



Technical and Test Institute
for Construction Prague
Prosecká 811/76a
190 00 Prague
Czech Republic
eota@tzus.cz



Member of
EOTA
www.eota.eu

European Technical Assessment

ETA 13/0037
of 28/04/2016

(English language translation, the original version in Czech language)

Technical Assessment Body issuing the ETA: Technical and Test Institute for Construction Prague

Trade name of the construction product

Würth WIT-PM 200
Würth WIT-PM 200 express
Würth WIT-PM 200 tropical

Product family to which the construction product belongs

Product area code: 33
Injection anchors for use in masonry

Manufacturer

Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12-17
74653 Künzelsau
Germany

Manufacturing plant(s)

Plant 3

This European Technical Assessment contains

56 pages including 52 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

ETAG 029, edition 2013, used as European Assessment Document (EAD)

This version replaces

ETA 13/0037 issued on 25/06/2013

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

1. Technical description of the product

The Würth WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical polyester resin styrene-free for masonry is bonded anchor consisting of a cartridge with injection mortar, a steel element and a plastic sleeve. The steel elements are the commercial threaded rods with hexagon nut and washer. The steel elements are made of galvanized or zinc plated steel, stainless or high corrosion resistance steel.

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

The illustration and the description of the product are given in Annex A.

2. Specification of the intended use in accordance with the applicable EAD

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 provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 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 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 |
|---------------------------------------------------------|-----------------------|
| Reduction factor for job site tests (β – factor) | See Annex C 1 |
| Characteristic resistance for tension and shear loads | See Annex C 5 to C 39 |
| Characteristic resistance for bending moments | See Annex C 2 |
| Displacement under shear and tension loads | See Annex C 5 to C 38 |
| Edge distances and spacing | See Annex C 4 to C 38 |

3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance |
|---------------------------------|----------------------------------------------|
| Reaction to fire | Anchorages satisfy requirements for Class A1 |
| Resistance to fire | No performance assessed |

3.3 Hygiene, health and environment (BWR 3)

Regarding dangerous substances contained in this European Technical Assessment, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the 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)

For basic requirement safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

3.5 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

3.6 General aspects relating to fitness for use

Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are taken into account.

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

According to the Decision 97/177/EC of the European Commission¹ the system of assessment verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table applies.

| Product | Intended use | Level or class | System |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------|
| Injection anchors for use in masonry | For fixing and/or supporting to masonry, structural elements (which contributes to the stability of the construction works) or heavy units | - | 1 |

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

5.1 Tasks of the manufacturer

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European Technical Assessment.

The manufacturer may only use raw materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the control plan which is a part of the technical documentation of this European Technical Assessment. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at Technical and Test Institute for Construction Prague² The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

The manufacturer shall, on the basis of a contract, involve a body which is notified for the tasks referred to in section 4 in the field of anchors in order to undertake the actions laid down in section 5.2. For this purpose, the control plan referred to in this section and section 5.2 shall be handed over by the manufacturer to the notified body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European Technical Assessment.

¹ Official Journal of the European Communities L 073 of 14.03.1997

² The control plan is a confidential part of the documentation of the European technical assessment, but not published together with the ETA and only handed over to the approved body involved in the procedure of AVCP.

5.2 Tasks of the notified bodies

The notified body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

The notified certification body involved by the manufacturer shall issue a certificate of constancy of performance of the product stating the conformity with the provisions of this European Technical Assessment.

In cases where the provisions of the European Technical Assessment and its control plan are no longer fulfilled the notified body shall withdraw the certificate of constancy of performance and inform Technical and Test Institute for Construction Prague without delay.

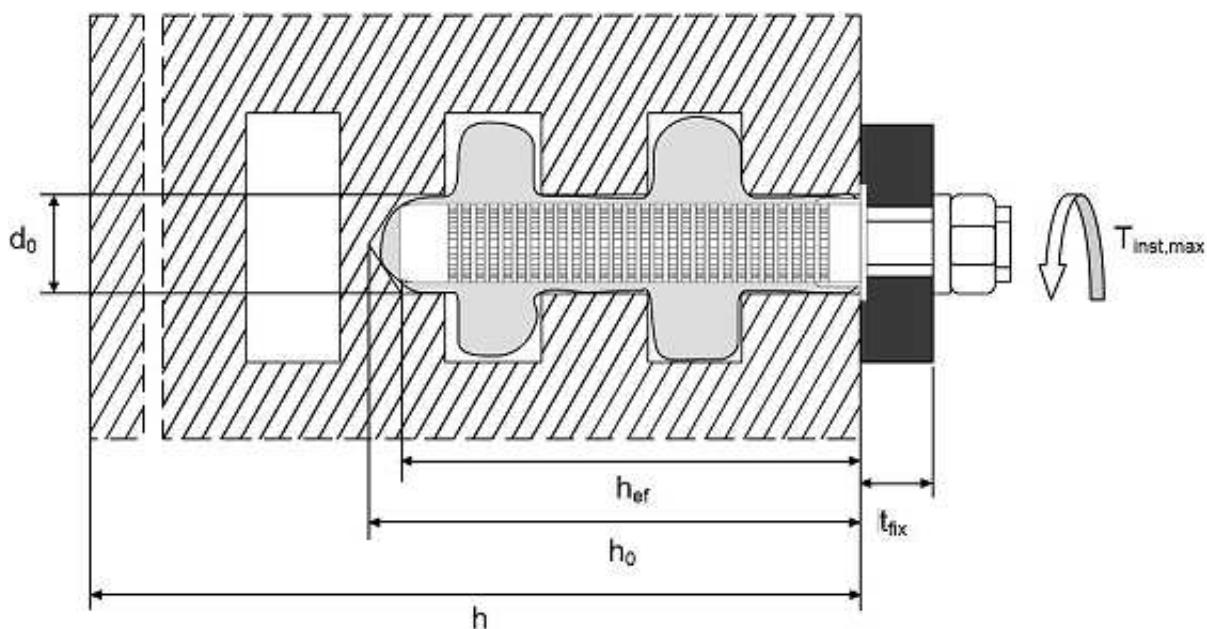
Issued in Prague on 28.04.2016

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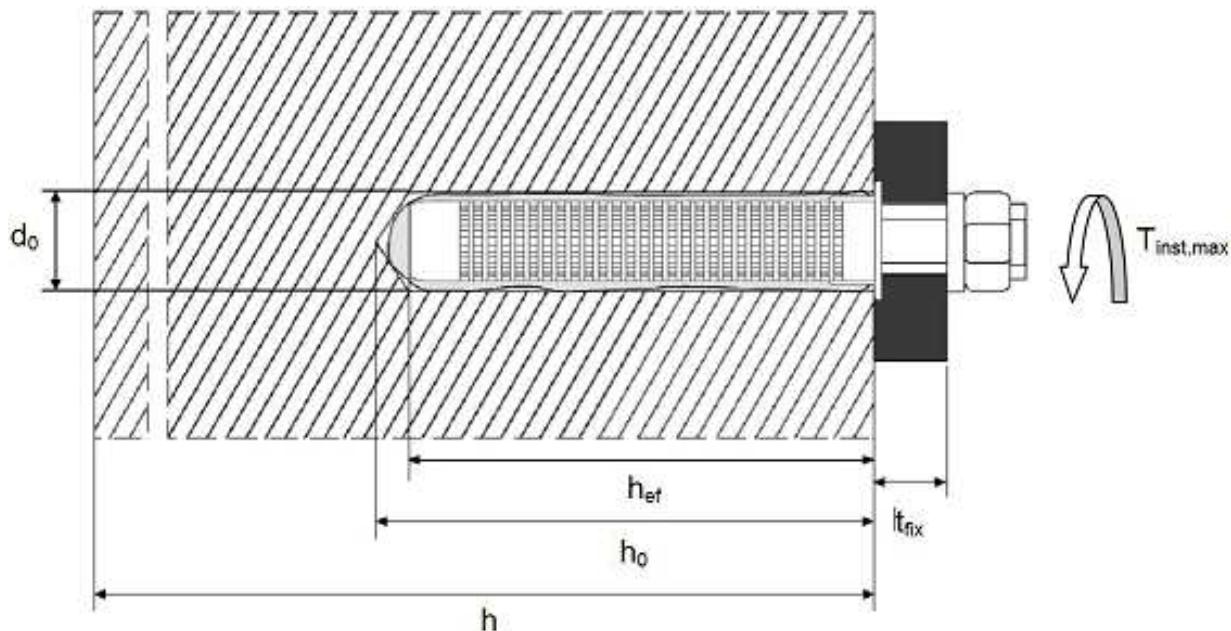
Ing. Mária Schaan

Head of the TAB

Installation in hollow brick; threaded rod with sleeve



Installation in solid brick; threaded rod with or without sleeve



h_{eff} = effective anchorage depth

h_0 = drill hole depth

t_{fix} = thickness of fixture

d_0 = drill hole diameter

$T_{\text{inst,max}}$ = max installation torque moment

h = thickness of member

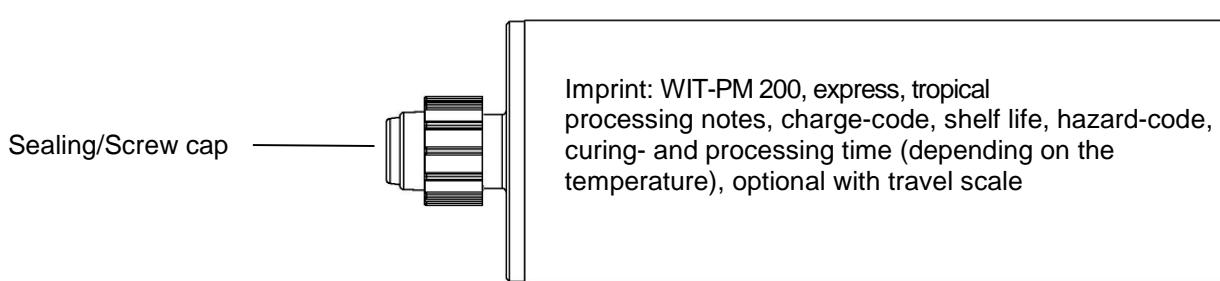
**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Product description
Installed condition

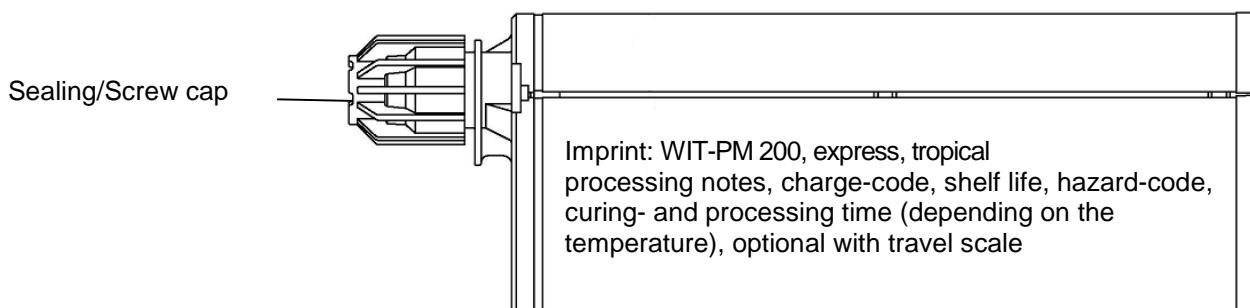
Annex A 1

Cartridge: WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical

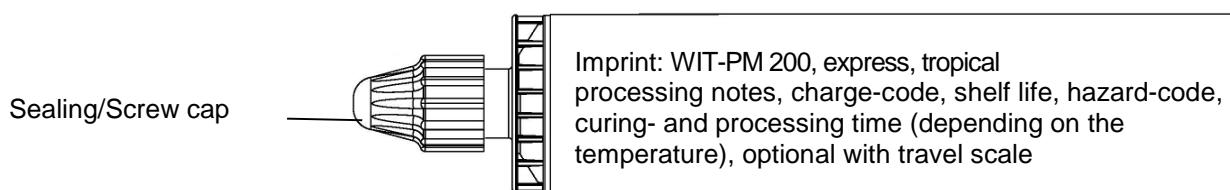
150 ml, 280 ml, 300 ml up to 333 ml, 380 ml up to 420 ml cartridge (Type: coaxial)



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



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

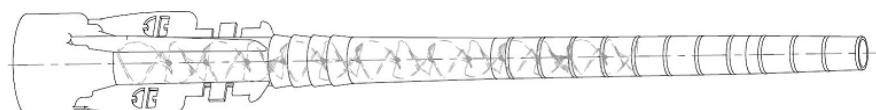


Static mixer

Standard mixer 14W



Static mixer Fill & Clean



Compojet 8W



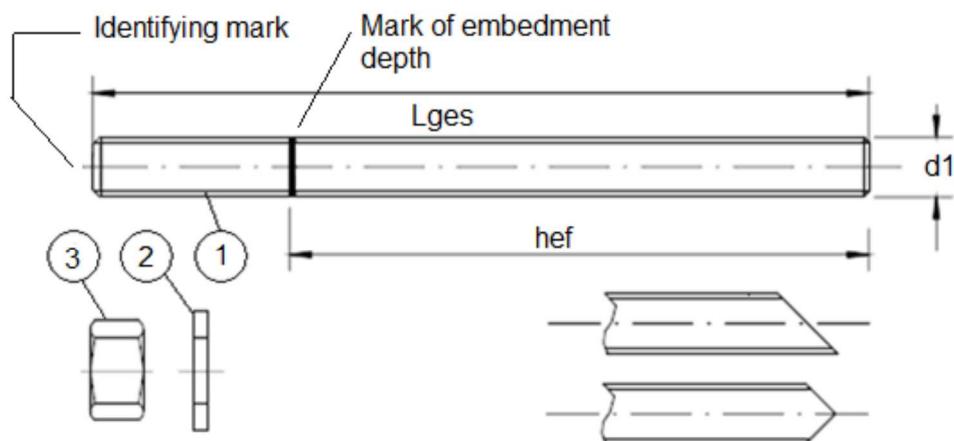
**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Product description

Injection system

Annex A 2

Threaded rod M8 / M10 / M12 / M16



Commercial standard threaded rod with:

