DECLARATION OF PERFORMANCE
NR. 0903450200_01_M_WIT-VM 250 (4)

LANGUAGE VERSIONS :

Language	Site
EN	2
ETA–16/0757 (EN)	4
BG	64
CZ	66
DA	68
DE	70
ES	71
ET	73
FI	75
FR	77
GA	79
GR	81
HR	83
HU	85
IT	87
LT	89
LV	91
MT	93
NL	95
NO	97
PL	99
PT	101
RO	103
RU	105
SE	107
SK	109
SL	111
TR	113

DECLARATION OF PERFORMANCE

No. 0903450200_01_M_WIT-VM 250 (4)

This is an English translation of the original German wording.
In cases of doubt, the German version applies

1. Unique identification code of the product type: Würth Injektionssystem WIT-VM 250 + SH und WIT-Nordic + SH
[Würth WIT-VM 250 + SH and WIT-Nordic injection system + SH]
Art. no.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Intended use(s): Bonded anchor for anchoring in masonry

3. Manufactured by: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12–17
D-74653 Künzelsau

4. System(s) of assessment and verification of constancy of performance: System 1

5. European Assessment Document: ETAG 029, April 2013
European Technical Assessment: ETA-16/0757 – 12/15/2016
Technical Assessment Body: Deutsches Institut für Bautechnik (DIBT), Berlin
Notified Body or Bodies: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

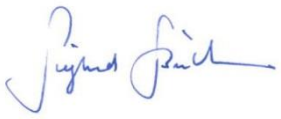
6. Declared performance:

Essential characteristics	**Performance**	**Harmonized technical specification**
Mechanical resistance and stability (BWR 1)		ETA-16/0757 ETAG 029
Characteristic load bearing capacity of the steel elements	See Annex C2	
Characteristic load-bearing capacity of the the dowels in masonry	See Annexes C3 to C45	
Deformations under transverse and tensile load	See Annexes C4 to C45	
Reduction factor for construction site tests (β factor)	See Annex C1	
Axial and edge clearances	See Annexes C3 to C45	
Group factor for group fastenings	See Annexes C3 to C45	
Fire protection (BWR 2)		
Fire behavior	Class A1	
Fire resistance	Performance not rated	

The performance of the above product corresponds to the declared performance. The declaration of performance is issued in compliance with EU Regulation 305/2011 under the sole responsibility of the above manufacturer.

Signed for and on behalf of the manufacturer by:

Frank Wolpert
Authorized Signatory, Head of Product Management



Dr.-Ing. Siegfried Beichter
(Head of Quality, Authorized Signatory)

Künzelsau, January 01, 2021

Deutsches Institut für Bautechnik

Member of EOTA
www.eota.eu

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-16/0757 of 15 December 2016

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	Injection system WIT-VM 250 + SH or WIT-Nordic + SH for masonry
Product family to which the construction product belongs	Injection system for use in masonry
Manufacturer	Adolf Würth GmbH & Co. KG Reinhold-Würth-Straße 12-17 74653 Künzelsau DEUTSCHLAND
Manufacturing plant	Werk 3
This European Technical Assessment contains	61 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	Guideline for European technical approval of "Metal Injection Anchors for Use in Masonry", ETAG 029, April 2013, used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The Injection system WIT-VM 250 + SH or WIT-Nordic + SH is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar WIT-VM 250 or WIT-Nordic, a perforated sleeve and an anchor rod with hexagon nut and washer. The steel elements are made of zinc coated steel or stainless steel.

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

The Illustration and the description of the product are 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 anchor of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

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

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance for steel elements	See Annex C2
Characteristic resistance for anchors in masonry units	See Annex C3 – C45
Displacements under shear and tension loads	See Annex C4 – C45
Reduction Factor for job site tests (β-Factor)	See Annex C1
Edge distances and spacing	See Annex C3 – C45
Group factor for group fastenings	See Annex C3 – C45

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	No performance assessed

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

The essential characteristics regarding Safety in use are included under the Basic Works Requirement Mechanical resistance and stability.

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

In accordance with guideline for European technical approval ETAG 029, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/177/EC].

The system to be applied is: 1

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

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

Issued in Berlin on 15 December 2016 by Deutsches Institut für Bautechnik

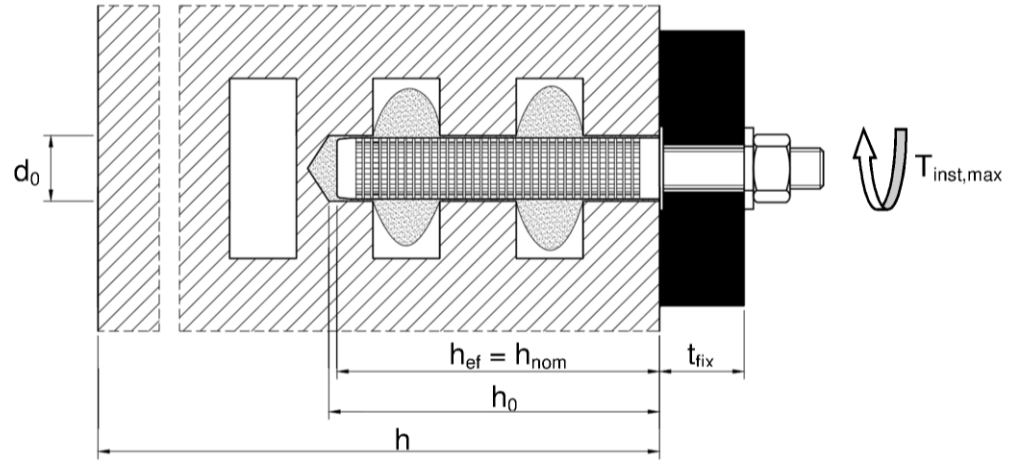
Uwe Bender
Head of Department

beglaubigt:
Baderschneider

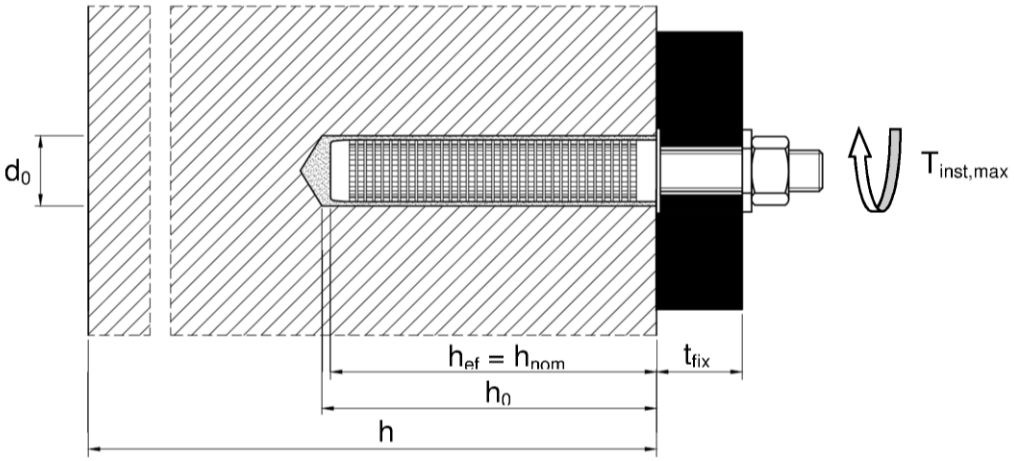
Deutsches Institut für Bautechnik

DIBt

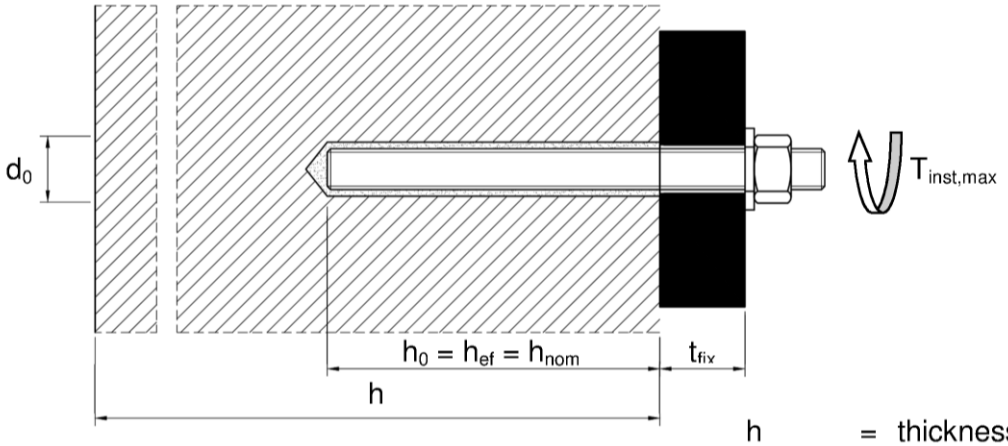
Installation in hollow brick; threaded rod and Internal threaded rod with sleeve



Installation in solid brick; threaded rod and Internal threaded rod with sleeve



Installation in solid brick; threaded rod and Internal threaded rod without sleeve



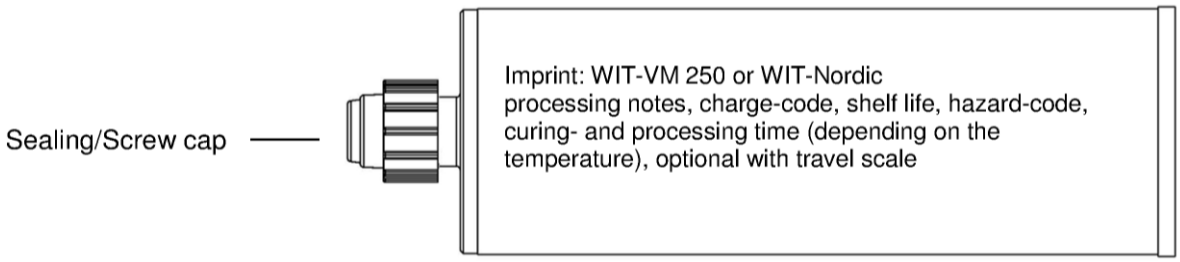
d_0 = nominal drill hole diameter
t_{fix} = thickness of fixture
$T_{inst,max}$ = max installation torque moment
h = thickness of member
h_0 = depth of drill hole depth at shoulder
h_{ef} = effective anchorage depth
h_{nom} = overall embedment depth

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex A 1**
Product description Installed condition	

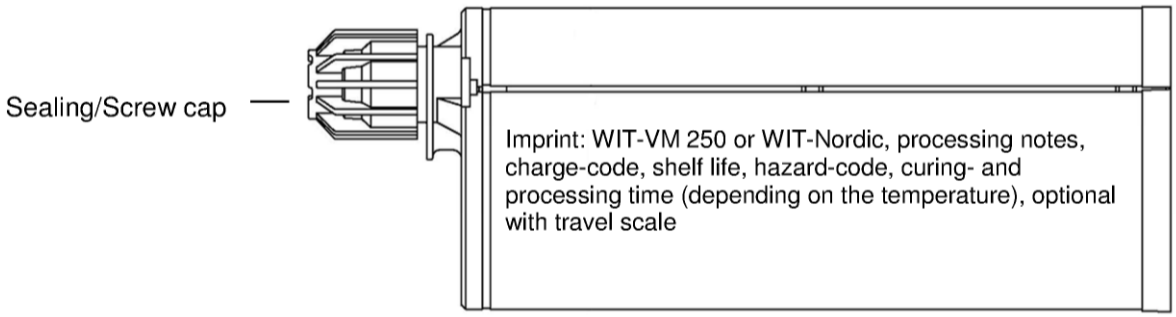
Deutsches Institut für Bautechnik DIBt

Cartridge: WIT-VM 250 or WIT-Nordic

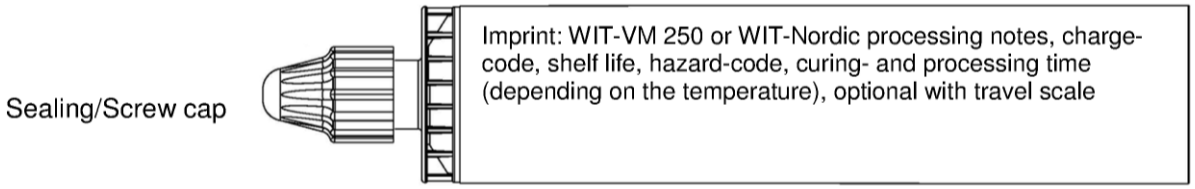
150 ml, 280 ml, 300 ml up to 333 ml and 380 ml up to 420 ml cartridge (Type: coaxial)



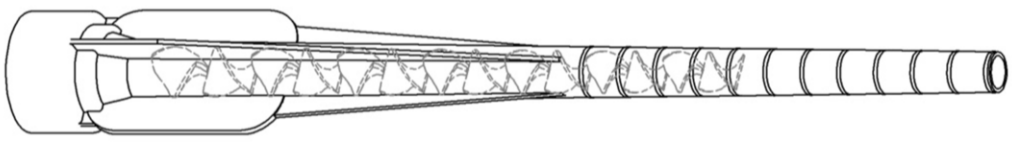
235 ml, 345 ml up to 360 ml and 825 ml cartridge (Type: "side-by-side")



165 ml and 300 ml cartridge (Type: "foil tube")



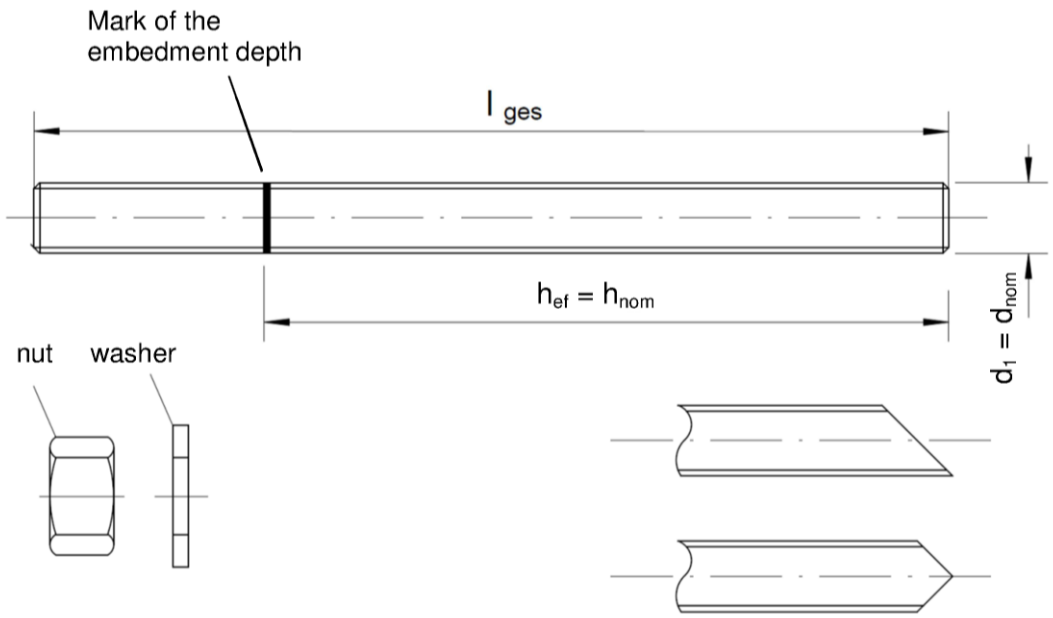
Static Mixer



Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex A 2**
Product description Injection system	

Deutsches Institut für Bautechnik DIBt

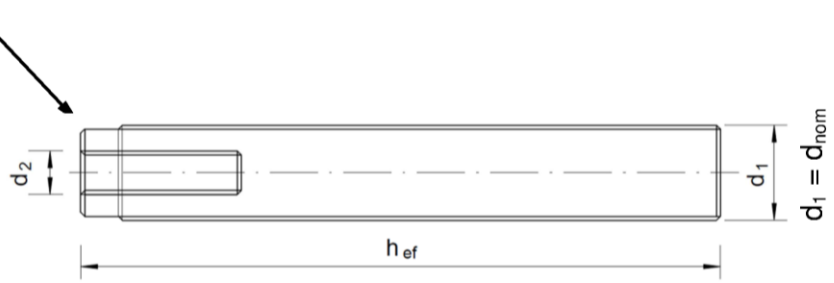
Threaded rod M8, M10, M12, M16



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

Internal threaded rod IG-M6, IG-M8, IG-M10

Mark the producer



Marking: e.g.  M8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex A 3**
Product description Anchor rods	

Deutsches Institut für Bautechnik DIBt

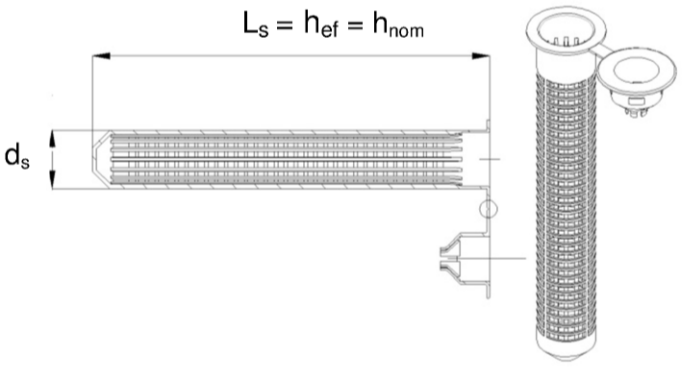
Table A1: Materials	
Designation	**Material**
Steel, zinc plated ≥ 5 µm acc. to EN ISO 4042:1999 or Steel, hot-dip galvanised ≥ 40 µm acc. to EN ISO 1461:2009 and EN ISO 10684:2004+AC:2009	
Anchor rod	Steel, EN 10087:1998 or EN 10263:2001 Property class 4.6, 4.8, 5.6, 5.8, 8.8 acc. EN 1993-1-8:2005+AC:2009 A_s > 8% fracture elongation
Hexagon nut, EN ISO 4032:2012	Steel acc. EN 10087:1998 or EN 10263:2001 Property class 4 (for class 4.6, 4.8 rod) EN ISO 898-2:2012 Property class 5 (for class 5.6, 5.8 rod) EN ISO 898-2:2012 Property class 8 (for class 8.8 rod) EN ISO 898-2:2012
Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000	Steel, zinc plated or hot-dip galvanised
Internal threaded rod	Steel, zinc plated Property class 5.6, 5.8 and 8.8 EN ISO 898-1:2013
Stainless steel	
Anchor rod	Material 1.4401 / 1.4404 / 1.4571, EN 10088-1:2014, Property class 70 EN ISO 3506-1:2009 Property class 80 EN ISO 3506-1:2009
Hexagon nut, EN ISO 4032:2012	Material 1.4401 / 1.4404 / 1.4571 EN 10088-1:2014, Property class 70 (for class 70 rod) EN ISO 3506-2:2009 Property class 80 (for class 80 rod) EN ISO 3506-2:2009
Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000	Material 1.4401, 1.4404 or 1.4571, EN 10088-1:2014
Internal threaded rod	Stainless steel: 1.4401 / 1.4404 / 1.4571, EN 10088-1:2014 Property class 70 (for class 70 rod) EN ISO 3506-1:2009
High corrosion resistant steel (HCR)	
Anchor rod	Material 1.4529 / 1.4565, EN 10088-1:2014, Property class 70 EN ISO 3506-1:2009 Property class 80 EN ISO 3506-1:2009
Hexagon nut, EN ISO 4032:2012	Material 1.4529 / 1.4565, EN 10088-1:2014, Property class 70 (for class 70 rod) EN ISO 3506-2:2009 Property class 80 (for class 80 rod) EN ISO 3506-2:2009
Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000	Material 1.4529 / 1.4565, EN 10088-1:2014
Internal threaded rod	Stainless steel: 1.4529 / 1.4565, EN 10088-1:2014 Property class 70 (for class 70 rod) EN ISO 3506-1:2009
Plastic sleeve	
Perforated sleeve	Material: Polypropylene

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex A 4**
Product description Materials	

Deutsches Institut für Bautechnik DIBt

Table A2: Sleeve (Plastic)

SH 12x80
SH 16x85
SH 20x85



SH 16x130
SH 20x130
SH 20x200

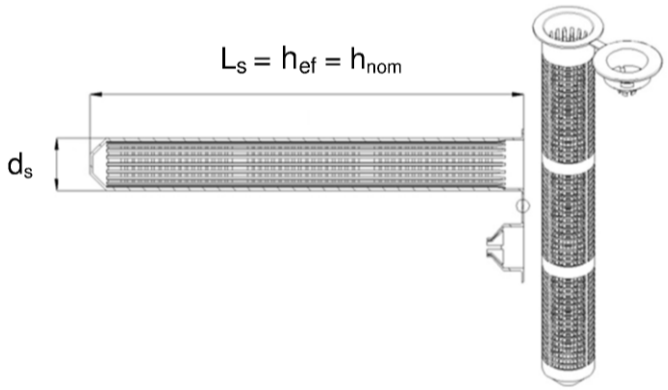


Table A3: Sizes sleeve

			Sleeve	12x80	16x85	16x130	20x85	20x130	20x200
Diameter of sleeve	$d_s = d_{nom}$	[mm]		12	16	16	20	20	20
Length of sleeve	L_s	[mm]		80	85	130	85	130	200
Effective anchorage depth	h_{ef}	[mm]		80	85	130	85	130	200
Overall anchor embedment	h_{nom}	[mm]		80	85	130	85	130	200

Table A4: Steel

	Anchor rod		IG-M6	IG-M8	IG-M10	M8	M10	M12	M16
Outside diameter of anchor	$d_1 = d_{nom}$	[mm]	10[1)]	12[1)]	16[1)]	8	10	12	16
Diameter of internal thread	d_2	[mm]	6	8	10	-	-	-	-
Thread engagement length Min/max	l_{IG}	[mm]	8/20	8/20	10/25	-	-	-	-
Total length of steel element	l_{ges}	[mm]	With sleeve: hef - 5mm Without sleeve: hef			hef + t_{fix} + 9,5	hef + t_{fix} + 11,5	hef + t_{fix} + 17,5	hef + t_{fix} + 20,0

[1)] Internal threaded rod with metric external thread

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Product description
Sleeves

Annex A 5

Deutsches Institut für Bautechnik DIBt

Specifications of intended use

Anchorages subject to:
- Static and quasi-static loads

Base materials:
- Autoclaved Aerated Concrete (Use category d) according to Annex B2
- Solid brick masonry (Use category b), according to Annex B2.
- Hollow brick masonry (use category c), according to Annex B2 and B3
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2010.
- For other bricks in solid masonry and in hollow or perforated masonry, the characteristic resistance of the anchor may be determined by job site tests according to ETAG 029, Annex B under consideration of the β-factor according to Annex C1, Table C1.

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

Temperature Range:
- T_a: - 40°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)
- T_b: - 40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C)
- T_c: - 40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C)

Use conditions (Environmental conditions):
- Dry and wet structure (regarding injection mortar).
- Structures subject to dry internal conditions (zinc coated steel, stainless steel or high corrosion resistant steel).
- 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 or high corrosion resistant steel).
- Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant 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).

