] **9,00**[12]	10)	10)
	18,0/-	10)	10)	10)	10)	**3,50**[7] **4,00**[3][7] **4,50**[5][8]	10)	**6,00**[7] **6,50**[8] **11,00**[12]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

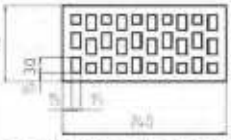
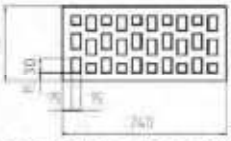
Footnotes see Annex C 16.

Table C26.2: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 1,2 Form B, as per EN 771-1 *e.g. Wienerberger, DE*  **2 DF** (240x115x113) Rotary drilling	10/8	**0,40**[7] **0,50**[8]	10)	10)	10)	**0,90**[7]	10)	**0,90**[7]	10)	10)
	12,5/10	**0,60**[7]	10)	10)	10)	**1,20**[7]	10)	**1,20**[7]	10)	10)
	15/12	**0,60**[7] **0,75**[8]	10)	10)	10)	**1,50**[7]	10)	**1,50**[7]	10)	10)
	20/16	**0,90**[7]	10)	10)	10)	**2,00**[7]	10)	**2,00**[7]	10)	10)
	25/20	**1,20**[7]	10)	10)	10)	**2,50**[7]	10)	**2,50**[7]	10)	10)
	26,7/-	**1,20**[7] **1,50**[8]	10)	10)	10)	**2,50**[7]	10)	**2,50**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

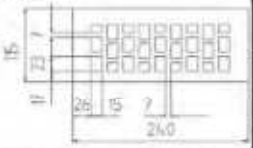
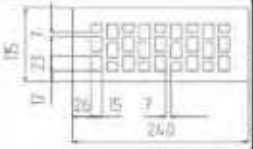
Footnotes see Annex C 16.

Table C27.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8[15]			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 1,0 as per EN 771-1 *e.g. Wienerberger, DE*  **2 DF** (240x115x113) Rotary drilling	10/8	**0,40**[7]	[10]	[10]	[10]	**0,60**[7] **0,75**[8]	[10]	**0,60**	[10]	[10]
	12,5/10	**0,50**[7]	[10]	[10]	[10]	**0,75**[7] **0,90**[8]	[10]	**0,75**	[10]	[10]
	15/12	**0,60**[7]	[10]	[10]	[10]	**0,90**[7]	[10]	**0,90**	[10]	[10]
	15,6/-	**0,60**[7]	[10]	[10]	[10]	**0,90**[7] **1,20**[8]	[10]	**1,20**	[10]	[10]
Perforated clay brick HLz; ρ ≥ 1,2 as per EN 771-1 *e.g. Wienerberger, DE*  **2 DF** (240x115x113) Rotary drilling	10/8	[10]	**0,40**[7]	**0,40**[7] **0,50**[8]	**0,40** **0,60**[2]	[10]	[10]	**0,60**[7]	[10]	[10]
	12,5/10	[10]	**0,50**[7]	**0,50**[7] **0,60**[8]	**0,60** **0,75**[2]	[10]	[10]	**0,75**[7]	[10]	[10]
	15/12	[10]	**0,60**[7]	**0,60**[7] **0,75**[8]	**0,60** **0,90**[2]	[10]	[10]	**0,90**[7]	[10]	[10]
	20/16	[10]	**0,75**[7] **0,90**[8]	**0,75**[7] **0,90**[8]	**0,90** **1,20**[2]	[10]	[10]	**1,20**[7]	[10]	[10]
	25/20	[10]	**0,90**[7] **1,20**[8]	**0,90**[7] **1,20**[8]	**1,20** **1,50**[2]	[10]	[10]	**1,50**[7]	[10]	[10]
	35/28	[10]	**1,20**[7] **1,50**[8]	**1,20**[7] **1,75**[8]	**1,50** **2,00**[2]	[10]	[10]	**2,00**[7] **2,50**[8]	[10]	[10]
	35,9	[10]	**1,20**[7] **1,50**[8]	**1,50**[7] **2,00**[8]	**1,50** **2,00**[2]	[10]	[10]	**2,50**[7]	[10]	[10]
Partial factor	γ_{Mm}[1] [-]	**2,5**								

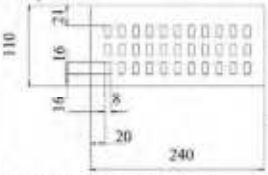
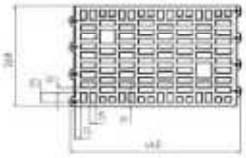
For explanations see C 15.