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

**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Product description

Threaded rod

Annex A 3

Table A1: Materials

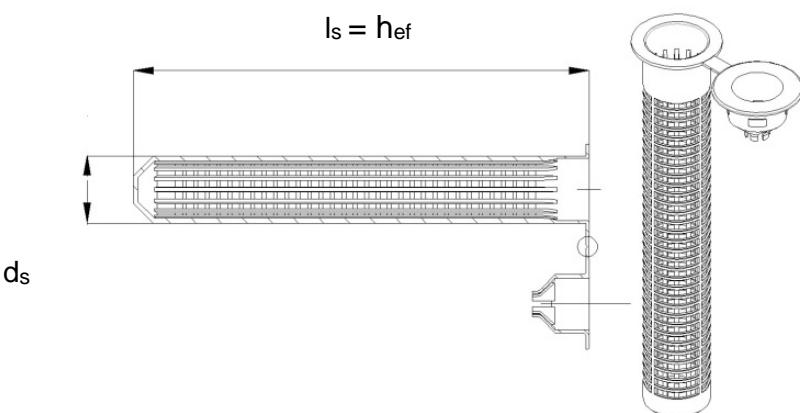
| Part | Designation | Material |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Steel, zinc plated ≥ 5 µm acc. to EN ISO 4042:2001 or Steel, hot-dip galvanised ≥ 40 µm acc. to EN ISO 1461:2009 and EN ISO 10684:2011+AC:2009 | | |
| 1 | Anchor rod | Steel, EN 10087:1998 or EN 10263:2001 Strength class 4.6, 4.8, 5.6, 5.8, 8.8 EN 1993-1-8:2005+AC:2009 |
| 2 | Hexagon nut, EN ISO 4032:2012 | Steel acc. to EN 10087:1998 or EN 10263:2001 Strength class 4 (for class 4.6, 4.8 rod) EN ISO 898-2:2012 Strength class 5 (for class 5.6, 5.8 rod) EN ISO 898-2:2012 Strength class 8 (for class 8.8 rod) EN ISO 898-2:2012 |
| 3 | 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 |
| Stainless steel | | |
| 1 | Anchor rod | Material 1.4401 / 1.4404 / 1.4571, EN 10088-1:2014, Strength class 70 EN ISO 3506-2:2009 Strength class 80 EN ISO 3506-2:2009 |
| 2 | Hexagon nut, EN ISO 4032:2012 | Material 1.4401 / 1.4404 / 1.4571 EN 10088-1:2014, Strength class 70 (for class 70 rod) EN ISO 3506-2:2009 Strength class 80 (for class 80 rod) EN ISO 3506-2:2009 |
| 3 | 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 |
| High corrosion resistant steel (HCR) | | |
| 1 | Anchor rod | Material 1.4529 / 1.4565, EN 10088-1:2014, Strength class 70 EN ISO 3506-2:2009 Strength class 80 EN ISO 3506-2:2009 |
| 2 | Hexagon nut, EN ISO 4032:2012 | Material 1.4529 / 1.4565 EN 10088-1:2014, Strength class 70 (for class 70 rod) EN ISO 3506-2:2009 Strength class 80 (for class 80 rod) EN ISO 3506-2:2009 |
| 3 | 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 |
| Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry | | |
| Product description Materials | | Annex A 4 |

Sleeve (Plastic)

SH 12x80

SH 16x85

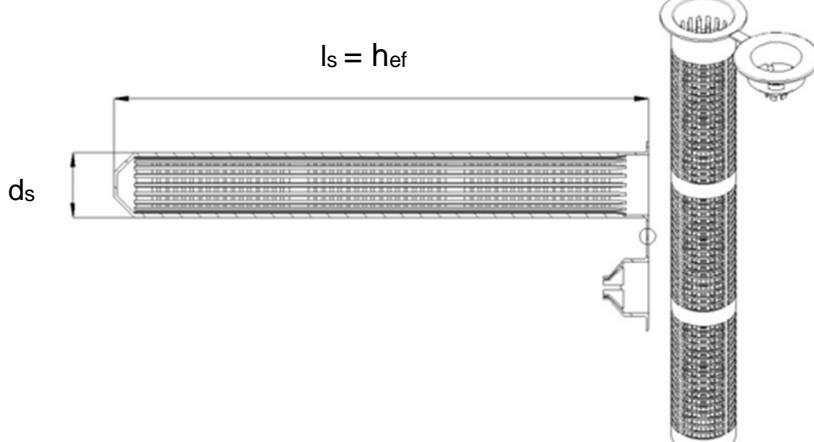
SH 20x85



SH 16x130

SH 20x130

SH 20x200



SH 16x130/330

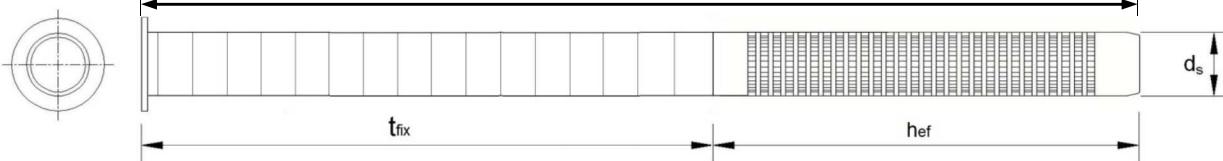


Table A2: Sleeve sizes (mm)

| Size | Sleeve | | |
|--------------|---------------|---------------|------------------|
| | d_s [mm] | l_s [mm] | h_{ef} [mm] |
| SH12x80 | 12 | 80 | 80 |
| SH16x85 | 16 | 85 | 85 |
| SH16x130 | 16 | 130 | 130 |
| SH16x130/330 | 16 | 330 | 130 |
| SH20x85 | 20 | 85 | 85 |
| SH20x130 | 20 | 130 | 130 |
| SH20x200 | 20 | 200 | 200 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Product description

Sleeves

Annex A 5

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads

Base materials

- Autoclaved Aerated Concrete (Use category d) to Annex B2.
- Solid brick masonry (Use category b), according to Annex B2 to B4.
- Hollow brick masonry (Use category c), according to Annex B2 to B4.
- 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 to Annex C1, Table C1.

Note: The characteristic resistances 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)

Use conditions (Environmental conditions)

- Dry and wet structures (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 wet 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 anchorage 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.

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.

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| Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry | |
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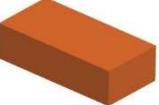
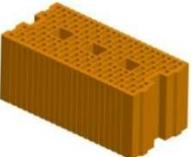
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|---------------------------------------|--|
| Intended use Specifications | |
|---------------------------------------|--|

| |
|------------------|
| Annex B 1 |
|------------------|

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

| Brick-Nr. | Brick type | picture | Brick size Length x width x height | Compressive strength | Bulk density | Sleeve - Anchor type | Annex |
|-----------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| | | | [mm] | [N/mm ²] | [kg/dm ³] | | |
| Autoclaved aerated concrete units according EN 771-4 | | | | | | | |
| 1 | Autoclaved Aerated Concrete AAC2 |  | 599 x 375 x 249 | 2 | 0,35 | M8 / M10 / M12 / M16 | C4 / C5 |
| 2 | Autoclaved Aerated Concrete AAC4 |  | 499 x 375 x 249 | 4 | 0,5 | M8 / M10 / M12 / M16 | C6 / C7 |
| 3 | Autoclaved Aerated Concrete AAC6 |  | 499 x 240 x 249 | 6 | 0,6 | M8 / M10 / M12 / M16 | C8 / C9 |
| Calcium silicate masonry units according EN 771-2 | | | | | | | |
| 4 | Calcium silicate solid brick KS-NF |  | 240 x 115 x 71 | 10 20 27 | 2,0 | M8 / M10 / M12 / M16 SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C10 / C11 |
| 5 | Calcium silicate hollow brick KS L-3DF |  | 240 x 175 x 113 | 8 12 14 | 1,4 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C12 / C13 |
| 6 | Calcium silicate hollow brick KS L-12DF |  | 498 x 175 x 238 | 10 12 16 | 1,4 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C14 / C15 |
| Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry | | | | | | | Annex B 2 |
| Intended use Brick types and properties with corresponding fastening elements | | | | | | | |

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

| Brick-Nr. | Brick type | picture | Brick size Length x width x height | Compressive strength | Bulk density | Sleeve - Anchor type | Annex |
|---------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| | | | [mm] | [N/mm ²] | [kg/dm ³] | | |
| Clay masonry units according EN 771-1 | | | | | | | |
| 7 | Clay solid brick Mz – DF |  | 240 x 115 x 55 | 10 20 28 | 1,64 | M8 / M10 / M12 / M16 SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C16 / C17 |
| 8 | Clay hollow brick HLz-16DF |  | 497 x 240 x 238 | 6 9 12 14 | 0,83 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C18 / C19 |
| 9 | Clay hollow brick Porotherm Homebrick |  | 500 x 200 x 299 | 6 8 10 | 0,68 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C20 / C21 |
| 10 | Clay hollow brick BGV Thermo |  | 500 x 200 x 314 | 4 6 10 | 0,62 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C22 / C23 |
| 11 | Clay hollow brick Calibric Th |  | 500 x 200 x 314 | 6 9 12 | 0,62 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C24 / C25 |
| 12 | Clay hollow brick Urbanbric |  | 560 x 200 x 274 | 6 9 | 0,74 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C26 / C27 |
| Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry | | | | | | | Annex B 3 |
| Intended use Brick types and properties with corresponding fastening elements | | | | | | | |

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

| Brick-Nr. | Brick type | picture | Brick size Length x width x height | Compressive strength | Bulk density | Sleeve - Anchor type | Annex |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| | | | [mm] | [N/mm ²] | [kg/dm ³] | | |
| Clay masonry units according EN 771-1 | | | | | | | |
| 13 | Clay hollow brick Blocchi Leggeri |  | 250 x 120 x 250 | 4 6 8 | 0,55 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C28 / C29 |
| 14 | Clay hollow brick Doppio Uni |  | 250 x 120 x 120 | 10 16 20 28 | 0,92 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 SH 20x200 – M12 / M16 | C30 / C31 |
| Light weight concrete according EN 771-3 | | | | | | | |
| 15 | Hollow light weight concrete Bloc creux B40 |  | 495 x 195 x 190 | 4 | 0,80 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C32 / C33 |
| 16 | Solid light weight concrete |  | 300 x 123 x 248 | 2 | 0,63 | M8 / M10 / M12 / M16 | C34 / C35 |
| 17 | Hollow light weight Leca Lex harkko RUH- 200 |  | 498 x 200 x 195 | 2,7 | 0,62 | SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C36 / C37 |
| 18 | Solid light weight Leca Lex RUH-200 Kulma |  | 498 x 200 x 195 | 3 | 0,62 | M8 / M10 / M12 / M16 SH 12x80 – M8 SH 16x85 – M8 / M10 SH 16x130 – M8 / M10 SH 16x130/330 - M8 / M10 SH 20x85 – M12 / M16 SH 20x130 – M12 / M16 | C38 / C39 |
| Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry | | | | | | | |
| Intended use Brick types and properties with corresponding fastening elements | | | | | | | |
| Annex B 4 | | | | | | | |

Installation: Steel brush



Table B2: Installation parameters in Autoclaved Aerated Concrete AAC and solid masonry (without sleeve)

| Threaded rod | M8 | M10 | M12 | M16 | |
|-------------------------------------------|---------------------|-----------------------------------------------|-----|-----|-----|
| Nominal drill hole diameter | d_0 [mm] | 10 | 12 | 14 | 18 |
| Drill hole depth | h_o [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 | 14 | 18 |
| Diameter of Steel brush | $d_b \geq$ [mm] | 12 | 14 | 16 | 20 |
| Max torque moment | $T_{inst,max}$ [Nm] | See parameters of brick Annex C4 to Annex C39 | | | |

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

| Threaded rod | M8 | M8 / M10 | | | M12 / M16 | | |
|-------------------------------------------|---------------------|-----------------------------------------------|-------------------|----------|----------------------|---------------------|----------------------|
| Sleeve | [mm] | SH12x80 | SH16x85 | SH16x130 | SH16x130/ 330 | SH20x85 | SH20x130 SH20x200 |
| Nominal drill hole diameter | d_0 [mm] | 12 | 16 | 16 | 16 | 20 | 20 |
| Drill hole depth | h_o [mm] | 85 | 90 | 135 | $135 + t_{fix}^{1)}$ | 90 | 135 |
| Effective anchorage depth | h_{ef} [mm] | 80 | 85 | 130 | 130 | 85 | 130 |
| Minimum wall thickness | h_{min} [mm] | 115 | 115 | 195 | 195 | 115 | 195 |
| Diameter of clearance hole in the fixture | $d_f \leq$ [mm] | 9 | 9 (M8) / 12 (M10) | | | 14 (M12) / 18 (M16) | |
| Diameter of brush | $d_b \geq$ [mm] | 14 | 18 | | | 22 | |
| Max torque moment | $T_{inst,max}$ [Nm] | See parameters of brick Annex C4 to Annex C39 | | | | | |

¹⁾ $t_{fix} < 200$ mm

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Intended use

Installation parameters and cleaning brush

Annex B 5

Table B4: Minimum curing time

| Temperature in the base material | WIT-PM 200 tropical | | WIT-PM 200 | | WIT-PM 200 express | |
|----------------------------------|---------------------|------------------|-------------------|------------------|--------------------|------------------|
| | Max. working time | Min. curing time | Max. working time | Min. curing time | Max. working time | Min. curing time |
| -10°C to -6°C | | | | | 60 min | 4 h |
| -5°C to -1°C | | | 90 min | 6 h | 45 min | 2 h |
| 0°C to +4°C | | | 45 min | 3 h | 25 min | 80 min |
| +5°C to +9°C | | | 25 min | 2 h | 10 min | 45 min |
| +10°C to +14°C | 30 min | 5 h | 20 min | 100 min | 4 min | 25 min |
| +15°C to +19°C | 20 min | 210 min | 15 min | 80 min | 3 min | 20 min |
| +20°C to +29°C | 15 min | 145 min | 6 min | 45 min | 2 min | 15 min |
| +30°C to +34°C | 10 min | 80 min | 4 min | 25 min | | |
| +35°C to +39°C | 6 min | 45 min | 2 min | 20 min | | |
| +40°C to +44°C | 4 min | 25 min | | | | |
| +45°C | 2 min | 20 min | | | | |
| Cartridge temperature | +5°C to +45°C | | +5°C to +40°C | | -5°C to +30°C | |

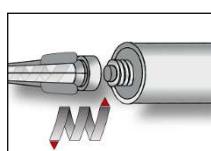
Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Intended use
Working and curing time

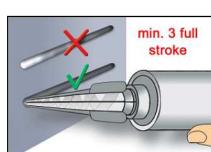
Annex B 6

Assembly instructions

Preparation of cartridge

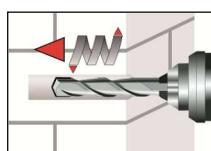


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. In case of a foil tube cartridge, cut off the clip before use. For every working interruption longer than the recommended working time (Table B4) as well as for new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

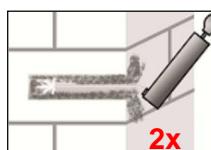


2. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes, for foil tube cartridges six full strokes, and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

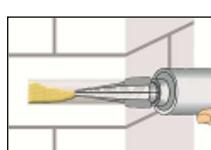
Installation in solid masonry (without sleeve)



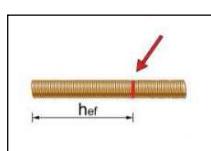
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drill method according to Annex C4 – C39, into the base material, with nominal drill hole diameter and bore hole depth acc. to the size and embedment depth required by the selected anchor. In case of aborted drill hole the drill hole shall be filled with mortar.



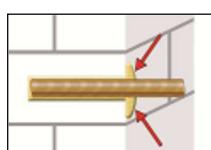
4. Blow out from the bottom of the drill hole two times. Attach the brush to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.



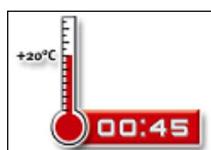
5. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. Observe the gel-/ working times given in Table B4.



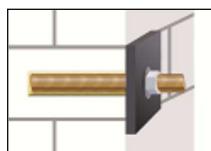
6. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



7. Be sure that the annular 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 time prior to applying any load or torque. Do not move or load the anchor until it is fully cured (attend Table B4).