Use categories in respect of installation and use:
- Category d/d: Installation and use in dry masonry
- Category w/w: Installation and use in dry or wet masonry (incl. w/d installation in wet masonry and use in dry masonry)

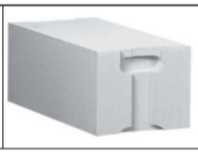
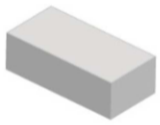
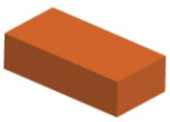
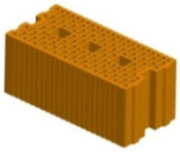
Design:
- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorages are designed in accordance with the ETAG 029, Annex C, Design method A under the responsibility of an engineer experienced in anchorages and masonry work.
- $N_{Rk,p} = N_{Rk,b}$ see Annex C4 to C45; $N_{Rk,s}$ see Annex C3; $N_{Rk,pb}$ see ETAG 029, Annex C
- $V_{Rk,b}$ and $V_{Rk,c}$ see Annex C4 to C45; $V_{Rk,s}$ see Annex C3; $V_{Rk,pb}$ see ETAG 029, Annex C
- For application with sleeve with drill bit size ≤ 15mm installed in joints not filled with mortar:
  - $N_{Rk,p,j} = 0{,}18 * N_{Rk,p}$ and $N_{Rk,b,j} = 0{,}18 * N_{Rk,b}$ ($N_{Rk,p} = N_{Rk,b}$ see Annex C4 to C45)
  - $V_{Rk,c,j} = 0{,}15 * V_{Rk,c}$ and $V_{Rk,b,j} = 0{,}15 * V_{Rk,b}$ ($V_{Rk,b}$ and $V_{Rk,c}$ see Annex C4 to C45)
- Application without sleeve installed in joints not filled with mortar is not allowed.

Installation:
- Dry or wet structures.
- Anchor Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Fastening screws or threaded rods (incl. nut and washer) must comply with the appropriate material and property class of the Internal threaded rod .

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex B 1**
Intended Use Specifications	

Deutsches Institut für Bautechnik DIBt

Table B1: Overview brick types and properties with corresponding fastening elements (Anchor and Sleeves)

Brick-No.	Brick type	Picture	Brick size length width height [mm]	Compressive strength [N/mm²]	Bulk density [kg/dm³]	Sleeve - Anchor type	Annex
Autoclaved aerated concrete units according EN 771-4							
1	Autoclaved Aerated Concrete AAC6		499 240 249	6	0,6	M8/M10/M12/M16/IG-M6/IG-M8/IG-M10	C4 – C5
Calcium silicate masonry units according EN 771-2							
2	Calcium silicate solid brick KS-NF		240 115 71	10 20 27	2,0	M8/M10/M12/M16/IG-M6/IG-M8/IG-M10 SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C6 – C8
3	Calcium silicate hollow brick KSL-3DF		240 175 113	8 12 14	1,4	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C9 - C11
4	Calcium silicate hollow brick KSL-12DF		498 175 238	10 12 16	1,4	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C12 - C14
Clay masonry units according EN 771-1							
5	Clay solid brick Mz – DF		240 115 55	10 20 28	1,6	M8/M10/M12/M16/IG-M6/IG-M8/IG-M10 SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C15 - C17
6	Clay hollow brick Hlz-16DF		497 240 238	6 8 12 14	0,8	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C18 - C20
7	Clay hollow brick Porotherm Homebric		500 200 299	4 6 10	0,7	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C21 - C23

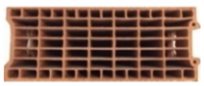
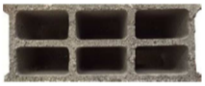
Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Intended Use
Brick types and properties with corresponding fastening elements

Annex B 2

Deutsches Institut für Bautechnik DIBt

Table B1: Overview brick types and properties with corresponding fastening elements (Anchor and Sleeves) (continue)

Brick-No.	Brick type	Picture	Brick size length width height [mm]	Compressive strength [N/mm²]	Bulk density [kg/dm³]	Sleeve - Anchor type	Annex
Clay masonry units according EN 771-1							
8	Clay hollow brick BGV Thermo		500 200 314	4 6 10	0,6	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C24 - C26
9	Clay hollow brick Calibric R+		500 200 314	6 9 12	0,6	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C27- C29
10	Clay hollow brick Urbanbric		560 200 274	6 9 12	0,7	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C30 - C32
11	Clay hollow brick Brique creuse C40		500 200 200	4 8 12	0,7	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C33 - C35
12	Clay hollow brick Blocchi Leggeri		250 120 250	4 6 8 12	0,6	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C36 - C38
13	Clay hollow brick Doppio Uni		250 120 120	10 16 20 28	0,9	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C39 - C41
Light weight concrete according EN 771-3							
14	Hollow light weight concrete Bloc creux B40		494 200 190	4	0,8	SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10	C42 - C43
15	Solid light weight concrete		300 123 248	2	0,6	M8/M10/M12/M16/IG-M6/IG-M8/IG-M10 SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10	C44 - C45

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Intended Use
Brick types and properties with corresponding fastening elements

Annex B 3

Deutsches Institut für Bautechnik DIBt

Installation: Steel Brush

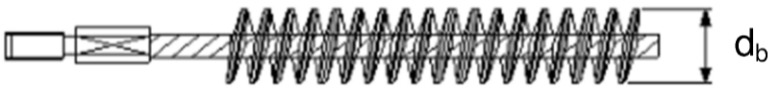


Table B2: Installation parameters in autoclaved aerated concrete AAC and solid masonry (without sleeve)

Anchor size			**M8**	**M10**	**IG-M6**	**M12**	**IG-M8**	**M16**	**IG-M10**
Nominal drill hole diameter	d_0	[mm]	10	12		14		18	
Drill hole depth	h_0	[mm]	80	90		100		100	
Effective anchorage depth	h_{ef}	[mm]	80	90		100		100	
Minimum wall thickness	h_{min}	[mm]	h_{ef} + 30						
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9	12	7	14	9	18	12
Diameter of steel brush	d_b	[mm]	12	14		16		20	
Minimum diameter of steel brush	$d_{b,min}$	[mm]	10,5	12,5		14,5		18,5	
Max installation torque moment	$T_{inst,max}$	[Nm]	2 (14 for Mz DF)						

Table B3: Installation parameters in solid and hollow masonry (with sleeve)

Anchor size			**M8**	**M8 / M10 / IG-M6**		**M12 / M16 / IG-M8 / IG-M10**		
		Sleeve	**12x80**	**16x85**	**16x130**	**20x85**	**20x130**	**20x200**
Nominal drill hole diameter	d_0	[mm]	12	16	16	20	20	20
Drill hole depth	h_0	[mm]	85	90	135	90	135	205
Effective anchorage depth	h_{ef}	[mm]	80	85	130	85	130	200
Minimum wall thickness	h_{min}	[mm]	115	115	175	115	175	240
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	9	7 (IG-M6) / 9 (M8) / 12 (M10)		9 (IG-M8) / 12 (IG-M10) / 14 (M12) / 18 (M16)		
Diameter of steel brush	d_b	[mm]	14	18		22		
Minimum diameter of steel brush	$d_{b,min}$	[mm]	12,5	16,5		20,5		
Max installation torque moment	$T_{inst,max}$	[Nm]	2					

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Intended Use
Installation parameters and cleaning brush

Annex B 4

Deutsches Institut für Bautechnik DIBt

Table B4: Maximum working time and minimum curing time WIT-VM 250

Temperature in the base material T	Temperature of cartridge	Gelling- / working time	Minimum curing time in dry base material [1)]
- 10°C to - 6°C	+15°C to +40°C	90 min	24 h
- 5°C to - 1°C	+5°C to +40°C	90 min	14 h
0°C to + 4 °C		45 min	7 h
+ 5 °C to + 9 °C		25 min	2 h
+ 10 °C to + 19 °C		15 min	80 min
+ 20 °C to + 29 °C		6 min	45 min
+ 30 °C to + 34 °C		4 min	25 min
+ 35 °C to + 39 °C		2 min	20 min
+ 40°C		1,5 min	15 min

1) In wet base material the curing time **must** be doubled

Table B5: Maximum working time and minimum curing time WIT-Nordic

Temperature in the base material T	Temperature of cartridge	Gelling- / working time	Minimum curing time in dry base material [1)]
- 20 °C to - 16 °C	-20°C to +10°C	75 min	24 h
- 15 °C to - 11 °C		55 min	16 h
- 10 °C to - 6 °C		35 min	10 h
- 5 °C to - 1 °C		20 min	5 h
0 °C to + 4 °C		10 min	2,5 h
+ 5 °C to + 9 °C		6 min	80 min
+ 10°C		6 min	60 min

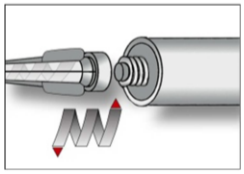
1) In wet base material the curing time **must** be doubled

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex B 5**
Intended Use Gelling and Curing times	

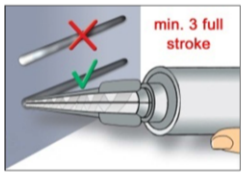
Deutsches Institut für Bautechnik DIBt

Installation Instructions

Preparation of cartridge

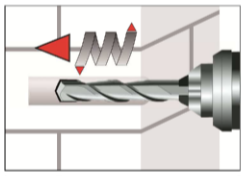


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. In case of a foil tube cartridge, cut off the clip before use. For every working interruption longer than the recommended working time (Table B4 and B5) as well as for new cartridges, a new static-mixer shall be used.

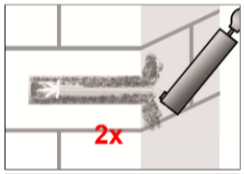


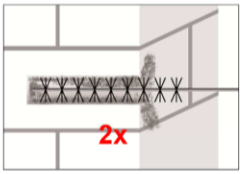
2. Initial adhesive is not suitable for fixing the anchor. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes, for foil tube cartridges six full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

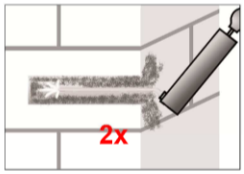
Installation in solid masonry (without sleeve)



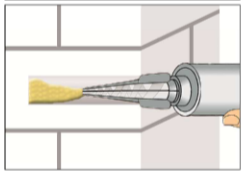
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drilling method according to Annex C4-C45, into the base material, with nominal drill hole diameter and bore hole depth according to the size and embedment depth required by the selected anchor. In case of aborted drill hole the drill hole shall be filled with mortar.



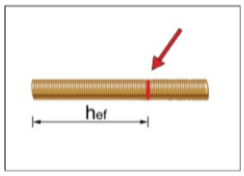


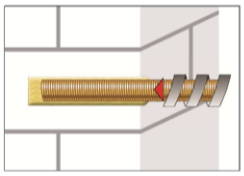


4. Blow out from the bottom of the bore hole two times. Attach the appropriate sized brush (> $d_{b,min}$ Table B2 or B3) to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.

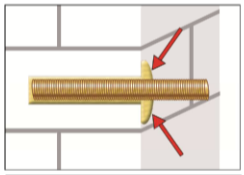


5. Starting from the bottom or back of the cleaned anchor hole, fill the hole up to min two-thirds with adhesive. Slowly withdraw the static mixing nozzle will avoid creating air pockets. Observe the gel-/ working times given in Table B4 and B5.

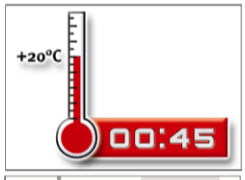




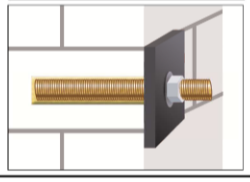
6. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



7. Be sure that the anular gap is fully filled with mortar. If no excess mortar is visible at the top of the hole, the application has to be renewed.



8. Allow the adhesive to cure to the specified curing time prior to applying any load or torque. Do not move or load the anchor until it is fully cured (attend Table B4 and B5).



9. After full curing, the fixture can be installed with up to the max. installation torque (see Annex B4) by using a calibrated torque wrench.

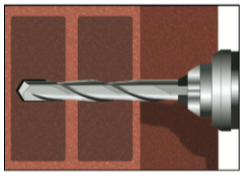
Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Intended Use
Installation instructions Solid masonry and Autoclaved Aerated Concrete

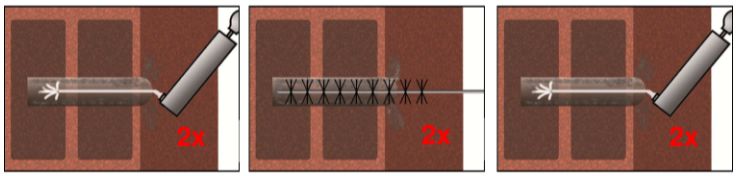
Annex B 6

Deutsches Institut für Bautechnik DIBt

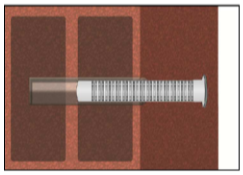
Installation in solid and hollow masonry (with sleeve)



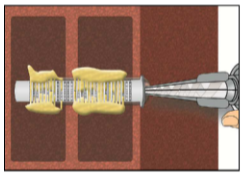
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drill method according to Annex C4 – C45, into the base material, with nominal drill hole diameter and bore hole depth according to the size and embedment depth required by the selected anchor.



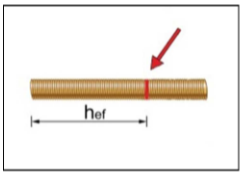
4 Blow out from the bottom of the bore hole two times. Attach the appropriate sized brush (> $d_{b,min}$ Table B3) to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.

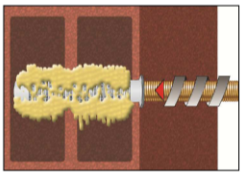


5. Insert the perforated sleeve flush with the surface of the masonry or plaster. Only use sleeves that have the right length. Never cut the sleeve.

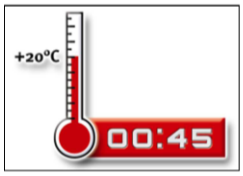


6. Starting from the bottom or back fill the sleeve with adhesive. For embedment depth equal to or larger than 130 mm an extension nozzle shall be used. For quantity of mortar attend cartridges label installation instructions.
Observe the gel-/ working times given in Table B4 and B5.

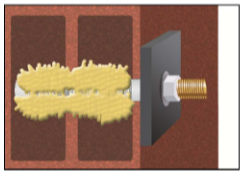




7. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



8. Allow the adhesive to cure to the specified curing time prior to applying any load or torque. Do not move or load the anchor until it is fully cured (attend Table B4 and B5).



9. After full curing, the fixture can be installed with up to the max. installation torque (see Annex B4) by using a calibrated torque wrench.

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex B 7**
Intended Use Installation instructions hollow brick	

Deutsches Institut für Bautechnik DIBt

Table C1: β-factor for job-site testing under tension loading

Brick-No. and abbreviation	Installation & Use category	β-factor					
		T_a: 40°C / 24°C		T_b: 80°C / 50°C		T_c: 120°C / 72°C	
		d/d	w/d w/w	d/d	w/d w/w	d/d	w/d w/w
1 AAC6	For all sizes	0,95	0,86	0,81	0,73	0,81	0,73
2 KS-NF	$d_0 \leq 14$ mm	0,93	0,80	0,87	0,74	0,65	0,56
	$d_0 \geq 16$ mm	0,93	0,93	0,87	0,87	0,65	0,65
3 KSL-3DF	$d_0 \leq 12$ mm	0,93	0,80	0,87	0,74	0,65	0,56
	$d_0 \geq 16$ mm	0,93	0,93	0,87	0,87	0,65	0,65
4 KSL-12DF	$d_0 \leq 12$ mm	0,93	0,80	0,87	0,74	0,65	0,56
	$d_0 \geq 16$ mm	0,93	0,93	0,87	0,87	0,65	0,65
5 MZ-DF	For all sizes	0,86	0,86	0,86	0,86	0,73	0,73
6 Hlz-16DF							
7 Porotherm Homebric							
8 BGV-Thermo							
9 Calibric R+							
10 Urbanbric							
11 Brique creuse C40							
12 Blocchi Leggeri							
13 Doppio Uni							
14 Bloc creux B40	$d_0 \leq 12$ mm	0,93	0,80	0,87	0,74	0,65	0,56
	$d_0 \geq 16$ mm	0,93	0,93	0,87	0,87	0,65	0,65
15 Solid light weight concrete	$d_0 \leq 12$ mm	0,93	0,80	0,87	0,74	0,65	0,56
	$d_0 \geq 16$ mm	0,93	0,93	0,87	0,87	0,65	0,65

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances
β-factors for job site testing under tension load

Annex C 1

Deutsches Institut für Bautechnik DIBt

Table C2: Characteristic steel resistance

Size			IG-M6	IG-M8	IG-M10	M8	M10	M12	M16
Characteristic tension resistance									
steel, property class 4.6	$N_{Rk,s}$	[kN]	-	-	-	15	23	34	63
	γ_{Ms}	[-]		-			2,0		
steel, property class 4.8	$N_{Rk,s}$	[kN]	-	-	-	15	23	34	63
	γ_{Ms}	[-]		-			1,5		
steel, property class 5.6	$N_{Rk,s}$	[kN]	10	18	29	18	29	42	79
	γ_{Ms}	[-]		2,0			2,0		
steel, property class 5.8	$N_{Rk,s}$	[kN]	10	17	29	18	29	42	79
	γ_{Ms}	[-]		1,5			1,5		
steel, property class 8.8	$N_{Rk,s}$	[kN]	16	27	46	29	46	67	126
	γ_{Ms}	[-]		1,5			1,5		
Stainless steel A4 / HCR, property class 70	$N_{Rk,s}$	[kN]	14	26	41	26	41	59	110
	γ_{Ms}	[-]		1,87			1,87		
Stainless steel A4 / HCR, property class 80	$N_{Rk,s}$	[kN]	16	29	46	29	46	67	126
	γ_{Ms}	[-]		1,6			1,6		
Characteristic shear resistance									
steel, property class 4.6	$V_{Rk,s}$	[kN]	-	-	-	7	12	17	31
	γ_{Ms}	[-]		-			1,67		
steel, property class 4.8	$V_{Rk,s}$	[kN]	-	-	-	7	12	17	31
	γ_{Ms}	[-]		-			1,25		
steel, property class 5.6	$V_{Rk,s}$	[kN]	5	9	15	9	15	21	39
	γ_{Ms}	[-]		1,67			1,67		
steel, property class 5.8	$V_{Rk,s}$	[kN]	5	9	15	9	15	21	39
	γ_{Ms}	[-]		1,25			1,25		
steel, property class 8.8	$V_{Rk,s}$	[kN]	8	14	23	15	23	34	63
	γ_{Ms}	[-]		1,25			1,25		
Stainless steel A4 / HCR, property class 70	$V_{Rk,s}$	[kN]	7	13	20	13	20	30	55
	γ_{Ms}	[-]		1,56			1,56		
Stainless steel A4 / HCR, property class 80	$V_{Rk,s}$	[kN]	8	15	23	15	23	34	63
	γ_{Ms}	[-]		1,33			1,33		
Characteristic bending moment									
steel, property class 4.6	$M_{Rk,s}$	[Nm]	-	-	-	15	30	52	133
	γ_{Ms}	[-]		-			1,67		
steel, property class 4.8	$M_{Rk,s}$	[Nm]	-	-	-	15	30	52	133
	γ_{Ms}	[-]		-			1,25		
steel, property class 5.6	$M_{Rk,s}$	[Nm]	8	19	37	19	37	66	167
	γ_{Ms}	[-]		1,67			1,67		
steel, property class 5.8	$M_{Rk,s}$	[Nm]	8	19	37	19	37	66	167
	γ_{Ms}	[-]		1,25			1,25		
steel, property class 8.8	$M_{Rk,s}$	[Nm]	12	30	60	30	60	105	266
	γ_{Ms}	[-]		1,25			1,25		
Stainless steel A4 / HCR, property class 70	$M_{Rk,s}$	[Nm]	11	26	52	26	52	92	233
	γ_{Ms}	[-]		1,56			1,56		
Stainless steel A4 / HCR, property class 80	$M_{Rk,s}$	[Nm]	12	30	60	30	60	105	266
	γ_{Ms}	[-]		1,33			1,33		

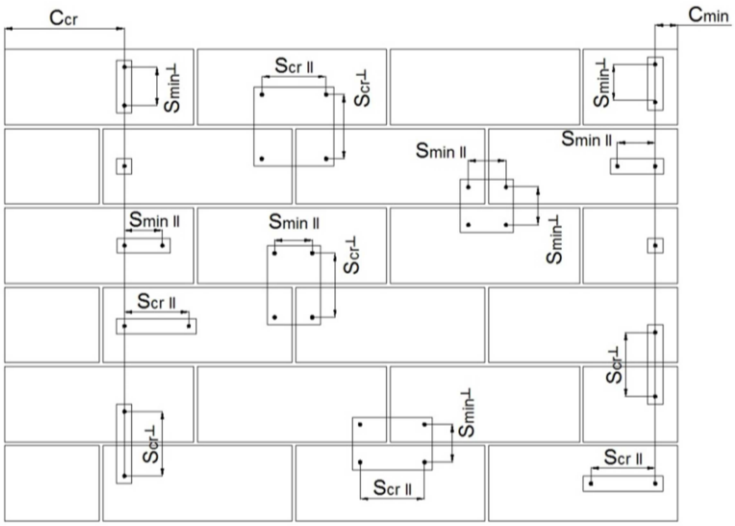
Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances
Characteristic resistance under tension and shear load – steel failure

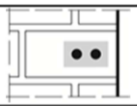
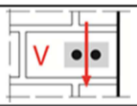
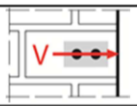
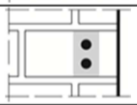
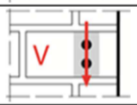
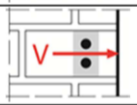
Annex C 2

Deutsches Institut für Bautechnik DIBt

Spacing and edge distances



c_{cr}	=	Characteristic edge distance
c_{min}	=	Minimum Edge distance
s_{cr}	=	Characteristic spacing
s_{min}	=	Minimum spacing
$s_{cr,II}$; ($s_{min,II}$)	=	Characteristic (minimum) spacing for anchors placed parallel to bed joint
$s_{cr,\perp}$; ($s_{min,\perp}$)	=	Characteristic (minimum) spacing for anchors placed perpendicular to bed joint

Load direction / Anchor position	Tension load	Shear load parallel to free edge	Shear load perpendicular to free edge
Anchors places parallel to bed joint $s_{cr,II}$; ($s_{min,II}$)			
Anchors places perpendicular to bed joint $s_{cr,\perp}$; ($s_{min,\perp}$)			

$\alpha_{g,N,II}$ =	Group factor in case of tension load for anchors placed parallel to the bed joint
$\alpha_{g,V,II}$ =	Group factor in case of shear load for anchors placed parallel to the bed joint
$\alpha_{g,N,\perp}$ =	Group factor in case of tension load for anchors placed perpendicular to the bed joint
$\alpha_{g,V,\perp}$ =	Group factor in case of shear load for anchors placed perpendicular to the bed joint

Group of two anchors: $N^g_{Rk} = \alpha_{g,N} * N_{RK}$ and $V^g_{Rk} = \alpha_{g,V} * V_{Rk}$

Group of four anchors: $N^g_{Rk} = \alpha_{g,N,II} * \alpha_{g,N,\perp} * N_{RK}$ and $V^g_{Rk} = \alpha_{g,V,II} * \alpha_{g,V,\perp} * V_{Rk}$

(N_{Rk}: $N_{Rk,b}$ or $N_{Rk,b,j}$ for c_{cr})

(V_{Rk}: $V_{Rk,c}$; $V_{Rk,c,j}$; $V_{Rk,b}$ or $V_{Rk,b,j}$ for c_{cr})

(with the relevant α_g)

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances
Edge distance and anchor spacing

