Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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

European Technical Assessment

ETA-15/0387 of 30 June 2023

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	EJOT / SORMAT SDF 8V
Product family to which the construction product belongs	Plastic anchor for redundant non-structural systems in concrete and masonry
Manufacturer	EJOT SE & Co. KG Astenbergstraße 21 57319 Bad Berleburg DEUTSCHLAND
Manufacturing plant	EJOT manufacturing plant 1, 2, 3 and 4
This European Technical Assessment contains	13 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330284-00-0604 edition 12/2020
This version replaces	ETA-15/0387 issued on 27 August 2015

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Specific part

1 Technical description of the product

The frame fixing EJOT / SORMAT SDF 8V is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel, of galvanised steel with additional organic coating 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 1

3.2 Mechanical resistance and stability (BWR 4)

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

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

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

The system to be applied is: 2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

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

Issued in Berlin on 30 June 2023 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Ziegler

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Intended use
Anchorage in concrete and solid bricks

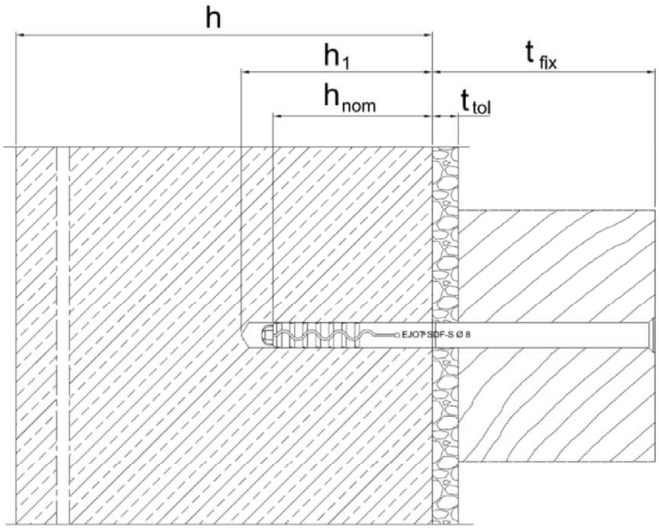

Figure 1: Intended use: screw head type: countersunk (S)

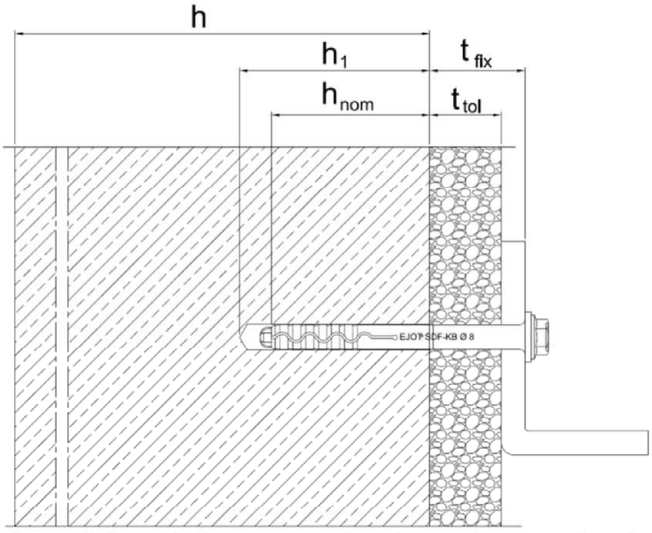

Figure 2: Intended use: screw head type: hexagon head with collar (KB)

Legend

h	=	Thickness of member
h_1	=	Depth of drilled hole to deepest point
h_{nom}	=	Overall plastic anchor embedment depth in base material (setting depth)
t_{tol}	=	Thickness of equalizing layer or non-load bearing coating
t_{fix}	=	t_{tol} + thickness of fixture