9. After full curing, the fixture can be installed with up to the max. torque (see parameters of brick Annex C4 to Annex C38) by using a calibrated torque wrench.

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

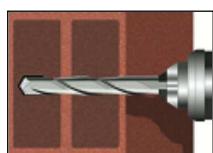
Intended use

Assembly instructions Solid masonry and Autoclaved Aerated Concrete without sleeve

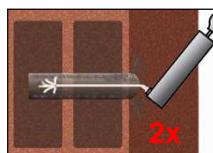
Annex B 7

Assembly Instructions (continuation)

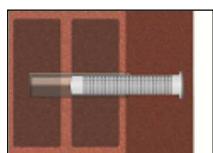
Installation in solid and hollow masonry (with sleeve)



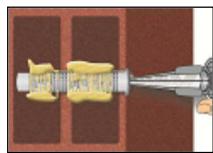
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drill method according to Annex C4 – C39, into the base material, with nominal drill hole diameter and drill hole depth acc. to the size and embedment depth required by the selected anchor. In case of aborted drill hole the drill hole shall be filled with mortar.



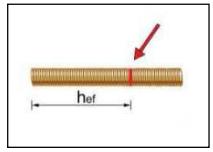
4. Blow from the bottom of the bore hole two times. Attach the brush to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.



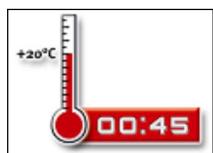
5. Insert the sleeve flush with the surface of the masonry. Only use sleeves that have the right length. Never cut the sleeve except the sleeve 16x130/330. For installing the sleeve 16x130/330 measure the required length of sleeve, cut the sleeve from the top and set the cap on it before pushing it through the fixing element.



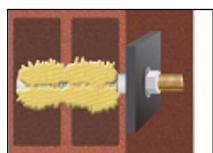
6. Starting from the bottom or back fill the sleeve with adhesive. For quantity of mortar attend cartridges label or installation instructions.
Observe the gel-/ working times given in Table B4.



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).



9. After full curing, the fixture can be installed with up to the max. torque (see parameters of brick Annex C4 to Annex C38) by using a calibrated torque wrench.

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Intended use

Assembly instructions Solid brick, Hollow brick and Solid lightweight Concrete with sleeve

Annex B 8

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

| Brick-Nr. | Installation & Use category | Anchor size | β-factor | |
|-----------|-----------------------------|----------------|------------------------------|------------------------------|
| | | | T _a : 24°C / 40°C | T _b : 50°C / 80°C |
| 1-3 | d/d | M8 | 0,82 | 0,70 |
| | | M10 | | |
| | | M12 | 0,70 | 0,60 |
| | | M16 | | |
| | w/w | M8 | 0,82 | 0,70 |
| | | M10 | 0,63 | 0,54 |
| | | M12 | 0,48 | 0,41 |
| | | M16 | | |
| 4-18 | d/d w/w | For all anchor | 0,72 | 0,50 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performances
β-factors for job site testing under tension load

Annex C 1

Table C2: Characteristic bending moment

| Size | | | M8 | M10 | M12 | M16 |
|------------------------------------------------------------------------------|------------|------|-----------|------------|------------|------------|
| Characteristic bending moment steel, property class 4.6 and 4.8 | $M_{Rk,s}$ | [Nm] | 15 | 30 | 52 | 133 |
| Characteristic bending moment steel, property class 5.6 and 5.8 | $M_{Rk,s}$ | [Nm] | 19 | 37 | 65 | 166 |
| Characteristic bending moment steel, property class 8.8 | $M_{Rk,s}$ | [Nm] | 30 | 60 | 105 | 266 |
| Characteristic bending moment Stainless steel A4 / HCR, property class 70 | $M_{Rk,s}$ | [Nm] | 26 | 52 | 92 | 232 |
| Characteristic bending moment Stainless steel A4 / HCR, property class 80 | $M_{Rk,s}$ | [Nm] | 30 | 60 | 105 | 266 |

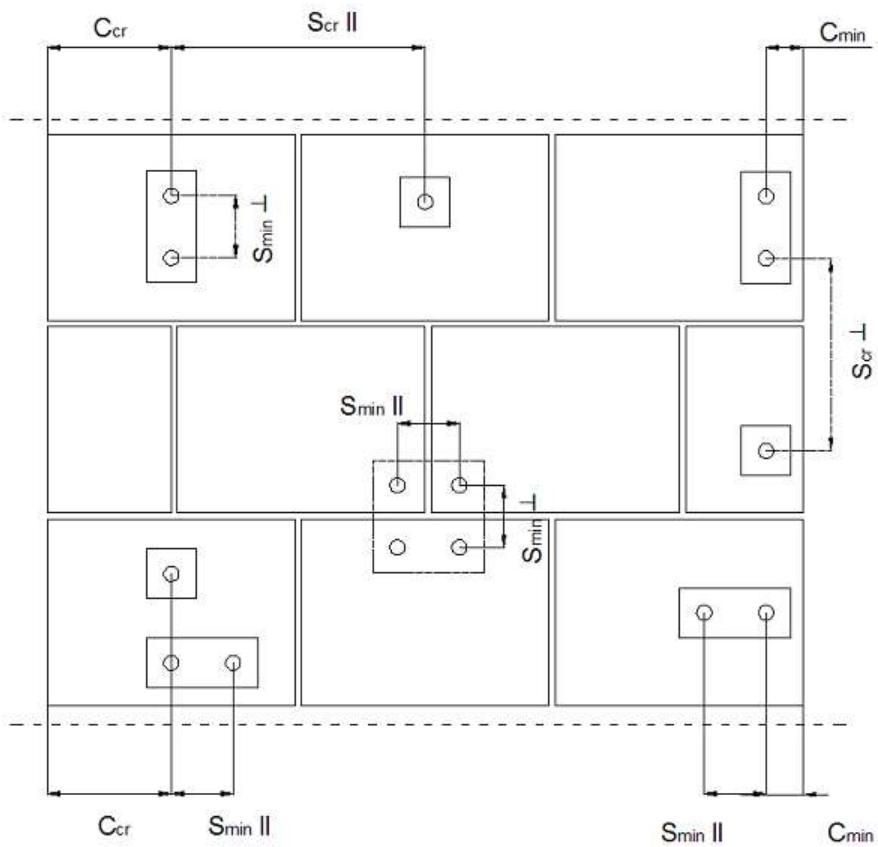
**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Performances

Characteristic resistance for bending moments

Annex C 2

Spacing and edge distances



- C_{cr} = Characteristic edge distance
 $S_{cr \parallel}$ = Characteristic spacing horizontal to the bed joint
 $S_{cr \perp}$ = Characteristic spacing vertical to the bed joint
 C_{min} = Minimum Edge distance
 $S_{min \parallel}$ = Minimum spacing horizontal to the bed joint
 $S_{min \perp}$ = Minimum spacing vertical to the bed joint

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performances
Edge distance and anchor spacing

Annex C 3

Brick type: Autoclaved Aerated Concrete – AAC2

Table C3: Description

| | | |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Autoclaved Aerated Concrete AAC2 |  |
| Bulk density [kg/dm ³] | 0,35 | |
| Compressive strength [N/mm ²] | 2 | |
| Code | EN 771-4 | |
| Producer (country code) | Ytong (CZ) | |
| Brick dimensions [mm] | 599 x 375 x 249 | |
| Drilling method | Rotary drilling | |

Table C4: Installation parameter (Edge and spacing distances)

| Anchor size | Effective anchorage depth | Edge distance | Spacing | Maximum installation torque moment |
|-------------|---------------------------|--------------------------------------------|------------------------------------------------------------|------------------------------------|
| | | | | T _{inst,max} |
| | h _{ef} | C _{min} = C _{cr} [mm] | S _{cr} = S _{min II} = S _{min ⊥} | [Nm] |
| M8 | 80 | 120 | 240 | 2 |
| M10 | 90 | 135 | 270 | |
| M12 | 100 | 150 | 300 | |
| M16 | 100 | 150 | 300 | |

Table C5: Displacement

| Effective anchorage depth h _{ef} | N | δ _{N0} | δ _{N∞} | V | δ _{v0} | δ _{v∞} |
|-------------------------------------------|----------------------|-----------------|-----------------|-----------------------------------------|-----------------|-----------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N _{Rk} | 0,29 | 0,58 | V _{Rk} 1,4 • γ _M | 1,23 | 1,84 |
| 90 | | 0,23 | 0,46 | | 0,87 | 1,31 |
| 100 | 1,4 • γ _M | 0,39 | 0,79 | | 1,29 | 1,94 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC2

Brick description, drawing,
Installation parameters, Displacements

Annex C 4

Brick type: Autoclaved Aerated Concrete AAC2

Table C6: Characteristic values of resistance under tension and shear loads

| Anchor size | Effective anchorage depth h _{ef} [mm] | Characteristic resistance | | | | | |
|----------------------------------------------------------------|----------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|
| | | Use category | | | | d/d w/d w/w | |
| | | d/d | | w/d w/w | | d/d w/d w/w | |
| | | 40°C / 24°C | 80°C / 50°C | 40°C / 24°C | 80°C / 50°C | For all temperature range | |
| | | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | V _{Rk} ²⁾ | |
| | | [kN] | | | | | |
| Compressive strength f_b ≥ 2 N/mm² | | | | | | | |
| M8 | 80 | 0,9 | 0,9 | 0,9 | 0,9 | 1,5 | |
| M10 | 90 | 0,9 | 0,9 | 0,9 | 0,75 | 2,0 | |
| M12 | 100 | 1,5 | 1,5 | 1,2 | 0,9 | 2,5 | |
| M16 | 100 | 1,5 | 1,5 | 1,2 | 0,9 | 3,5 | |

¹⁾ For design according ETAG 029, Annex C: N_{Rk} = N_{Rk,p} = N_{Rk,s}; Calculation N_{Rkp,b} see ETAG 029, Annex C

²⁾ For V_{Rk,s} see Annex C 2, Table C2; Calculation of V_{Rkp,b} and V_{Rk,c} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC2
Characteristic values of resistance under tension and shear load

Annex C 5

Brick type: Autoclaved Aerated Concrete AAC4
Table C7: Description

| | | |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Autoclaved Aerated Concrete AAC4 |  |
| Bulk density [kg/dm ³] | 0,50 | |
| Compressive strength [N/mm ²] | 4 | |
| Code | EN 771-4 | |
| Producer (country code) | Ytong (CZ) | |
| Brick dimensions [mm] | 499 x 375 x 249 | |
| Drilling method | Rotary drilling | |

Table C8: Installation parameter (Edge and spacing distances)

| Anchor size | Effective anchorage depth | Edge distance | Spacing | Maximum installation torque moment |
|-------------|---------------------------|------------------------------------|------------------------------------------------------------|------------------------------------|
| | | | | T _{inst,max} |
| | h _{ef} | C _{min} = C _{cr} | S _{cr} = S _{min II} = S _{min ⊥} | [Nm] |
| M8 | 80 | 120 | 240 | 2 |
| | 90 | 135 | 270 | |
| | 100 | 150 | 300 | |
| | 100 | 150 | 300 | |

Table C9: Displacement

| Effective anchorage depth h _{ef} | N | δ _{N0} | δ _{N∞} | V | δ _{v0} | δ _{v∞} |
|-------------------------------------------|-------------------------------------|-----------------|-----------------|-------------------------------------|-----------------|-----------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,23 | 0,47 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,23 | 1,84 |
| | | 0,58 | 1,17 | | 0,87 | 1,31 |
| | | 0,10 | 0,21 | | 1,29 | 1,94 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC4

Brick description, drawing,
Installation parameters, Displacement

Annex C 6

Brick type: Autoclaved Aerated Concrete AAC4

Table C10: Characteristic values of resistance under tension and shear loads

| Anchor size | Effective anchorage depth h _{ef} [mm] | Characteristic resistance | | | | | |
|----------------------------------------------------------------|----------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|
| | | Use category | | | | d/d w/d w/w | |
| | | d/d | | w/d w/w | | d/d w/d w/w | |
| | | 40°C / 24°C | 80°C / 50°C | 40°C / 24°C | 80°C / 50°C | For all temperature range | |
| | | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | N _{Rk} ¹⁾ | V _{Rk} ²⁾ | |
| | | [kN] | | | | | |
| Compressive strength f_b ≥ 4 N/mm² | | | | | | | |
| M8 | 80 | 0,9 | 0,9 | 0,9 | 0,9 | 1,5 | |
| M10 | 90 | 2,5 | 2,0 | 1,5 | 1,5 | 2,0 | |
| M12 | 100 | 2,5 | 2,0 | 2,0 | 1,5 | 2,5 | |
| M16 | 100 | 3,5 | 3,0 | 2,0 | 2,0 | 3,5 | |

¹⁾ For design according ETAG 029, Annex C: N_{Rk} = N_{Rkp} = N_{Rks}; Calculation N_{Rkp,b} see ETAG 029, Annex C

²⁾ For V_{Rk,s} see Annex C 2, Table C2; Calculation of V_{Rkp,b} and V_{Rk,c} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC4
Characteristic values of resistance under tension and shear load

Annex C 7

Brick type: Autoclaved Aerated Concrete AAC6

Table C11: Description

| | | |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Autoclaved Aerated Concrete AAC6 |  |
| Bulk density [kg/dm ³] | 0,60 | |
| Compressive strength [N/mm ²] | 6 | |
| Code | EN 771-4 | |
| Producer (country code) | Porit (DE) | |
| Brick dimensions [mm] | 499 x 240 x 249 | |
| Drilling method | Rotary drilling | |

Table C12: Installation parameter (Edge and spacing distances)

| Anchor size | Effective anchorage depth | Edge distance | Spacing | Maximum installation torque moment |
|-------------|---------------------------|------------------------------------|------------------------------------------------------------|------------------------------------|
| | | | | T _{inst,max} |
| | h _{ef} | C _{min} = C _{cr} | S _{cr} = S _{min II} = S _{min ⊥} | [Nm] |
| M8 | 80 | 120 | 240 | 2 |
| | 90 | 135 | 270 | |
| | 100 | 150 | 300 | |
| | 100 | 150 | 300 | |

Table C13: Displacement

| Effective anchorage depth h _{ef} | N | δ _{N0} | δ _{N∞} | V | δ _{v0} | δ _{v∞} |
|-------------------------------------------|-------------------------------------|-----------------|-----------------|-------------------------------------|-----------------|-----------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,54 | 1,09 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,32 | 0,48 |
| 90 | | 0,85 | 1,69 | | 1,49 | 2,23 |
| 100 | | 0,10 | 0,19 | | 1,67 | 2,50 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC6

Brick description, drawing,
Installation parameters, Displacements

Annex C 8

Brick type: Autoclaved Aerated Concrete AAC6

Table C14: Characteristic values of resistance under tension and shear loads

| Anchor size | 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 | | For all temperature range | |
| h_{ef} | | $N_{Rk}^{1)}$ | $N_{Rk}^{1)}$ | $N_{Rk}^{1)}$ | $N_{Rk}^{1)}$ | $V_{Rk}^{2)}$ | |
| [mm] | | [kN] | | | | | |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | | | |
| M8 | 80 | 2,0 | 2,0 | 2,0 | 2,0 | 5,5 | |
| M10 | 90 | 3,0 | 2,5 | 2,5 | 2,0 | 9,0 | |
| M12 | 100 | 4,5 | 3,5 | 3,0 | 2,5 | 9,0 | |
| M16 | 100 | 5,5 | 4,5 | 3,5 | 3,0 | 11,0 | |

³⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

⁴⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and V_{Rkc} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Autoclaved Aerated Concrete – AAC6
Characteristic values of resistance under tension and shear load

Annex C 9

Brick type: Calcium silicate solid brick KS-NF

Table C15: Description

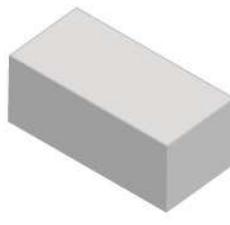
| | | |
|-------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Calcium silicate solid brick KS-NF |  |
| Bulk density [kg/dm ³] | 2,0 | |
| Compressive strength [N/mm ²] | 10, 20 or 27 | |
| Code | EN 771-2 | |
| Producer (country code) | Wernding (DE) | |
| Brick dimensions [mm] | 240 x 115 x 71 | |
| Drilling method | Hammer drilling | |

Table C16: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | | Spacing | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|--------------------|---------|------------------------------------|
| | | | h_{ef} | $C_{min} = C_{cr}$ | | |
| | | | [mm] | | | |
| M8 | - | 80 | 120 | 240 | | 10 |
| M10 | - | 90 | 135 | 270 | | 20 |
| M12 / M16 | - | 100 | 150 | 300 | | |
| M8 | SH 12x80 | 80 | 120 | 240 | 10 | |
| | SH 16x85 | 85 | 127 | 255 | | |
| M10 | SH 16x85 | 85 | 127 | 255 | | |
| M8 / M10 | SH 16x130 | 130 | 195 | 390 | 20 | |
| | SH 16x130/330 | 130 | 195 | 390 | | |
| M12 / M16 | SH 20x85 | 85 | 127 | 255 | 20 | |
| | SH 20x130 | 130 | 195 | 390 | | |
| | SH 20x200 | 200 | 300 | 600 | | |

Table C17: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|------|---------------|--------------------|------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | | 0,08 | 0,16 | | 3,07 | 4,61 |
| 85 | | 0,26 | 0,52 | | 1,46 | 2,19 |
| 90 | | 0,09 | 0,18 | | 1,50 | 2,25 |
| 100 | | 0,10 | 0,20 | | 1,03 | 1,53 |
| 130 ; 200 | | 0,22 | 0,44 | | 1,16 | 1,74 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Calcium solid brick KS-NF

Brick description, drawing,
Installation parameters, Displacements

Annex C 10

Brick type: Calcium silicate solid brick KS-NF

Table C18: 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 | For all temperature range |
| | | | h_{ef} [mm] | $N_{Rk}^1)$ [kN] | $V_{Rk}^2)$ |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 3,0 | 2,0 | 3,0 |
| M10 | - | 90 | 3,0 | 2,0 | 3,0 |
| M12 | - | 100 | 4,0 | 2,5 | 3,5 |
| M16 | - | 100 | 3,0 | 2,0 | 3,5 |
| M8 | SH 12x80 | 80 | 2,5 | 2,0 | 2,5 |
| | SH 16x85 | 85 | 2,5 | 2,0 | 3,0 |
| | SH16x130 / SH16x130/330 | 130 | 4,0 | 2,5 | 4,0 |
| M10 | SH 16x85 | 85 | 2,5 | 2,0 | 3,0 |
| | SH16x130 / SH16x130/330 | 130 | 4,5 | 3,0 | 4,0 |
| M12 / M16 | SH 20x85 | 85 | 2,5 | 2,0 | 3,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 4,5 | 2,5 | 4,0 |
| Compressive strength $f_b \geq 20 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 4,5 | 3,0 | 4,5 |
| M10 | - | 90 | 4,5 | 3,0 | 4,5 |
| M12 | - | 100 | 5,5 | 3,5 | 5,0 |
| M16 | - | 100 | 4,5 | 3,0 | 5,0 |
| M8 | SH 12x80 | 80 | 4,0 | 2,5 | 4,0 |
| | SH 16x85 | 85 | 4,0 | 2,5 | 4,5 |
| | SH16x130 / SH16x130/330 | 130 | 6,0 | 3,5 | 5,5 |
| M10 | SH 16x85 | 85 | 4,0 | 2,5 | 4,5 |
| | SH16x130 / SH16x130/330 | 130 | 6,0 | 4,0 | 5,5 |
| M12 / M16 | SH 20x85 | 85 | 4,0 | 2,5 | 5,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 6,0 | 4,0 | 5,5 |
| Compressive strength $f_b \geq 27 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 5,5 | 3,5 | 5,0 |
| M10 | - | 90 | 5,5 | 3,5 | 5,5 |
| M12 | - | 100 | 6,5 | 4,5 | 6,0 |
| M16 | - | 100 | 5,5 | 3,5 | 6,0 |
| M8 | SH 12x80 | 80 | 4,5 | 3,0 | 4,5 |
| | SH 16x85 | 85 | 4,5 | 3,0 | 5,5 |
| | SH16x130 / SH16x130/330 | 130 | 6,5 | 4,5 | 6,5 |
| M10 | SH 16x85 | 85 | 4,5 | 3,0 | 5,5 |
| | SH16x130 / SH16x130/330 | 130 | 6,5 | 4,5 | 6,5 |
| M12 / M16 | SH 20x85 | 85 | 4,5 | 3,0 | 5,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 6,5 | 4,5 | 6,5 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation N_{Rkp} see ETAG 029, Annex C

²⁾ For V_{Rks} see Annex C 2, Table C2; Calculation of V_{Rkp} and V_{Rkc} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Calcium solid brick KS-NF

Characteristic values of resistance under tension and shear load

Annex C 11

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

Table C19: Description

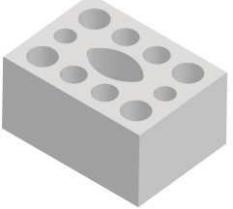
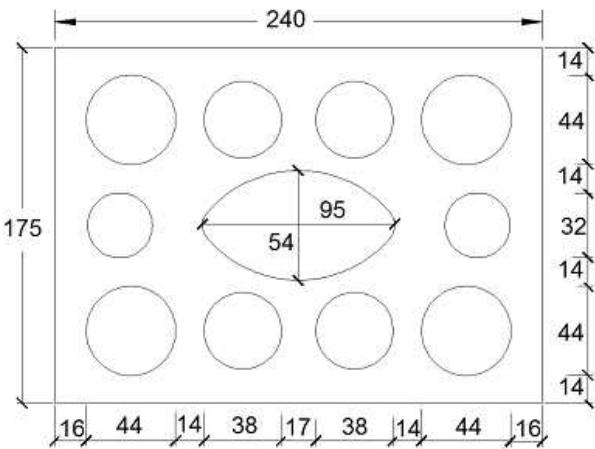
| | | |
|------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Calcium silicate hollow brick KS L-3DF |  |
| Bulk density [kg/dm ³] | 1,4 | |
| Compressive strength [N/mm ²] | 8, 12 or 14 | |
| Code | EN 771-2 | |
| Producer (country code) | Wemding (DE) | |
| Brick dimensions [mm] | 240 x 175 x 113 | |
| Drilling method | Rotary drilling | |
|  | | |

Table C20: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|--------------------|------------------------------|------------------------------------|
| | | | | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | |
| | | | | [mm] | [mm] | |
| M8 | SH 12x80 | 80 | | | | |
| M8 / M10 | SH 16x85 | 85 | 100 | 240 | 113 | 8 |
| | SH 16x130 | 130 | | | | |
| | SH 16x130/330 | 130 | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | | | |
| | SH 20x130 | 130 | | | | |
| | SH 20x200 | 200 | | | | |

Table C21: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,36 | 0,73 | V_{Rk} | 0,82 | 1,23 |
| 85 | | 1,62 | 3,24 | | 1,83 | 2,75 |
| 130 ; 200 | $1,4 \cdot \gamma_M$ | 1,70 | 3,40 | $1,4 \cdot \gamma_M$ | 1,98 | 2,98 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Calcium hollow brick KS L-3DF

Brick description, drawing,
Installation parameters, Displacements

Annex C 12

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

Table C22: 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 |
| | | h_{ef} [mm] | | $N_{Rk}^1)$ [kN] | $N_{Rk}^1)$ $V_{Rk}^2)$ |
| Compressive strength $f_b \geq 8 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,5 | 0,9 | 2,0 |
| | SH 16x85 | 85 | 1,5 | 0,9 | 2,5 |
| | SH 16x130 | 130 | 2,5 | 1,5 | 3,0 |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 3,0 |
| M10 | SH 16x85 | 85 | 1,5 | 0,9 | 2,5 |
| | SH 16x130 | 130 | 2,5 | 1,5 | 3,0 |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 3,0 |
| M12 | SH 20x85 | 85 | 1,5 | 0,9 | 3,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 2,5 | 1,5 | 3,0 |
| M16 | SH 20x85 | 85 | 1,5 | 0,9 | 3,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 2,5 | 1,5 | 4,0 |
| Compressive strength $f_b \geq 12 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 2,0 | 1,2 | 2,5 |
| | SH 16x85 | 85 | 2,0 | 1,2 | 3,5 |
| | SH 16x130 | 130 | 3,5 | 2,0 | 4,5 |
| | SH 16x130/330 | 130 | 3,5 | 2,0 | 4,5 |
| M10 | SH 16x85 | 85 | 2,0 | 1,2 | 3,5 |
| | SH 16x130 | 130 | 3,5 | 2,0 | 4,5 |
| | SH 16x130/330 | 130 | 3,5 | 2,0 | 4,5 |
| M12 | SH 20x85 | 85 | 2,0 | 1,2 | 3,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 3,5 | 2,0 | 4,5 |
| M16 | SH 20x85 | 85 | 2,0 | 1,2 | 3,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 3,5 | 2,0 | 5,0 |
| Compressive strength $f_b \geq 14 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 2,5 | 1,5 | 3,0 |
| | SH 16x85 | 85 | 2,5 | 1,5 | 4,0 |
| | SH 16x130 | 130 | 4,0 | 3,0 | 5,0 |
| | SH 16x130/330 | 130 | 4,0 | 3,0 | 5,0 |
| M10 | SH 16x85 | 85 | 2,5 | 1,5 | 4,0 |
| | SH 16x130 | 130 | 4,0 | 3,0 | 5,0 |
| | SH 16x130/330 | 130 | 4,0 | 3,0 | 5,0 |
| M12 | SH 20x85 | 85 | 2,5 | 1,5 | 4,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 4,0 | 3,0 | 5,0 |
| M16 | SH 20x85 | 85 | 2,5 | 1,5 | 4,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 4,0 | 3,0 | 6,0 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

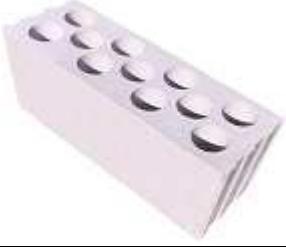
Performance Calcium hollow brick KS L-3DF

Characteristic values of resistance under tension and shear load

Annex C 13

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

Table C23: Description

| | | |
|-------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Calcium silicate hollow brick KS L-12DF |  |
| Bulk density [kg/dm ³] | 1,40 | |
| Compressive strength [N/mm ²] | 10, 12 or 16 | |
| Code | EN 771-2 | |
| Producer (country code) | Wemding (DE) | |
| Brick dimensions [mm] | 498 x 175 x 238 | |
| Drilling method | Rotary drilling | |

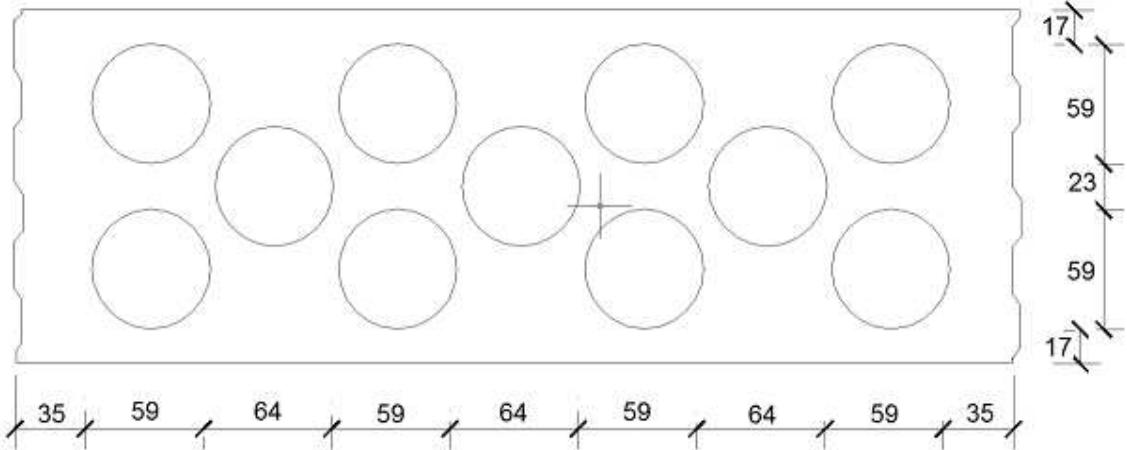


Table C24: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|----------|--------------------|------------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | $S_{cr} = S_{min\ II}$ | |
| | | | | [mm] | [mm] | [mm] | [mm] |
| M8 | SH 12x80 | 80 | | | | | 2 |
| M8 / M10 | SH 16x85 | 85 | 100 | 498 | 238 | | 4 |
| | SH 16x130 | 130 | | | | | |
| | SH 16x130/330 | 130 | | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | | | | |
| | SH 20x130 | 130 | | | | | |
| | SH 20x200 | 200 | | | | | |

Table C25: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,21 | 0,42 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,77 | 2,66 |
| 85 | | 0,13 | 0,26 | | 3,89 | 5,83 |
| 130 | | 0,22 | 0,44 | | 4,35 | 6,52 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Calcium hollow brick KS L-12DF

Brick description, drawing,
Installation parameters, Displacement

Annex C 14

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

Table C26: 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 | For all temperature range |
| | | | h_{ef} | $N_{Rk}^1)$ | $N_{Rk}^1)$ |
| | | [mm] | | [kN] | |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,4 | 0,3 | 3,0 |
| | SH 16x85 | 85 | 1,2 | 0,9 | 6,0 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 7,0 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 7,0 |
| M10 | SH 16x85 | 85 | 1,2 | 0,9 | 6,0 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 7,0 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 7,0 |
| M12 / M16 | SH 20x85 | 85 | 1,2 | 0,9 | 6,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 3,5 | 2,5 | 7,0 |
| Compressive strength $f_b \geq 12 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,4 | 0,3 | 3,5 |
| | SH 16x85 | 85 | 1,5 | 0,9 | 7,0 |
| | SH 16x130 | 130 | 4,5 | 3,0 | 8,0 |
| | SH 16x130/330 | 130 | 4,5 | 3,0 | 8,0 |
| M10 | SH 16x85 | 85 | 1,5 | 0,9 | 7,0 |
| | SH 16x130 | 130 | 4,5 | 3,0 | 8,0 |
| | SH 16x130/330 | 130 | 4,5 | 3,0 | 8,0 |
| M12 / M16 | SH 20x85 | 85 | 1,5 | 0,9 | 7,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 4,5 | 3,0 | 8,0 |
| Compressive strength $f_b \geq 16 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,5 | 0,4 | 4,0 |
| | SH 16x85 | 85 | 2,0 | 1,2 | 9,0 |
| | SH 16x130 | 130 | 5,5 | 3,5 | 10,0 |
| | SH 16x130/330 | 130 | 5,5 | 3,5 | 10,0 |
| M10 | SH 16x85 | 85 | 2,0 | 1,2 | 9,0 |
| | SH 16x130 | 130 | 5,5 | 3,5 | 10,0 |
| | SH 16x130/330 | 130 | 5,5 | 3,5 | 10,0 |
| M12 / M16 | SH 20x85 | 85 | 2,0 | 1,2 | 8,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 5,5 | 3,5 | 10,0 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and V_{Rkc} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Calcium hollow brick KS L-12DF