Annex C 3

Deutsches Institut für Bautechnik DIBt

Brick type: Autoclaved Aerated Concrete – AAC6

Table C3: Description of the brick

Brick type		Autoclaved Aerated Concrete AAC6
Bulk density	ρ [kg/dm³]	0,6
Compressive strength	$f_b \geq$ [N/mm²]	6
Code		EN 771-4
Producer (country code)		e.g. Porit (DE)
Brick dimensions	[mm]	499 x 240 x 249
Drilling method		Rotary

Table C4: Installation parameter

Anchor size		[-]	M8	M10/IG-M6	M12/IG-M8	M16/IG-M10
Effective anchorage depth		[mm]	80	90	100	100
Edge distance	c_{cr}	[mm]	$1{,}5*h_{ef}$			
Minimum edge distance	$c_{min,N}$	[mm]	75			
	$c_{min,V,II}$ ($c_{min,v,\perp}$)[1)]	[mm]	75 ($1{,}5*h_{ef}$)			
Spacing	s_{cr}	[mm]	$3*h_{ef}$			
Minimum spacing	s_{min}	[mm]	100			

[1)] $c_{min,V,II}$ for shear loading parallel to the free edge; $c_{min,v,\perp}$ for shear loading perpendicular the free edge

Table C5: Group factor for anchor group in case of tension loading

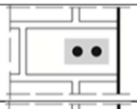
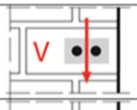
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		125 (M8:120)	100	$\alpha_{g,N,II}$	[-]	1,8
		1,5*hef	3*hef			2,0
⊥: anchors placed perpendicular to horizontal joint		75	100	$\alpha_{g,N,\perp}$		1,4
		1,5*hef	3*hef			2,0

Table C6: Group factor for anchor group in case of shear loading parallel to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		75	100	$\alpha_{g,V,II}$	[-]	1,2
		1,5*hef	3*hef			2,0
⊥: anchors placed perpendicular to horizontal joint		1,5*hef	3*hef	$\alpha_{g,V,\perp}$		2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances Autoclaved Aerated Concrete - AAC6
Description of the brick
Installation parameters

Annex C 4

Deutsches Institut für Bautechnik DIBt

Brick type: Autoclaved Aerated Concrete – AAC6

Table C7: Group factor for anchor group in case of shear loading perpendicular to free edge

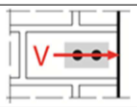
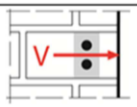
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		1,5*hef	3,0*hef	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		1,5*hef	3,0*hef	$\alpha_{g,V,\perp}$		2,0

Table C8: Characteristic values of resistance under tension and shear loads

Anchor size	Effective anchorage depth	Characteristic resistance						
		Use category						
		d/d			w/w w/d			d/d w/d w/w
		40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
	h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
	[mm]	[kN]						
Compressive strength $f_b \geq 6$ N/mm²								
M8	80	2,5 (2,0)	2,5 (1,5)	2,0 (1,2)	2,5 (1,5)	2,0 (1,5)	1,5 (1,2)	6,0
M10/IG-M6	90	4,0 (2,5)	3,0 (2,0)	2,5 (1,5)	3,5 (2,5)	3,0 (2,0)	2,5 (1,5)	10,0
M12/IG-M8	100	5,0 (3,5)	4,0 (3,0)	3,0 (2,5)	4,5 (3,0)	3,5 (2,5)	3,0 (2,5)	10,0
M16/IG-M10	100	6,5 (4,5)	5,5 (3,5)	4,0 (3,0)	5,5 (4,0)	5,0 (3,5)	4,0 (3,0)	10,0

1) Values are valid for c_{cr}, values in brackets are valid for single anchors with c_{min}
2) For calculation of $V_{Rk,c}$ see ETAG029, Annex C;
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C9: Displacements

Anchor size	h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
	[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	80	0,9	0,18	0,16	0,32	1,3	0,8	1,20
M10/IG-M6	90	1,4		0,26	0,51	1,8	1,2	1,80
M12/IG-M8	100	1,8	0,08	0,14	0,29	2,1	1,4	2,10
M16/IG-M10	100	2,3		0,19	0,37	2,3	1,5	2,25

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances Autoclaved Aerated Concrete – AAC6
Installation parameters (continue)
Characteristic values of resistance under tension and shear load / Displacements

Annex C 5

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate solid brick KS-NF

Table C10: Description of the brick

Brick type		Calcium silicate solid brick KS-NF
Bulk density	ρ [kg/dm³]	2,0
Compressive strength	$f_b \geq$ [N/mm²]	10, 20 or 27
Code		EN 771-2
Producer (country code)		e.g. Wemding (DE)
Brick dimensions	[mm]	240 x 115 x 71
Drilling method		Hammer

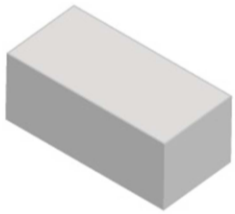


Table C11: Installation parameter

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	$1,5*h_{ef}$
Minimum edge distance	c_{min}	[mm]	60
Spacing	s_{cr}	[mm]	$3*h_{ef}$
Minimum spacing	s_{min}	[mm]	120

Table C12: Group factor for anchor group in case of tension loading

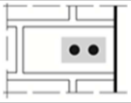
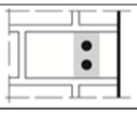
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,N,II}$	[-]	1,0
		140	120			1,5
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,N,\perp}$		0,5
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Table C13: Group factor for anchor group in case of shear loading parallel to free edge

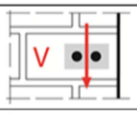
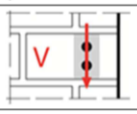
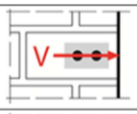
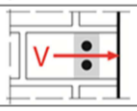
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	1,0
		115	120			1,7
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		1,0
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Table C14: Group factor for anchor group in case of shear loading perpendicular to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	1,0
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		1,0
		1,5*hef	$3*h_{ef}$			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium solid brick KS-NF
Installation parameters

Annex C 6

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate solid brick KS-NF

Table C15: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth h_{ef} [mm]	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For All temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 10$ N/mm²									
M8	-	80	4,5 (2,0)	4,5 (2,0)	3,0 (1,5)	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	2,5 (1,5)
M10 / IG-M6	-	90	4,5 (2,0)	4,5 (2,0)	3,0 (1,5)	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	3,0 (2,0)
M12 / IG-M8	-	100	4,5 (2,0)	4,5 (2,0)	3,0 (1,5)	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	2,5 (1,5)
M16 / IG-M10	-	100	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	3,0 (1,5)	3,5 (1,5)	2,0 (0,9)	2,5 (1,5)
M8	12x80	80	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	3,5 (1,5)	3,0 (1,5)	2,5 (1,2)	2,5 (1,5)
M8 / M10/ IG-M6	16x85	85	3,5 (1,5)	3,0 (1,5)	2,0 (0,9)	3,5 (1,5)	3,0 (1,5)	2,5 (1,2)	2,5 (1,5)
	16x130	130	3,5 (1,5)	3,0 (1,5)	2,0 (0,9)	3,5 (1,5)	3,0 (1,5)	2,5 (1,2)	2,5 (1,5)
M12 / M16 / IG-M8 / IG-M10	20x85	85	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	2,5 (1,5)
	20x130	130	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	2,5 (1,5)
	20x200	200	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	3,0 (1,5)	2,5 (1,2)	2,0 (0,9)	2,5 (1,5)
Compressive strength $f_b \geq 20$ N/mm²									
M8	-	80	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	5,0 (2,5)	5,0 (2,5)	3,5 (1,5)	4,0 (2,5)
M10 / IG-M6	-	90	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	5,0 (2,5)	5,0 (2,5)	3,5 (1,5)	4,5 (2,5)
M12/ IG-M8	-	100	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	5,0 (2,5)	5,0 (2,5)	3,5 (1,5)	4,0 (2,5)
M16/ IG-M10	-	100	5,0 (2,5)	5,0 (2,5)	3,5 (1,5)	5,0 (2,5)	5,0 (2,5)	3,5 (1,5)	4,0 (2,5)
M8	12x80	80	5,5 (2,5)	5,0 (2,5)	3,5 (1,5)	4,5 (2,0)	4,5 (2,0)	3,0 (1,5)	4,0 (2,5)
M8 / M10/ IG-M6	16x85	85	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	4,0 (2,5)
	16x130	130	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	4,0 (2,5)
M12 / M16 / IG-M8 / IG-M10	20x85	85	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,5)
	20x130	130	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,5)
	20x200	200	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,0)	4,0 (2,0)	3,0 (1,5)	4,0 (2,5)

1) Values are valid for c_{cr}, values in brackets are valid for single anchors with c_{min}
2) For c_{cr} calculation of $V_{Rk,c}$ see ETAG 029, Annex C; values in brackets $V_{Rk,b} = V_{Rk,c}$ for single anchors with c_{min}
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium solid brick KS-NF
Characteristic values of resistance under tension and shear load

Annex C 7

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate solid brick KS-NF

Table C16: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth h_{ef} [mm]	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For All temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 27$ N/mm²									
M8	-	80	7,0 (3,5)	6,5 (3,0)	5,0 (2,5)	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	4,5 (2,5)
M10 / IG-M6	-	90	7,0 (3,5)	6,5 (3,0)	5,0 (2,5)	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	5,5 (3,0)
M12 / IG-M8	-	100	7,0 (3,5)	6,5 (3,0)	5,0 (2,5)	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	4,5 (2,5)
M16 / IG-M10	-	100	6,0 (3,0)	5,5 (2,5)	4,5 (2,0)	6,0 (3,0)	5,5 (2,5)	4,0 (2,0)	4,5 (2,5)
M8	12x80	80	6,5 (3,0)	6,0 (3,0)	4,5 (2,0)	5,5 (2,5)	5,0 (2,5)	3,5 (1,5)	4,5 (2,5)
M8 / M10/ IG-M6	16x85	85	5,5 (2,5)	5,0 (2,5)	4,0 (2,0)	5,5 (2,5)	5,0 (2,5)	4,0 (2,0)	4,5 (2,5)
	16x130	130	5,5 (2,5)	5,0 (2,5)	4,0 (2,0)	5,5 (2,5)	5,0 (2,5)	4,0 (2,0)	4,5 (2,5)
M12 / M16 / IG-M8 / IG-M10	20x85	85	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	4,5 (2,5)
	20x130	130	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	4,5 (2,5)
	20x200	200	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	5,0 (2,5)	4,5 (2,0)	3,5 (1,5)	4,5 (2,5)

1) Values are valid for c_{cr}, values in brackets are valid for single anchors with c_{min}
2) For c_{cr} calculation of $V_{Rk,c}$ see ETAG 029, Annex C; values in brackets $V_{Rk,b} = V_{Rk,c}$ for single anchors with c_{min}
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C17: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	-	80	2,0	0,15	0,30	0,60	1,7	0,90	1,35
M10 / IG-M6	-	90					2,0	1,10	1,65
M12 / IG-M8	-	100					1,7	0,90	1,35
M16 / IG-M10	-	100	1,7		0,26	0,51			
M8	12x80	80							
M8 / M10/ IG-M6	16x85	85	1,4		0,21	0,43			
	16x130	130							
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,3		0,19	0,39			
	20x130	130							
	20x200	200							

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium solid brick KS-NF
Characteristic values of resistance under tension and shear load (continue)
Displacements

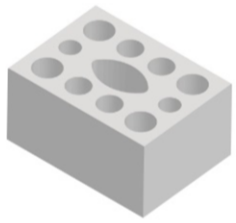
Annex C 8

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-3DF

Table C18: Description of the brick

Brick type	Calcium silicate hollow brick KSL-3DF
Bulk density ρ [kg/dm³]	1,4
Compressive strength $f_b \geq$ [N/mm²]	8, 12 or 14
Code	EN 771-2
Producer (country code)	e.g. Wemding (DE)
Brick dimensions [mm]	240 x 175 x 113
Drilling method	Rotary



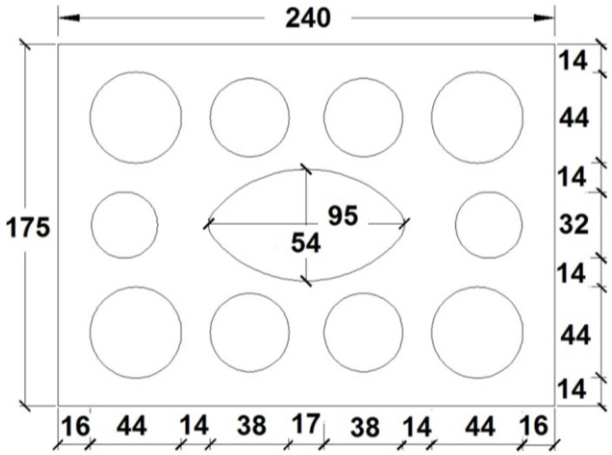
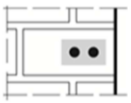
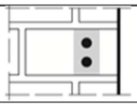


Table C19: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1]
Minimum edge distance	c_{min}	[mm]	60
Spacing	$s_{cr,II}$	[mm]	240
	$s_{cr,\perp}$	[mm]	120
Minimum spacing	s_{min}	[mm]	120

[1] Value in brackets for SH20x85; SH20x130 and SH20x200

Table C20: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,N,II}$	[-]	1,5
		c_{cr}	240			2,0
		160	120			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,N,\perp}$		1,0
		c_{cr}	120			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium hollow brick KS L-3DF
Description of the brick
Installation parameters

Annex C 9

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-3DF

Table C21: Group factor for anchor group in case of shear loading parallel to free edge

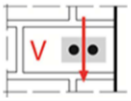
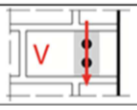
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	1,0
		160	120			1,6
		c_{cr}	240			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		1,0
		c_{cr}	120			2,0

Table C22: Group factor for anchor group in case of shear loading perpendicular to free edge

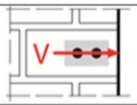
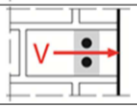
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	1,0
		c_{cr}	240			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		1,0
		c_{cr}	120			2,0

Table C23: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d; w/w			d/d; w/d; w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [4]
		[mm]	[kN]						
Compressive strength $f_b \geq 8$ N/mm²									
M8	12x80	80	1,5	1,5	1,2	1,5	1,2	0,9	2,5[2] (0,9)[3]
M8 / M10 / IG-M6	16x85	85	1,5	1,5	1,2	1,5	1,5	1,2	4,0[2] (1,5)[3]
	16x130	130	1,5	1,5	1,2	1,5	1,5	1,2	4,0[2] (1,5)[3]
M12 / M16 / IG-M8 / IG-M10	20x85	85	4,5	4,0	3,0	4,5	4,0	3,0	4,0[2] (1,5)[3]
	20x130	130	4,5	4,0	3,0	4,5	4,0	3,0	4,0[2] (1,5)[3]
	20x200	200	4,5	4,0	3,0	4,5	4,0	3,0	4,0[2] (1,5)[3]
Compressive strength $f_b \geq 12$ N/mm²									
M8	12x80	80	2,0	2,0	1,5	2,0	1,5	1,2	3,0[2] (1,2)[3]
M8 / M10 / IG-M6	16x85	85	2,0	2,0	1,5	2,0	2,0	1,5	4,5[2] (1,5)[3]
	16x130	130	2,5	2,5	1,5	2,5	2,5	1,5	4,5[2] (1,5)[3]
M12 / M16 / IG-M8 / IG-M10	20x85	85	6,0	5,5	4,0	6,0	5,5	4,0	4,5[2] (1,5)[3]
	20x130	130	6,0	5,5	4,0	6,0	5,5	4,0	4,5[2] (1,5)[3]
	20x200	200	6,0	5,5	4,0	6,0	5,5	4,0	4,5[2] (1,5)[3]

1) Values are valid for c_{cr} and c_{min}
2) $V_{Rk,c,II} = V_{Rk,b}$ valid for shear load parallel to free edge
3) $V_{Rk,c,\perp} = V_{Rk,b}$ (values in brackets) valid for shear load in direction to free edge
4) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium hollow brick KS L-3DF
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 10

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-3DF

Table C24: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d; w/d; w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [4]
		[mm]	[kN]						
Compressive strength $f_b \geq 14$ N/mm²									
M8	12x80	80	2,5	2,5	1,5	2,0	2,0	1,5	3,5 [2] (1,5) [3]
M8 / M10 / IG-M6	16x85	85	2,5	2,5	1,5	2,5	2,5	1,5	6,0 [2] (2,0) [3]
	16x130	130	2,5	2,5	2,0	2,5	2,5	2,0	6,0 [2] (2,0) [3]
M12 / M16 / IG-M8 / IG-M10	20x85	85	6,5	6,0	4,5	6,5	6,0	4,5	6,0 [2] (2,0) [3]
	20x130	130	6,5	6,0	4,5	6,5	6,0	4,5	6,0 [2] (2,0) [3]
	20x200	200	6,5	6,0	4,5	6,5	6,0	4,5	6,0 [2] (2,0) [3]

1) Values are valid for c_{cr} and c_{min}
2) $V_{Rk,c,II} = V_{Rk,b}$ valid for shear load parallel to free edge
3) $V_{Rk,c,\perp} = V_{Rk,b}$ (values in brackets) valid for shear load in direction to free edge
4) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C25: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,71	0,90	0,64	1,29	1,0	1,0	1,50
M8 / M10 / IG-M6	16x85	85					1,7	1,9	2,85
	16x130	130							
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,86		1,67	3,34			
	20x130	130							
	20x200	200							

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-12DF

Table C26: Description of the brick

Brick type		Calcium silicate hollow brick KSL-12DF
Bulk density	ρ [kg/dm³]	1,4
Compressive strength	$f_b \geq$ [N/mm²]	10, 12 or 16
Code		EN 771-2
Producer (country code)		e.g. Wemding (DE)
Brick dimensions	[mm]	498 x 175 x 238
Drilling method		Rotary

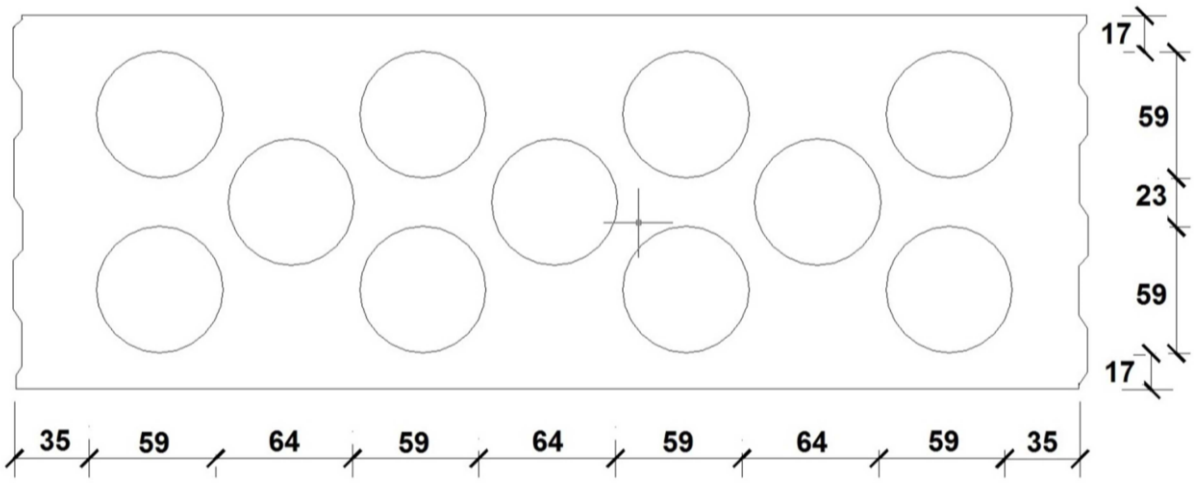
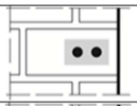
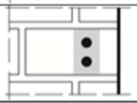


Table C27: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1]
Minimum edge distance	c_{min}[2]	[mm]	100 (120)[1]
Spacing	$s_{cr,II}$	[mm]	498
	$s_{cr,\perp}$	[mm]	238
Minimum spacing	s_{min}	[mm]	120

1) Value in brackets for SH20x85 and SH20x130
2) For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C28: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		100	120	$\alpha_{g,N,II}$	[-]	1,0
		c_{cr}	498			2,0
⊥: anchors placed perpendicular to horizontal joint		100	120	$\alpha_{g,N,\perp}$		1,0
		c_{cr}	238			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances Calcium hollow brick KS L-12DF
Description of the brick
Installation parameters

Annex C 12

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-12DF

Table C29: Group factor for anchor group in case of shear loading parallel to free edge

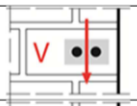
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	498	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	238	$\alpha_{g,V,\perp}$		2,0

Table C30: Group factor for anchor group in case of shear loading perpendicular to free edge

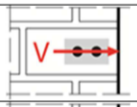
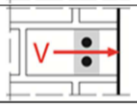
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	498	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	238	$\alpha_{g,V,\perp}$		2,0

Table C31: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 10$ N/mm²									
M8	12x80	80	0,6	0,6	0,4	0,5	0,5	0,4	2,5
M8 / M10 / IG-M6	16x85	85	0,6	0,6	0,4	0,6	0,6	0,4	5,5
	16x130	130	2,5	2,5	2,0	2,5	2,5	2,0	5,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,5	1,5	0,9	1,5	1,5	0,9	5,5
	20x130	130	2,5	2,5	2,0	2,5	2,5	2,0	5,5
Compressive strength $f_b \geq 12$ N/mm²									
M8	12x80	80	0,75	0,6	0,5	0,6	0,6	0,4	3,0
M8 / M10 / IG-M6	16x85	85	0,75	0,6	0,5	0,75	0,6	0,5	6,5
	16x130	130	3,0	3,0	2,0	3,0	3,0	2,0	6,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,5	1,5	1,2	1,5	1,5	1,2	6,5
	20x130	130	3,0	3,0	2,0	3,0	3,0	2,0	6,5

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 120 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium hollow brick KS L-12DF
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 13

Deutsches Institut für Bautechnik DIBt

Brick type: Calcium silicate hollow brick KS L-12DF

Table C32: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 16$ N/mm²									
M8	12x80	80	0,9	0,9	0,6	0,75	0,75	0,5	3,5
M8 / M10 / IG-M6	16x85	85	0,9	0,9	0,6	0,9	0,9	0,6	8,0
	16x130	130	4,0	3,5	2,5	4,0	3,5	2,5	8,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	2,0	2,0	1,5	2,0	2,0	1,5	8,0
	20x130	130	4,0	3,5	2,5	4,0	3,5	2,5	8,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 120$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C33: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,26	0,90	0,23	0,46	1,0	1,3	1,95
M8 / M10 / IG-M6	16x85	85					2,3	2,5	3,75
	16x130	130	1,14		1,03	2,06			
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,57		0,51	1,03			
	20x130	130	1,14		1,03	2,06			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances calcium hollow brick KS L-12DF
Characteristic values of resistance under tension and shear load (continue)
Displacements

Annex C 14

Deutsches Institut für Bautechnik DIBt

Brick type: Clay solid brick Mz-DF

Table C34: Description of the brick

Brick type		Clay solid brick Mz-DF
Bulk density	ρ [kg/dm³]	1,6
Compressive strength	$f_b \geq$ [N/mm²]	10, 20 or 28
Code		EN 771-1
Producer (country code)		e.g. Unipor (DE)
Brick dimensions	[mm]	240 x 115 x 55
Drilling method		Hammer