Table C28.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14[15]	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick VHLz; ρ ≥ 1,6 as per EN 771-1, *e.g. Wienerberger, DE*  **NF** (240x115x71) Rotary drilling	20/16	10)	10)	10)	10)	10)	10)	10)	**1,50** **2,00**[2]	**1,50** **2,00**[2]
	25/20	10)	10)	10)	10)	10)	10)	10)	**2,00** **2,50**[2]	**2,00** **2,50**[2]
	35/28	10)	10)	10)	10)	10)	10)	10)	**3,00** **3,50**[2]	**2,50** **3,00**[2]
	45/36	10)	10)	10)	10)	10)	10)	10)	**4,00** **4,50**[2]	**3,50** **4,00**[2]
	60/48	10)	10)	10)	10)	10)	10)	10)	**5,00** **6,00**[2]	**4,50** **5,50**[2]
	70,1/-	10)	10)	10)	10)	10)	10)	10)	**6,00** **7,00**[2]	**5,50** **6,50**[2]
Perforated clay brick VHLz; ρ ≥ 1,6 as per EN 771-1, *e.g. Wienerberger, DE*  **2 DF** (240x115x113) Rotary drilling	12,5/10	10)	**0,50**[7] **0,60**[8]	**0,50**[7] **0,60**[8]	**0,30**[7] **0,40**[8]	**0,90**[7]	10)	**1,20**[7]	10)	10)
	15/12	10)	**0,60**[7] **0,75**[8]	**0,60**[7] **0,75**[8]	**0,40**[7] **0,50**[8]	**0,90**[7] **1,20**[8]	10)	**1,20**[7] **1,50**[8]	10)	10)
	20/16	10)	**0,75**[7] **0,90**[8]	**0,75**[7] **1,20**[8]	**0,50**[7] **0,60**[8]	**1,50**[7]	10)	**1,50**[7] **2,00**[8]	10)	10)
	25/20	10)	**0,90**[7] **1,20**[8]	**0,90**[7] **1,20**[8]	**0,60**[7] **0,90**[8]	**1,50**[7] **2,00**[8]	10)	**2,00**[7] **2,50**[8]	10)	10)
	35/28	10)	**1,50**[7]	**1,50**[7] **2,00**[8]	**0,90**[7] **1,20**[8]	**2,50**[7]	10)	**3,00**[7]	10)	10)
	45/36	10)	**2,00**[7]	**2,00**[7]	**1,20**[7] **1,50**[8]	**2,50**[7]	10)	**4,00**[7]	10)	10)
	60/48	10)	**2,50**[7]	**2,50**[7]	**1,50**[7] **2,00**[8]	**2,50**[7]	10)	**5,50**[7]	10)	10)
	60,7/-	10)	**2,50**[7]	**2,50**[7]	**1,50**[7] **2,00**[8]	**2,50**[7]	10)	**5,50**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

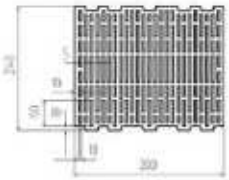
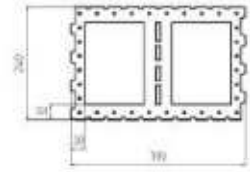
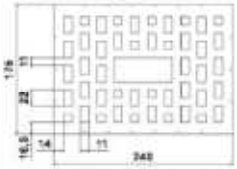
Factors see Annex C 16

Table C29.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 1,5 as per EN 771 -1 *e.g. Wienerberger, BS, DE*  **DF** (240x110x52) Hammer drilling	10/8	**0,60**[7]	10)	10)	10)	**0,50**[7] **0,60**[8]	10)	10)	10)	10)
	12,5/10	**0,75**[7]	10)	10)	10)	**0,60**[7] **0,75**[8]	10)	10)	10)	10)
	15/12	**0,75**[7] **0,90**[8]	10)	10)	10)	**0,75**[7] **0,90**[8]	10)	10)	10)	10)
	20/16	**1,20**[7]	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	10)	10)	10)
	25/20	**1,50**[7]	10)	10)	10)	**1,20**[7] **1,50**[8]	10)	10)	10)	10)
	35/28	**2,00**[7]	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	10)	10)	10)
	45/36	**2,50**[7]	10)	10)	10)	**2,00**[7] **2,50**[8]	10)	10)	10)	10)
	48,1/-	**2,50**[7]	10)	10)	10)	**2,50**[7]	10)	10)	10)	10)
Perforated clay brick HLz; ρ ≥ 0,9 as per EN 771-1 *e.g. Schlagmann, DE*  **10 DF** (440x260x240) Rotary drilling	5/4	**0,40 0,50**[2]	10)	10)	10)	**0,60**	10)	10)	10)	10)
	7,5/6	**0,60 0,75**[2]	10)	10)	10)	**0,90**	10)	10)	10)	10)
	10/8	**0,90**	10)	10)	10)	**1,20**	10)	10)	10)	10)
	10,9/-	**0,90 1,20**[2]	10)	10)	10)	**1,20 1,50**[2]	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C30.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14[15]	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1 *e.g. Schlagmann Poroton T14, DE*  **10 DF** (240x300x240) Rotary drilling	5/4	10)	10)	10)	10)	**0,30**	10)	**0,50**[7]	10)	10)
	6,4/-	10)	10)	10)	10)	**0,30 0,40**[2]	10)	**0,50**[7]	10)	10)
	7,5/6	10)	10)	10)	10)	**0,30 0,40**[2]	10)	**0,75**[7]	10)	10)
	7,7/-	10)	10)	10)	10)	**0,30 0,40**[2]	10)	**0,75**[7]	10)	10)
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1 *e.g. Schlagmann Planfüllziegel, DE*  **12 DF** (380x240x240) Rotary drilling	2,5/2	**0,40 0,50**[2]	10)	10)	10)	**0,60**	10)	10)	10)	10)
	5/4	**0,75 0,90**[2]	10)	10)	10)	**1,20**	10)	10)	10)	10)
	7,5/6	**1,20 1,50**[2]	10)	10)	10)	**2,00**	10)	10)	10)	10)
	8,0/-	**1,20 1,50**[2]	10)	10)	10)	**2,00**	10)	10)	10)	10)
Perforated clay brick HLz; ρ ≥ 1,0 as per EN 771-1 *e.g. Schlagmann, DE*  **3 DF** (240x175x113) Rotary drilling	7,5/6	10)	10)	10)	10)	10)	10)	10)	**1,50**[7]	**2,00**[7]
	10/8	10)	10)	10)	10)	10)	10)	10)	**2,00**[7]	**2,50**[7]
	12,5/10	10)	10)	10)	10)	10)	10)	10)	**2,50**[7]	**2,50**[7]
	15/12	10)	10)	10)	10)	10)	10)	10)	**2,50**[7]	**2,50**[7]
	15,8/-	10)	10)	10)	10)	10)	10)	10)	**2,50**[7]	**2,50**[7]
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