EJOT / SORMAT SDF 8V	**Annex A 1**
Product description Installed condition	

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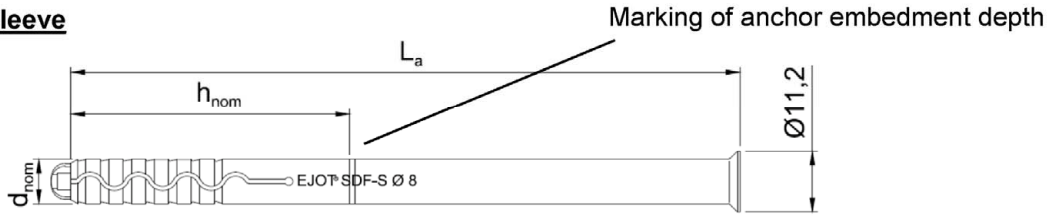
Anchor sleeve



Special screw

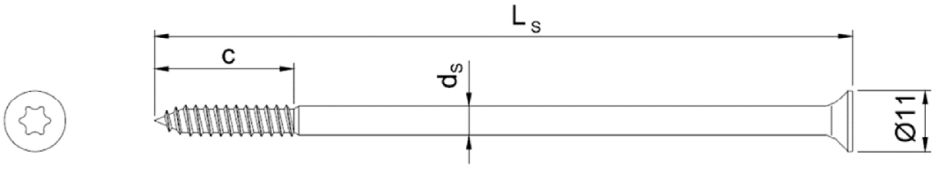
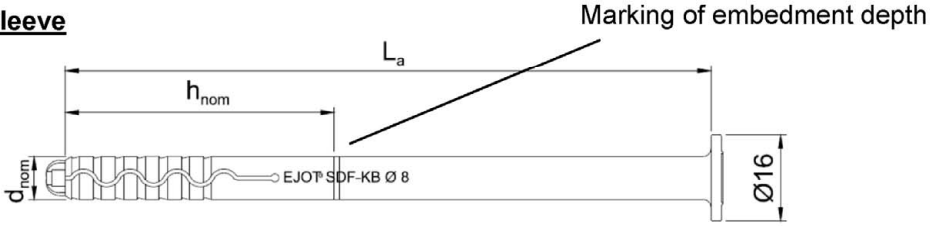


Figure 1: Type of anchor: countersunk (S)

Anchor marking:
Manufacturer, anchor type incl. head type, diameter, length
Example: EJOT SDF-S-8 x 100

Screw marking:
Length of anchor (e.g. 100)

Anchor sleeve



Special screw

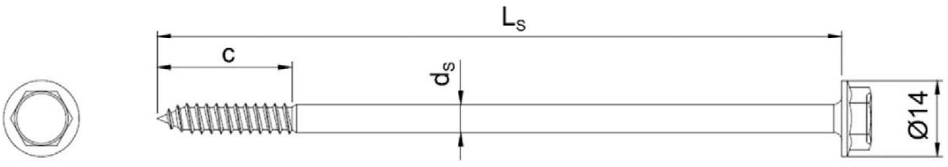


Figure 2: Type of anchor: collar with flange (KB)

Anchor marking:
Manufacturer, anchor type incl. head type, diameter, length
Example: EJOT SDF-KB-8 x 100

Screw marking:
Length of anchor (e.g. 100)

EJOT / SORMAT SDF 8V	Annex A 2
Product description Anchor types, marking of the anchor sleeve and special screw	