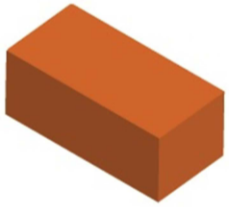


Table C35: Installation parameter

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	$1,5*h_{ef}$
Minimum edge distance	c_{min}	[mm]	60
Spacing	s_{cr}	[mm]	$3*h_{ef}$
Minimum spacing	s_{min}	[mm]	120

Table C36: Group factor for anchor group in case of tension loading

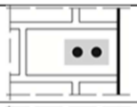
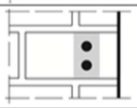
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,N,II}$	[-]	0,7
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,N,\perp}$		0,5
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Table C37: Group factor for anchor group in case of shear loading parallel to free edge

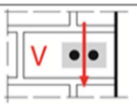
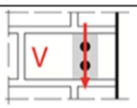
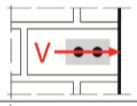
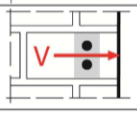
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	0,5
		90	120			1,1
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		0,5
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Table C38: Group factor for anchor group in case of shear loading perpendicular to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	0,5
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		0,5
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay solid brick Mz-DF
Description of the brick
Installation parameters

Annex C 15

Deutsches Institut für Bautechnik DIBt

Brick type: Clay solid brick Mz-DF

Table C39: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 10$ N/mm²						
M8	-	80	3,5 (1,5)	3,5 (1,5)	2,5 (1,2)	3,5 (1,2)
M10 / IG-M6	-	90	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
M12 / IG-M8	-	100	4,0 (2,0)	4,0 (2,0)	3,5 (1,5)	3,5 (1,2)
M16 / IG-M10	-	100	4,0 (2,0)	4,0 (2,0)	3,5 (1,5)	5,5 (1,5)
M8	12x80	80	3,5 (1,5)	3,5 (1,5)	3,0 (1,2)	3,5 (1,2)
M8 / M10 / IG-M6	16x85	85	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
	16x130	130	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
M12 / M16 / IG-M8 / IG-M10	20x85	85	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
	20x130	130	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
	20x200	200	3,5 (1,5)	3,5 (1,5)	3,0 (1,5)	3,5 (1,2)
Compressive strength $f_b \geq 20$ N/mm²						
M8	-	80	4,5 (2,5)	4,5 (2,5)	4,0 (2,0)	5,0 (1,5)
M10 / IG-M6	-	90	5,5 (2,5)	5,5 (2,5)	4,5 (2,0)	5,0 (1,5)
M12 / IG-M8	-	100	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,0 (1,5)
M16 / IG-M10	-	100	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	8,0 (2,5)
M8	12x80	80	4,5 (2,5)	4,5 (2,5)	4,0 (2,0)	5,0 (1,5)
M8 / M10 / IG-M6	16x85	85	5,0 (2,5)	5,0 (2,5)	4,0 (2,0)	5,0 (1,5)
	16x130	130	5,0 (2,5)	5,0 (2,5)	4,0 (2,0)	5,0 (1,5)
M12 / M16 / IG-M8 / IG-M10	20x85	85	5,0 (2,5)	5,0 (2,5)	4,0 (2,0)	5,0 (1,5)
	20x130	130	5,0 (2,5)	5,0 (2,5)	4,0 (2,0)	5,0 (1,5)
	20x200	200	5,0 (2,5)	5,0 (2,5)	4,0 (2,0)	5,0 (1,5)
Compressive strength $f_b \geq 28$ N/mm²						
M8	-	80	5,5 (2,5)	5,5 (2,5)	4,5 (2,5)	5,5 (2,0)
M10 / IG-M6	-	90	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)
M12 / IG-M8	-	100	7,0 (3,5)	7,0 (3,5)	6,0 (3,0)	5,5 (2,0)
M16 / IG-M10	-	100	7,0 (3,5)	7,0 (3,5)	6,0 (3,0)	9,0 (3,0)
M8	12x80	80	5,5 (2,5)	5,5 (2,5)	4,5 (2,5)	5,5 (2,0)
M8 / M10 / IG-M6	16x85	85	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)
	16x130	130	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)
M12 / M16 / IG-M8 / IG-M10	20x85	85	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)
	20x130	130	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)
	20x200	200	6,0 (3,0)	6,0 (3,0)	5,0 (2,5)	5,5 (2,0)

1) Values are valid for c_{cr}, values in brackets are valid for single anchors with c_{min}
2) For c_{cr} calculation of $V_{Rk,c}$ see ETAG 029, Annex C; for c_{min} values in brackets $V_{Rk,b} = V_{Rk,c}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay solid brick Mz-DF
Characteristic values of resistance under tension and shear load

Annex C 16

Deutsches Institut für Bautechnik DIBt

Brick type: Clay solid brick Mz-DF

Table C40: Displacements

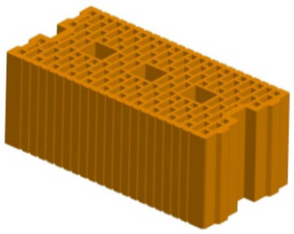
Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	-	80	1,3	0,15	0,19	0,39	1,9	1,00	1,50
M10 / IG-M6	-	90	1,6		0,24	0,47			
M12 / IG-M8	-	100	1,7		0,26	0,51			
M16 / IG-M10	-	100					2,9		
M8	12x80	80	1,3		0,19	0,39	1,9		
M8 / M10 / IG-M6	16x85	85							
	16x130	130							
M12 / M16 / IG-M8 / IG-M10	20x85	85							
	20x130	130							
	20x200	200							

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick HLz-16-DF

Table C41: Description of the brick

Brick type		Clay hollow brick HLz-16-DF
Bulk density	ρ [kg/dm³]	0,8
Compressive strength	$f_b \geq$ [N/mm²]	6, 8, 12, 14
Code		EN 771-1
Producer (country code)		e.g. Unipor DE)
Brick dimensions	[mm]	497 x 240 x 238
Drilling method		Rotary



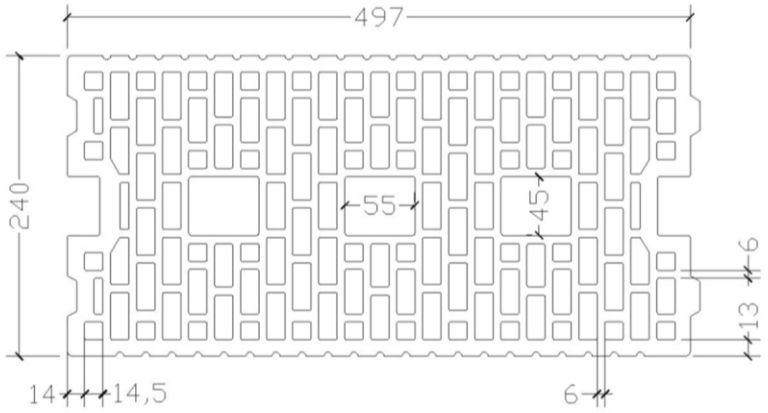
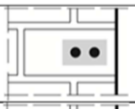
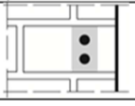


Table C42: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1)]
Minimum edge distance	c_{min}[2)]	[mm]	100 (120)[1)]
Spacing	$s_{cr,II}$	[mm]	497
	$s_{cr,\perp}$	[mm]	238
Minimum spacing	s_{min}	[mm]	100

1) Value in brackets for SH20x85; SH20x130 and SH20x200
2) For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C43: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	100	$\alpha_{g,N,II}$	[-]	1,3
		c_{cr}	497			2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	100	$\alpha_{g,N,\perp}$		1,1
		c_{cr}	238			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick HLz-16DF
Description of the brick
Installation parameters

Annex C 18

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick HLz-16-DF

Table C44: Group factor for anchor group in case of shear loading parallel to free edge

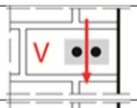
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	497	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	238	$\alpha_{g,V,\perp}$		2,0

Table C45: Group factor for anchor group in case of shear loading perpendicular to free edge

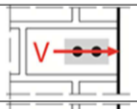
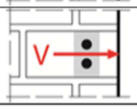
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	497	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	238	$\alpha_{g,V,\perp}$		2,0

Table C46: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	2,5	2,5	2,0	2,5
M8 / M10/ IG-M6	16x85	85	2,5	2,5	2,0	4,5
	16x130	130	3,5	3,5	3,0	4,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	2,5	2,5	2,0	5,0
	20x130	130	3,5	3,5	3,0	6,0
	20x200	200	3,5	3,5	3,0	6,0
Compressive strength $f_b \geq 8$ N/mm²						
M8	12x80	80	3,0	3,0	2,5	3,0
M8 / M10/ IG-M6	16x85	85	3,0	3,0	2,5	5,5
	16x130	130	4,5	4,5	3,5	5,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	3,0	3,0	2,5	6,0
	20x130	130	4,5	4,5	3,5	7,0
	20x200	200	4,5	4,5	3,5	7,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 125 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick HLz-16DF
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 19

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick HLz-16-DF

Table C47: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 12$ N/mm²						
M8	12x80	80	3,5	3,5	3,0	4,0
M8 / M10/ IG-M6	16x85	85	3,5	3,5	3,0	6,5
	16x130	130	5,0	5,0	4,5	6,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	3,5	3,5	3,0	7,0
	20x130	130	5,0	5,0	4,5	9,0
	20x200	200	5,0	5,0	4,5	9,0
Compressive strength $f_b \geq 14$ N/mm²						
M8	12x80	80	4,0	4,0	3,0	4,0
M8 / M10/ IG-M6	16x85	85	4,0	4,0	3,0	6,5
	16x130	130	5,5	5,5	4,5	6,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	4,0	4,0	3,0	7,0
	20x130	130	5,5	5,5	4,5	9,0
	20x200	200	5,5	5,5	4,5	9,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 125$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C48: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	1,14	0,10	0,11	0,23	1,10	1,20	1,80
M8 / M10/ IG-M6	16x85	85					1,86	1,50	2,25
	16x130	130	1,57		0,16	0,31			
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,14		0,11	0,23	1,86	1,50	2,25
	20x130	130	1,57		0,16	0,31	2,57	2,10	3,15
	20x200	200							

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick HLz-16DF
Characteristic values of resistance under tension and shear load (continue)
Displacements

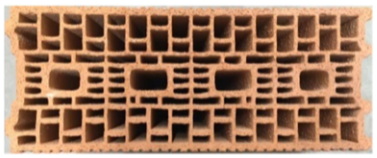
Annex C 20

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Porotherm Homebric

Table C49: Description of the brick

Brick type		Clay hollow hollow brick Porotherm Homebric
Bulk density	ρ [kg/dm³]	0,7
Compressive strength	$f_b \geq$ [N/mm²]	4, 6 or 10
Code		EN 771-1
Producer (country code)		e.g. Wienerberger (FR)
Brick dimensions	[mm]	500 x 200 x 299
Drilling method		Rotary



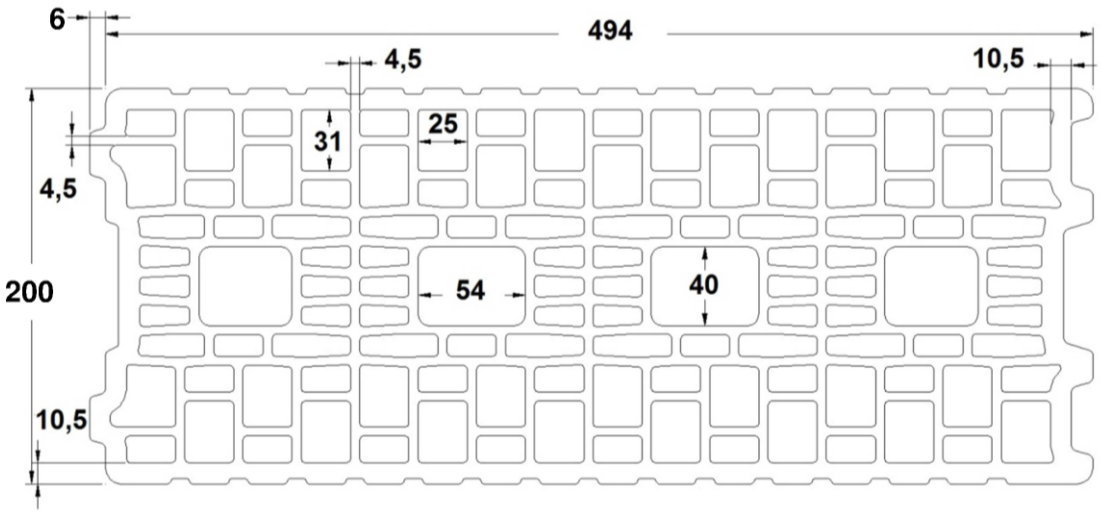
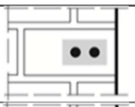
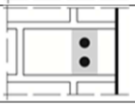


Table C50: Installation parameters

Anchor size			[-]	All sizes
Edge distance		c_{cr}	[mm]	100 (120)[1]
Minimum edge distance		c_{min}[2]	[mm]	100 (120)[1]
Spacing		$s_{cr,II}$	[mm]	500
		$s_{cr,\perp}$	[mm]	299
Minimum spacing		s_{min}	[mm]	100

1) Value in brackets for SH20x85 and SH20x130
2) For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C51: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		200	100	$\alpha_{g,N,II}$	[-]	2,0
		c_{cr}	500			2,0
⊥: anchors placed perpendicular to horizontal joint		200	100	$\alpha_{g,N,\perp}$		1,2
		c_{cr}	299			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Porotherm Homebric
Description of the brick
Installation parameters

Annex C 21

Deutsches Institut für Bautechnik DIBt

Brick type: Clay silicate hollow brick Porotherm Homebric

Table C52: Group factor for anchor group in case of shear loading parallel to free edge

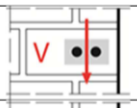
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	299	$\alpha_{g,V,\perp}$		2,0

Table C53: Group factor for anchor group in case of shear loading perpendicular to free edge

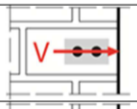
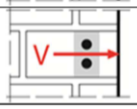
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	299	$\alpha_{g,V,\perp}$		2,0

Table C54: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 4$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	2,0
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,75	2,0
	16x130	130	1,2	1,2	0,9	2,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,75	2,5
	20x130	130	1,2	1,2	0,9	2,5
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	0,9	0,9	0,9	2,5
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,9	2,5
	16x130	130	1,2	1,2	1,2	2,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,9	3,0
	20x130	130	1,2	1,2	1,2	3,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 200 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Porotherm Homebric
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 22

Deutsches Institut für Bautechnik DIBt

Brick type: Clay silicate hollow brick Porotherm Homebric

Table C55: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 10$ N/mm²						
M8	12x80	80	1,2	1,2	1,2	3,0
M8 / M10/ IG-M6	16x85	85	1,2	1,2	1,2	3,0
	16x130	130	1,5	1,5	1,5	3,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	1,2	1,2	4,0
	20x130	130	1,5	1,5	1,5	4,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 200$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C56: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,34	0,80	0,27	0,55	0,9	1,20	1,80
M8 / M10/ IG-M6	16x85	85					0,9		
	16x130	130	0,43		0,34	0,69	1,0		
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,34		0,27	0,55	1,14		
	20x130	130	0,43		0,34	0,69			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Porotherm Homebric
Characteristic values of resistance under tension and shear load (continue)
Displacements

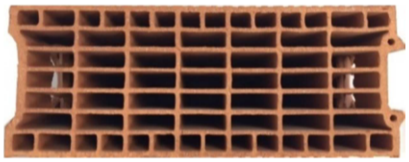
Annex C 23

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick BGV Thermo

Table C57: Description of the brick

Brick type	Clay hollow brick BGV Thermo
Bulk density ρ [kg/dm³]	0,6
Compressive strength $f_b \geq$ [N/mm²]	4, 6 or 10
Code	EN 771-1
Producer (country code)	e.g. Leroux (FR)
Brick dimensions [mm]	500 x 200 x 314
Drilling method	Rotary



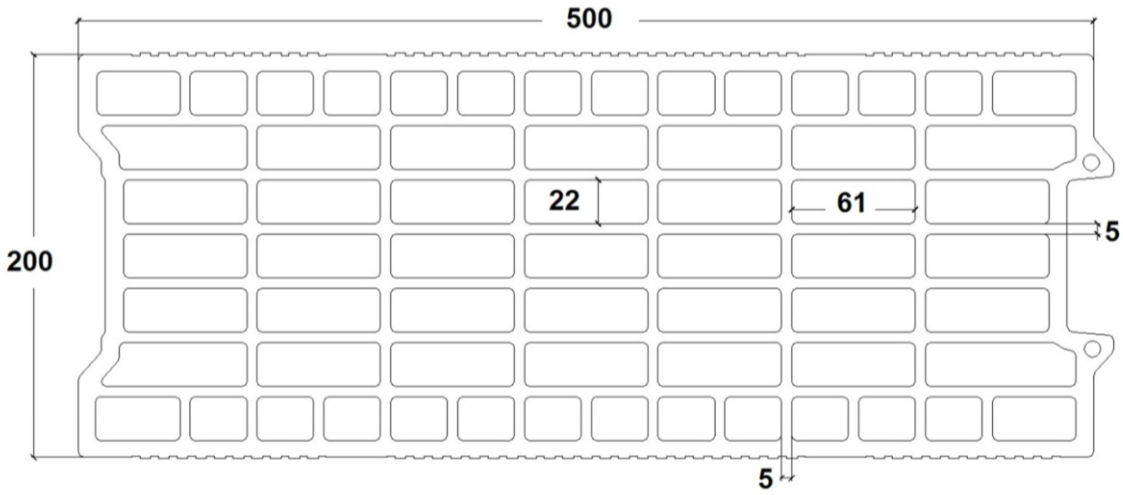
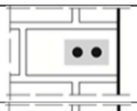
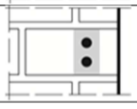


Table C58: Installation parameters

Anchor size			[-]	All sizes
Edge distance	c_{cr}		[mm]	100 (120)[1]
Minimum edge distance	c_{min}	[2]	[mm]	100 (120)[1]
Spacing	$s_{cr,II}$		[mm]	500
	$s_{cr,\perp}$		[mm]	314
Minimum spacing	s_{min}		[mm]	100

[1] Value in brackets for SH20x85 and SH20x130
[2] For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C59: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		200	100	$\alpha_{g,N,II}$	[-]	1,7
		c_{cr}	500			2,0
⊥: anchors placed perpendicular to horizontal joint		200	100	$\alpha_{g,N,\perp}$		1,1
		c_{cr}	314			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick BGV Thermo
Description of the brick
Installation parameters

Annex C 24

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick BGV Thermo

Table C60: Group factor for anchor group in case of shear loading parallel to free edge

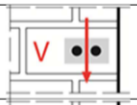
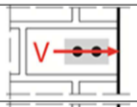
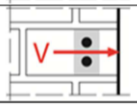
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	314	$\alpha_{g,V,\perp}$		2,0

Table C61: Group factor for anchor group in case of shear loading perpendicular to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	314	$\alpha_{g,V,\perp}$		2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick BGV Thermo
Installation parameters (continue)

Annex C 25

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick BGV Thermo

Table C62: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 4$ N/mm²						
M8	12x80	80	0,6	0,6	0,6	2,0
M8 / M10/ IG-M6	16x85	85	0,6	0,6	0,6	2,0
	16x130	130	1,2	1,2	0,9	2,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,6	0,6	0,6	2,5
	20x130	130	1,2	1,2	0,9	2,5
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	2,5
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,75	2,5
	16x130	130	1,5	1,5	1,2	3,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,75	3,0
	20x130	130	1,5	1,5	1,2	3,0
Compressive strength $f_b \geq 10$ N/mm²						
M8	12x80	80	0,9	0,9	0,9	3,5
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,9	3,5
	16x130	130	2,0	2,0	1,5	4,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,9	4,0
	20x130	130	2,0	2,0	1,5	4,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 250$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C63: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,26	0,80	0,21	0,41	0,7	1,00	1,50
M8 / M10/ IG-M6	16x85	85							
	16x130	130	0,43		0,34	0,69	0,86		
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,26		0,21	0,41			
	20x130	130	0,43		0,34	0,69			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick BGV Thermo
Characteristic values of resistance under tension and shear load
Displacements

Annex C 26

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Calibric R+

Table C64: Description of the brick

Brick type		Clay hollow brick Calibric R+
Bulk density	ρ [kg/dm³]	0,6
Compressive strength	$f_b \geq$ [N/mm²]	6, 9 or 12
Code		EN 771-1
Producer (country code)		e.g. Terreal (FR)
Brick dimensions	[mm]	500 x 200 x 314
Drilling method		Rotary

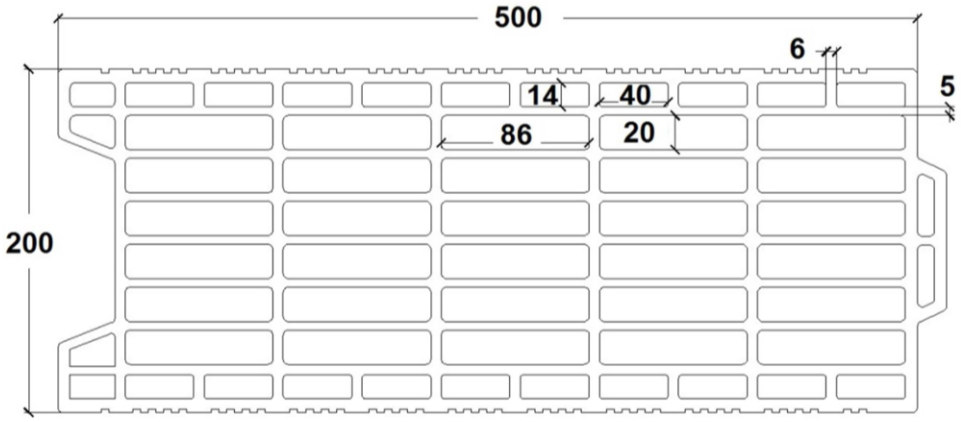
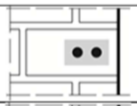
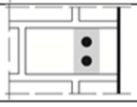


Table C65: Installation parameters

Anchor size			[-]	All sizes
Edge distance		c_{cr}	[mm]	100 (120)[1]
Minimum edge distance		c_{min}[2]	[mm]	100 (120)[1]
Spacing		$s_{cr,II}$	[mm]	500
		$s_{cr,\perp}$	[mm]	314
Minimum spacing		s_{min}	[mm]	100

[1] Value in brackets for SH20x85 and SH20x130
[2] For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C66: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		175	100	$\alpha_{g,N,II}$	[-]	1,7
		c_{cr}	500			2,0
⊥: anchors placed perpendicular to horizontal joint		175	100	$\alpha_{g,N,\perp}$		1,0
		c_{cr}	314			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Calibric R+
Description of the brick
Installation parameters

Annex C 27

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Calibric R+

Table C67: Group factor for anchor group in case of shear loading parallel to free edge

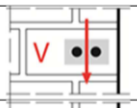
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	314	$\alpha_{g,V,\perp}$		2,0

Table C68: Group factor for anchor group in case of shear loading perpendicular to free edge

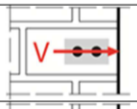
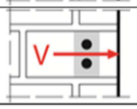
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	314	$\alpha_{g,V,\perp}$		2,0

Table C69: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	3,0
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,75	4,0
	16x130	130	1,2	1,2	0,9	4,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,75	6,0
	20x130	130	1,2	1,2	0,9	6,0
Compressive strength $f_b \geq 9$ N/mm²						
M8	12x80	80	1,2	1,2	0,9	3,5
M8 / M10/ IG-M6	16x85	85	1,2	1,2	0,9	5,0
	16x130	130	1,5	1,5	1,2	5,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	1,2	0,9	7,5
	20x130	130	1,5	1,5	1,2	7,5