fischer frame fixing SXR / SXRL

Performance
Characteristic values for use in hollow or perforated masonry

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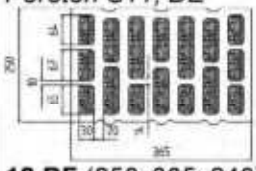
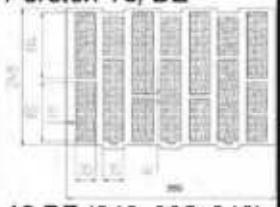
Table C31.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,8 as per EN 771-1 *e.g. Schlagmann Poroton S11, DE*  **12 DF** (250x365x240) Rotary drilling	5/4	10)	10)	10)	10)	10)	10)	**1,20**[7]	10)	10)
	7,5/6	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
	8,6/-	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1 *e.g. Schlagmann Poroton S10, DE*  **10 DF** (250x300x240) Rotary drilling	5/4	10)	10)	10)	10)	10)	10)	**1,20**[7] **1,50**[8]	10)	10)
	7,5/6	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
	7,7/-	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
Perforated clay brick HLz; ρ ≥ 0,6 as per EN 771-1 *e.g. Schlagmann Poroton T8, DE*  **12 DF** (248x365x240) Rotary drilling	2,5/2	10)	10)	10)	10)	10)	10)	**0,75**[7]	10)	10)
	5/4	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
	5,8/-	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

fischer frame fixing SXR / SXRL

Performance
Characteristic values for hollow or perforated masonry

Anhang C 31
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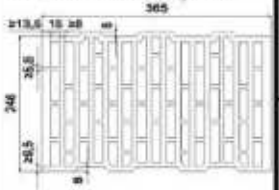
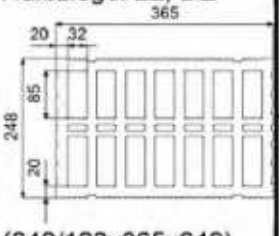
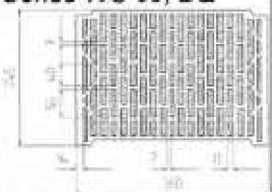
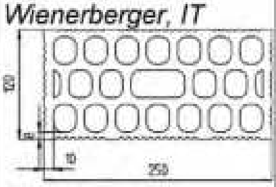
Table C32.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	**70**	**90**	70	90
Perforated clay brick HLz; ρ ≥ 0,75 as per EN 771-1 *e.g. Schlagmann Poroton S9 Hlz, DE*  (248x365x249) Rotary drilling	7,5/6	10)	10)	10)	10)	10)	**0,75 1,20[7]**	**0,90 1,20[3][7] 1,50[3][8]**	10)	10)
	10/8	10)	10)	10)	10)	10)	**0,90 1,50[7]**	**1,50 2,00[3][7]**	10)	10)
	12,5/10	10)	10)	10)	10)	10)	**1,20 2,00[7]**	**1,50 2,00[3][7] 2,50[3][8]**	10)	10)
	15/12	10)	10)	10)	10)	10)	**1,50 2,50[7]**	**2,00 2,50[3] 3,00[3][8]**	10)	10)
	16/-	10)	10)	10)	10)	10)	**1,50 2,50[7]**	**2,00 2,50[7] 3,00[3][7]**	10)	10)
Perforated clay brick HLz; ρ ≥ 0,75 as per EN 771-1 *e.g. Schlagmann S8 Halbziegel LZ, DE*  (248/123x365x249) Rotary drilling	5/4	10)	10)	10)	10)	10)	**0,30**	**0,60**	10)	10)
	7,5/6	10)	10)	10)	10)	10)	**0,40**	**0,90**	10)	10)
	10/8	10)	10)	10)	10)	10)	**0,50**	**1,20**	10)	10)
	10,2/-	10)	10)	10)	10)	10)	**0,50**	**1,20**	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

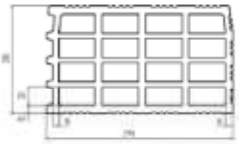
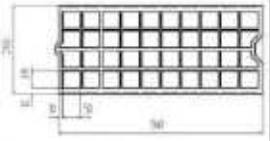
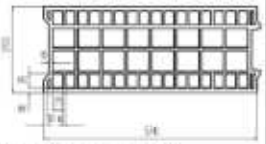
fischer frame fixing SXR / SXRL

Table C33.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8[15]			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,8 as per EN 771-1, *e.g. Hörl & Hartmann Coriso WS 09, DE*  (245x360x240) Rotary drilling	2,5/2	10)	10)	10)	10)	10)	**0,50[7] 0,60[4][7]**	**0,50[7]**	10)	10)
	5/4	10)	10)	10)	10)	10)	**0,90[7] 1,20[4][7]**	**0,90[7]**	10)	10)
	7,5/6	10)	10)	10)	10)	10)	**1,50[7] 2,00[6][7]**	**1,50[7]**	10)	10)
	7,7/-	10)	10)	10)	10)	10)	**1,50[7] 2,00[4][7]**	**1,50[7]**	10)	10)
Perforated clay brick HLz; ρ ≥ 0,9 as per EN 771-1 *e.g. Doppio Uni IT Wienerberger, IT*  (250x120x190) Rotary drilling	7,5/6	10)	**0,50[7] 0,60[8]**	**0,40[7] 0,60[8]**	**0,60[7] 0,75[8]**	10)	10)	10)	10)	10)
	10/8	10)	**0,60[7] 0,75[8]**	**0,60[7] 0,75[8]**	**0,75[7] 0,90[8]**	10)	10)	10)	10)	10)
	12,5/10	10)	**0,75[7] 0,90[8]**	**0,75[7] 0,90[8]**	**0,90[7] 1,20[8]**	10)	10)	10)	10)	10)
	15/12	10)	**0,90[7] 1,20[8]**	**0,90[7] 1,20[8]**	**1,20[7] 1,50[8]**	10)	10)	10)	10)	10)
	18,7/-	10)	**1,20[7] 1,50[8]**	**1,20[7] 1,50[8]**	**1,50[7] 2,00[8]**	10)	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

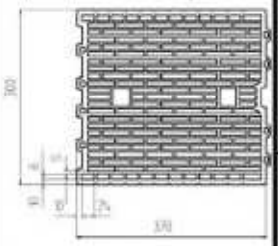
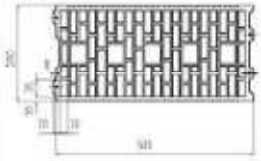
Footnotes see Annex C 16.