Characteristic values of resistance under tension and shear load

Annex C 15

Brick type: Clay solid brick Mz-DF

Table C27: Description

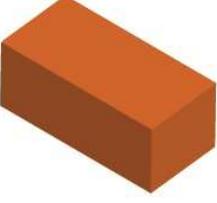
| | | |
|-------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay solid brick Mz-DF |  |
| Bulk density [kg/dm ³] | 1,64 | |
| Compressive strength [N/mm ²] | 10, 20 or 28 | |
| Code | EN 771-1 | |
| Producer (country code) | Unipor (DE) | |
| Brick dimensions [mm] | 240 x 115 x 55 | |
| Drilling method | Hammer drilling | |

Table C28: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | Maximum installation torque moment |
|------------------|---------------|-----------------|---------------|--------------------|----------------------------------------------|
| | | | h_{ef} | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel} = S_{min \perp}$ |
| | | | [mm] | | |
| M8 | - | 80 | 120 | 240 | 6 |
| | SH 12x80 | 80 | 120 | 240 | |
| | SH 16x85 | 85 | 127 | 255 | |
| | SH 16x130 | 130 | 195 | 390 | |
| | SH 16x130/330 | 130 | 195 | 390 | |
| M10 | - | 90 | 135 | 270 | 10 |
| M12 / M16 | - | 100 | 150 | 300 | |
| M10 | SH 16x85 | 85 | 127 | 255 | |
| | SH 16x130 | 130 | 195 | 390 | |
| | SH 16x130/330 | 130 | 195 | 390 | |
| M12 / M16 | SH 20x85 | 85 | 127 | 255 | 8 |
| | SH 20x130 | 130 | 195 | 390 | |
| | SH 20x200 | 200 | 300 | 600 | |

Table C29: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,12 | 0,24 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 2,27 | 3,41 |
| 85 | | 0,13 | 0,26 | | 1,22 | 1,83 |
| 90 | | 0,06 | 0,13 | | 0,71 | 1,06 |
| 100 | | 0,18 | 0,35 | | 0,43 | 0,64 |
| 130 ; 200 | | 0,42 | 0,85 | | 1,22 | 1,83 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay solid brick Mz-DF

Brick description, drawing,
Installation parameters, Displacements

Annex C 16

Brick type: Clay solid brick Mz-DF

Table C30: 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 | For all temperature range |
| | | | h_{ef} | $N_{Rk}^1)$ | $V_{Rk}^2)$ |
| | | [mm] | | [kN] | |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 1,5 | 1,2 | 3,0 |
| M10 | - | 90 | 1,5 | 1,2 | 3,5 |
| M12 | - | 100 | 1,5 | 0,9 | 5,0 |
| M16 | - | 100 | 2,5 | 1,5 | 5,0 |
| M8 | SH 12x80 | 80 | 2,0 | 1,5 | 3,0 |
| | SH 16x85 | 85 | 2,0 | 1,5 | 3,0 |
| | SH 16x130 / SH 16x130/330 | 130 | 3,0 | 2,0 | 3,0 |
| M10 | SH 16x85 | 85 | 2,0 | 1,5 | 3,5 |
| | SH 16x130 / SH 16x130/330 | 130 | 3,0 | 2,0 | 3,5 |
| M12 / M16 | SH 20x85 | 85 | 2,0 | 1,5 | 3,5 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 3,0 | 2,0 | 3,5 |
| Compressive strength $f_b \geq 20 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 2,5 | 1,5 | 4,5 |
| M10 | - | 90 | 2,5 | 1,5 | 5,5 |
| M12 | - | 100 | 2,0 | 1,5 | 7,5 |
| M16 | - | 100 | 3,5 | 2,5 | 7,5 |
| M8 | SH 12x80 | 80 | 3,0 | 2,0 | 4,0 |
| | SH 16x85 | 85 | 3,0 | 2,0 | 4,5 |
| | SH 16x130 / SH 16x130/330 | 130 | 4,0 | 2,5 | 4,5 |
| M10 | SH 16x85 | 85 | 3,0 | 2,0 | 5,0 |
| | SH 16x130 / SH 16x130/330 | 130 | 4,5 | 3,0 | 5,0 |
| M12 / M16 | SH 20x85 | 85 | 3,0 | 2,0 | 5,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 4,5 | 3,0 | 5,0 |
| Compressive strength $f_b \geq 28 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 3,0 | 2,0 | 5,5 |
| M10 | - | 90 | 3,0 | 2,0 | 6,5 |
| M12 | - | 100 | 2,5 | 1,5 | 9,0 |
| M16 | - | 100 | 4,5 | 3,0 | 9,0 |
| M8 | SH 12x80 | 80 | 3,5 | 2,5 | 5,0 |
| | SH 16x85 | 85 | 3,5 | 2,5 | 5,0 |
| | SH 16x130 / SH 16x130/330 | 130 | 5,0 | 3,5 | 5,0 |
| M10 | SH 16x85 | 85 | 3,5 | 2,5 | 6,0 |
| | SH 16x130 / SH 16x130/330 | 130 | 5,0 | 3,5 | 6,0 |
| M12 / M16 | SH 20x85 | 85 | 3,5 | 2,5 | 6,0 |
| | SH 20x130 / SH 20x200 | 130 / 200 | 5,0 | 3,5 | 6,0 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay solid brick Mz-DF

Characteristic values of resistance under tension and shear load

Annex C 17

Brick type: Clay hollow brick HLz-16DF

Table C31: Description

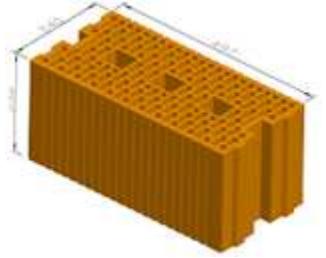
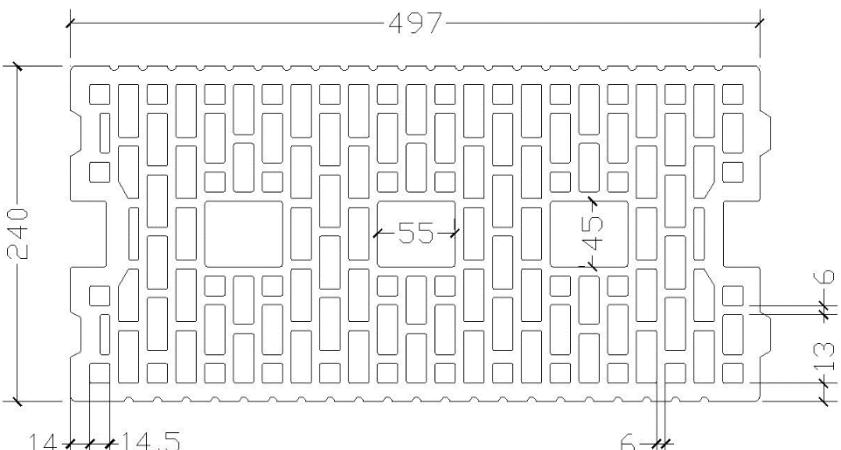
| | | |
|------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick HLz-16DF |  |
| Bulk density [kg/dm ³] | 0,83 | |
| Compressive strength [N/mm ²] | 6, 9, 12 or 14 | |
| Code | EN 771-1 | |
| Producer (country code) | Unipor (DE) | |
| Brick dimensions [mm] | 497 x 240 x 238 | |
| Drilling method | Rotary drilling | |
|  | | |

Table C32: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth h_{ef} | Edge distance $C_{min} = C_{cr}$ | Spacing | | Maximum installation torque moment $T_{inst,max}$ |
|-------------|---------------|-----------------------------|-------------------------------------|------------------------------|-----------------|------------------------------------------------------|
| | | | | $S_{cr} = S_{min \parallel}$ | $S_{min \perp}$ | |
| | | | | [mm] | | [Nm] |
| M8 | SH 12x80 | 80 | 100 | 497 | 238 | 6 |
| M8 / M10 | SH 16x85 | 85 | | | | |
| | SH 16x130 | 130 | | | | |
| | SH 16x130/330 | 130 | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | 497 | 238 | 6 |
| | SH 20x130 | 130 | | | | |
| | SH 20x200 | 200 | | | | |

Table C33: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,27 | 0,55 | V_{Rk} | 1,02 | 1,53 |
| 85 | | 0,55 | 1,10 | | 2,14 | 3,22 |
| 130 ; 200 | $1,4 \cdot \gamma_M$ | 0,19 | 0,38 | $1,4 \cdot \gamma_M$ | 2,26 | 3,39 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick HLz-16DF

Brick description, drawing,
Installation parameters, Displacements

Annex C 18

Brick type: Clay hollow brick HLz-16DF

Table C34: 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 | For all temperature range |
| | | | h_{ef} [mm] | $N_{Rk}^1)$ [kN] | $V_{Rk}^2)$ |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,75 | 2,5 |
| | SH 16x85 | 85 | 1,5 | 1,2 | 4,0 |
| | SH 16x130 | 130 | 2,5 | 1,5 | 4,0 |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 4,0 |
| M10 | SH 16x85 | 85 | 1,5 | 1,2 | 4,0 |
| | SH 16x130 | 130 | 2,5 | 1,5 | 6,0 |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 6,0 |
| M12 / M16 | SH 20x85 | 85 | 2,0 | 1,5 | 4,0 |
| | SH 20x130 / SH 20x200 | 130/ 200 | 2,5 | 1,5 | 6,0 |
| Compressive strength $f_b \geq 9 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,9 | 3,0 |
| | SH 16x85 | 85 | 2,0 | 1,5 | 4,5 |
| | SH 16x130 | 130 | 3,0 | 2,0 | 5,0 |
| | SH 16x130/330 | 130 | 3,0 | 2,0 | 5,0 |
| M10 | SH 16x85 | 85 | 2,0 | 1,5 | 5,0 |
| | SH 16x130 | 130 | 3,0 | 2,0 | 7,0 |
| | SH 16x130/330 | 130 | 3,0 | 2,0 | 7,0 |
| M12 / M16 | SH 20x85 | 85 | 2,5 | 2,0 | 5,0 |
| | SH 20x130 / SH 20x200 | 130/ 200 | 3,0 | 2,0 | 7,0 |
| Compressive strength $f_b \geq 12 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,5 | 1,2 | 3,5 |
| | SH 16x85 | 85 | 2,5 | 1,5 | 5,5 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 6,0 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 6,0 |
| M10 | SH 16x85 | 85 | 2,5 | 1,5 | 6,0 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 8,0 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 8,0 |
| M12 / M16 | SH 20x85 | 85 | 3,5 | 2,0 | 6,0 |
| | SH 20x130 / SH 20x200 | 130/ 200 | 3,5 | 2,5 | 8,0 |
| Compressive strength $f_b \geq 14 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,5 | 1,2 | 4,0 |
| | SH 16x85 | 85 | 2,5 | 2,0 | 6,0 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 6,5 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 6,5 |
| M10 | SH 16x85 | 85 | 2,5 | 2,0 | 6,0 |
| | SH 16x130 | 130 | 3,5 | 2,5 | 9,0 |
| | SH 16x130/330 | 130 | 3,5 | 2,5 | 9,0 |
| M12 / M16 | SH 20x85 | 85 | 3,5 | 2,0 | 6,0 |
| | SH 20x130 / SH 20x200 | 130/ 200 | 3,5 | 2,5 | 9,0 |
| <p>1) For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation N_{Rkp} see ETAG 029, Annex C</p> <p>2) For V_{Rks} see Annex C 2, Table C2; Calculation of V_{Rkp} and V_{Rkc} see ETAG 029, Annex C</p> | | | | | |
| <p>Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry</p> | | | | | |
| <p>Performance Clay hollow brick HLz-16DF Characteristic values of resistance under tension and shear load</p> | | | | | |
| Annex C 19 | | | | | |

Brick type: Clay hollow brick Porotherm Homebric

Table C35: Description

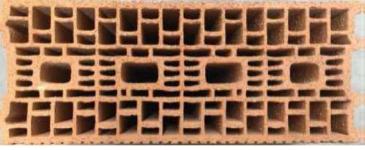
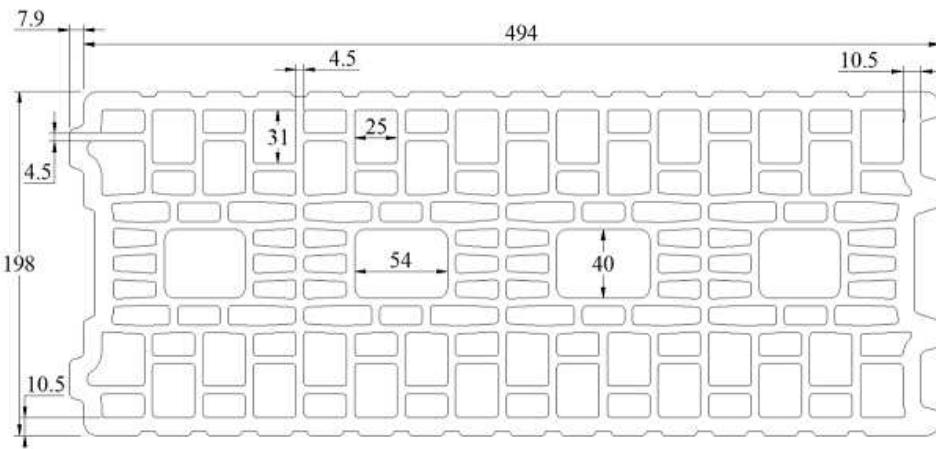
| | | |
|------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick Porotherm Homebric |  |
| Bulk density [kg/dm ³] | 0,68 | |
| Compressive strength [N/mm ²] | 6, 8 or 10 | |
| Code | EN 771-1 | |
| Producer (country code) | Wienerberger (FR) | |
| Brick dimensions [mm] | 500 x 200 x 299 | |
| Drilling method | Rotary drilling | |
|  | | |

Table C36: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|----------|--------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | |
| | | | | [mm] | [mm] | |
| M8 | SH 12x80 | 80 | 100 | 500 | 299 | 2 |
| M8 / M10 | SH 16x85 | 85 | | | | 6 |
| | SH 16x130 | 130 | | | | |
| | SH 16x130/330 | 130 | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | 500 | 299 | 6 |
| | SH 20x130 | 130 | | | | |

Table C37: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,65 | 1,29 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,26 | 1,89 |
| 85 | | 0,52 | 1,04 | | 1,89 | 2,84 |
| 130 | | 0,45 | 0,90 | | 1,48 | 2,23 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Porotherm Homebric