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Product designation key

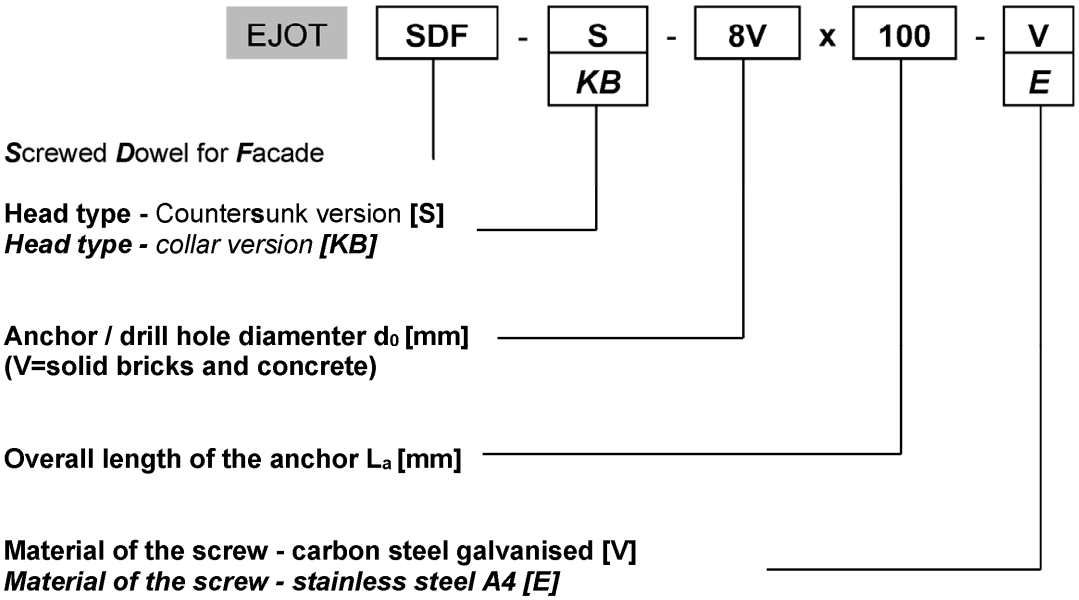

Table A3.1: Dimensions [mm]

Anchor type	Anchor sleeve					Special screw		
	colour	d_{nom}	h_{nom}	min L_a	max L_a	L_s	d_s	c
SDF – KB – 8V	red	8	50	60	220	L_a + 8,0	5,2	25
SDF – S – 8V	red	8	50	60	220	L_a + 8,0	5,2	25

Designations: see Annex A 2

Table A3.2: Materials

Element	Material
Anchor sleeve	Polyamid PA6, colour see Table A3.1
Special screw	Steel, galvanized zinc plated > 5 µm acc. EN ISO 4042:2018
	Steel, galvanized zinc plated > 5 µm acc. EN ISO 4042:2018 with additional organic coating (C1000)
	Stainless steel of corrosion resistance class CRC III in accordance EN 1993-1-4:2006 + A1:2015

EJOT / SORMAT SDF 8V	**Annex A 3**
Product description Product designation key, dimensions and material	

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Specifications of intended use

Anchorage is subject to:
- static or quasi-static loads
- Redundant non-structural systems

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

Temperature Range:
- c: -5°C to 50°C (max. short term temperature +50°C and max. long term temperature +30°C)
- b: -5°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 (zinc coated steel, stainless steel).
- The specific screw made of galvanized steel may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e.g. undercoating or body cavity protection for cars).
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).
- Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

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

Installation:
- Hole drilling by the drill modes acc. to Annex C for base material group a and b.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on site.
- Installation temperature from -5°C to +40°C
- Exposure to UV due to solar radiation of anchor not protected ≤ 6 weeks
- No ingress of water in the borehole at temperatures < 0 °C.

EJOT / SORMAT SDF 8V	Annex B 1
Intended use Specifications	

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Table B2.1: Installation parameters

Anchor type			**SDF-KB–8V SDF–S–8V**
Base material group[1)]			a,b
Drill hole diameter	d_0 [mm]	=	8
Cutting diameter of drill bit	d_{cut} [mm]	≤	8,45
Depth of the drill hole to deepest point	h_1 [mm]	≥	60
Overall embedment depthof the anchor in the base material[1)]	h_{nom} [mm]	≥	50
Diameter of the clearance hole in the fixture	d_f [mm]	≤	8,5
Thickness of fixture	t_{fix} [mm]	≥	10
Minimum temperature during installation process	[°C]		-5
Temperature range (c)	[°C]		30 - 50
Temperature range (b)	[°C]		50 - 80

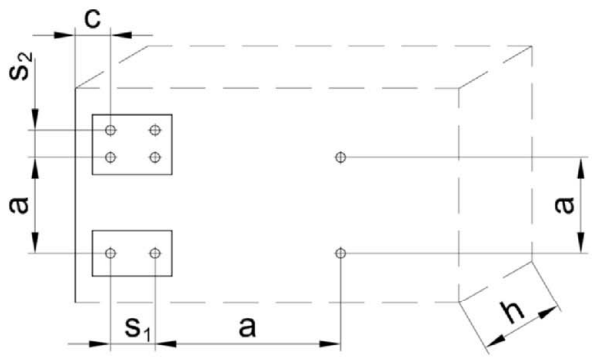
[1)] Base material group a = concrete, b = solid masonry