Table C34.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,6 as per EN 771-1, *e.g. Imerys Gelimatic, FR*  (500x200x270) Rotary drilling	5/4	10)	10)	10)	10)	**0,50**[7]	10)	**1,20**[7]	10)	10)
	6,5/-	10)	10)	10)	10)	**0,60**[7] **0,75**[8]	10)	**1,50**[7]	10)	10)
Perforated clay brick HLz; ρ ≥ 0,6 as per EN 771-1, *e.g. Imerys Optibric, FR*  (560x200x275) Rotary drilling	5/5	10)	10)	10)	10)	**0,50**[7] **0,60**[8]	10)	**0,75**[7]	10)	10)
	7,5/6	10)	10)	10)	10)	**0,75**[7] **0,90**[8]	10)	**1,20**[7]	10)	10)
	10/8	10)	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	**1,50**[7]	10)	10)
	10,5/-	10)	10)	10)	10)	**1,20**[7]	10)	**1,50**[7]	10)	10)
Perforated clay brick HLz; ρ ≥ 0,6 as per EN 771-1, *e.g. Bouyer Leroux BGV, FR*  (570x200x315) Rotary drilling	5/4	10)	10)	10)	10)	**0,60**[7] **0,75**[8]	10)	**0,75**[7]	10)	10)
	7,4/-	10)	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	**1,20**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

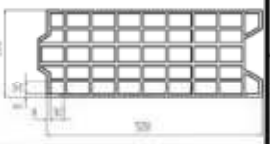
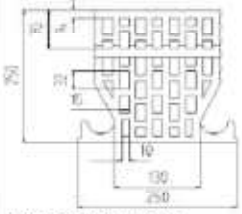
Footnotes see Annex C 16.

Table C35.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1, *e.g. Wienerberger Porotherm 30 R, FR*  (370x300x250) Rotary drilling	7,5/6	10)	10)	10)	10)	**0,40**[7]	10)	10)	10)	10)
	10/8	10)	10)	10)	10)	**0,50**[7] **0,60**[8]	10)	10)	10)	10)
	10,7/-	10)	10)	10)	10)	**0,50**[7] **0,60**[8]	10)	10)	10)	10)
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1 *e.g. Wienerberger Porotherm GF R20, FR*  (500x200x275) Rotary drilling	5/4	10)	10)	10)	10)	10)	10)	**0,40**[7] **0,50**[8]	10)	10)
	7,5/6	10)	10)	10)	10)	**0,40** **0,50**[2]	10)	**0,60**[7] **0,75**[8]	10)	10)
	10/8	10)	10)	10)	10)	**0,60**	10)	**0,90**[8]	10)	10)
	11,8/-	10)	10)	10)	10)	**0,60** **0,75**[2]	10)	**0,90**[7] **1,20**[8]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16

Table C36.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Perforated clay brick HLz; ρ ≥ 0,7 as per EN 771-1, *e.g. Terreal Calibric, FR*  (500x200x220) Rotary drilling	5/4	10)	10)	10)	10)	**0,30** **0,40**[2]	10)	**0,60**[7]	10)	10)
	7,5/6	10)	10)	10)	10)	**0,50** **0,60**[2]	10)	**0,90**[7]	10)	10)
	9,4/-	10)	10)	10)	10)	**0,60** **0,75**[2]	10)	**0,90**[7] **1,20**[8]	10)	10)
Perforated clay ceiling brick; ρ ≥ 0,7 as per EN 15037-3 *e.g. Hörl & Hartmann ceiling block, DE*  (250x250x190) Rotary drilling	5/4	10)	10)	10)	10)	10)	10)	**0,90**[7]	10)	10)
	7,5/6	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
	10/8	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
	12,1/-	10)	10)	10)	10)	10)	10)	**2,50**[7]	10)	10)
Perforated clay ceiling brick; ρ ≥ 0,7 as per EN 15037 *e.g. Hörl & Hartmann block for beam-and-block ceilings, DE*  (520x250x180) Rotary drilling	2,5/2	10)	10)	10)	10)	10)	10)	**0,50**[7]	10)	10)
	5/4	10)	10)	10)	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	10)
	7,5/6	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
	8,9/-	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