Brick description, drawing,
Installation parameters, Displacements

Annex C 20

Brick type: Clay hollow brick Porotherm Homebric

Table C38: 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 | For all temperature range |
| | | | h_{ef} [mm] | $N_{Rk}^1)$ [kN] | $V_{Rk}^2)$ |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,75 | 2,0 |
| | SH 16x85 | 85 | 1,2 | 0,75 | 2,0 |
| | SH 16x130 | 130 | 1,5 | 0,9 | 2,5 |
| | SH 16x130/330 | 130 | 1,5 | 0,9 | 2,5 |
| M10 | SH 16x85 | 85 | 1,2 | 0,75 | 2,0 |
| | SH 16x130 | 130 | 1,5 | 0,9 | 2,5 |
| | SH 16x130/330 | 130 | 1,5 | 0,9 | 2,5 |
| M12 | SH 20x85 | 85 | 1,2 | 0,75 | 3,0 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 3,0 |
| M16 | SH 20x85 | 85 | 1,2 | 0,75 | 3,0 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 3,0 |
| Compressive strength $f_b \geq 8 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,9 | 2,5 |
| | SH 16x85 | 85 | 1,2 | 0,9 | 2,5 |
| | SH 16x130 | 130 | 1,5 | 1,2 | 3,0 |
| | SH 16x130/330 | 130 | 1,5 | 1,2 | 3,0 |
| M10 | SH 16x85 | 85 | 1,2 | 0,9 | 2,5 |
| | SH 16x130 | 130 | 1,5 | 1,2 | 3,0 |
| | SH 16x130/330 | 130 | 1,5 | 1,2 | 3,0 |
| M12 | SH 20x85 | 85 | 1,2 | 0,9 | 3,5 |
| | SH 20x130 | 130 | 1,5 | 1,2 | 3,5 |
| M16 | SH 20x85 | 85 | 1,2 | 0,9 | 3,5 |
| | SH 20x130 | 130 | 1,5 | 1,2 | 3,5 |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,9 | 3,0 |
| | SH 16x85 | 85 | 1,5 | 0,9 | 3,0 |
| | SH 16x130 | 130 | 2,0 | 1,2 | 3,5 |
| | SH 16x130/330 | 130 | 2,0 | 1,2 | 3,5 |
| M10 | SH 16x85 | 85 | 1,5 | 0,9 | 3,0 |
| | SH 16x130 | 130 | 2,0 | 1,2 | 3,5 |
| | SH 16x130/330 | 130 | 2,0 | 1,2 | 3,5 |
| M12 | SH 20x85 | 85 | 1,5 | 0,9 | 4,0 |
| | SH 20x130 | 130 | 2,0 | 1,2 | 4,0 |
| M16 | SH 20x85 | 85 | 1,5 | 0,9 | 4,0 |
| | SH 20x130 | 130 | 2,0 | 1,2 | 4,0 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Porotherm Homebric

Characteristic values of resistance under tension and shear load

Annex C 21

Brick type: Clay hollow brick BGV Thermo

Table C39: Description

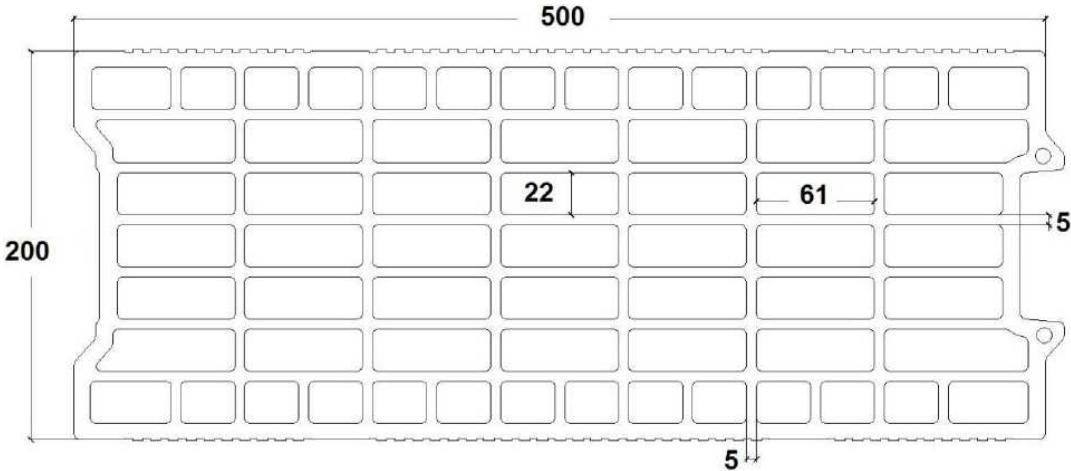
| | | |
|-------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick BGV Thermo |  |
| Bulk density [kg/dm ³] | 0,62 | |
| Compressive strength [N/mm ²] | 4, 6 or 10 | |
| Code | EN 771-1 | |
| Producer (country code) | Leroux (FR) | |
| Brick dimensions [mm] | 500 x 200 x 314 | |
| Drilling method | Rotary drilling | |
|  | | |

Table C40: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | | Maximum installation torque moment |
|------------------|---------------|-----------------|---------------|----------|--------------------|------------------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | |
| | | | | [mm] | [mm] | $S_{min \perp}$ | |
| M8 | SH 12x80 | 80 | 100 | 500 | 314 | 2 | |
| M8 / M10 | SH 16x85 | 85 | | | | | |
| | SH 16x130 | 130 | | | | | |
| | SH 16x130/330 | 130 | | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | 500 | 314 | 4 | |
| | SH 20x130 | 130 | | | | | |

Table C41: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,27 | 0,54 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,21 | 1,81 |
| 85 | | 0,39 | 0,77 | | 2,00 | 3,01 |
| 130 | | 0,16 | 0,32 | | 1,60 | 2,39 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick BGV Thermo

Brick description, drawing,
Installation parameters, Displacements

Annex C 22

Brick type: Clay hollow brick BGV Thermo

Table C42: 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 | | For all temperature range | |
| | | h_{ef} | $N_{Rk}^1)$ | | $V_{Rk}^2)$ | |
| | | [mm] | [kN] | | | |
| Compressive strength $f_b \geq 4 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,5 | 0,4 | 2,0 | |
| | SH 16x85 | 85 | 0,75 | 0,5 | 2,0 | |
| | SH 16x130 | 130 | 0,9 | 0,75 | 2,5 | |
| | SH 16x130/330 | 130 | 0,9 | 0,75 | 2,5 | |
| M10 | SH 16x85 | 85 | 0,75 | 0,5 | 2,0 | |
| | SH 16x130 | 130 | 1,2 | 0,75 | 2,5 | |
| | SH 16x130/330 | 130 | 1,2 | 0,75 | 2,5 | |
| M12 | SH 20x85 | 85 | 0,75 | 0,5 | 2,0 | |
| | SH 20x130 | 130 | 1,2 | 0,75 | 2,5 | |
| M16 | SH 20x85 | 85 | 0,9 | 0,6 | 2,0 | |
| | SH 20x130 | 130 | 1,2 | 0,75 | 2,5 | |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,6 | 0,5 | 2,0 | |
| | SH 16x85 | 85 | 0,9 | 0,6 | 2,5 | |
| | SH 16x130 | 130 | 1,2 | 0,9 | 3,0 | |
| | SH 16x130/330 | 130 | 1,2 | 0,9 | 3,0 | |
| M10 | SH 16x85 | 85 | 0,9 | 0,6 | 2,5 | |
| | SH 16x130 | 130 | 1,5 | 0,9 | 3,0 | |
| | SH 16x130/330 | 130 | 1,5 | 0,9 | 3,0 | |
| M12 | SH 20x85 | 85 | 0,9 | 0,6 | 3,0 | |
| | SH 20x130 | 130 | 1,5 | 0,9 | 3,0 | |
| M16 | SH 20x85 | 85 | 1,2 | 0,75 | 3,0 | |
| | SH 20x130 | 130 | 1,5 | 0,9 | 3,0 | |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,6 | 3,0 | |
| | SH 16x85 | 85 | 1,2 | 0,9 | 3,5 | |
| | SH 16x130 | 130 | 1,5 | 1,2 | 4,0 | |
| | SH 16x130/330 | 130 | 1,5 | 1,2 | 4,0 | |
| M10 | SH 16x85 | 85 | 1,2 | 0,9 | 3,5 | |
| | SH 16x130 | 130 | 1,5 | 1,2 | 4,0 | |
| | SH 16x130/330 | 130 | 1,5 | 1,2 | 4,0 | |
| M12 | SH 20x85 | 85 | 1,2 | 0,75 | 3,5 | |
| | SH 20x130 | 130 | 1,5 | 1,2 | 4,0 | |
| M16 | SH 20x85 | 85 | 1,5 | 0,9 | 3,5 | |
| | SH 20x130 | 130 | 1,5 | 1,2 | 4,0 | |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rk,p} = N_{Rk,s}$; Calculation $N_{Rk,pb}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick BGV Thermo

Characteristic values of resistance under tension and shear load

Annex C 23

Brick type: Clay hollow brick Calibric Th

Table C43: Description

| | | |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick Calibric Th |  |
| Bulk density [kg/dm ³] | 0,62 | |
| Compressive strength [N/mm ²] | 6, 9 or 12 | |
| Code | EN 771-1 | |
| Producer (country code) | Terreal (FR) | |
| Brick dimensions [mm] | 500 x 200 x 314 | |
| Drilling method | Rotary drilling | |

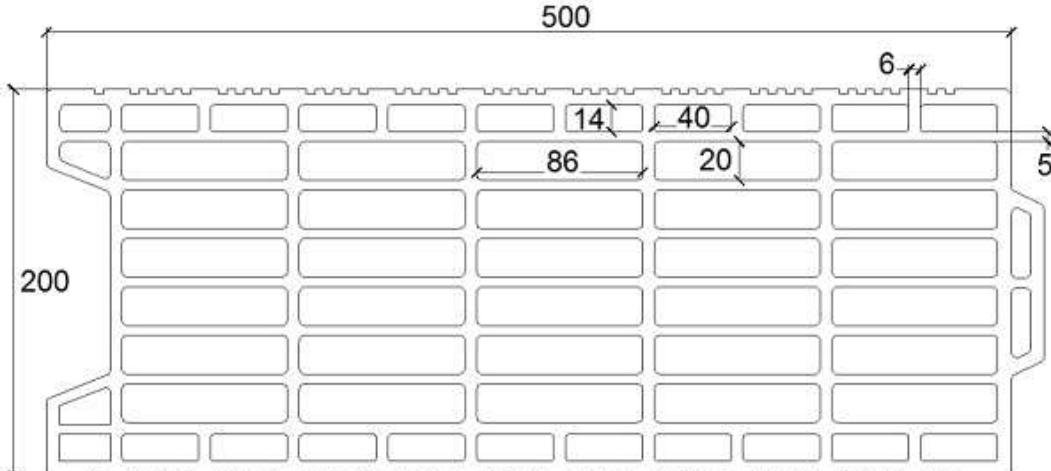


Table C44: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment |
|------------------|---------------|-----------------|---------------|----------|------------------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | |
| | | | | [mm] | $S_{cr} = S_{min \parallel}$ | |
| M8 | SH 12x80 | 80 | 100 | 500 | 314 | 2 |
| M8 / M10 | SH 16x85 | 85 | | | | |
| | SH 16x130 | 130 | | | | |
| | SH 16x130/330 | 130 | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | 500 | 314 | 2 |
| | SH 20x130 | 130 | | | | |

Table C45: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,48 | 0,96 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,18 | 1,78 |
| 85 | | 0,49 | 0,98 | | 2,20 | 3,30 |
| 130 | 1,4 • γ_M | 0,37 | 0,74 | | 2,31 | 3,46 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Calibric Th

Brick description, drawing,
Installation parameters, Displacements

Annex C 24

Brick type: Clay hollow brick Calibric Th

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 | | |
| | | | 40°C / 24°C | 80°C / 50°C | For all temperature range |
| | | | h_{ef} [mm] | $N_{Rk}^1)$ [kN] | $V_{Rk}^2)$ |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,75 | 0,5 | 2,5 |
| | SH 16x85 | 85 | 0,75 | 0,5 | 3,5 |
| | SH 16x130 | 130 | 0,9 | 0,6 | 3,5 |
| | SH 16x130/330 | 130 | 0,9 | 0,6 | 3,5 |
| M10 | SH 16x85 | 85 | 0,75 | 0,5 | 3,5 |
| | SH 16x130 | 130 | 0,9 | 0,6 | 3,5 |
| | SH 16x130/330 | 130 | 0,9 | 0,6 | 3,5 |
| M12 | SH 20x85 | 85 | 0,75 | 0,5 | 6,0 |
| | SH 20x130 | 130 | 0,9 | 0,6 | 6,0 |
| M16 | SH 20x85 | 85 | 1,2 | 0,75 | 6,0 |
| | SH 20x130 | 130 | 1,2 | 0,75 | 6,0 |
| Compressive strength $f_b \geq 9 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,6 | 3,5 |
| | SH 16x85 | 85 | 0,9 | 0,6 | 4,5 |
| | SH 16x130 | 130 | 1,2 | 0,75 | 4,5 |
| | SH 16x130/330 | 130 | 1,2 | 0,75 | 4,5 |
| M10 | SH 16x85 | 85 | 0,9 | 0,6 | 4,5 |
| | SH 16x130 | 130 | 1,2 | 0,9 | 4,5 |
| | SH 16x130/330 | 130 | 1,2 | 0,9 | 4,5 |
| M12 | SH 20x85 | 85 | 0,9 | 0,6 | 7,5 |
| | SH 20x130 | 130 | 1,2 | 0,9 | 7,5 |
| M16 | SH 20x85 | 85 | 1,5 | 0,9 | 7,5 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 7,5 |
| Compressive strength $f_b \geq 12 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,75 | 4,0 |
| | SH 16x85 | 85 | 0,9 | 0,75 | 5,5 |
| | SH 16x130 | 130 | 1,2 | 0,9 | 5,5 |
| | SH 16x130/330 | 130 | 1,2 | 0,9 | 5,5 |
| M10 | SH 16x85 | 85 | 0,9 | 0,75 | 5,5 |
| | SH 16x130 | 130 | 1,5 | 0,9 | 5,5 |
| | SH 16x130/330 | 130 | 1,5 | 0,9 | 5,5 |
| M12 | SH 20x85 | 85 | 0,9 | 0,75 | 8,5 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 8,5 |
| M16 | SH 20x85 | 85 | 1,5 | 1,2 | 8,5 |
| | SH 20x130 | 130 | 1,5 | 1,2 | 8,5 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Calibric Th

Characteristic values of resistance under tension and shear load

Annex C 25

Brick type: Clay hollow brick Urbanbrick

Table C47: Description

| | | |
|-------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick Urbanbrick |  |
| Bulk density [kg/dm ³] | 0,74 | |
| Compressive strength [N/mm ²] | 6 or 9 | |
| Code | EN 771-1 | |
| Producer (country code) | Imerys (FR) | |
| Brick dimensions [mm] | 560 x 200 x 274 | |
| Drilling method | Rotary drilling | |