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 250 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex C 28**
Performances clay hollow brick Calibric R+ Installation parameters (continue) Characteristic values of resistance under tension and shear load	

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Calibric R+

Table C70: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 12$ N/mm²						
M8	12x80	80	1,2	1,2	0,9	4,0
M8 / M10/ IG-M6	16x85	85	1,2	1,2	0,9	5,5
	16x130	130	1,5	1,5	1,2	5,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	1,2	0,9	8,5
	20x130	130	1,5	1,5	1,2	8,5

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 250$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C71: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,34	0,80	0,27	0,55	1,0	1,10	1,65
M8 / M10/ IG-M6	16x85	85					1,43	2,00	3,00
	16x130	130	0,43		0,34	0,69			
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,34		0,27	0,55	2,14		
	20x130	130	0,43		0,34	0,69			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Calibric R+
Characteristic values of resistance under tension and shear load (continue)
Displacements

Annex C 29

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Urbanbric

Table C72: Description of the brick

Brick type		Clay hollow brick Urbanbric
Bulk density	ρ [kg/dm³]	0,7
Compressive strength	$f_b \geq$ [N/mm²]	6, 9 or 12
Code		EN 771-1
Producer (country code)		e.g. Imerys (FR)
Brick dimensions	[mm]	560 x 200 x 274
Drilling method		Rotary

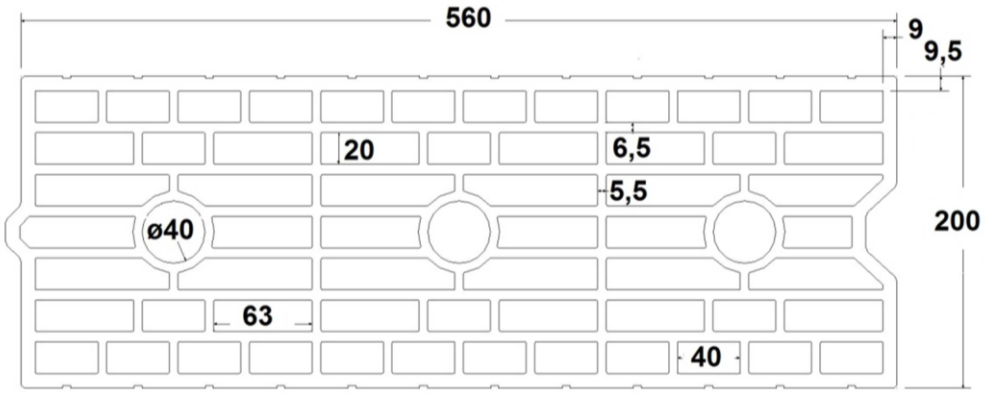
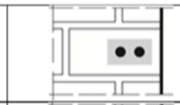


Table C73: Installation parameters

Anchor size			[-]	All sizes
Edge distance		c_{cr}	[mm]	100 (120)[1]
Minimum edge distance		c_{min}[2]	[mm]	100 (120)[1]
Spacing		$s_{cr,II}$	[mm]	560
		$s_{cr,\perp}$	[mm]	274
Minimum spacing		s_{min}	[mm]	100

[1] Value in brackets for SH20x85 and SH20x130
[2] For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C74: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		185	100	$\alpha_{g,N,II}$	[-]	1,9
		c_{cr}	560			2,0
⊥: anchors placed perpendicular to horizontal joint		185	100	$\alpha_{g,N,\perp}$		1,1
		c_{cr}	274			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Urbanbric
Description of the brick
Installation parameters

Annex C 30

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Urbanbric

Table C75: Group factor for anchor group in case of shear loading parallel to free edge

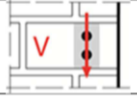
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	560	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	274	$\alpha_{g,V,\perp}$		2,0

Table C76: Group factor for anchor group in case of shear loading perpendicular to free edge

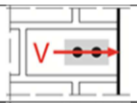
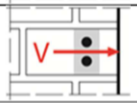
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	560	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	274	$\alpha_{g,V,\perp}$		2,0

Table C77: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	3,0
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,75	3,0
	16x130	130	2,0	2,0	1,5	3,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,75	3,5
	20x130	130	2,0	2,0	1,5	3,5
Compressive strength $f_b \geq 9$ N/mm²						
M8	12x80	80	0,9	0,9	0,9	4,0
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,9	4,0
	16x130	130	2,5	2,5	2,0	4,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,9	4,5
	20x130	130	2,5	2,5	2,0	4,5

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 190 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Urbanbric
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 31

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Urbanbric

Table C78: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 12$ N/mm²						
M8	12x80	80	1,2	1,2	0,9	4,5
M8 / M10/ IG-M6	16x85	85	1,2	1,2	0,9	4,5
	16x130	130	3,0	3,0	2,5	4,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	1,2	0,9	5,0
	20x130	130	3,0	3,0	2,5	5,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 190 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C79: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,34	0,80	0,27	0,55	1,30	1,00	1,50
M8 / M10/ IG-M6	16x85	85							
	16x130	130	0,86		0,69	1,37			
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,34		0,27	0,55	1,43		
	20x130	130	0,86		0,69	1,37			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Urbanbric
Characteristic values of resistance under tension and shear load (continue)
Displacements

Annex C 32

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Brique creuse C40

Table C80: Description of the brick

Brick type		Clay hollow brick Brique creuse C40
Bulk density	ρ [kg/dm³]	0,7
Compressive strength	$f_b \geq$ [N/mm²]	4, 8 or 12
Code		EN 771-1
Producer (country code)		e.g. Terreal (FR)
Brick dimensions	[mm]	500 x 200 x 200
Drilling method		Rotary

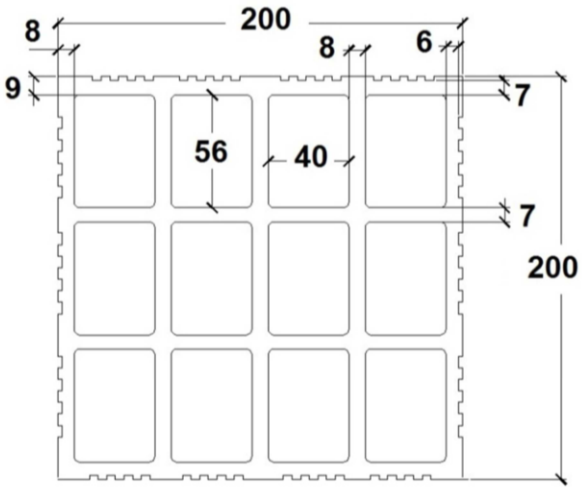
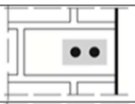
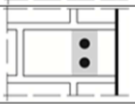


Table C81: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1]
Minimum edge distance	c_{min}[2]	[mm]	100 (120)[1]
Spacing	$s_{cr,II}$	[mm]	500
	$s_{cr,\perp}$	[mm]	200
Minimum spacing	s_{min}	[mm]	200

[1] Value in brackets for SH20x85 and SH20x130
[2] For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C82: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	200	$\alpha_{g,N,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	200	$\alpha_{g,N,\perp}$		2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Brique creuse C40
Description of the brick
Installation parameters

Annex C 33

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Brique creuse C40

Table C83: Group factor for anchor group in case of shear loading parallel to free edge

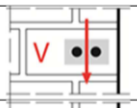
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	200	$\alpha_{g,V,\perp}$		2,0

Table C84: Group factor for anchor group in case of shear loading perpendicular to free edge

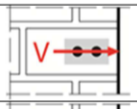
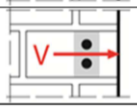
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	500	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	200	$\alpha_{g,V,\perp}$		2,0

Table C85: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 4$ N/mm²						
M8	12x80	80	0,6	0,6	0,6	0,9
M8 / M10/ IG-M6	16x85	85	0,6	0,6	0,6	0,9
	16x130	130	0,6	0,6	0,6	0,9
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,6	0,6	0,6	0,9
	20x130	130	0,6	0,6	0,6	0,9
Compressive strength $f_b \geq 8$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	1,2
M8 / M10/ IG-M6	16x85	85	0,9	0,9	0,75	1,2
	16x130	130	0,9	0,9	0,75	1,2
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,9	0,9	0,75	1,2
	20x130	130	0,9	0,9	0,75	1,2

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Brique creuse C40
Installation parameters (continue)
Characteristic values of resistance under tension and shear load

Annex C 34

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Brique creuse C40

Table C86: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 12$ N/mm²						
M8	12x80	80	1,2	1,2	0,9	1,5
M8 / M10/ IG-M6	16x85	85	1,2	1,2	0,9	1,5
	16x130	130	1,2	1,2	0,9	1,5
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	1,2	0,9	1,5
	20x130	130	1,2	1,2	0,9	1,5

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C87: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	12x80	80	0,17	0,80	0,14	0,27	0,3	0,9	1,35
M8 / M10/ IG-M6	16x85	85							
	16x130	130	0,14		0,11	0,23			
M12 / M16 / IG-M8 / IG-M10	20x85	85	0,17		0,14	0,27			
	20x130	130	0,14		0,11	0,23			

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Brique creuse C40
Characteristic values of resistance under tension and shear load (continue)
Displacements

Annex C 35

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Blocchi Leggeri

Table C88: Description of the brick

Brick type		Clay hollow brick Blocchi Leggeri
Bulk density	ρ [kg/dm^3]	0,6
Compressive strength	$f_b \geq$ [N/mm^2]	4, 6, 8 or 12
Code		EN 771-1
Producer (country code)		e.g. Wienerberger (IT)
Brick dimensions	[mm]	250 x 120 x 250
Drilling method		Rotary

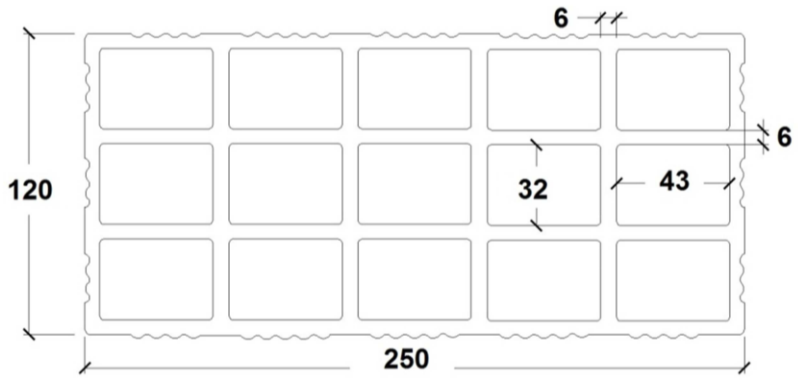
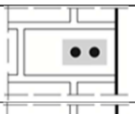
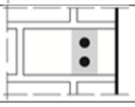


Table C89: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1)]
Minimum edge distance	c_{min}	[mm]	60
Spacing	$s_{cr,II}$	[mm]	250
	$s_{cr,\perp}$	[mm]	120
Minimum spacing	s_{min}	[mm]	100

1) Value in brackets for SH20x85; SH20x130 and SH20x200

Table C90: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	100	$\alpha_{g,N,II}$	[-]	1,0
		c_{cr}	250			2,0
⊥: anchors placed perpendicular to horizontal joint		60	100	$\alpha_{g,N,\perp}$		2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

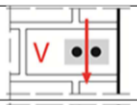
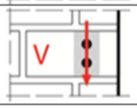
Performances clay hollow brick Blocchi Leggeri
Description of the brick
Installation parameters

Annex C 36

Deutsches Institut für Bautechnik DIBt

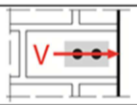
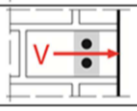
Brick type: Clay hollow brick Blocchi Leggeri

Table C91: Group factor for anchor group in case of shear loading parallel to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60[1]	100[1]	$\alpha_{g,V,II}$	[-]	1,0
		c_{cr}	250			2,0
⊥: anchors placed perpendicular to horizontal joint		60[1]	100[1]	$\alpha_{g,V,\perp}$		1,6
		c_{cr}	250			2,0

[1] Only valid for $V_{Rk,b}$ according to Table C93 and C94 values in brackets

Table C92: Group factor for anchor group in case of shear loading perpendicular to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60[1]	100[1]	$\alpha_{g,V,II}$	[-]	1,0
		c_{cr}	250			2,0
⊥: anchors placed perpendicular to horizontal joint		60[1]	100[1]	$\alpha_{g,V,\perp}$		1,6
		c_{cr}	250			2,0

[1] Only valid for $V_{Rk,b}$ according to Table C93 and C94 values in brackets

Table C93: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance Use category d/d; w/d; w/w			
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$[1]			$V_{Rk,b}$[4]
		[mm]	[kN]			
Compressive strength $f_b \geq 4$ N/mm²						
M8	12x80	80	0,4	0,4	0,3	2,0[2] (0,9)[3]
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				
Compressive strength $f_b \geq 6$ N/mm²						
M8	12x80	80	0,5	0,5	0,4	2,5[2] (1,2)[3]
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				

[1] Values are valid for c_{cr} and c_{min}
[2] Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 125 mm: $V_{Rk,c,II} = V_{Rk,b}$
[3] Values in brackets $V_{Rk,c} = V_{Rk,b}$ for anchors with c_{min}
[4] The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex C 37**
Performances clay hollow brick Blocchi Leggeri Installation parameters (continue) Characteristic values of resistance under tension and shear load	

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Blocchi Leggeri

Table C94: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			
			40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [4]
		[mm]	[kN]			
Compressive strength $f_b \geq 8$ N/mm²						
M8	12x80	80	0,6	0,6	0,5	3,0 [2] (1,2) [3]
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				
Compressive strength $f_b \geq 12$ N/mm²						
M8	12x80	80	0,6	0,6	0,6	3,5 [2] (1,5) [3]
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with $c \geq 125$ mm: $V_{Rk,c,II} = V_{Rk,b}$
3) Values in brackets $V_{Rk,c} = V_{Rk,b}$ for anchors with c_{min}
4) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C95: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
All sizes	All sizes	All sizes	0,17	1,20	0,21	0,41	0,9	1,20	1,80

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Blocchi Leggeri
Characteristic values of resistance under tension and shear load (continue)
Displacements

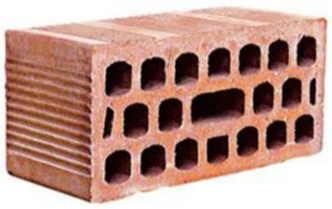
Annex C 38

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Doppio Uni

Table C96: Description of the brick

Brick type		Clay hollow brick Doppio Uni
Bulk density	ρ [kg/dm³]	0,9
Compressive strength	$f_b \geq$ [N/mm²]	10, 16, 20 or 28
Code		EN 771-1
Producer (country code)		e.g. Wienerberger (IT)
Brick dimensions	[mm]	250 x 120 x 120
Drilling method		Rotary



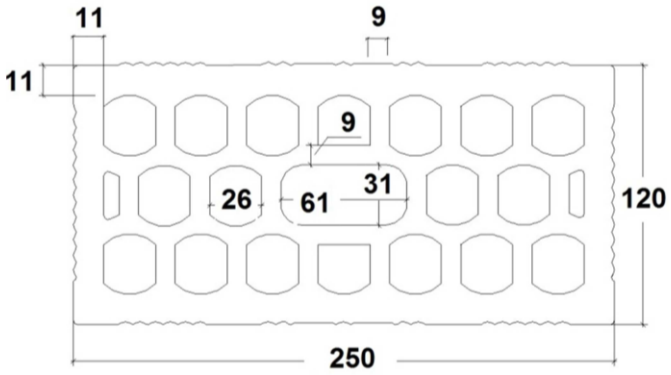
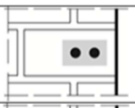
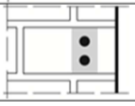


Table C97: Installation parameters

Anchor size			[-]	All sizes
Edge distance		c_{cr}	[mm]	100 (120)[1]
Minimum edge distance		c_{min}[2]	[mm]	60
Spacing		$s_{cr,II}$	[mm]	250
		$s_{cr,\perp}$	[mm]	120
Minimum spacing		$s_{min,II}$	[mm]	100
		$s_{min,\perp}$	[mm]	120

1) Value in brackets for SH20x85; SH20x130 and SH20x200
2) For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C98: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	100	$\alpha_{g,N,II}$	[-]	1,0
		c_{cr}	250			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,N,\perp}$		2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Doppio Uni
Description of the brick
Installation parameters

Annex C 39

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Doppio Uni

Table C99: Group factor for anchor group in case of shear loading parallel to free edge

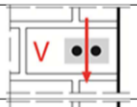
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	250	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	120	$\alpha_{g,V,\perp}$		2,0

Table C100: Group factor for anchor group in case of shear loading perpendicular to free edge

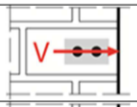
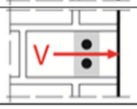
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	250	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	120	$\alpha_{g,V,\perp}$		2,0

Table C101: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			
			40°C/24°C	80°C/50°C	120°C/72°C	For All temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 10$ N/mm²						
M8	12x80	80	0,6	0,6	0,5	1,5
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				
Compressive strength $f_b \geq 16$ N/mm²						
M8	12x80	80	0,75	0,75	0,6	2,0
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry	**Annex C 40**
Performances clay hollow brick Doppio Uni Installation parameters (continue) Characteristic values of resistance under tension and shear load	

Deutsches Institut für Bautechnik DIBt

Brick type: Clay hollow brick Doppio Uni

Table C102: Characteristic values of resistance under tension and shear loads (continue)

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance			
			Use category			
			d/d w/d w/w			
			40°C/24°C	80°C/50°C	120°C/72°C	For All temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]			
Compressive strength $f_b \geq 20$ N/mm²						
M8	12x80	80	0,9	0,9	0,75	2,0
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				
Compressive strength $f_b \geq 28$ N/mm²						
M8	12x80	80	1,2	1,2	0,9	2,5
M8 / M10/ IG-M6	16x85	85				
	16x130	130				
M12 / M16 / IG-M8 / IG-M10	20x85	85				
	20x130	130				
	20x200	200				

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C103: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
All sizes	All sizes	All sizes	0,26	1,20	0,31	0,62	0,6	0,3	0,45

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances clay hollow brick Doppio Uni
Characteristic values of resistance under tension and shear load (continue)
Displacements

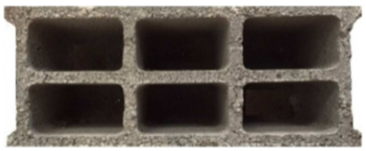
Annex C 41

Deutsches Institut für Bautechnik DIBt

Brick type: Hollow Light weight concrete Bloc creux B40

Table C104: Description of the brick

Brick type	Hollow light weight concrete Bloc creux B40
Bulk density ρ [kg/dm³]	0,8
Compressive strength $f_b \geq$ [N/mm²]	4
Code	EN 771-3
Producer (country code)	e.g. Sepa (FR)
Brick dimensions [mm]	494 x 200 x 190
Drilling method	Rotary



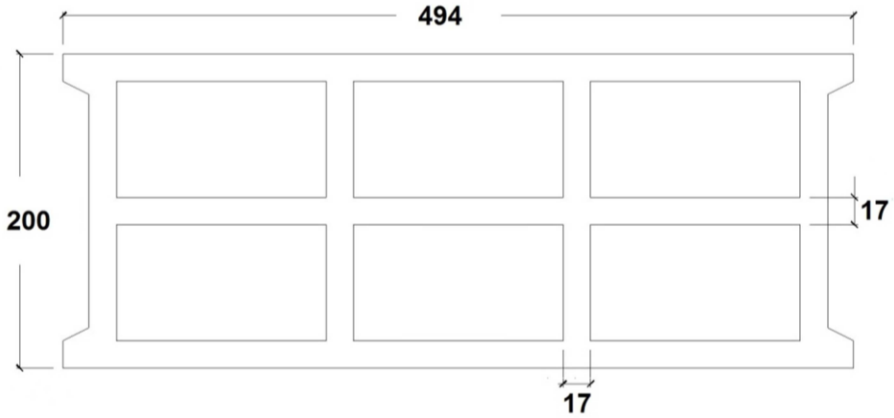
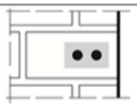
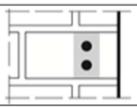


Table C105: Installation parameters

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	100 (120)[1]
Minimum edge distance	c_{min}[2]	[mm]	100 (120)[1]
Spacing	$s_{cr,II}$	[mm]	494
	$s_{cr,\perp}$	[mm]	190
Minimum spacing	s_{min}	[mm]	100

[1] Value in brackets for SH20x85 and SH20x130
[2] For $V_{Rk,c}$: c_{min} according to ETAG 029, Annex C

Table C106: Group factor for anchor group in case of tension loading

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		100	100	$\alpha_{g,N,II}$	[-]	1,5
		c_{cr}	494			2,0
⊥: anchors placed perpendicular to horizontal joint		100	100	$\alpha_{g,N,\perp}$		1,0
		c_{cr}	190			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances hollow light weight concrete Bloc creux B40
Description of the brick
Installation parameters

Annex C 42

Deutsches Institut für Bautechnik DIBt

Brick type: Hollow Light weight concrete Bloc creux B40

Table C107: Group factor for anchor group in case of shear loading parallel to free edge

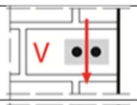
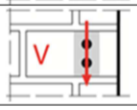
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		50	100	$\alpha_{g,V,II}$	[-]	1,1
		c_{cr}	494			2,0
⊥: anchors placed perpendicular to horizontal joint		100	100	$\alpha_{g,V,\perp}$		1,1
		c_{cr}	190			2,0

Table C108: Group factor for anchor group in case of shear loading perpendicular to free edge

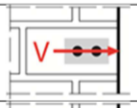
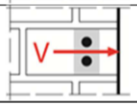
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		c_{cr}	494	$\alpha_{g,V,II}$	[-]	2,0
⊥: anchors placed perpendicular to horizontal joint		c_{cr}	190	$\alpha_{g,V,\perp}$		2,0

Table C109: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 4$ N/mm²									
M8	12x80	80	1,2	0,9	0,75	0,9	0,9	0,75	3,0
M8 / M10/ IG-M6	16x85	85	1,2	0,9	0,75	1,2	0,9	0,75	3,0
	16x130	130	1,2	0,9	0,75	1,2	0,9	0,75	3,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	1,2	0,9	0,75	1,2	0,9	0,75	3,0
	20x130	130	1,2	0,9	0,75	1,2	0,9	0,75	3,0

1) Values are valid for c_{cr} and c_{min}
2) Calculation of $V_{Rk,c}$ see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 250 mm: $V_{Rk,c,II} = V_{Rk,b}$
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C110: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
All sizes	All sizes	All sizes	0,34	0,90	0,31	0,62	0,86	0,9	1,35

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances hollow light weight concrete brick Bloc creux B40
Installation parameters (continue)
Characteristic values of resistance under tension and shear load / Displacements

Annex C 43

Deutsches Institut für Bautechnik DIBt

Brick type: Solid light weight concrete brick - LAC

Table C111: Description of the brick

Brick type		Solid light weight concrete brick
Bulk density	ρ [kg/dm³]	0,6
Compressive strength	$f_b \geq$ [N/mm²]	2
Code		EN 771-3
Producer (country code)		e.g. Bisotherm (DE)
Brick dimensions	[mm]	300 x 123 x 248
Drilling method		Rotary