Table B2.2: Minimum member thickness, edge distance and spacing in concrete (base material group a)

Compressive strength	**Minimum member thickness h_{min} [mm]**	**Characteristic edge distance $c_{cr,N}$ [mm]**	**Characteristic spacing a [mm]**	**Minimum edge distance c_{min} [mm]**	**Minimum spacing s_{min} [mm]**
≥ C16/20	100	100	100	50	80
≥ C12/15	100	140	115	70	110

Fixing point with a spacing ≤ a are considered as a group with max. characteristic resistance $N_{Rk,p}$ according to Table C1.3.
For a spacing > a the anchors are always considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ according to Table C1.3.

Scheme of distance and spacing in concrete



h = member thickness
c = edge distance
a = spacing
s = spacing within an anchor group

EJOT / SORMAT SDF 8V

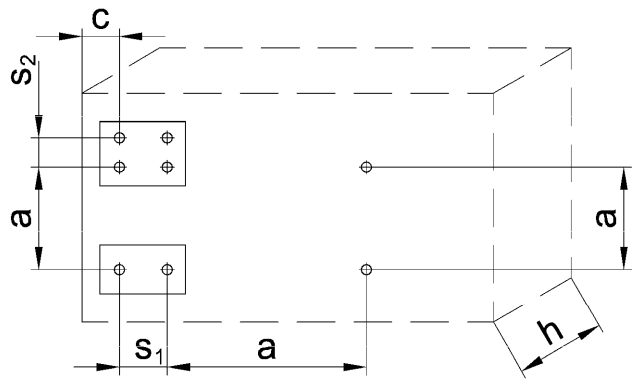
Intended use
Installation parameters, minimum member thickness, spacing and edge distance in concrete

Annex B 2

Table B3.1: Minimum member thickness, spacing and edge distance in solid bricks (base material group b)

Base material	Minimum member thickness h_{min} [mm]	Single anchor		Anchor group		
		Minimum edge distance c_{min} [mm]	Minimum spacing s_{min} [mm]	Minimum edge distance c_{min} [mm]	Minimum spacing $s_{1,min}$ [mm]	Minimum spacing $s_{2,min}$ [mm]
771 1-007 Mz	70	100	250	100	80	80
771 2-008 KS	70	100	250	100	80	80

Scheme of spacing and edge distances in masonry



h = member thickness
c = edge distance
a = spacing
s_1 = spacing (perpendicular to the free edge) within an anchor group
s_2 = spacing (parallel to the free edge) within an anchor group

EJOT / SORMAT SDF 8V	Annex B 3
Intended use Minimum member thickness, spacing and edge distance in solid bricks	

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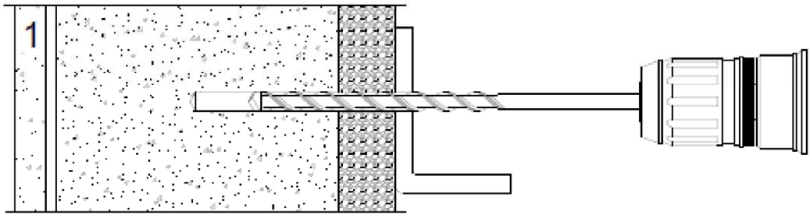
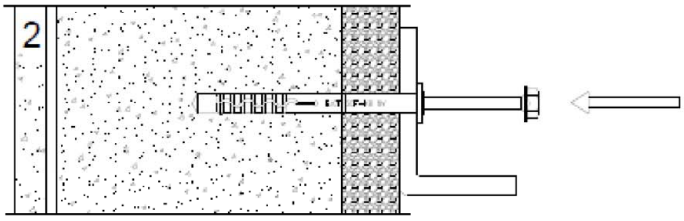
Installation instructions
(exemplary for the fixing of a pre-drilled metal attachment part)