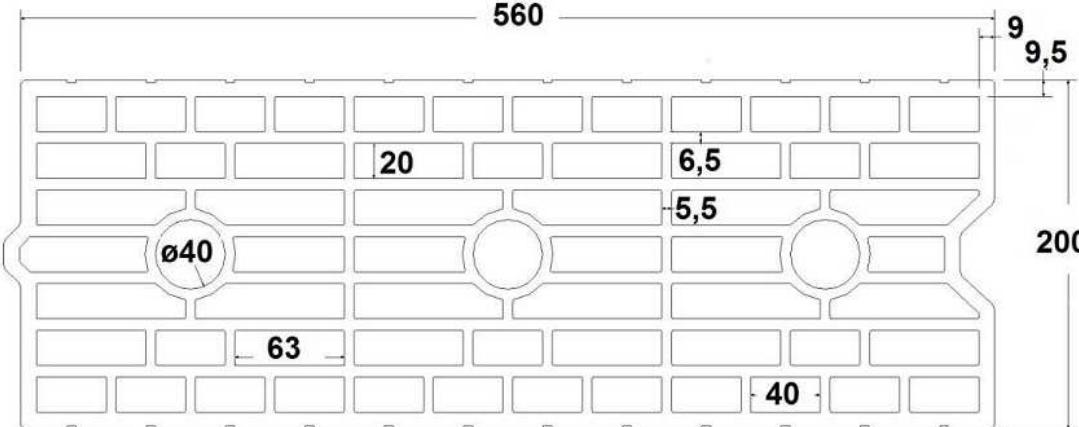


Table C48: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|----------|--------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | |
| | | | | [mm] | | [Nm] |
| M8 | SH 12x80 | 80 | | | | |
| M8 / M10 | SH 16x85 | 85 | 100 | 560 | 274 | 2 |
| | SH 16x130 | 130 | | | | |
| | SH 16x130/330 | 130 | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | | | |
| | SH 20x130 | 130 | | | | |

Table C49: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,34 | 0,67 | V_{Rk} | 0,71 | 1,06 |
| 85 | | 0,52 | 1,04 | | 1,37 | 2,06 |
| 130 | $1,4 \cdot \gamma_M$ | 0,62 | 1,24 | $1,4 \cdot \gamma_M$ | 1,62 | 2,44 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Calibric Th

Brick description, drawing,
Installation parameters, Displacements

Annex C 26

Brick type: Clay hollow brick Urbanbrick

Table C50: 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 | | For all temperature range | |
| | | h_{ef} | $N_{Rk}^1)$ | | $V_{Rk}^2)$ | |
| | | [mm] | [kN] | | | |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,75 | 3,0 | |
| M8 / M10 | SH 16x85 | 85 | 1,2 | 0,75 | 3,5 | |
| | SH 16x130 | 130 | 1,5 | 1,2 | 3,5 | |
| M12 / M16 | SH 16x130/330 | 130 | 1,5 | 1,2 | 3,5 | |
| | SH 20x85 | 85 | 1,2 | 0,75 | 4,0 | |
| M12 / M16 | SH 20x130 | 130 | 1,5 | 1,2 | 4,0 | |
| Compressive strength $f_b \geq 9 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,9 | 3,5 | |
| M8 / M10 | SH 16x85 | 85 | 1,5 | 0,9 | 4,0 | |
| | SH 16x130 | 130 | 2,0 | 1,5 | 4,5 | |
| M12 / M16 | SH 16x130/330 | 130 | 2,0 | 1,5 | 4,5 | |
| | SH 20x85 | 85 | 1,5 | 0,9 | 5,0 | |
| M12 / M16 | SH 20x130 | 130 | 2,0 | 1,5 | 5,0 | |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and V_{Rkc} see ETAG 029, Annex C

**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Performance Clay hollow brick Calibric Th

Characteristic values of resistance under tension and shear load

Annex C 27

Brick type: Clay hollow brick Blocchi Leggeri

Table C51: Description

| | | |
|-------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick Blocchi Leggeri |  |
| Bulk density [kg/dm ³] | 0,55 | |
| Compressive strength [N/mm ²] | 4, 6 or 8 | |
| Code | EN 771-1 | |
| Producer (country code) | Wienerberger (IT) | |
| Brick dimensions [mm] | 250 x 120 x 250 | |
| Drilling method | Rotary drilling | |

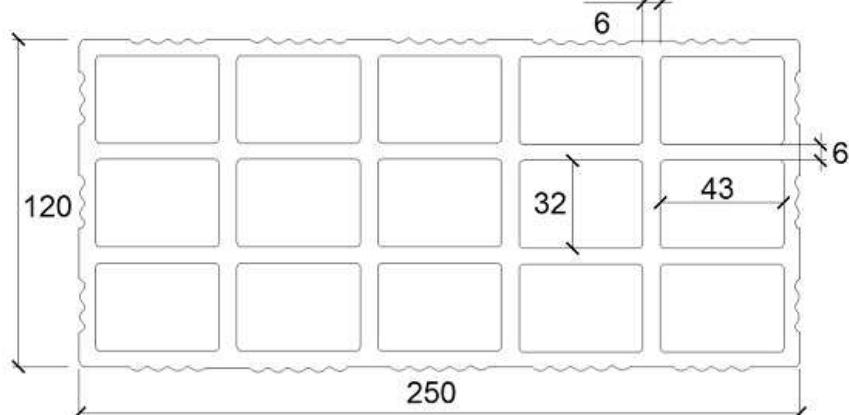


Table C52: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | | Maximum installation torque moment |
|-------------|---------------|-----------------|---------------|----------|--------------------|------------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | $S_{cr} = S_{min\ II}$ | |
| | | | | [mm] | [mm] | [mm] | |
| M8 | SH 12x80 | 80 | 100 | 250 | 250 | 250 | 4 |
| M8 / M10 | SH 16x85 | 85 | | | | | |
| | SH 16x130 | 130 | | | | | |
| | SH 16x130/330 | 130 | | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | 250 | 250 | 250 | 4 |
| | SH 20x130 | 130 | | | | | |
| | SH 20x200 | 200 | | | | | |

Table C53: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{V0} | $\delta_{V\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{R_k}$ | 0,32 | 0,64 | $\frac{V_{Rk}}{R_k}$ | 1,16 | 1,74 |
| 85 | $1,4 \cdot \gamma_M$ | 0,26 | 0,53 | $1,4 \cdot \gamma_M$ | 2,52 | 3,78 |
| 130 ; 200 | $1,4 \cdot \gamma_M$ | 0,32 | 0,64 | $1,4 \cdot \gamma_M$ | 2,52 | 3,78 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Blocchi Leggeri

Brick description, drawing,
Installation parameters, Displacements

Annex C 28

Brick type: Clay hollow brick Blocchi Leggeri

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 | | | |
| | | | 40°C / 24°C | 80°C / 50°C | For all temperature range | |
| | | h_{ef} | $N_{Rk}^1)$ | $N_{Rk}^1)$ | $V_{Rk}^2)$ | |
| | | [mm] | [kN] | | | |
| Compressive strength $f_b \geq 4 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,4 | 0,3 | 2,0 | |
| M8 / M10 | SH 16x85 | 85 | 0,4 | 0,3 | 2,0 | |
| | SH 16x130 | 130 | 0,5 | 0,3 | 2,0 | |
| M12 / M16 | SH 16x130/330 | 130 | 0,5 | 0,3 | 2,0 | |
| | SH 20x85 | 85 | 0,4 | 0,3 | 2,0 | |
| | SH 20x130 | 130 | 0,5 | 0,3 | 2,0 | |
| Compressive strength $f_b \geq 6 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,5 | 0,3 | 2,0 | |
| M8 / M10 | SH 16x85 | 85 | 0,5 | 0,3 | 2,0 | |
| | SH 16x130 | 130 | 0,6 | 0,4 | 2,0 | |
| M12 / M16 | SH 16x130/330 | 130 | 0,6 | 0,4 | 2,0 | |
| | SH 20x85 | 85 | 0,5 | 0,3 | 2,5 | |
| | SH 20x130 | 130 | 0,6 | 0,4 | 2,5 | |
| Compressive strength $f_b \geq 8 \text{ N/mm}^2$ | | | | | | |
| M8 | SH 12x80 | 80 | 0,6 | 0,4 | 2,5 | |
| M8 / M10 | SH 16x85 | 85 | 0,6 | 0,4 | 2,5 | |
| | SH 16x130 | 130 | 0,6 | 0,5 | 2,5 | |
| M12 / M16 | SH 16x130/330 | 130 | 0,6 | 0,5 | 2,5 | |
| | SH 20x85 | 85 | 0,6 | 0,4 | 3,0 | |
| | SH 20x130 | 130 | 0,6 | 0,5 | 3,0 | |
| | | | | | | |

1) For design according ETAG 029, Annex C: $N_{Rk} = N_{Rk,p} = N_{Rk,s}$; Calculation $N_{Rk,pb}$ see ETAG 029, Annex C

2) For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

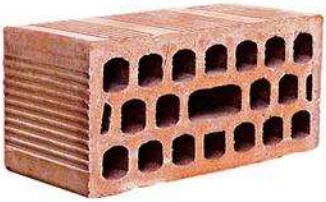
Performance Clay hollow brick Blocchi Leggeri

Characteristic values of resistance under tension and shear load

Annex C 29

Brick type: Clay hollow brick Doppio Uni

Table C55: Description

| | | |
|-------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Clay hollow brick Doppio Uni |  |
| Bulk density [kg/dm ³] | 0,92 | |
| Compressive strength [N/mm ²] | 10, 16, 20 or 28 | |
| Code | EN 771-1 | |
| Producer (country code) | Wienerberger (IT) | |
| Brick dimensions [mm] | 250 x 120 x 120 | |
| Drilling method | Rotary drilling | |

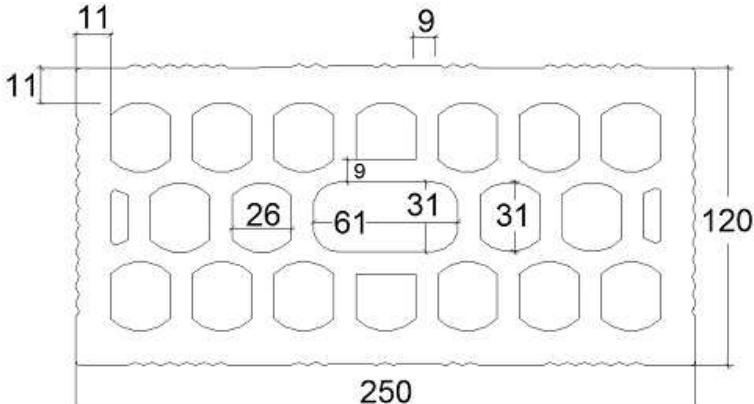


Table C56: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment | |
|------------------|---------------|-----------------|---------------|----------|--------------------|------------------------------------|------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | |
| | | | | [mm] | | | [Nm] |
| M8 | SH 12x80 | 80 | | | | | |
| M8 / M10 | SH 16x85 | 85 | 100 | 250 | 120 | 4 | |
| | SH 16x130 | 130 | | | | | |
| | SH 16x130/330 | 130 | | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | | | | |
| | SH 20x130 | 130 | | | | | |
| | SH 20x200 | 200 | | | | | |

Table C57: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,54 | 1,08 | V_{Rk} | 1,63 | 2,45 |
| 85 | | 0,17 | 0,34 | | 1,75 | 2,63 |
| 130 ; 200 | $1,4 \cdot \gamma_M$ | 0,54 | 1,08 | $1,4 \cdot \gamma_M$ | 1,75 | 2,63 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Doppio Uni

Brick description, drawing,
Installation parameters, Displacements

Annex C 30

Brick type: Clay hollow brick Doppio Uni

Table C58: 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 | For all temperature range |
| | | | h_{ef} | $N_{Rk}^1)$ | $N_{Rk}^1)$ |
| | | [mm] | | [kN] | |
| Compressive strength $f_b \geq 10 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,6 | 2,0 |
| M8 / M10 | SH 16x85 | 85 | 0,9 | 0,6 | 2,0 |
| | SH 16x130 | 130 | 0,9 | 0,6 | 2,0 |
| M12 / M16 | SH 16x130/330 | 130 | 0,9 | 0,6 | 2,0 |
| | SH 20x85 | 85 | 1,2 | 0,75 | 2,0 |
| | SH 20x130 | 130 | 1,2 | 0,75 | 2,0 |
| M12 / M16 | SH 20x200 | 200 | 1,2 | 0,75 | 2,0 |
| | | | | | |
| Compressive strength $f_b \geq 16 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 0,9 | 0,75 | 2,5 |
| M8 / M10 | SH 16x85 | 85 | 1,2 | 0,9 | 2,5 |
| | SH 16x130 | 130 | 1,2 | 0,9 | 2,5 |
| M12 / M16 | SH 16x130/330 | 130 | 1,2 | 0,9 | 2,5 |
| | SH 20x85 | 85 | 1,5 | 0,9 | 2,5 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 2,5 |
| M12 / M16 | SH 20x200 | 200 | 1,5 | 0,9 | 2,5 |
| | | | | | |
| Compressive strength $f_b \geq 20 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,2 | 0,75 | 3,0 |
| M8 / M10 | SH 16x85 | 85 | 1,2 | 0,9 | 3,0 |
| | SH 16x130 | 130 | 1,5 | 0,9 | 3,0 |
| M12 / M16 | SH 16x130/330 | 130 | 1,5 | 0,9 | 3,0 |
| | SH 20x85 | 85 | 1,5 | 0,9 | 3,0 |
| | SH 20x130 | 130 | 1,5 | 0,9 | 3,0 |
| M12 / M16 | SH 20x200 | 200 | 1,5 | 0,9 | 3,0 |
| | | | | | |
| Compressive strength $f_b \geq 28 \text{ N/mm}^2$ | | | | | |
| M8 | SH 12x80 | 80 | 1,5 | 0,9 | 3,5 |
| M8 / M10 | SH 16x85 | 85 | 1,5 | 1,2 | 3,5 |
| | SH 16x130 | 130 | 1,5 | 1,2 | 3,5 |
| M12 / M16 | SH 16x130/330 | 130 | 1,5 | 1,2 | 3,5 |
| | SH 20x85 | 85 | 2,0 | 1,2 | 3,5 |
| | SH 20x130 | 130 | 2,0 | 1,2 | 3,5 |
| M12 / M16 | SH 20x200 | 200 | 2,0 | 1,2 | 3,5 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and V_{Rkc} see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Clay hollow brick Doppio Uni