Table C112: Installation parameter

Anchor size		[-]	All sizes
Edge distance	c_{cr}	[mm]	$1,5*h_{ef}$
Minimum edge distance	c_{min}	[mm]	60
Spacing	s_{cr}	[mm]	$3*h_{ef}$
Minimum spacing	s_{min}	[mm]	120

Table C113: Group factor for anchor group in case of tension loading

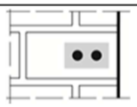
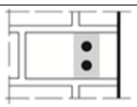
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		90	120	$\alpha_{g,N,II}$	[-]	1,1
		1,5*hef	$3*h_{ef}$			2,0
⊥: anchors placed perpendicular to horizontal joint		124	120	$\alpha_{g,N,\perp}$		1,1
		1,5*hef	$3*h_{ef}$			2,0

Table C114: Group factor for anchor group in case of shear loading parallel to free edge

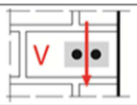
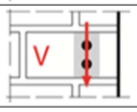
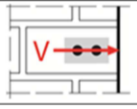
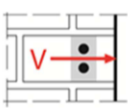
Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	0,6
		90	120			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		0,6
		124	120			2,0

Table C115: Group factor for anchor group in case of shear loading perpendicular to free edge

Configuration		with c ≥	with s ≥			
II: anchors placed parallel to horizontal joint		60	120	$\alpha_{g,V,II}$	[-]	0,6
		90	120			2,0
⊥: anchors placed perpendicular to horizontal joint		60	120	$\alpha_{g,V,\perp}$		0,6
		1,5*hef	120			1,0
		1,5*hef	$3*h_{ef}$			2,0

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances solid light weight concrete brick - LAC
Description of the brick
Installation parameters

Annex C 44

Deutsches Institut für Bautechnik DIBt

Brick type: Solid light weight concrete brick - LAC

Table C116: Characteristic values of resistance under tension and shear loads

Anchor size	Sleeve	Effective anchorage depth	Characteristic resistance						
			Use category						
			d/d			w/d w/w			d/d w/d w/w
			40°C/24°C	80°C/50°C	120°C/72°C	40°C/24°C	80°C/50°C	120°C/72°C	For all temperature range
		h_{ef}	$N_{Rk,b} = N_{Rk,p}$ [1]			$N_{Rk,b} = N_{Rk,p}$ [1]			$V_{Rk,b}$ [2)3)]
		[mm]	[kN]						
Compressive strength $f_b \geq 2$ N/mm²									
M8	-	80	3,0	2,5	2,0	2,5	2,0	1,5	3,0
M8 / M10/ IG-M6	-	90	3,0	3,0	2,0	2,5	2,5	2,0	3,0
M10 / IG-M8	-	100	3,5	3,0	2,5	3,0	2,5	2,0	3,0
M16 / IG-M10	-	100	3,0	3,0	2,0	3,0	3,0	2,0	3,0
M8	12x80	80	2,5	2,5	2,0	2,5	2,0	1,5	3,0
M8 / M10/ IG-M6	16x85	85	3,0	2,5	2,0	3,0	2,5	2,0	3,0
	16x130	130	3,0	2,5	2,0	3,0	2,5	2,0	3,0
M12 / M16 / IG-M8 / IG-M10	20x85	85	2,5	2,5	2,0	2,5	2,5	2,0	3,0
	20x130	130	2,5	2,5	2,0	2,5	2,5	2,0	3,0
	20x200	200	2,5	2,5	2,0	2,5	2,5	2,0	3,0

1) Values are valid for c_{cr}, values in brackets are valid for single anchors with c_{min}
2) For calculation of $V_{Rk,c}$ see ETAG029, Annex C
3) The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C117: Displacements

Anchor size	Sleeve	Effective anchorage depth h_{ef}	N	δ_N / N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
		[mm]	[kN]	[mm/kN]	[mm]	[mm]	[kN]	[mm]	[mm]
M8	-	80	0,86	0,50	0,43	0,86	0,9	0,25	0,38
M8 / M10/ IG-M6	-	90							
M10 / IG-M8	-	100	1,00	0,35	0,35	0,70			
M16 / IG-M10	-	100	0,86		0,30	0,60			
M8	12x80	80	0,71	0,50	0,36	0,71			
M8 / M10/ IG-M6	16x85	85		0,35	0,25	0,50			
	16x130	130							
M12 / M16 / IG-M8 / IG-M10	20x85	85							
	20x130	130							
	20x200	200							

Injection System WIT-VM 250 + SH or WIT-Nordic + SH for masonry

Performances solid light weight concrete brick - LAC
Characteristic values of resistance under tension and shear load
Displacements

Annex C 45

ДЕКЛАРАЦИЯ ЗА ЕКСПЛОАТАЦИОННИ ПОКАЗАТЕЛИ

Nr. 0903450200_01_M_WIT-VM 250 (4)

Настоящият текст е превод от немски на български.
В случай на съмнение важи оригиналът на немски

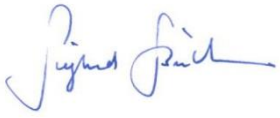
1. Уникален идентификационен код на типа на продукта: Würth Injektionssystem WIT-VM 250 + SH und WIT-Nordic (Würth инжекционна система WIT-VM 250 + SH и WIT-Nordic + SH)
Арт. №: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Предвидена употреба/употреби: Verbunddübel zur Verankerung im Beton (Свързващ дюбел за закотвяне в зидария)
3. Производител: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau
4. Система (и) за оценка и проверка на постоянството на експлоатационните показатели: Система 1
5. Европейски документ за оценяване: ETAG 029, април 2013
Европейска техническа оценка: ETA-16/0757 - 15.12.2016 г.
Орган за техническа оценка: Deutsches Institut für Bautechnik (DIBt), Berlin
Нотифициран(и) орган(и): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Деклариран(и) експлоатационен(и) показател(и):

Основни характеристики	**Експлоатационни показатели**	**Хармонизирана техническа спецификация**
Механична якост и устойчивост (BWR 1)		ETA-16/0757 ETAG 029
Характерна товароносимост за стоманени елементи	Вижте приложение C2	
Характерна товароносимост на дюбелите в зидария	Вижте приложения C3 до C45	
Деформации под напречно натоварване и натоварване на опън	Вижте приложения C4 до C45	
Намаляващ коефициент за опити на строителен обект (β-фактор)	Вижте приложение C1	
Разстояния до ръба и осите	Вижте приложения C3 до C45	
Групов коефициент за групови закрепвания	Вижте приложения C3 до C45	
Противопожарна защита (BWR 2)		
Реакция на огън	Клас A1	
Огнеустойчивост	Експлоатационният показател не е оценяван	

Експлоатационните показатели на продукта, посочен по-горе, са в съответствие с декларираните експлоатационни показатели. Отговорност за издаването на декларацията за експлоатационни показатели носи изцяло производителят в съответствие с Регламент на (ЕС) № 305/2011.

Подписана за производителя и от името на производителя от:

Франк Волперт
Прокурист мениджър Продуктов мениджмънт



Др. инж. Зигфрид Байхтер
(Прокурист мениджър Качество)

Кюнцелзау, 01.1.2021 г.

PROHLÁŠENÍ O VLASTNOSTECH

Č. 0903450200_01_M_WIT-VM 250 (4)

Jedná se o verzi přeloženou z němčiny.
V případě pochybností platí německý originál

1. Jednoznačný identifikační kód typu výrobku: Injekční systém Würth WIT-VM 250 + SH a WIT-Nordic + SH
Č. výr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Zamýšlené/zamýšlená použití: Spojovací hmoždinka pro ukotvení do zdiva

3. Výrobce: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Systém(y) pro hodnocení a kontrolu stálosti vlastností: Systém 1

5. Evropský dokument pro posuzování: ETAG 029, duben 2013
Evropské technické schválení: ETA-16/0757 – 15. 12. 2016
Pracoviště pro technické posuzování: Deutsches Institut für Bautechnik, Berlin (DIBt, Německý institut pro stavební techniku v Berlíně)
Oznámený subjekt/oznámené subjekty: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

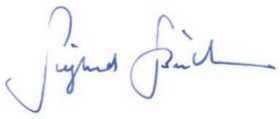
6. Deklarovaná vlastnost/deklarované vlastnosti:

Podstatné charakteristické vlastnosti	**Vlastnost**	**Harmonizovaná technická specifikace**
Mechanická pevnost a stálost (BWR 1)		ETA-16/0757 ETAG 029
Charakteristická nosnost ocelových prvků	Viz přílohu C2	
Charakteristická nosnost hmoždinek ve zdivu	Viz přílohy C3 až C45	
Deformace při příčném a tahovém zatížení	Viz přílohy C4 až C45	
Redukční faktor pro zkoušky na stavbě (β-faktor)	Viz přílohu C1	
Vzdálenosti od okraje a osové vzdálenosti	Viz přílohy C3 až C45	
Skupinový faktor pro skupinová upevnění	Viz přílohy C3 až C45	
Požární ochrana (BWR 2)		
Reakce na oheň	Třída A1	
Požární odolnost	Nehodnocené vlastnosti	

Vlastnosti výše uvedeného výrobku jsou ve shodě se souborem deklarovaných vlastností. Za vyhotovení prohlášení o vlastnostech v souladu s nařízením (EU) č. 305/2011 je odpovědný výhradně výše uvedený výrobce.

Podepsal za výrobce a jeho jménem:

Frank Wolpert
(zmocněnec – ředitel produktového managementu)



Dr.–Ing. Siegfried Beichter
(zmocněnec – ředitel oddělení jakosti)

Künzelsau, 01. 01. 2021

YDEEVNEDEKLARATION

Nr. 0903450200_01_M_WIT-VM 250 (4)

Denne version er oversat fra tysk.
I tvivlstilfælde gælder den tyske original

1. Produkttypens entydige identifikationskode: Würth injektionssystem WIT-VM 250 + SH og WIT-Nordic + SH
Art.-nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Anvendelsesformål: Skruedyvel til forankring i murværk

3. Producent: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. System(er) til bedømmelse og kontrol af ydelsesbestandigheden: System 1

5. Europæisk vurderingsdokument: ETAG 029, april 2013
Europæisk teknisk bedømmelse: ETA-16/0757 – 15-12-2016
Teknisk evalueringsmyndighed: Deutsches Institut für Bautechnik (DIBt), Berlin
Notificeret myndighed/notificerede myndigheder: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

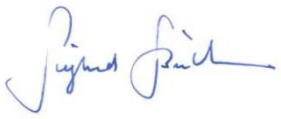
6. Deklareret ydeevne/deklarerede ydeevner:

Væsentlige egenskaber	**Ydelse**	**Harmoniseret teknisk specifikation**
Mekanisk modstandsdygtighed og stabilitet (BWR 1)		ETA-16/0757 ETAG 029
Stålelemenernes karakteristiske bæreevne	Se bilag C2	
Dyvlens karakteristiske bæreevne i murværket	Se bilag C3 til C45	
Deformationer under tværlast og træklast	Se bilag C4 til C45	
Reduktionsfaktor for byggepladsforsøg (β-faktor)	Se bilag C1	
Afstande til kanter og akser	Se bilag C3 til C45	
Gruppefaktor for gruppefastgørelser	Se bilag C3 til C45	
Brandsikkerhed (BWR 2)		
Brandreaktion	Klasse A1	
Brandmodstand	Ydelse ikke evalueret	

Det ovenstående produkts ydeevne svarer til den deklarerede ydeevne/de deklarerede ydeevner. For udstedelsen af ydeevnedeklarationen i henhold til forordning (EU) nr. 305/2011 er udelukkende ovenstående producent ansvarlig.

Underskrevet for og på vegne af producenten af:

Frank Wolpert
(Prokurist - leder produktmanagement)



Dr.-ing. Siegfried Beichter
(Prokurist - leder af kvalitetsafdelingen)

Künzelsau, den 01.01.2021

LEISTUNGSERKLÄRUNG

Nr. 0903450200_01_M_WIT-VM 250 (4)

1. Eindeutiger Kenncode des Produkttyps: Würth Injektionssystem WIT-VM 250 + SH und WIT-Nordic + SH
   Art.-Nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Verwendungszweck(e): Verbunddübel zur Verankerung im Mauerwerk
3. Hersteller: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 - 17
   D - 74653 Künzelsau
4. System(e) zur Bewertung und Überprüfung der Leistungsbeständigkeit: System 1
5. Europäisches Bewertungsdokument: ETAG 029, April 2013
   Europäische Technische Bewertung: ETA-16/0757 - 15.12.2016
   Technische Bewertungsstelle: Deutsches Institut für Bautechnik (DIBt), Berlin
   Notifizierte Stelle(n): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Erklärte Leistung(en):

Wesentliche Merkmale	**Leistung**	**Harmonisierte technische Spezifikation**
Mechanische Festigkeit und Standsicherheit (BWR 1)		ETA-16/0757 ETAG 029
Charakteristische Tragfähigkeit der Stahlelemente	Siehe Anhang C2	
Charakteristische Tragfähigkeit der Dübel im Mauerwerk	Siehe Anhänge C3 bis C45	
Verformungen unter Querlast und Zuglast	Siehe Anhänge C4 bis C45	
Reduktionsfaktor für Baustellenversuche (β-Faktor)	Siehe Anhang C1	
Rand- und Achsabstände	Siehe Anhänge C3 bis C45	
Gruppenfaktor für Gruppenbefestigungen	Siehe Anhänge C3 bis C45	
Brandschutz (BWR 2)		
Brandverhalten	Klasse A1	
Feuerwiderstand	Leistung nicht bewertet	

Die Leistung des vorstehenden Produkts entspricht der erklärten Leistung/den erklärten Leistungen. Für die Erstellung der Leistungserklärung im Einklang mit der Verordnung (EU) Nr. 305/2011 ist allein der obengenannte Hersteller verantwortlich.

Unterzeichnet für den Hersteller und im Namen des Herstellers von:

Frank Wolpert
(Prokurist - Leiter Produktmanagement)

Dr. -Ing. Siegfried Beichter
(Prokurist - Leiter Qualität)

Künzelsau, den 01.01.2021

DECLARACIÓN DE PRESTACIONES

N.º 0903450200_01_M_WIT-VM 250 (4)

Esta versión está traducida del alemán.
En caso de duda es aplicable el original alemán

1. Código de identificación única del producto tipo: Würth Injektionssystem WIT-VM 250 + SH y WIT-Nordic + SH (sistema de inyección Würth)
N.° de art.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Uso(s) previsto(s): Taco químico para anclaje en mampostería

3. Fabricante: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Sistema(s) de evaluación y verificación de la constancia de las prestaciones: Sistema 1

5. Documento de evaluación europeo: ETAG 029, abril de 2013
Evaluación Técnica Europea: ETA-16/0757 – del 15/12/2016
Organismo de Evaluación Técnica: Deutsches Institut für Bautechnik (DIBt), Berlín
Organismo(s) notificado(s): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

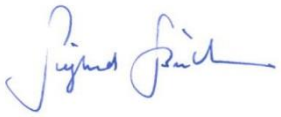
6. Prestaciones declaradas:

Características esenciales	**Prestación**	**Especificaciones técnicas armonizadas**
Resistencia mecánica y estabilidad (BWR 1)		ETA-16/0757 ETAG 029
Carga soportada característica de los elementos de acero	Véase el anexo C2	
Carga soportada característica del taco en mampostería	Véanse los anexos C3 hasta C45	
Deformaciones bajo esfuerzo transversal y esfuerzo de tracción	Véanse los anexos C4 hasta C45	
Factor reductor para ensayos en la obra (factor ß)	Véase el anexo C1	
Distancias al borde y entre ejes	Véanse los anexos C3 hasta C45	
Factor de grupo para fijaciones de grupo	Véanse los anexos C3 hasta C45	
Protección contra incendios (BWR 2)		
Reacción al fuego	Clase A1	
Resistencia al fuego	Prestación no evaluada	

Las prestaciones del producto identificado anteriormente son conformes con el conjunto de prestaciones declaradas. La presente declaración de prestaciones se emite de conformidad con el Reglamento (UE) n.° 305/2011, bajo la sola responsabilidad del fabricante arriba identificado.

Firmado por y en nombre del fabricante por:

Frank Wolpert
(Apoderado – Director de Product Management)



Dr. –Ing. Siegfried Beichter
(Apoderado – Director de Calidad)

Künzelsau, el 01/01/2021

TOIMIVUSDEKLARATSIOON

Nr. 0903450200_01_M_WIT-VM 250 (4)

Tegemist on saksa keelest tõlgitud versiooniga.
Kahtluste korral kehtib saksakeelne originaaltekst

1. Tootetüübi kordumatu identifitseerimiskood: Würthi ankurdussüsteem WIT-VM 250 + SH ja WIT-Nordic + SH
   Art-nr: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Ettenähtud kasutusotstarve või -otstarbed: Sidumisankur kinnitamiseks müüri
3. Tootja: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. Toimivuse püsivuse hindamise ja kontrolli süsteem(id): Süsteem 1
5. Euroopa hindamisdokument: ETAG 029, aprill 2013
   Euroopa tehniline hinnang: ETA-16/0757 – 15.12.2016
   Tehnilise hindamise asutus: Deutsches Institut für Bautechnik (DIBt), Berliin
   Teavitatud asutus(ed): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Deklareeritud toimivus(ed):

Põhiomadused	**Toimivus**	**Ühtlustatud tehniline kirjeldus**
Mehaaniline tugevus ja vastupidavus (BWR 1)		ETA-16/0757 ETAG 029
Teraselementide iseloomulik kandevõime	Vt lisa C2	
Tüübli iseloomulik kandevõime müüris	Vt lisad C3 kuni C45	
Deformatsioonid ristkoormuse ja tõmbekoormuse all	Vt lisad C4 kuni C45	
Vähendusfaktor ehituslike katsete puhul (ß-faktor)	Vt lisa C1	
Serva ja telgede vahekaugused	Vt lisad C3 kuni C45	
Rühmafaktor rühmakinnituste jaoks	Vt lisad C3 kuni C45	
Tulekaitse (BWR 2)		
Tuletundlikkus	Klass A1	
Tuletakistus	Toimivus hindamata	

Eespool nimetatud toodete toimivus vastab deklareeritud toimivusele / deklareeritud toimivustele. Vastavusdeklaratsiooni koostamise eest kooskõlas määrusega (EL) nr 305/2011 vastutab ainuisikuliselt eespool nimetatud tootja.

Tootja poolt ja nimel allkirjastanud:

Frank Wolpert
(Prokurist-tootejuht)

Dr. ins. Siegfried Beichter
(Prokurist-kvaliteedijuht)

Künzelsau, 01.01.2021

fSUORITUSTASOILMOITUS

Nro 0903450200_01_M_WIT-VM 250 (4)

Tämä on käännös saksankielisestä.
Epäilyksissä pätee saksankielinen alkuperäisilmoitus.

1. Tuotetyypin yksilöllinen tunniste: Würth injektiojärjestelmä WIT-VM 250 + SH ja WIT-Nordic + SH
Tuote-nro: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Aiottu käyttötarkoitus (aiotut käyttötarkoitukset): Vaarnaruuvi tiilivuoraukseen ankkuroimiseksi
3. Valmistaja: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau, Saksa
4. Suoritustason arvioinnin ja tarkistamisen järjestelmä(t): Järjestelmä 1
5. Eurooppalainen arviointidokumentti: ETAG 029, April 2013 (ETAG 029, huhtikuu 2013)
Eurooppalainen tekninen arviointi: ETA-16/0757 – 15.12.2016
Teknisestä arvioinnista vastaava laitos: Deutsches Institut für Bautechnik (DIBt; Saksan rakennustekninen instituutti), Berliini
Ilmoitettu laitos / ilmoitetut laitokset: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW; teräsrakenneteollisuuden ja materiaalimekaniikan instituutti), Darmstadt

6. Ilmoitettu suoritustaso/ilmoitetut suoritustasot:

Perusominaisuudet	**Suoritustaso**	**Yhdenmukaistetut tekniset eritelmät**
Mekaaninen lujuus ja vakaus (BWR 1)		ETA-16/0757 ETAG 029
Ominaiskantavuus teräselementeille	Katso liite C2	
Ruuvien ominaiskantavuus tiilivuorauksessa	Katso liitteet C3 - C45	
Epämuodostumat poikittais- ja vetokuormien alla	Katso liitteet C4 - C45	
Vähennyskerroin työmaatesteille (β-kerroin)	Katso liite C1	
Reuna- ja akselietäisyydet	Katso liitteet C3 - C45	
Ryhmäkerroin ryhmäkiinnityksille	Katso liitteet C3 - C45	
Palosuoja (BWR 2)		
Palokäyttäytyminen	Luokka A1	
Palonkestävyys	Suoritustasoa ei määritetty	

Edellä yksilöidyn tuotteen suoritustaso on ilmoitettujen suoritustasojen joukon mukainen. Tämä suoritustasoilmoitus on asetuksen (EU) N:o 305/2011 mukaisesti annettu edellä ilmoitetun valmistajan yksinomaisella vastuulla.

Valmistajan puolesta allekirjoittanut:

Frank Wolpert
(Prokuristi - tuotehallinnon johtaja)

TkT Siegfried Beichter
(Prokuristi - laadunjohtaja)

Künzelsau, 01.01.2021

DÉCLARATION DE PERFORMANCES

N° 0903450200_01_M_WIT-VM 250 (4)

Il s'agit ici de la version traduite à partir de l'allemand.
En cas de doute, la version allemande fait foi

1. Code d'identification unique du produit type : Système à injecter Würth WIT-VM 250 + SH et WIT-Nordic + SH
N° de réf. : 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Usage(s) prévu(s) : Cheville composite d'ancrage dans la maçonnerie

3. Fabricant : Adolf Würth GmbH & Co. KG
Reinhold-Würth-Strasse 12 – 17
D – 74653 Künzelsau

4. Système(s) d'évaluation et de vérification de la constance des performances : Système 1

5. Document d'évaluation européen : ETAG 029, avril 2013
Évaluation technique européenne : ETA-16/0757 – 15/12/2016
Organisme d'évaluation technique : Deutsches Institut für Bautechnik (DIBt), Berlin
Organisme(s) notifié(s) : 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

6. Performance(s) déclarée(s) :

Caractéristiques essentielles	**Performance**	**Spécification technique harmonisée**
Résistance mécanique et stabilité verticale (BWR 1)		ETA-16/0757 ETAG 029
Capacité de charge caractéristique des éléments en acier	Voir annexe C2	
Capacité de charge caractéristique des chevilles dans la maçonnerie	Voir les annexes C3 à C45	
Déformations sous charges de traction et transversales	Voir les annexes C4 à C45	
Facteur de réduction pour essais sur chantiers (facteur ß)	Voir annexe C1	
Distance au bord et entraxe	Voir les annexes C3 à C45	
Facteur de groupe pour les fixations de groupe	Voir les annexes C3 à C45	
Protection incendie (BWR 2)		
Réaction au feu	Classe A1	
Résistance au feu	Performance non évaluée	

La performance du produit susmentionné correspond à la performance / aux performances déclarée(s). Conformément au règlement (UE) N°305/2011, la présente déclaration des performances est établie sous la seule responsabilité du fabricant mentionné ci-dessus.