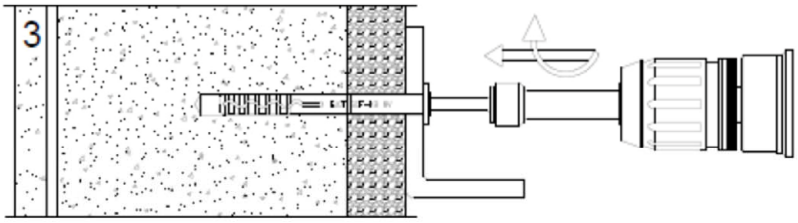
Drill the bore hole ø 8 mm using the drill method described in Annex C



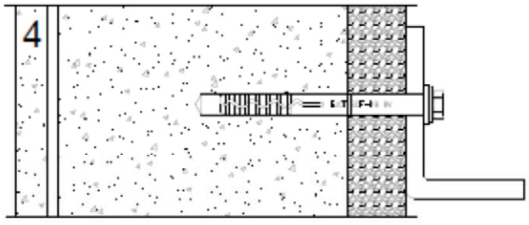
Cleaning of the hole
Insert the assembled anchor (screw and sleeve) using a hammer, until the plastic sleeve is flush with the surface of fixture



Screw in the screw, until the head of the screw touches the plastic sleeve



Correctly installed anchor



EJOT / SORMAT SDF 8V	Annex B 4
Intended use Installation instructions	

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Table C1.1: Characteristic resistance of the screw

Steel failure of the special screw		**SDF-8V**	
Material		**Galvanized steel**	**Stainless steel**
Characteristic tension resistance	$N_{Rk,s}$ [kN]	10,62	14,87
Partial safety factor γ_{Ms} [1)]		*1,4*	*1,4*
Characteristic shear resistance	$V_{Rk,s}$ [kN]	5,3	7,4
Characteristic bending moment	$M_{Rk,s}$ [Nm]	8,2	11,6
Partial safety factor γ_{Ms} [1)]		*1,25*	*1,56*

1) in absence of other national regulations

Table C1.2: Displacements[1)2)] under tension and shear loading in concrete and solid masonry

Anchor type	**Tension or shear load**	**Displacements under tension**		**Displacements under shear**	
SDF-8V	**F = N = V [kN]**	**δ_{N0} [mm]**	**$\delta_{N\infty}$ [mm]**	**δ_{V0} [mm]**	**$\delta_{V\infty}$ [mm]**
	2,6	0,75	1,5	1,83	2,75

1) Valid for all temperature ranges
2) Intermediate values by linear interpolation

Table C1.3: Characteristic resistance in concrete

Pull-out failure		**Characteristic resistance**
Characteristic tension resistance $N_{Rk,p}$ [2)] [kN]	< C20/25	4,5
Characteristic tension resistance $N_{Rk,p}$ [2)] [kN]	≥ C20/25	6,5
Partial safety factor γ_{Mc} [1)]		*1,8*

1) in absence of other national regulations
2) valid in temperature ranges c and b

Table C1.4: Values under fire exposure in concrete C20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm, fastening of façade systems (Fire resistance class R 90)

Characteristic tension resistance $F_{Rk,fi,90}$ [kN]	≤ 0,8
Partial safety factor $\gamma_{M,fi}$ [1)]	*1,0*

1) in absence of other national regulations

EJOT / SORMAT SDF 8V	**Annex C 1**
Performances Characteristic resistance of the screw, characteristic resistance in concrete, displacements under tension and shear loads, values under fire exposure	

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Table C2.1: Characteristic resistance F_{Rk} in solid masonry

Base material	Minimum stone format (LxWxH) [mm]	Drilling method	Minimum compressive strength f_b [N/mm²]	c_{min} [mm]	F_{Rk} [3] [kN]
Vollsteinmauerwerk					
Clay brick Mz NF 28-1.8 (EN 771-1:2011+A1:2015) **771 1-007 Mz**	240x115x71	H[1]	28	100	2,0
			20		2,0
			10		1,2
Sand-lime solid brick KS NF 12-2.0 (EN 771-2:2011+A1:2015) **771 2-008 KS**	240x115x71	H[1]	20	250	2,5
			10		1,5
Partial safety factor γ_{Mc} [2]					*2,5*

[1] **H** = Hammerdrilling
[2] In absence of other national regulations
[3] Temperature range b and c

EJOT / SORMAT SDF 8V

Performances
Characteristic resistance in solid masonry

Annex C 2