fischer frame fixing SXR / SXRL

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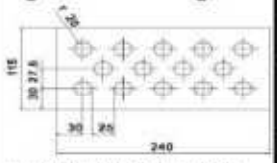
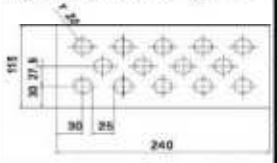
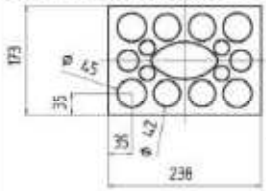
Table C37.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8[15]			SXR 10	SXRL 10		SXRL 14[15]	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow calcium silicate brick KSL; ρ ≥ 1,4 as per EN 771-2 *e.g. KS Wemding, DE*  **2 DF** (240x115x113) Hammer drilling	7,5/6	**0,75**[7] **0,90**[8]	10)	10)	10)	**0,90**[7]	10)	**1,50**[7]	**1,20**	**2,50**
	10/8	**0,90**[7] **1,20**[8]	10)	10)	10)	**1,20**[7] **1,50**[8]	10)	**2,00**[7]	**1,50**	**2,50**
	12,5/10	**1,20**[7] **1,50**[8]	10)	10)	10)	**1,50**[7]	10)	**2,50**[7]	**2,00**	**2,50**
	15/12	**1,50**[7] **2,00**[8]	10)	10)	10)	**2,00**[7]	10)	**2,50**[7]	**2,00** **2,50**[2]	**2,50**
	17,6/-	**2,00**[7]	10)	10)	10)	**2,00**[7] **2,50**[8]	10)	**2,50**[7]	**2,50**	**2,50**
Hollow calcium silicate brick KSL; ρ ≥ 1,6 as per EN 771-2 *e.g. KS Wemding, DE*  **2 DF** (240x115x113) Hammer drilling	10/8	10)	**0,60** **0,75**[2]	**0,90** **1,20**[2]	**0,75**[7] **0,90**[8]	10)	10)	10)	10)	10)
	12,5/10	10)	**0,75** **0,90**[2]	**1,20** **1,50**[2]	**0,90**[7] **1,20**[8]	10)	10)	10)	10)	10)
	15/12	10)	**0,90**	**1,50** **2,00**[2]	**1,20**[7] **1,50**[8]	10)	10)	10)	10)	10)
	20/16	10)	**1,20** **1,50**[2]	**2,00** **2,50**[2]	**1,50**[7] **2,00**[8]	10)	10)	10)	10)	10)
	25/20	10)	**1,50**	**2,50**	**2,00**[7] **2,50**[8]	10)	10)	10)	10)	10)
	32,5/-	10)	**2,00**	**2,50**	**2,50**[7]	10)	10)	10)	10)	10)
Hollow calcium silicate brick KSL; ρ ≥ 1,4 as per EN 771-2 *e.g. KS Wemding, DE*  **3 DF** (240x175x113) Hammer drilling	7,5/6	10)	10)	10)	10)	**0,60**[7] **0,75**[8]	10)	**0,60**	10)	10)
	10/8	**0,50**[7]	10)	10)	10)	**0,90**[7]	10)	**0,75**	10)	10)
	12,5/10	**0,60**[7]	10)	10)	10)	**1,20**[7]	10)	**0,90**	10)	10)
	15/12	**0,75**[7]	10)	10)	10)	**1,20**[7] **1,50**[8]	10)	**1,20**	10)	10)
	20/16	**0,90**[7] **1,20**[8]	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	**1,50**	10)	10)
	25/20	**1,20**[7]	10)	10)	10)	10)	10)	**2,00**	10)	10)
	27,7/-	**1,20**[7] **1,50**[8]	10)	10)	10)	10)	10)	**2,00**	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

fischer frame fixing SXR / SXRL

Performance
Characteristic values for masonry

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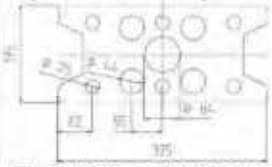
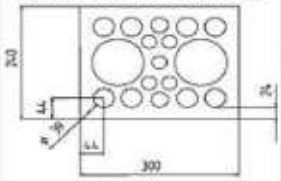
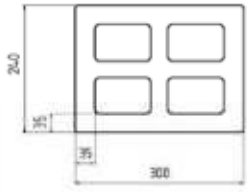
Table C38.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8[15]			SXR 10	SXRL 10		SXRL 14[15]	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow calcium silicate brick KSL; ρ ≥ 1,4 as per EN 771-2 *e.g. KS Wemding, DE*  **9 DF** (375x175x248) Hammer drilling	10/8	[10]	**0,30**[7]	**0,60**[7] **0,75**[8]	**0,30**[7] **0,40**[8]	[10]	[10]	**1,50**[7]	**1,50**[7] **2,00**[8]	**0,75**[7] **0,90**[8]
	12,5/10	[10]	**0,30**[7] **0,40**[8]	**0,75**[7] **0,90**[8]	**0,40**[7] **0,60**[8]	[10]	[10]	**1,50**[7] **2,0**[8])	**2,00**[7]	**0,90**[7] **1,20**[8]
	15/12	[10]	**0,40**[7]	**0,90**[7] **1,20**[8]	**0,50**[7] **0,60**[8]	[10]	[10]	**2,00**[7]	**2,50**[7]	**1,20**[7] **1,50**[8]
	20/16	[10]	**0,50**[7] **0,60**[8]	**1,20**[7] **1,50**[8]	**0,75**[7] **0,90**[8]	[10]	[10]	**3,00**[7]	**3,00**[7] **3,50**[8]	**1,50**[7] **2,00**[8]
	25/20	[10]	**0,60**[7] **0,75**[8]	**1,50**[7] **2,00**[8]	**0,90**[7] **1,20**[8]	[10]	[10]	**3,50**[7]	**4,00**[7] **4,50**[8]	**2,00**[7] **2,50**[8]
	28,5/-	[10]	**0,60**[7] **0,75**[8]	**1,50**[7] **2,00**[8]	**0,90**[7] **1,20**[8]	[10]	[10]	**4,00**[7]	**4,50**[7] **5,00**[8]	**2,00**[7] **2,50**[8]
Hollow calcium silicate brick KSL; ρ ≥ 1,4 as per EN 771-2 *e.g. KS Wemding, DE*  **5 DF** (300x240x113) Hammer drilling	7,5/6	**0,40**[7] **0,50**[8]	[10]	[10]	[10]	**1,20**[7]	[10]	[10]	[10]	[10]
	10/8	**0,50**[7] **0,60**[8]	[10]	[10]	[10]	**1,50**[7]	[10]	[10]	[10]	[10]
	12,5/10	**0,60**[7] **0,75**[8]	[10]	[10]	[10]	**2,00**[7]	[10]	[10]	[10]	[10]
	15/12	**0,75**[7] **0,90**[8]	[10]	[10]	[10]	**2,00**[7] **2,50**[8]	[10]	[10]	[10]	[10]
	20/16	**0,90**[7] **1,20**[8]	[10]	[10]	[10]	**2,50**[7]	[10]	[10]	[10]	[10]
	25/20	**1,20**[7] **1,50**[8]	[10]	[10]	[10]	**2,50**[7]	[10]	[10]	[10]	[10]
	35/28	**2,00**[7]	[10]	[10]	[10]	**2,50**[7]	[10]	[10]	[10]	[10]
	36,4/-	**2,00**[7]	[10]	[10]	[10]	**2,50**[7]	[10]	[10]	[10]	[10]
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