Signée pour le fabricant et en son nom par :

Frank Wolpert
(Fondé de pouvoir – Directeur Gestion Produits)

Dr. –Ing. Siegfried Beichter
(Fondé de pouvoir – Directeur Qualité)

Künzelsau, le 01/01/2021

DEARBHÚ FEIDHMÍOCHTA

Uimh. 0903450200_01_M_WIT-VM 250 (4)

Is é seo an leagan a aistríodh ón nGearmáinis.
Má tá aon amhras ort tá feidhm ag an bunleagan Gearmáinise

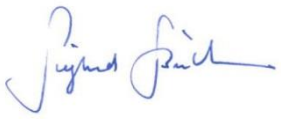
1. Cód aitheantais uathúil an chineáil táirge: Würth Injektionssystem WIT-VM 250 + SH und WIT-Nordic + SH
Uimh.earra: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Úsáid(í) b(h)eartaithe: Ancaire nasctha le haghaidh daingnithe i gcoincréit
3. Déantúsóir: Adolf Würth GmbH & Co. KG
Reinhold- Würth-Str. 12 - 17
D – 74653 Künzelsau
4. Córa(i)s chun seasmhacht feidhmíochta a mheas agus a scrúdú: Córas 1
5. Doiciméad Measúnaithe Eorpach: ETAG 029, Aibreán 2013
Measúnú Teicniúil Eorpach: ETA-16/0757 – 15/12/2016
Ionad Measúnaithe Teicniúil: Deutsches Institut für Bautechnik, DIBt (Ionad Teicníocht Tógála na Gearmáine), Beirlín
Iona(i)d dá dtugtar fógra: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt (Institiúid um Fhoirgníocht Chruach agus Meicníocht Ábhair (IFSW), Darmstadt
6. Feidhmíocht(aí) d(h)earbhaithe:

Príomhthréithe	**Feidhmíocht**	**Sonraíocht theicniúil chomhchuibhithe**
Friotaíocht agus Cobhsaíocht Mheicniúil (BWR 1)		ETA-16/0757 ETAG 029
Cumas tréitheach ualachiompartha na n-eilimintí cruach	Féach iarscríbhinn C2	
Cumas tréitheach ualachiompartha na n-ancairí sa gcoincréit	Féach iarscríbhinní C3 go C45	
Díthoirmiú faoi strus trasnach agus tarraingthe	Féach iarscríbhinní C4 go C45	
Fachtóir laghdaithe do thriallacha sa láthair tógála (fachtóir ß)	Féach iarscríbhinn C1	
Achair imill agus acastóra	Féach iarscríbhinní C3 go C45	
Fachtóir grúpa le haghaidh ceangail ghrúpa	Féach iarscríbhinní C3 go C45	
Cosaint dóiteáin (BWR 2)		
Iompar i gcás dóiteáin	Aicme A1	
Friotaíocht i gcoinne tine	Níor measadh an fheidhmíocht	

Tá feidhmíocht an táirge thuas ag teacht leis an bhfeidhmíocht dhearbhaithe/na feidhmíochtaí dearbhaithe. Is ar an déantúsóir thuasluaite amháin atá an fhreagracht Dearbhú Feidhmíochta a dhéanamh de réir Rialacháin (AE) Uimh. 305/2011.

Sínithe ar son agus thar ceann an déantúsóra ag:

Frank Wolpert
(Oifigeach Údaraithe - Stiúrthóir um Bainistíocht Táirgí)



Dr. –Ing. Siegfried Beichter
(Oifigeach Údaraithe - Stiúrthóir Cáilíochta)

Künzelsau, 01/01/2021

ΔΗΛΩΣΗ ΕΠΙΔΟΣΕΩΝ

Αρ. 0903450200_01_M_WIT-VM 250 (4)

Πρόκειται για την έκδοση μεταφρασμένη από τα γερμανικά.
Σε περίπτωση αμφιβολιών, ισχύει το γερμανικό πρωτότυπο

1. Μοναδικός κωδικός αναγνώρισης του τύπου του προϊόντος: Σύστημα έγχυσης Würth WIT-VM 250 + SH και WIT-Nordic + SH
Αρ. είδ.: 09034502*, 090345010*, 090546*, 090547*, 59160*, 5916108999, 5916110999, 5916112999, 5916116999, 5916208999, 5916210999, 5916212999, 5916216999, 5916408110, 5916410130, 5916412160, 5916416190, 59156*, 59157*, 090344 123, 090344 164, 090344 165, 090344 203, 090344 204, 090344 205
2. Σκοπός (-οί) χρήσης: Χημικό αγκύριο για αγκύρωση σε τοιχοποιία
3. Κατασκευαστής: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau
4. Σύστημα (-τα) για την αξιολόγηση και τον έλεγχο της διατήρησης της επίδοσης: Σύστημα 1
5. Ευρωπαϊκό έντυπο αξιολόγησης: ETAG 029, Απρίλιος 2013
Ευρωπαϊκή τεχνική αξιολόγηση: ETA-16/0757 – 15.12.2016
Οργανισμός τεχνικής αξιολόγησης: Deutsches Institut für Bautechnik (DIBt), Βερολίνο
Κοινοποιημένος οργανισμός (-οί): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Δηλωμένη επίδοση (-εις):

Σημαντικά χαρακτηριστικά	**Επίδοση**	**Εναρμονισμένες τεχνικές προδιαγραφές**
Μηχανική αντοχή και αντίσταση (BWR 1)		ETA-16/0757 ETAG 029
Χαρακτηριστική φέρουσα ικανότητα για χαλύβδινα στοιχεία	Βλέπε παράρτημα C2	
Χαρακτηριστική φέρουσα ικανότητα των αγκυρίων σε τοιχοποιία	Βλέπε παραρτήματα C3 έως C45	
Παραμορφώσεις υπό εγκάρσιο φορτίο και εφελκυστικό φορτίο	Βλέπε παραρτήματα C4 έως C45	
Συντελεστής ελάπωσης για εργοταξιακές δοκιμές (συντελεστής β)	Βλέπε παράρτημα C1	
Αποστάσεις ακμών και αποστάσεις αξόνων	Βλέπε παραρτήματα C3 έως C45	
Ομαδικός συντελεστής για ομαδικές στερεώσεις	Βλέπε παραρτήματα C3 έως C45	
Πυροπροστασία (BWR 2)		
Συμπεριφορά σε πυρκαγιά	Κατηγορία A1	
Αντοχή σε πυρκαγιά	Η επίδοση δεν έχει αξιολογηθεί	

Η επίδοση του προαναφερόμενου προϊόντος αντιστοιχεί στη δηλωμένη επίδοση/στις δηλωμένες επιδόσεις. Για τη σύνταξη της δήλωσης επιδόσεων σε συμμόρφωση με τον κανονισμό (ΕΕ) αρ. 305/2011 ο μόνος υπεύθυνος είναι ο προαναφερόμενος κατασκευαστής.

Υπογράφεται για τον κατασκευαστή και εν ονόματι του κατασκευαστή από:

Frank Wolpert
(Γενικός εμπορικός πληρεξούσιος - Διευθυντής διαχείρισης παραγωγής)

Dr. –Ing. Siegfried Beichter
(Γενικός εμπορικός πληρεξούσιος - Διευθυντής ποιότητας)

Künzelsau, την 01.01.2021

IZJAVA O SVOJSTVIMA

Br. 0903450200_01_M_WIT-VM 250 (4)

Ova je verzija teksta prevedena s njemačkog.
U slučaju dvojbe original na njemačkom ima prednost

1. Jedinstvena identifikacijska oznaka tipa proizvoda: Würth injekcijski sustav WIT-VM 250 + SH i WIT-Nordic+ SH
Br. art.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Namjena(e): Spojni zatici za kotvljenje u zidove
3. Proizvođač: Adolf Würth GmbH & Co. KG
Reinhold- Würth-Str. 12 – 17
D – 74653 Künzelsau
4. Sustav/i za ocjenjivanje i provjeru postojanosti svojstava: Sustav 1
5. Europski dokument za ocjenjivanje: ETAG 029, travanj 2013.
Europska tehnička ocjena: ETA-16/0757 – 15.12.2016.
Tijelo za tehničku ocjenu: Njemački institut građevinarstva (DIBt), Berlin
Prijavljeno/a tijelo/a: 2873, Institut za čelične konstrukcije i mehaniku materijala (IFSW), Darmstadt
6. Navedeno svojstvo/a:

Bitna obilježja	**Svojstvo**	**Usklađene tehničke specifikacije**
Mehanička čvrstoća i stabilnost (BWR 1)		ETA-16/0757 ETAG 029
Karakteristična nosivost čeličnih elemenata	Vidi prilog C2	
Karakteristične vrijednosti nosivosti tipli u zidu	Vidi priloge C3 do C45	
Deformacija uzrokovana uzdužnim i poprečnim opterećenjem	Vidi priloge C4 do C45	
Faktor redukcije za testiranja na gradilištima (ß faktor)	Vidi prilog C1	
Udaljenost ruba i osi	Vidi priloge C3 do C45	
Skupni faktor za skupna pričvršćenja	Vidi priloge C3 do C45	
Zaštita od požara (BWR 2)		
Ponašanje u slučaju požara	Klasa A1	
Otpornost na požar	Svojstvo nije ocijenjeno	

Svojstvo gore navedenog proizvoda odgovara navedenom svojstvu / navedenim svojstvima. Za izradu Izjave o svojstvima prema Odredbi (EU) br. 305/2011 isključivo je odgovoran gore navedeni proizvođač.

Potpisano za i u ime proizvođača od strane:

Frank Wolpert
(Prokurist – voditelj upravljanja proizvodima)

Dr. – Ing. Siegfried Beichter
(Prokurist – voditelj za kvalitetu)

Künzelsau, 1.1.2021.

TELJESÍTMÉNYNYILATKOZAT

0903450200_01_M_WIT-VM 250 (4) sz.

Ez a német nyelvről lefordított változat.
Kétség esetén a német nyelvű eredeti az érvényes.

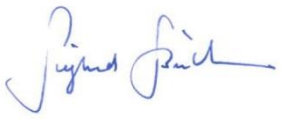
1. A terméktípus egyedi azonosító kódja: Würth WIT-VM 250 + SH és WIT-Nordic + SH injekciós rendszer
   Cikkszámok: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Felhasználási cél(ok): Kötőanyaggal rögzített horgony falazatban való horgonyzáshoz
3. Gyártó: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. A teljesítményállandóság értékelésére és ellenőrzésére szolgáló rendszer(ek): 1-es rendszer
5. Európai értékelési dokumentum: ETAG 029, 2013. április
   Európai Műszaki Értékelés: ETA-16/0757 – 2016.12.15.
   Műszaki értékelő szervezet: Deutsches Institut für Bautechnik (DIBt), Berlin
   Bejelentett szerv(ek): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Nyilatkozatban szereplő teljesítmény(ek):

Lényeges jellemzők	**Teljesítmény**	**Harmonizált műszaki specifikáció**
Mechanikai szilárdság és állékonyság (BWR 1)		ETA-16/0757 ETAG 029
Az acélelemek jellemző teherbíró képessége	Lásd a C2 mellékletet	
A horgony jellemző teherbíró képessége a falazatban	Lásd a C3 – C45 mellékleteket	
Alakváltozás keresztirányú és húzó terhelés alatt	Lásd a C4 – C45 mellékleteket	
Redukciós tényező építési helyszíni kísérletekhez (ß-tényező)	Lásd a C1 mellékletet	
Szél- és tengelytávok	Lásd a C3 – C45 mellékleteket	
Csoporttényező csoportos rögzítésekhez	Lásd a C3 – C45 mellékleteket	
Tűzvédelem (BWR 2)		
Tűzzel szembeni viselkedés	A1 osztály	
Tűzállóság	A teljesítmény nincs értékelve	

A fent megnevezett termék teljesítménye megfelel a teljesítménynyilatkozatban rögzített teljesítménynek/teljesítményeknek. A 305/2011 sz. EU rendelet előírásai alapján készült teljesítménynyilatkozat összeállítása kizárólag a fent nevezett gyártó felelőssége.

A gyártó képviseletében és nevében aláírta:

Frank Wolpert
(cégvezető – termékmenedzsment vezető)



Dr. –Ing. Siegfried Beichter
(cégvezető – minőségügyi vezető)

Künzelsau, 2021.01.01.

DICHIARAZIONE DI PRESTAZIONE

N. 0903450200_01_M_WIT-VM 250 (4)

La presente è la versione tradotta dal tedesco.
In caso di incertezze si considera valido l'originale in tedesco

1. Codice di identificazione unico del prodotto-tipo: Würth Injektionssystem WIT-VM 250 + SH und WIT-Nordic + SH (Ancorante chimico - sistema ad iniezione Würth WIT-VM 250 + SH e WIT-Nordic + SH) Art. n.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Utilizzo/i previsto/i: Ancorante chimico per l'ancoraggio in muratura
3. Azienda produttrice: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. Sistema/i di valutazione e verifica della prestazione: Sistema 1
5. Documento per la Valutazione Europea: ETAG 029, aprile 2013
   Valutazione tecnica europea: ETA-16/0757 – 15.12.2016
   Organismo di valutazione tecnica: Deutsches Institut für Bautechnik (DIBt), Berlino
   Organismo/i notificato/i: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Prestazione/i dichiarata/e:

Caratteristiche essenziali	**Prestazione**	**Norma tecnica armonizzata**
Resistenza meccanica e stabilità (BWR 1)		ETA-16/0757 ETAG 029
Capacità di portata caratteristica degli elementi di acciaio	Si veda Allegato C2	
Capacità di portata caratteristica dei tasselli nella muratura	Si vedano Allegati da C3 a C45	
Deformazioni sotto carico trasversale e carico a trazione	Si vedano Allegati da C4 a C45	
Coefficiente di riduzione per prove in cantiere (coefficiente β)	Si veda l'allegato C1	
Distanze dai bordi e interassi	Si vedano Allegati da C3 a C45	
Coefficiente di gruppo per fissaggi in gruppo	Si vedano Allegati da C3 a C45	
Sicurezza in caso di incendio (BWR 2)		
Reazione al fuoco	Classe A1	
Resistenza al fuoco	Prestazione non valutata	

La prestazione del prodotto di cui sopra è conforme alla prestazione dichiarata/alle prestazioni dichiarate. Si rilascia la presente dichiarazione di prestazione ai sensi del Regolamento (UE) N. 305/2011 sotto la responsabilità esclusiva del suddetto fabbricante.

Firmato a nome e per conto del fabbricante da:

Frank Wolpert
(Procuratore - Responsabile gestione prodotto)

Dr. –Ing. Siegfried Beichter
(Procuratore - Responsabile Qualità)

Künzelsau, 01.01.2021

EKSPLOATACINIŲ SAVYBIŲ DEKLARACIJA

Nr. 0903450200_01_M_WIT-VM 250 (4)

Tai yra vertimas iš vokiečių kalbos.
Kilus abejonių, vadovautis originalu vokiečių kalba.

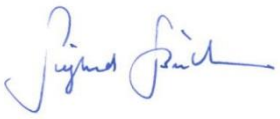
1. Produkto tipo unikalus atpažinimo kodas: „Würth" injekcinė sistema WIT-VM 250 + SH ir „WIT-Nordic" + SH
Prekės Nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Naudojimo paskirtis (-ys): sujungimo kaištis tvirtinimui į mūrą
3. Gamintojas: „Adolf Würth GmbH & Co. KG"
Reinhold-Würth g. 12–17
D – 74653 Kiuncelsau
4. Eksploatacinių savybių atsparumo įvertinimo ir patikrinimo sistema (-os): 1 sistema
5. Europos įvertinimo dokumentas: ETAG 029, 2013 balandis
Europos techninis įvertinimas: ETA-16/0757, atliktas 2016-12-15
Techninio vertinimo įstaiga: „Deutsches Institut für Bautechnik (DIBt)", Berlynas
Notifikuotoji (-osios) įstaiga (-os): 2873, „Institut für Stahlbau und Werkstoffmechanik" (IFSW), Darmštatas
6. Deklaruojama (-os) eksploatacinė (-s) savybė (-s):

Pagrindinės charakteristikos	**Eksploatacinės savybės**	**Darnusis techninis standartas**
Mechaninis stiprumas ir stabilumas (BWR 1)		ETA-16/0757 ETAG 029
Plieninių elementų leistinoji apkrova	Žr. C2 priedą.	
Mūre įtvirtinto kaiščio leistinoji apkrova	Žr. priedą: C3 iki C45	
Deformacija esant tempimo ir šlyties apkrovai	Žr. priedą: C4 iki C45	
Redukcijos koeficientas vykdant betono stiprumo bandymus (ß-koeficientas)	Žr. C1 priedą.	
Krašto ir ašių atstumai	Žr. priedą: C3 iki C45	
Grupinis koeficientas atliekant grupės tvirtinimus	Žr. priedą: C3 iki C45	
Priešgaisrinė apsauga (BWR 2)		
Degumas	A1 klasė	
Atsparumas ugniai	Neįvertinta eksploatacinė savybė	

Turimos produkto eksploatacinės savybės atitinka deklaruotas eksploatacines savybes. Už eksploatacinių savybių deklaracijos, atitinkančios potvarkį (ES) Nr. 305/2011, sudarymą atsako tik nurodytas gamintojas.

Pasirašo gamintojas ir atstovas gamintojo vardu:

Frank Wolpert
(Įgaliotasis produkto vadovas)



Dr. inž. Siegfried Beichter
(Įgaliotasis kokybės vadovas)

Kiuncelsau, 2021-01-01

EKSPLUATĀCIJAS ĪPAŠĪBU DEKLARĀCIJA

Nr. 0903450200_01_M_WIT-VM 250 (4)

Šī ir no vācu valodas tulkota dokumenta versija.
Šaubu gadījumā spēkā ir oriģināls vācu valodā

1. Nepārprotams produkta tipa identifikācijas kods: Würth injekciju sistēmas WIT-VM 250 + SH un WIT-Nordic + SH
Preces Nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Lietojuma mērķis(-i): savienošanas dībelis enkurošanai mūrī
3. Ražotājs: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau (Kincelzava)
4. Ekspluatācijas īpašību noturības novērtējuma un pārbaudes sistēma(-as): Sistēma 1
5. Eiropas novērtējuma dokuments: ETAG 029, 2013. gada aprīlī
Eiropas Tehniskais novērtējums: ETA-16/0757 – 15.12.2016
Tehniskā novērtējuma iestāde: Deutsches Institut für Bautechnik (DIBt), Berlin (Berlīne)
Paziņotā(-ās) iestāde(-es): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt (Darmštate)
6. Deklarētā(-ās) ekspluatācijas īpašība(-as):

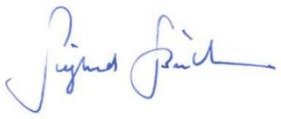
Būtiskie raksturlielumi	**Ekspluatācijas īpašības**	**Saskaņotā tehniskā specifikācija**
Mehāniskā izturība un stiprība *(BWR 1)*		ETA-16/0757 ETAG 029
Tērauda elementiem raksturīgā nestspēja	Skatīt C2 pielikumu	
Dībeļu raksturīgā nestspēja mūrī	Skatīt C3 līdz C45 pielikumu	
Šķērsvirziena un vilces slodzes izraisītas deformācijas	Skatīt C4 līdz C45 pielikumu	
Samazinājuma koeficients būvniecības testos (ß koeficients)	Skatīt C1 pielikumu	
Malas un ass attālumi	Skatīt C3 līdz C45 pielikumu	
Grupas faktors grupu stiprinājumiem	Skatīt C3 līdz C45 pielikumu	
Ugunsdrošība *(BWR 2)*		
Degšanas īpašības	A1 klase	
Ugunsizturība	Īpašība nav vērtēta	

Šā produkta ekspluatācijas īpašības atbilst deklarētajai(-ām) ekspluatācijas īpašībai(-ām). Par ekspluatācijas īpašību deklarācijas sagatavošanu saskaņā ar Regulu (ES) Nr. 305/2011 ir atbildīgs tikai iepriekš minētais ražotājs.

Ražotāja un ražotāja pārstāvja paraksts:

Frank Wolpert (Franks Volperts)

(*Prokurist – Leiter Produktmanagement* (prokūrists – produktu nodaļas vadītājs))



Dr. –Ing. Siegfried Beichter (Dr. ing. Zigfrīds Beihters)
(*Prokurist – Leiter Qualität* (prokūrists – kvalitātes sistēmas vadītājs))

Künzelsau (Kincelzava), 01.01.2021.

DIKJARAZZJONI TA' PRESTAZZJONI

Nru 0903450200_01_M_WIT-VM 250 (4)

Din hija l-verżjoni tradotta mill-Ġermaniż.
F'każ ta' dubju jgħodd id-dokument oriġinali bil-lingwa Ġermaniża

1. Kodiċi uniku ta' identifikazzjoni tat-tip tal-prodott: Würth Sistema b'Injezzjoni WIT-VM 250 + SH u WIT-Nordic + SH
Nru tal-oġġett: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Użu/i intenzjonat/i: Kavilja għat-twaħħil, għall-ankraġġ fil-ħitan tal-ġebel
3. Manifattur: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Str. 12 – 17
D – 74653 Künzelsau
4. Sistema jew sistemi ta' valutazzjoni u verifika tal-kostanza ta' prestazzjoni: Sistema 1
5. Dokument Ewropew ta' valutazzjoni: ETAG 029, April 2013
Valutazzjoni Teknika Ewropea: ETA-16/0757 – 15/12/2016
Korp tal-valutazzjoni teknika: Deutsches Institut für Bautechnik (DIBt), Berlin
Korp/i nnotifikat/i: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt, Germany
6. Prestazzjoni/jiet ddikjarata/i:

Karatteristiċi essenzjali	**Prestazzjoni**	**Speċifikazzjoni teknika armonizzata**
Stabbiltà u ebusija mekkanika (BWR 1)		ETA-16/0757 ETAG 029
Kapaċità ta' ġarr karatteristika tal-elementi tal-azzar	Ara l-Anness C2	
Kapaċità ta' ġarr karatteristika tal-kavilja f'ħitan tal-ġebel	Ara l-Annessi C3 sa C45	
Deformazzjoni taħt tagħbija laterali u ġbid	Ara l-Annessi C4 sa C45	
Fattur tat-tnaqqis għat-testijiet fil-post tal-bini (fattur β)	Ara l-Anness C1	
Distanzi mit-tarf u mill-assi	Ara l-Annessi C3 sa C45	
Fattur ta' grupp għall-irbit fi gruppi	Ara l-Annessi C3 sa C45	
Protezzjoni kontra n-nar (BWR 2)		
Reazzjoni għan-nar	Klassi A1	
Reżistenza kontra n-nar	Prestazzjoni mhux stabbilita	

Il-prestazzjoni tal-prodott identifikat hawn fuq hija konformi mal-prestazzjonijiet iddikjarati. Din id-dikjarazzjoni ta' prestazzjoni hi maħruġa skont ir-Regolament (UE) Nru 305/2011 taħt ir-responsabbiltà unika tal-manifattur identifikat hawn fuq.

Iffirmat għal u f'isem il-manifattur minn:

Frank Wolpert
(Rapp. Awtorizzat - Kap, Ġestjoni tal-Prodott)

Dr. –Ing. Siegfried Beichter
(Rapp. Awtorizzat - Kap, Ġestjoni tal-Kwalità)

Künzelsau, 01/01/2021

PRESTATIEVERKLARING

Nr. 0903450200_01_M_WIT-VM 250 (4)

Dit is een uit het Duits vertaalde versie.
In twijfelgevallen geldt het Duitse origineel.