Characteristic values of resistance under tension and shear load

Annex C 31

Brick type: Hollow Light weight concrete Bloc creux B40

Table C59: Description

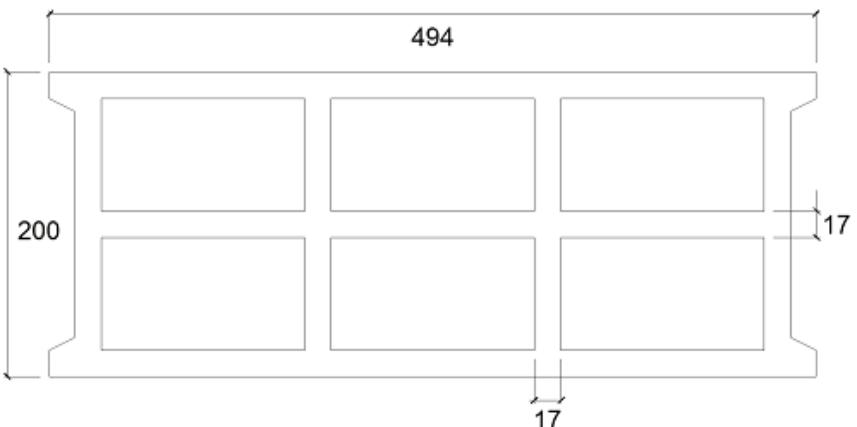
| | | |
|------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Hollow light weight concrete Bloc creux B40 |  |
| Bulk density [kg/dm ³] | 0,88 | |
| Compressive strength [N/mm ²] | 4 | |
| Code | EN 771-3 | |
| Producer (country code) | Sepa (FR) | |
| Brick dimensions [mm] | 494 x 200 x 190 | |
| Drilling method | Rotary drilling | |
|  | | |

Table C60: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment | |
|-------------|---------------|-----------------|---------------|----------|--------------------|------------------------------------|-----------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | $s_{cr} = s_{min \parallel}$ | $s_{min \perp}$ |
| [mm] | | | | | | [Nm] | |
| M8 | SH 12x80 | 80 | | | | | |
| M8 / M10 | SH 16x85 | 85 | 100 | 494 | 190 | 2 | |
| | SH 16x130 | 130 | | | | | |
| | SH 16x130/330 | 130 | | | | | |
| M12 / M16 | SH 20x85 | 85 | 120 | | | | |
| | SH 20x130 | 130 | | | | | |

Table C61: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,14 | 0,29 | V_{Rk} | 0,25 | 0,37 |
| 85 | | 0,45 | 0,90 | | 0,98 | 1,47 |
| 130 | $1,4 \cdot \gamma_M$ | 0,61 | 1,22 | $1,4 \cdot \gamma_M$ | 1,10 | 1,65 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance hollow light weight concrete Bloc creux B40

Brick description, drawing,
Installation parameters, Displacements

Annex C 32

Brick type: Hollow Light weight concrete Bloc creux B40

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 | | | |
| | | | 40°C / 24°C | 80°C / 50°C | For all temperature range | | | |
| h_{ef} | | $N_{Rk}^1)$ | $N_{Rk}^1)$ | $V_{Rk}^2)$ | | | | |
| [mm] | | [kN] | | | | | | |
| Compressive strength $f_b \geq 4 \text{ N/mm}^2$ | | | | | | | | |
| M8 | SH 12x80 | 80 | 0,4 | 0,3 | 1,2 | | | |
| | SH 16x85 | 85 | 0,6 | 0,5 | 3,0 | | | |
| | SH 16x130 | 130 | 2,0 | 1,5 | 3,5 | | | |
| | SH 16x130/330 | 130 | 2,0 | 1,5 | 3,5 | | | |
| M10 | SH 16x85 | 85 | 0,6 | 0,5 | 3,0 | | | |
| | SH 16x130 | 130 | 2,0 | 1,5 | 3,5 | | | |
| | SH 16x130/330 | 130 | 2,0 | 1,5 | 3,5 | | | |
| M12 | SH 20x85 | 85 | 0,9 | 0,6 | 3,0 | | | |
| | SH 20x130 | 130 | 2,0 | 1,5 | 3,5 | | | |
| M16 | SH 20x85 | 85 | 0,9 | 0,6 | 3,0 | | | |
| | SH 20x130 | 130 | 2,0 | 1,5 | 3,5 | | | |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation $N_{Rkp,b}$ see ETAG 029, Annex C

²⁾ For V_{Rks} see Annex C 2, Table C2; Calculation of $V_{Rkp,b}$ and V_{Rkc} see ETAG 029, Annex C

**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Performance hollow light weight concrete Bloc creux B40

Characteristic values of resistance under tension and shear load

Annex C 33

Brick type: Solid light weight concrete brick

Table C63: Description

| | | |
|-------------------------------------------|-----------------------------------|--|
| Brick type | Solid light weight concrete brick | |
| Bulk density [kg/dm ³] | 0,63 | |
| Compressive strength [N/mm ²] | 2 | |
| Code | EN 771-3 | |
| Producer (country code) | Bisotherm (DE) | |
| Brick dimensions [mm] | 300 x 123 x 248 | |
| Drilling method | Rotary drilling | |

Table C64: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | | Spacing | Maximum installation torque moment |
|-------------|--------|-----------------|---------------|--------------------|---------|------------------------------------|
| | | | h_{ef} | $C_{min} = C_{cr}$ | | |
| | | | [mm] | | | |
| M8 | - | 80 | 120 | 240 | | |
| M10 | - | 90 | 135 | 270 | | 6 |
| M12 | - | 100 | 150 | 300 | | 10 |
| M16 | - | 100 | 150 | 300 | | 14 |

Table C65: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|------------------------------------|----------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | N_{Rk} | 0,64 | 1,28 | V_{Rk} | 0,50 | 0,75 |
| 90 | | 0,70 | 1,41 | | 0,68 | 1,03 |
| 100 | $1,4 \cdot \gamma_M$ | 0,21 | 0,42 | $1,4 \cdot \gamma_M$ | 0,54 | 0,81 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance Solid light weight concrete LAC

Brick description, drawing,
Installation parameters, Displacements

Annex C 34

Brick type: Solid light weight concrete brick

Table C66: 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 | For all temperature range | |
| h_{ef} | | $N_{Rk}^{1)}$ | | $N_{Rk}^{1)}$ | $V_{Rk}^{2)}$ | |
| [mm] | | [kN] | | | | |
| Compressive strength $f_b \geq 2 \text{ N/mm}^2$ | | | | | | |
| M8 | - | 80 | 2,0 | 1,5 | 3,0 | |
| M10 | - | 90 | 2,0 | 1,5 | 3,5 | |
| M12 | - | 100 | 2,0 | 1,5 | 4,0 | |
| M16 | - | 100 | 2,0 | 1,5 | 4,0 | |

1) For design according ETAG 029, Annex C: $N_{Rk} = N_{Rk,p} = N_{Rk,s}$; Calculation $N_{Rk,pb}$ see ETAG 029, Annex C

2) For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ see ETAG 029, Annex C

**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Performance Solid light weight concrete LAC

Characteristic values of resistance under tension and shear load

Annex C 35

Brick type: Hollow light weight concrete brick – Leca Lex harkko RUH-200

Table C67: Description

| | | |
|-------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Hollow light weight concrete Leca Lex harkko RUH-200 |  |
| Bulk density [kg/dm ³] | 0,7 | |
| Compressive strength [N/mm ²] | 2,7 | |
| Code | EN 771-3 | |
| Producer (country code) | Saint-Gobain Weber (Fin) | |
| Brick dimensions [mm] | 498 x 200 x 195 | |
| Drilling method | Rotary drilling | |

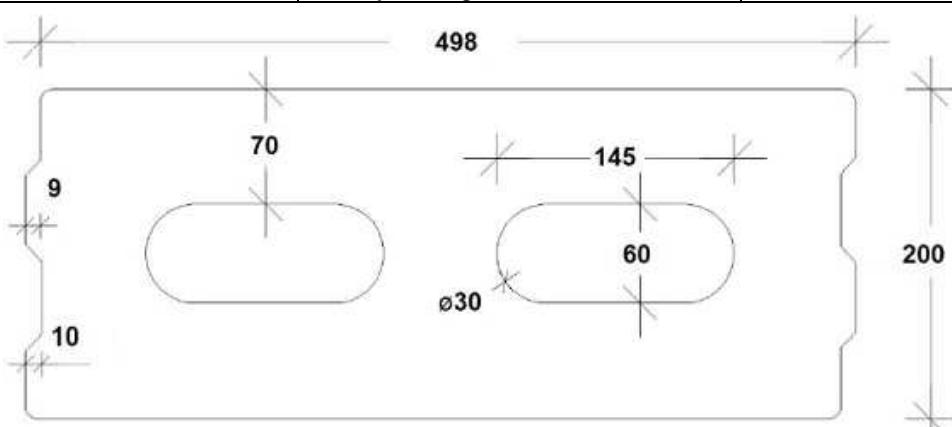


Table C68: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | | Maximum installation torque moment |
|------------------|---------------|-----------------|---------------|----------|------------------------------|------------------------------------|
| | | | | h_{ef} | $C_{min} = C_{cr}$ | |
| | | | | [mm] | $S_{cr} = S_{min \parallel}$ | |
| M8 | SH 12x80 | 80 | 120 | 498 | 195 | 8 |
| M8 / M10 | SH 16x85 | 85 | 127 | | | |
| | SH 16x130 | 130 | 195 | | | |
| | SH 16x130/330 | 130 | 195 | | | |
| M12 / M16 | SH 20x85 | 85 | 127 | | | |
| | SH 20x130 | 130 | 195 | | | |

Table C69: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------|---------------|--------------------|----------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{V_{Rk}}$ | 0,11 | 0,22 | | 0,47 | 0,70 |
| 85 | | 0,11 | 0,23 | | 0,38 | 0,57 |
| 130 | $1,4 \cdot \gamma_M$ | 0,10 | 0,20 | $1,4 \cdot \gamma_M$ | 0,56 | 0,85 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance LECA LEX harkko RUH-200 Hollow

Brick description, drawing,
Installation parameters, Displacements

Annex C 36

Brick type: Hollow light weight concrete brick – Leca Lex harkko RUH-200

Table C70: 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 | For all temperature range | | |
| | | | h_{ef} | $N_{Rk}^1)$ | $N_{Rk}^1)$ | | |
| [mm] | | | | | | | |
| Compressive strength $f_b \geq 2,7 \text{ N/mm}^2$ | | | | | | | |
| M8 | SH 12x80 | 80 | 2,0 | 1,2 | 2,5 | | |
| | SH 16x85 | 85 | 2,0 | 1,2 | 3,5 | | |
| | SH 16x130 | 130 | 2,5 | 1,5 | 3,5 | | |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 3,5 | | |
| M10 | SH 16x85 | 85 | 2,0 | 1,5 | 3,5 | | |
| | SH 16x130 | 130 | 2,5 | 1,5 | 3,5 | | |
| | SH 16x130/330 | 130 | 2,5 | 1,5 | 3,5 | | |
| M12 | SH 20x85 | 85 | 2,5 | 1,5 | 3,5 | | |
| | SH 20x130 | 130 | 2,5 | 1,5 | 3,5 | | |
| M16 | SH 20x85 | 85 | 2,5 | 1,5 | 3,5 | | |
| | SH 20x130 | 130 | 2,5 | 1,5 | 3,5 | | |

¹⁾ For design according ETAG 029, Annex C; $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation N_{Rkpb} see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of $V_{Rk,pb}$ and $V_{Rk,c}$ see ETAG 029, Annex C

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance LECA LEX harkko RUH-200 Hollow

Characteristic values of resistance under tension and shear load
Displacement

Annex C 37

Brick type: Solid light weight concrete brick – Leca Lex harkko RUH-200 kulma

Table C71: Description

| | | |
|-------------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type | Solid light weight concrete Leca Lex harkko RUH-200 kulma |  |
| Bulk density [kg/dm ³] | 0,78 | |
| Compressive strength [N/mm ²] | 3 | |
| Code | EN 771-3 | |
| Producer (country code) | Saint-Gobain Weber (Fin) | |
| Brick dimensions [mm] | 498 x 200 x 195 | |
| Drilling method | Rotary drilling | |

Table C72: Installation parameter (Edge and spacing distances)

| Anchor size | Sleeve | Embedment depth | Edge distance | Spacing | Maximum installation torque moment |
|-------------|---------------|-----------------|--------------------|----------------------------------------------|------------------------------------|
| | | | $c_{min} = c_{cr}$ | $s_{cr} = s_{min \parallel} = s_{min \perp}$ | $T_{inst,max}$ |
| | | | [mm] | [mm] | [Nm] |
| M8 | - | 80 | 120 | 240 | 6 |
| M10 | - | 90 | 135 | 270 | 12 |
| M12 | - | 100 | 150 | 300 | 14 |
| M16 | - | 100 | 150 | 300 | 16 |
| M8 | SH 12x80 | 80 | 120 | 240 | 8 |
| M8 / M10 | SH 16x85 | 85 | 127 | 255 | |
| | SH 16x130 | 130 | 195 | 390 | 16 |
| | SH 16x130/330 | 130 | 195 | 390 | 16 |
| M12 / M16 | SH 20x85 | 85 | 127 | 255 | 12 |
| | SH 20x130 | 130 | 195 | 390 | 16 |

Table C73: Displacement

| Effective anchorage depth h_{ef} | N | δ_{N0} | $\delta_{N\infty}$ | V | δ_{v0} | $\delta_{v\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm] | [kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| 80 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,09 | 0,18 | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,48 | 0,72 |
| 85 | | 0,07 | 0,15 | | 0,77 | 1,15 |
| 90 | | 0,13 | 0,26 | | 0,26 | 0,39 |
| 100 | | 0,13 | 0,23 | | 0,36 | 0,54 |
| 130 | | 0,10 | 0,21 | | 0,68 | 1,01 |

Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical for masonry

Performance LECA LEX harkko RUH-200 Kulma Solid

Brick description, drawing,
Installation parameters, Displacements

Annex C 38

Brick type: Solid light weight concrete brick – Leca Lex harkko RUH-200 kulma

Table C74: 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 | For all temperature range |
| | | h_{ef} | $N_{Rk}^1)$ | $N_{Rk}^1)$ | $V_{Rk}^2)$ |
| | | [mm] | [kN] | | |
| Compressive strength $f_b \geq 3,0 \text{ N/mm}^2$ | | | | | |
| M8 | - | 80 | 2,0 | 1,2 | 3,0 |
| M10 | - | 90 | 3,0 | 2,0 | 4,0 |
| M12 | - | 100 | 3,0 | 2,0 | 4,0 |
| M16 | - | 100 | 3,0 | 2,0 | 4,0 |
| M8 | SH 12x80 | 80 | 2,0 | 1,2 | 3,0 |
| | SH 16x85 | 85 | 2,0 | 1,5 | 3,5 |
| | SH 16x130 | 130 | 3,0 | 2,0 | 4,0 |
| | SH 16x130/330 | 130 | 3,0 | 2,0 | 4,0 |
| M10 | SH 16x85 | 85 | 2,0 | 1,5 | 3,5 |
| | SH 16x130 | 130 | 3,0 | 2,0 | 4,0 |
| | SH 16x130/330 | 130 | 3,0 | 2,0 | 4,0 |
| M12 / M16 | SH 20x85 | 85 | 2,0 | 1,5 | 4,5 |
| | SH 20x130 | 130 | 3,0 | 2,0 | 4,5 |

¹⁾ For design according ETAG 029, Annex C: $N_{Rk} = N_{Rkp} = N_{Rks}$; Calculation N_{Rkp} see ETAG 029, Annex C

²⁾ For $V_{Rk,s}$ see Annex C 2, Table C2; Calculation of V_{Rkp} and V_{Rkc} see ETAG 029, Annex C

**Würth Injection system WIT-PM 200, WIT-PM 200 express, WIT-PM 200 tropical
for masonry**

Performance LECA LEX harkko RUH-200 Kulma Solid
Characteristic values of resistance under tension and shear load

Annex C 39