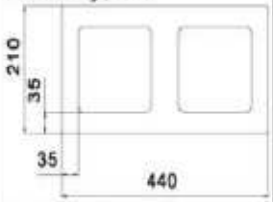
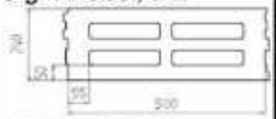
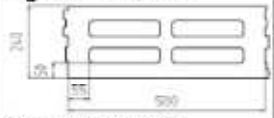
Table C39.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow calcium silicate brick KSL; ρ ≥ 1,2 as per EN 771-2 *e.g. KS Wemding, P10, DE*  (495x98x245) Hammer drilling	2,5/2	**0,30 0,40**[2]	10)	10)	10)	**0,60 0,75**[2]	10)	10)	10)	10)
	5/4	**0,60 0,75**[2]	10)	10)	10)	**1,20 1,50**[2]	10)	10)	10)	10)
	7,5/6	**0,90 1,20**[2]	10)	10)	10)	**2,00 2,50**[2]	10)	10)	10)	10)
	9,4/-	**1,20 1,50**[2]	10)	10)	10)	**2,00 2,50**[2]	10)	10)	10)	10)
Hollow calcium silicate brick KSL; ρ ≥ 1,4 as per EN 771-2 *e.g. KS Wemding, DE*  **9 DF** (250x240x240) Hammer drilling	7,5/6	10)	10)	10)	10)	10)	10)	**0,90**[7] **1,20**[8]	10)	10)
	10/8	10)	10)	10)	10)	10)	10)	**1,50**[7]	10)	10)
	12,5/10	10)	10)	10)	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	10)
	15/12	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
	16,5/-	10)	10)	10)	10)	10)	10)	**2,50**[7]	10)	10)
Hollow brick light-weight concrete Hbl; ρ ≥ 1,4 as per EN 771-3, *e.g. KLB, DE*  (300x240x240) Hammer drilling	2,5/2	10)	10)	10)	10)	**1,50**[7] **2,00**[8]	10)	10)	10)	10)
	2,6/-	10)	10)	10)	10)	**2,00**[7]	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

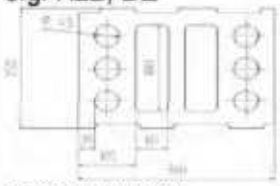
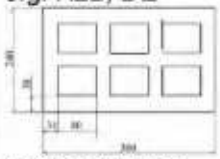
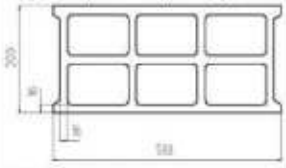
fischer frame fixing SXR / SXRL

Table C40.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8[15]			SXR 10	SXRL 10		SXRL 14[15]	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow brick light-weight concrete Hbl; ρ ≥ 1,2 as per EN 771-3, *e.g. Roadstone masonry, IE*  (440x210x215) Hammer drilling	2,5/2	**0,75**[7] **0,90**[8]	**0,40**[7] **0,50**[8]	**0,40**[7] **0,50**[8]	[10]	**0,90**[7] **1,20**[8]	[10]	**0,60**[7]	**0,90**[7]	[10]
	5/4	**1,50**[7] **2,00**[8]	**0,90**[7]	**0,75**[7] **0,90**[8]	**0,30**[8]	**2,00**[7]	[10]	**1,20**[7]	**2,00**[7]	[10]
	7,5/6	**2,50**[7]	**1,20**[7] **1,50**[8]	**1,20**[7] **1,50**[8]	**0,30**[7] **0,40**[8]	**2,50**[7]	[10]	**2,00**[7]	**2,50**[7]	[10]
	10/8	**2,50**[7]	**1,50**[7] **2,00**[8]	**1,50**[7] **2,00**[8]	**0,40**[7] **0,50**[8]	**2,50**[7]	[10]	**2,50**[7]	**3,50**[7]	[10]
	11,3/-	**2,50**[7]	**2,00**[7]	**2,00**[7] **2,50**[8]	**0,40**[7] **0,60**[8]	**2,50**[7]	[10]	**2,50**[7]	**4,00**[7]	[10]
Hollow brick light-weight concrete Hbl; ρ ≥ 0,8 as per EN 771-3, *e.g. Knobel, DE*  (500x240x240) Rotary drilling	2,5/2	[10]	**1,20**[7]	**1,20**[7] **1,50**[8]	**1,20**[7]	[10]	**1,20**[7] **1,50**[8]	**1,50**[7] **2,00**[4][8]	**2,00**[7]	**1,50**[7]
	4,0/-	[10]	**1,50**[7] **2,00**[8]	**2,00**[7] **2,50**[8]	**1,50**[7] **2,00**[8]	[10]	**2,00**[7] **2,50**[8]	**2,50**[7] **3,00**[4][8] **3,50**[6][8]	**2,50**[7]	**2,50**[7]
Hollow brick light-weight concrete Hbl; ρ ≥ 0,9 as per EN 771-3, *e.g. Knobel, DE*  (500x240x240) Rotary drilling	2,5/2	[10]	**0,60**[7]	**0,90**[7] **1,50**[8]	**0,60**[7] **0,75**[8]	[10]	**0,90**[7]	[10]	[10]	[10]
	5/4	[10]	**1,20**[7]	**2,00**[7] **2,50**[8]	**1,20**[7] **1,50**[8]	[10]	**2,00**[7]	[10]	[10]	[10]
	6,2/-	[10]	**1,50**[7]	**2,50**[7]	**1,50**[7] **2,00**[8]	[10]	**2,50**[7]	[10]	[10]	[10]
Partial factor	γ_{Mm}[1] [-]	**2,5**								

Footnotes see Annex C 16.