1. Eenduidige identificatiecode van het producttype: Würth injectiesysteem WIT-VM 250 + SH en WIT-Nordic + SH
Art.nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Gebruiksdoel(en): compoundanker voor verankering in metselwerk

3. Fabrikant: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Systeem/systemen voor beoordeling en verificatie van de prestatiebestendigheid: Systeem 1

5. Europees beoordelingsdocument: ETAG 029, april 2013
Europese technische beoordeling: ETA-16/0757 – 15/12/2016
Technische beoordelingsinstantie: Deutsches Institut für Bautechnik (DIBt), Berlijn
Aangemelde instantie(s): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

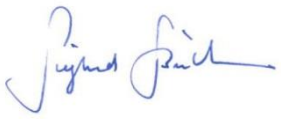
6. Vastgestelde prestatie(s):

Belangrijkste eigenschappen	**Prestatie**	**Geharmoniseerde technische specificatie**
Mechanische sterkte en stabiliteit (BWR 1)		ETA-16/0757 ETAG 029
Karakteristiek draagvermogen van de stalen elementen	Zie bijlage C2	
Karakteristiek draagvermogen van de pluggen in metselwerk	Zie bijlage C3 t/m C45	
Vervormingen onder dwarsbelasting en trekbelasting	Zie bijlage C4 t/m C45	
Reductiefactor voor bouwplaatstests (ß-factor)	Zie bijlage C1	
Rand- en asafstanden	Zie bijlage C3 t/m C45	
Groepsfactor voor groepsbevestiging	Zie bijlage C3 t/m C45	
Brandveiligheid (BWR 2)		
Brandgedrag	Klasse A1	
Brandweerstand	prestatie niet beoordeeld	

De prestatie van het bovenvermelde product voldoet aan de vastgestelde prestatie(s). Voor het opstellen van de prestatieverklaring overeenkomstig verordening (EU) nr. 305/2011 is uitsluitend de bovengenoemde fabrikant verantwoordelijk.

Ondertekend voor de fabrikant en in naam van de fabrikant door:

Frank Wolpert
(Procuratiehouder - Hoofd Productmanagement)



dr.-ing. Siegfried Beichter
(Procuratiehouder - Hoofd Kwaliteit)

Künzelsau, 01/01/2021

YTELSESERKLÆRING

Nr. 0903450200_01_M_WIT-VM 250 (4)

Dette er en versjon som er oversatt fra tysk.
Skulle det oppstå tvil, gjelder den tyske originalen

1. Entydig kode for produkttypen: Würth injeksjonssystem WIT-VM 250 + SH og WIT-Nordic + SH
   Art.-nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Bruksområde: Kompositttplugg til forankring i mur
3. Produsent: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. System(er) til vurdering og kontroll av ytelsesbestandigheten: System 1
5. Europeisk vurderingsdokument: ETAG 029, april 2013
   Europeisk teknisk godkjenning: ETA-16/0757 – 15.12.2016
   Teknisk godkjenningsorgan: Deutsches Institut für Bautechnik, Berlin
   Teknisk(e) kontrollorgan(er): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt, Tyskland
6. Erklært(e) ytelse(r):

Vesentlige egenskaper	**Ytelse**	**Harmonisert teknisk spesifikasjon**
Mekanisk fasthet og stabilitet (BWR 1)		ETA-16/0757 ETAG 029
Karakteristisk bæreevne for stålelementene	Se vedlegg C2	
Karakteristisk bæreevne for pluggene i mur	Se vedlegg C3 til C45	
Deformasjoner under tverrbelastning og strekkbelastning	Se vedlegg C4 til C45	
Reduksjonsfaktor for anleggsforsøk (ß-faktor)	Se vedlegg C1	
Kant- og akselavstander	Se vedlegg C3 til C45	
Gruppefaktor for gruppeinnfestinger	Se vedlegg C3 til C45	
Brannvern (BWR 2)		
Egenskaper ved brann	Klasse A1	
Brannmotstand	Ytelse ikke vurdert	

Ytelsen til dette produktet tilsvarer den erklærte ytelsen / de erklærte ytelsene. Produsenten som er nevnt over, er eneansvarlig for at det lages en ytelseserklæring i henhold til forordningen (EU) nr. 305/2011.

Undertegnet for produsenten og på vegne av produsenten:

Frank Wolpert
(prokurist - leder produktstyring)

Dr. ing. Siegfried Beichter
(prokurist- leder kvalitet)

Künzelsau, den 01.01.2021

DEKLARACJA WŁAŚCIWOŚCI UŻYTKOWYCH

Nr 0903450200_01_M_WIT-VM 250 (4)

Ten dokument jest wersją przełożoną z języka niemieckiego.
W razie wątpliwości obowiązuje wersja niemiecka.

1. Niepowtarzalny kod identyfikacyjny typu produktu: Würth system do zastrzyków WIT-VM 250 + SH i WIT-Nordic + SH
Nr artykułu: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Przeznaczenie: kołek rozporowy do kotwienia w murze

3. Producent: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. System (systemy) oceny i weryfikacji stałości właściwości użytkowych: System 1

5. Europejski dokument oceny: ETAG 029, kwiecień 2013
Europejska Ocena Techniczna: ETA-16/0757 – 15.12.2016
Placówka sporządzająca ocenę techniczną: Deutsches Institut für Bautechnik (DIBt), Berlin
Jednostka/-i notyfikowana/-e: 2873, Institut für Stahlbau und Werkstoffmechanik (Instytut konstrukcji stalowych i mechaniki tworzyw), Darmstadt

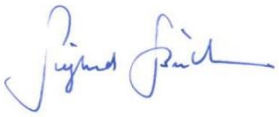
6. Deklarowane właściwości użytkowe:

Istotne cechy	**Właściwości użytkowe**	**Zharmonizowana specyfikacja techniczna**
Wytrzymałość mechaniczna i stateczność (BWR 1)		ETA-16/0757 ETAG 029
Wartości charakterystyczne nośności elementów stalowych	Patrz załącznik C2	
Wartości charakterystyczne nośności kołków w murze	Patrz załączniki C3 do C45	
Deformacje na skutek obciążenia poprzecznego i rozciągania	Patrz załączniki C4 do C45	
Współczynnik redukcji dla prób w miejscu budowy (współczynnik β)	Patrz załącznik C1	
Odstępy na obrzeżu i odstępy osi	Patrz załączniki C3 do C45	
Współczynnik grupowy dla mocowań grupowych	Patrz załączniki C3 do C45	
Ochrona przeciwpożarowa (BWR 2)		
Klasyfikacja ogniowa	Klasa A1	
Odporność ogniowa	Nie oceniano właściwości	

Właściwości użytkowe powyższego produktu pokrywają się z deklarowanymi właściwościami użytkowymi. Za sporządzenie deklaracji właściwości użytkowych zgodnie z rozporządzeniem (UE) nr 305/2011 odpowiedzialny jest wyłącznie wyżej wymieniony producent.

Podpisano za producenta i w jego imieniu:

Frank Wolpert
(Prokurent - Kierownik działu zarządzania produktami)



Dr inż. Siegfried Beichter
(Prokurent - Kierownik działu jakości)

Künzelsau, dnia 01.01.2021 r.

DECLARAÇÃO DE DESEMPENHO

N.º 0903450200_01_M_WIT-VM 250 (4)

Versão traduzida da versão alemã.
Em caso de dúvida, é válido o original em alemão

1. Código de identificação inequívoco do tipo de produto: Sistema de injeção Würth WIT-VM 250 + SH e WIT-Nordic + SH
N.° art.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Fim/fins de utilização: Cavilha de fixação por aderência para ancoragem em parede de alvenaria

3. Fabricante: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Sistema(s) para avaliação e verificação da constância do desempenho: Sistema 1

5. Documento de avaliação europeu: ETAG 029, abril de 2013
Avaliação Técnica Europeia: ETA-16/0757 – 15.12.2016
Organismo de Avaliação Técnica: Deutsches Institut für Bautechnik (DIBt), Berlim
Organismo(s) notificado(s): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

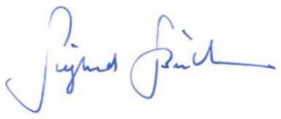
6. Desempenho(s) declarado(s):

Características essenciais	**Desempenho**	**Especificação Técnica Harmonizada**
Resistência mecânica e estabilidade (BWR 1)		ETA-16/0757 ETAG 029
Capacidade de carga característica dos elementos de aço	Veja anexo C2	
Capacidade de carga característica das cavilhas em parede de alvenaria	Veja anexos C3 a C45	
Deformações sob carga transversal e carga de tração	Veja anexos C4 a C45	
Fator de redução para testes em locais de obras (fator β)	Veja anexo C1	
Distâncias aos bordos e distâncias entre eixos	Veja anexos C3 a C45	
Fator de grupo para fixações de grupo	Veja anexos C3 a C45	
Proteção contra incêndio (BWR 2)		
Comportamento em caso de incêndio	Classe 1	
Resistência ao fogo	Desempenho não avaliado	

O desempenho do presente produto corresponde ao(s) desempenho(s) declarado(s). O fabricante acima mencionado é o único responsável pela elaboração da declaração de desempenho, em conformidade com o Regulamento (UE) n.° 305/2011.

Assinado pelo fabricante e em nome do fabricante por:

Frank Wolpert
(Procurador - Diretor de gestão de produtos)



Dr. Eng.° Siegfried Beichter
(Procurador - Diretor de qualidade)

Künzelsau, a 01.01.2021

DECLARAȚIE DE PERFORMANȚĂ

Nr. 0903450200_01_M_WIT-VM 250 (4)

Prezenta versiune este o traducere din limba germană.
În caz de dubiu, se aplică originalul în limba germană

1. Cod unic de identificare al tipului de produs: Sistem de injecție Würth WIT-VM 250 + SH și WIT-Nordic + SH
Nr. articol: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Scopul sau scopurile de utilizare: Diblu de îmbinare pentru ancorare în zidărie

3. Producător: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Sistem(e) pentru evaluarea și verificarea constanței performanței: Sistem 1

5. Document european de evaluare: ETAG 029, Aprilie 2013
Evaluare tehnică europeană: ETA-16/0757 – 15.12.2016
Organism de evaluare tehnică: Deutsches Institut für Bautechnik (DIBt), Berlin
Organism(e) notificat(e): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt (Institutul pentru construcții metalice și mecanica materialelor)

6. Performanța(e) declarată(e):

Caracteristici esențiale	**Performanță**	**Specificație tehnică armonizată**
Rezistență mecanică și stabilitate (BWR 1)		ETA-16/0757 ETAG 029
Capacitatea portantă caracteristică a elementelor din oțel	A se vedea anexa C2	
Capacitatea portantă caracteristică a diblurilor în zidărie	A se vedea anexele C3 până la C45	
Deformări sub sarcină transversală și sarcină de tracțiune	A se vedea anexele C4 până la C45	
Coeficient de reducere pentru încercări pe șantier (factorul β)	A se vedea anexa C1	
Distanțe față de margine și față de axă	A se vedea anexele C3 până la C45	
Coeficient de grup pentru fixări în grup	A se vedea anexele C3 până la C45	
Protecție contra incendiilor (BWR 2)		
Comportament la incendiu	Clasa A1	
Rezistență la foc	Performanța nu este evaluată	

Performanța produsului prezentat este în conformitate cu performanța declarată / cu performanțele declarate. Pentru realizarea declarației de performanță în conformitate cu Ordonanța (UE) nr. 305/2011, singurul responsabil este producătorul menționat mai sus.

Semnată pentru și în numele producătorului, de către:

Frank Wolpert
(Reprezentant legal - director pentru producție)

Dr.-Ing. Siegfried Beichter
(Reprezentant legal - director dep. calitate)

Künzelsau, 01.01.2021

ДЕКЛАРАЦИЯ ХАРАКТЕРИСТИК

№ 0903450200_01_M_WIT-VM 250 (4)

Здесь речь идет о переведенной с немецкого языка версии.
В случае сомнений руководствоваться немецким оригиналом

1. Однозначная маркировка типа продукта: Система инъекции Würth WIT-VM 250 + SH и WIT-Nordic + SH
Арт. №: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Цель(и) применения: Комбинированный дюбель для анкеровки в каменной кладке

3. Изготовитель: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße12 – 17
D – 74653 Künzelsau

4. Система(ы) для оценки и проверки стабильности характеристик: Система 1

5. Европейский оценочный документ: ETAG 029, апрель 2013 г.
Европейская техническая оценка: ETA-16/0757 – 15.12.2016
Орган технической оценки Уполномоченный(е) орган(ы): Германский институт строительных технологий (DIBt), Берлин
2873, Институт строительных конструкций и механики материалов (IFSW), Дармштадт

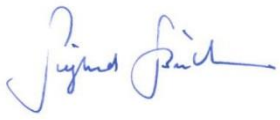
6. Заявленная(-ые) характеристика(-и):

Важные признаки	**Характеристика**	**Гармонизированная техническая спецификация**
Механическая прочность и устойчивость (BWR 1)		ETA-16/0757 ETAG 029
Типичная несущая способность стальных элементов	См. Приложение C2	
Типичная несущая способность дюбелей в каменной кладке	См. Приложения с C3 по C45	
Деформации при поперечной нагрузке и растяжении	См. Приложения с C4 по C45	
Редукционный коэффициент для экспериментов на строительной площадке (ß-коэффициент)	См. Приложение C1	
Расстояния от краев и межосевые расстояния	См. Приложения с C3 по C45	
Групповой коэффициент для групповых креплений	См. Приложения с C3 по C45	
Противопожарная защита (BWR 2)		
Огнестойкость	Класс A1	
Огнестойкость	Характеристика не определена	

Характеристика вышеприведенного продукта соответствует заявленной(-ым) характеристике/характеристикам. За составление декларации характеристик в соответствии с предписанием (EU) № 305/2011 отвечает исключительно вышеупомянутый изготовитель.

Подписано за изготовителя и от имени изготовителя:

Франк Вольперт
(Прокурист - Нач.производств.отдела)



Д-р-инж. Зигфрид Байхтер
(Прокурист - Нач. ОТК)

Кюнцельзау, 01.01.2021

PRESTANDADEKLARATION

Nr. 0903450200_01_M_WIT-VM 250 (4)

Denna version är översatt från tyska.
I tveksamma fall gäller originalet på tyska.

1. Produkttypens unika identifikationskod: Würth injekteringssystem WIT-VM 250 + SH och WIT-Nordic + SH
   Art.-nr.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Användningsändamål: Ankarplugg för förankring i murverk
3. Tillverkare: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. System för bedömning och kontroll av prestandabeständighet: System 1
5. Europeiskt bedömningsdokument: ETAG 029, april 2013
   Europeisk teknisk bedömning: ETA-16/0757 – 2016-12-15
   Tekniskt bedömningsorgan: Deutsches Institut für Bautechnik (DIBt), Berlin
   Notificerade organ: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Deklarerad prestanda:

Väsentliga egenskaper	**Prestanda**	**Harmoniserad teknisk specifikation**
Mekanisk hållfasthet och stabilitet (BWR 1)		ETA-16/0757 ETAG 029
Stålelementens karakteristiska bärförmåga	Se Bilaga C2	
Karakteristisk bärförmåga för pluggarna i murverk	Se Bilaga C3 till C45	
Deformationer under tvärbelastning och dragbelastning	Se Bilaga C4 till C45	
Reduktionsfaktor för undersökningar på byggplats (β-faktor)	Se Bilaga C1	
Kant- och axelavstånd	Se Bilaga C3 till C45	
Gruppfaktor för gruppfästen	Se Bilaga C3 till C45	
Brandskydd (BWR 2)		
Branduppförande	Klass A1	
Brandmotstånd	Prestanda ej bedömd	

Ovanstående produkts prestanda överensstämmer med den prestanda som anges. Denna prestandadeklaration utfärdas i överensstämmelse med förordning (EU) nr. 305/2011 på eget ansvar av ovanstående tillverkare.

Undertecknad för tillverkaren och på tillverkarens vägnar av:

Frank Wolpert
(Prokurist - Chef Produkthantering)

Dr.-ing. Siegfried Beichter
(Prokurist - Chef Kvalitet)

Künzelsau, 2021-01-01

VYHLÁSENIE O VLASTNOSTIACH

Č. 0903450200_01_M_WIT-VM 250 (4)

Jedná sa tu o preloženú nemeckú verziu.
V prípade pochybností platí nemecký originál

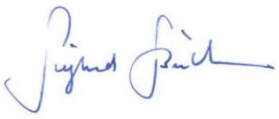
1. Jednoznačný identifikačný kód typu výrobku: Würth Injekčný systém WIT-VM 250 + SH a WIT-Nordic + SH
   Výr. č.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Účel(y) použitia: Spojovacie hmoždinky na ukotvenie do muriva
3. Výrobca: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau
4. Systém (systémy) na posudzovanie a overovanie odolnosti parametrov: Systém 1
5. Európsky vyhodnocovací dokument: ETAG 029, apríl 2013
   Európske technické vyhodnotenie: ETA-16/0757 – 15.12.2016
   Pracovisko pre technické vyhodnotenie: Deutsches Institut für Bautechnik (Nemecký inštitút pre stavebnú techniku) (DIBt), Berlín
   Notifikovaný orgán(y): 2873, Ústav pre oceľové konštrukcie a mechaniku materiálov (IFSW), Darmstadt
6. Vlastnosť(i) uvedené vo vyhlásení:

Podstatné znaky	**Vlastnosť**	**Harmonizovaná technická špecifikácia**
Mechanická pevnosť a stabilita (BWR 1)		ETA-16/0757 ETAG 029
Charakteristická únosnosť oceľových prvkov	Pozri dodatok C2	
Charakteristická únosnosť hmoždiniek v murive	Pozri dodatok C3 až C45	
Deformácie pri priečnom a ťahovom zaťažení	Pozri dodatok C4 až C45	
Redukčný činiteľ pre skúšky na stavenisku (β-faktor)	Pozri dodatok C1	
Okrajové a stredové vzdialenosti	Pozri dodatok C3 až C45	
Skupinový faktor pre skupinové upevnenia	Pozri dodatok C3 až C45	
Protipožiarna ochrana (BWR 2)		
Reakcia látky pri požiari	Trieda A1	
Požiarna odolnosť	Vlastnosť nie je hodnotená	

Vlastnosť vyššie uvedeného produktu zodpovedá vyhlásenej vlastnosti / vyhláseným vlastnostiam. Na vyhotovenie vyhlásenia o parametroch v súlade s nariadením (EÚ) č. 305/2011 je zodpovedný sám vyššie uvedený výrobca.

Podpísané pre výrobcu a v mene výrobcu:

Frank Wolpert
(Prokurista - vedúci výrobného manažmentu)



Dr. –Ing. Siegfried Beichter
(Prokurista - vedúci kvality)

Künzelsau, dňa 01. 01. 2021

IZJAVA O LASTNOSTIH

Št. 0903450200_01_M_WIT-VM 250 (4)

To besedilo je prevod iz nemščine.
V primeru dvoma velja nemški izvirnik

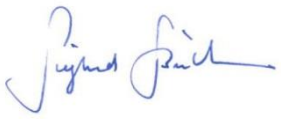
1. Enotna identifikacijska oznaka tipa izdelka: Vbrizgalni sistem Würth WIT-VM 250 + SH in WIT-Nordic+ SH
   Št. art.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205
2. Nameni uporabe: Kombinirano sidro za sidranje v zidovih
3. Proizvajalec: Adolf Würth GmbH & Co. KG
   Reinhold-Würth-Straße 12 – 17
   D – 74653 Künzelsau, Nemčija
4. Sistemi za vrednotenje in preverjanje trajnosti lastnosti: Sistem 1
5. Evropski ocenjevalni dokument: ETAG 029, april 2013
   Evropsko tehnično vrednotenje: ETA-16/0757 – 15.12.2016
   Organ, ki je opravil tehnično vrednotenje: Deutsches Institut für Bautechnik (DIBt), Berlin
   Obveščeni organ: 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt
6. Navedene lastnosti:

Bistvene značilnosti	**Lastnost**	**Harmonizirana tehnična specifikacija**
Mehanska trdnost in stabilnost (BWR 1)		ETA-16/0757 ETAG 029
Značilna nosilnost jeklenih elementov	Glejte Prilogo C2	
Značilna nosilnost vložka v zidovju	Glejte Priloge od C3 do C45	
Deformacije pod strižno in vlečno obremenitvijo	Glejte Priloge od C4 do C45	
Faktor zmanjšanja za preizkuse na gradbišču (β-faktor)	Glejte Prilogo C1	
Razdalje od robov in osi	Glejte Priloge od C3 do C45	
Skupinski faktor za skupinske pritrditve	Glejte Priloge od C3 do C45	
Protipožarna zaščita (BWR 2)		
Požarne lastnosti	Razred A1	
Požarna odpornost	Lastnost ni ocenjena	

Lastnosti tega izdelka ustrezajo navedenim lastnostim. Za pripravo izjave o lastnostih po uredbi (EU) št. 305/2011 je odgovoren izključno zgoraj navedeni proizvajalec.

Podpis za proizvajalca in v njegovem imenu:

Frank Wolpert
(prokurist – vodja izdelkov)



Dr. –Ing. Siegfried Beichter
(prokurist – vodja za kakovost)

Künzelsau, 1. 1. 2021

PERFORMANS BEYANI

No. 0903450200_01_M_WIT-VM 250 (4)

Bu metin, Almanca dilinden yapılmış bir çeviridir.
Şüpheli durumlarda Almanca orijinal metin geçerli olacaktır

1. Ürün tipinin açık kodu: Würth Enjeksiyon sistemi WIT-VM 250 + SH ve WIT-Nordic + SH
Ürün No.: 09034502*; 090345010*; 090546*; 090547*; 59160*; 5916108999; 5916110999; 5916112999; 5916116999; 5916208999; 5916210999; 5916212999; 5916216999; 5916408110; 5916410130; 5916412160; 5916416190; 59156*; 59157*; 090344 123; 090344 164; 090344 165; 090344 203; 090344 204; 090344 205

2. Kullanma amacı (amaçları): Duvara ankraj için kimyasal dübel

3. Üretici: Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12 – 17
D – 74653 Künzelsau

4. Performansın sürdürülebilirliğinin değerlendirilmesi ve kontrolü için sistem(ler): Sistem 1

5. Avrupa Değerlendirme Belgesi: ETAG 029, Nisan 2013
Avrupa Teknik Değerlendirmesi: ETA-16/0757 – 15.12.2016
Teknik Değerlendirme Kuruluşu: Deutsches Institut für Bautechnik (DIBt), Berlin
Akredite kuruluş(lar): 2873, Institut für Stahlbau und Werkstoffmechanik (IFSW), Darmstadt

6. Beyan edilen performans(lar):

Önemli özellikler	**Performans**	**Uyumlandırılmış teknik nitelik**
Mekanik dayanıklılık ve kararlılık (BWR 1)		ETA-16/0757 ETAG 029
Çelik elemanların karakteristik taşıma kapasitesi	Bkz. Ek C2	
Duvardaki dübelin karakteristik taşıma kapasitesi	Bkz. Ek C3 ila C45	
Enine yük ve çekme yükü altında deformasyonlar	Bkz. Ek C4 ila C45	
Şantiye deneyleri için redüksiyon faktörü (β faktörü)	Bkz. Ek C1	
Kenar ve eksen mesafeleri	Bkz. Ek C3 ila C45	
Grup sabitlemeleri için grup faktörü	Bkz. Ek C3 ila C45	
Yangından koruma (BWR 2)		
Yangındaki tutum	Sınıf A1	
Yangına dayanıklılık	Performans değerlendirilmemiştir	

Mevcut ürünün performansı, beyan edilen performansa / beyan edilen performanslara uygundur. Performans beyanının 305/2011 numaralı yönetmelikle (AB) uyumlu olarak oluşturulmasından yukarıda belirtilen üretici tek başına sorumludur.

Üretici için ve üretici adına imzalayan:

Frank Wolpert
(İmzaya yetkili ürün yönetim bölümü yöneticisi)

Dr. Müh. Siegfried Beichter
(İmzaya Yetkili Kalite Yöneticisi)

Künzelsau, 01.01.2021