Table C41.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow brick light-weight concrete Hbl; ρ ≥ 0,9 as per EN 771-3, *e.g. KLB, DE*  (360x250x250) Hammer drilling	2,5/2	10)	10)	10)	10)	10)	10)	**1,20**[7]	10)	10)
	3,9/-	10)	10)	10)	10)	10)	10)	**2,00**[7]	10)	10)
Hollow brick light-weight concrete Hbl; ρ ≥ 1,0 as per EN 771-3, *e.g. KLB, DE*  (360x240x240) Hammer drilling	2,5/2	**0,50**[7] **0,60**[8]	10)	10)	10)	10)	10)	10)	10)	10)
	5/4	**1,20**[7]	10)	10)	10)	10)	10)	10)	10)	10)
	6,3/-	**1,20**[7] **1,50**[8]	10)	10)	10)	10)	10)	10)	10)	10)
Hollow brick light-weight concrete Hbl; ρ ≥ 0,9 as per EN 771-3, *e.g. Sepa Parpaing, FR*  (500x200x200) Rotary drilling	2,5/2	10)	10)	10)	10)	**0,30 0,60**[7]	10)	10)	10)	10)
	5/4	**0,30**	10)	10)	10)	**0,60 1,20**[7]	10)	**0,30**[7] **0,40**[8]	10)	10)
	5,9/-	**0,30 0,40**[2]	10)	10)	10)	**0,75 1,20**[7] **1,50**[8]	10)	**0,40**[7] **0,50**[8]	10)	10)
	7,5/6	**0,30 0,40**[2]	10)	10)	10)	**0,75 1,20**[7] **1,50**[8]	10)	**0,50**[7] **0,60**[8]	10)	10)
	8,4/-	**0,30 0,40**[2]	10)	10)	10)	**0,75 1,20**[7] **1,50**[8]	10)	**0,60**[7]	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

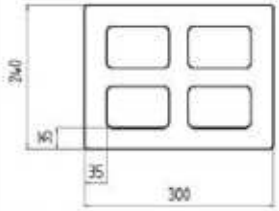
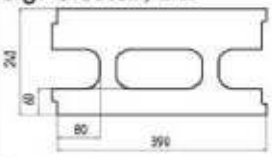
Footnotes see Annex C 16.

fischer frame fixing SXR / SXRL

Performance
Characteristic resistance for use in hollow or perforated masonry

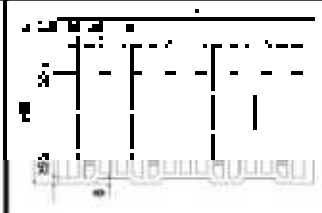
Annex C 41

Table C42.1: Characteristic resistance F_{Rk}[16] in [kN] for use in hollow or perforated brick masonry – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10		SXRL 14	
		h_{nom} [mm]								
		50	50	70	90	50	50	70	70	90
Hollow brick normal concrete Hbn; ρ ≥ 1,6 as per EN 771-3, *e.g. Adolf Blatt, DE*  (300x240x240) Hammer drilling	2,5/2	10)	10)	10)	10)	**1,50**[7]	10)	**0,75**[7] **1,50**[4][7]	10)	10)
	5/4	10)	10)	10)	10)	**2,50**[7]	10)	**1,50**[7] **2,50**[4][7]	10)	10)
	7,3/-	10)	10)	10)	10)	**2,50**[7]	10)	**2,00**[7] **2,50**[4][7]	10)	10)
Heat insulation brick WDB; ρ ≥ 0,7 *e.g. Gisoton, DE*  (390x240x240) Hammer drilling	2,5/2	10)	10)	10)	10)	**1,50**[7]	10)	10)	10)	10)
	3,7/-	10)	10)	10)	10)	**2,00**[7] **2,50**[8]	10)	10)	10)	10)
Partial factor	γ_{Mm}[1] [-]	**2,5**								

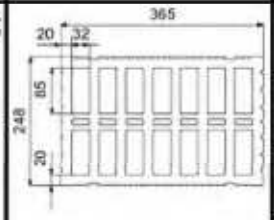
Footnotes see Annex C 16.

Table C43.1: Characteristic resistance F_{Rk}[16] in [kN] in perforated bricks for use in the header side – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Brick drawing [mm]	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	**SXRL 10** Characteristic resistance F_{Rk} [kN] Temperature range 30/50°C and 50/80°C	
			h_{nom} [mm]	
			70	90
Perforated clay brick HLz; ρ ≥ 0,75 as per EN 771-1 e.g. Schlagmann Poroton S8 HL (248x365x249) Rotary drilling		7,5/6	0,75	0,75
		10/8	0,90	0,90
		12,5/10	1,20	1,20
		15/12	1,50	1,50
		16/-	1,50	1,50
Partial factor		γ_{Mm}[1] [-]	2,5	
Minimum edge distance		c_{min} = [mm]	70	
Minimum spacing perpendicular to free edge		$s_{1,min}$ = [mm]	150	
Minimum spacing parallel to free edge		$s_{2,min}$ = [mm]	250	

Footnotes see Annex C 16.

Table C43.2: Characteristic resistance F_{Rk}[16] in [kN] in perforated bricks for use in the header side – base material group "c"

Base material; bulk density [kg/dm³] [*Supplier Title, country*] Geometry, DF or nominal Size (L x W x H) [mm] and drilling method	Brick drawing [mm]	Mean compressive strength as per EN 771 / Minimum compressive strength single brick[14] [N/mm²]	**SXRL 10** Characteristic resistance F_{Rk} [kN] Temperature range 30/50°C and 50/80°C			
			h_{nom} [mm]			
			70	90	150[13]	180[13]
Perforated clay brick HLz; ρ ≥ 0,75 as per EN 771-1 *e.g. Schlagmann S8 Halbziegel LZ, DE* (248/123 x 365 x 249) Rotary drilling		5/4	**0,50**[12]	**0,30 0,60**[12]	**0,90**	**0,30 0,60**[12]
		7,5/6	**0,30 0,75**[12]	**0,40 0,90**[12]	**1,20**	**0,50 0,90**[12]
		10/8	**0,40 1,20**[12]	**0,50 1,20**[12]	**1,50**	**0,60 1,20**[12]
		10,2/-	**0,40 1,20**[12]	**0,60 1,20**[12]	**1,50**	**0,60 1,20**[12]
Partial factor		γ_{Mm}[1] [-]	2,5			
Minimum edge distance		c_{min} = [mm]	75			
Minimum spacing perpendicular to free edge		$s_{1,min}$ = [mm]	150			
Minimum spacing parallel to free edge		$s_{2,min}$ = [mm]	250			

Footnotes see Annex C 16

Table C44.1: Characteristic resistance F_{Rk} in [kN] for use in unreinforced autoclaved aerated concrete – base material group "d"

Base material Size (L x W x H) [mm] and drilling method	Mean compressive strength as per EN 771-4 $f_{cm,dec}$ [N/mm²]	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C								
		SXR 8	SXRL 8			SXR 10	SXRL 10[3]		SXRL 14	
		h_{nom} [mm]								
		≥ 50	≥ 50	≥ 70	≥ 90	≥ 50	≥ 70	≥ 90	≥ 70	≥ 90
Autoclaved aerated concrete as per EN 771-4 e.g. (500x120x300) e.g. (500x250x300) Hammer drilling	≥ 2,0	8)	8)	**0,40**	**0,60**	**0,40**[3] **0,50**[2)3)]	**0,50**	**0,60**[7] **0,90**[4)5)]	**0,90**	**1,20**
	≥ 2,5	8)	8)	8)	8)	8)	**0,75**	**0,90**[7] **1,20**[4)5)]	8)	8)
	≥ 3,0	8)	8)	**0,60** **0,90**[6)]	**0,90** **1,20**[6)]	**0,40**[3] **0,50**[2)3)]	**0,90** **1,20**[4)]	**1,20**[7] **1,50**[4)5)]	**1,50**	**2,00**
	≥ 3,5	8)	8)	8)	8)	8)	**1,20** **1,50**[4)]	**1,50**[7] **2,00**[4)5)]	8)	8)
	≥ 4,0	8)	8)	**0,90** **1,50**[6)]	**1,20** **1,50**[6)]	**0,75** **0,90**[2)]	**1,50** **2,00**[4)]	**1,50**[7] **2,00**[4)]	**2,50**	**3,00**
	≥ 4,5	8)	8)	8)	8)	8)	**1,50** **2,00**[4)]	**2,00**[7] **2,50**[4)7)]	8)	8)
	≥ 5,0	8)	8)	8)	8)	8)	**2,00** **2,50**[4)]	**2,00**[7] **3,00**[4)]	8)	8)
	≥ 6,0	8)	8)	**1,50** **3,00**[6)]	**2,00** **3,00**[6)]	**0,75** **0,90**[6)]	**2,50** **3,00**[4)]	**3,00**[7] **3,50**[4)7)]	**4,00**	**5,00**
Partial factor	γ_{MAAC}[1] [-]	**2,0**								

1) [illegible]
2) [illegible]
3) [illegible]
4) [illegible]
5) [illegible]
6) [illegible]
7) [illegible]
8) [illegible]

Table C45.1: Characteristic resistance F_{Rk} in [kN] for use in reinforced autoclaved aerated concrete for SXRL 10 – base material group "d"

Base material and drilling method	Compressive strength f_{ck} [N/mm²] (compressive strength class) as per EN 12602	Characteristic resistance F_{Rk} [kN] Temperature range 30/50 °C and 50/80 °C			
		$h_{nom} \geq 70$ mm		$h_{nom} \geq 90$ mm	
		Member thickness h_{min} [mm]			
		175	240	175	240
Reinforced autoclaved aerated concrete, AAC as per EN 12602 – drilling	≥ 2,0 (AAC 2)	0,50	[2]	0,50	[2]
	≥ 2,5 (AAC 2,5)	0,75	[2]	0,90	[2]
	≥ 3,0 (AAC 3)	1,20	[2]	1,20	[2]
	≥ 3,5 (AAC 3,5)	1,50	[2]	1,50	[2]
	≥ 4,0 (AAC 4)	[3]	1,50	[3]	2,00
	≥ 4,5 (AAC 4,5)	[3]	2,00	[3]	2,50
	≥ 5,0 (AAC 5)	[3]	2,00	[3]	2,50
	≥ 6,0 (AAC 6)	[3]	3,00	[3]	3,50
Partial factor	γ_{MAAC} [1] [-]	2,0			

1) In absence of other national regulations.
2) The characteristic resistance F_{Rk} at h_{min} 175 mm is also valid for bigger member thickness.
3) No performance assessed.