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for Construction Prague**

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## European Technical Assessment

**ETA 20/0645  
of 17/09/2020**

(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 Injection System WIT-VM 210  
WIT-VM 210 Blue  
WIT-VM 210 Tropical  
WIT-VM 210 Express

**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, Germany

**This European Technical Assessment  
contains**

56 pages including 53 Annexes which form  
an integral part of this assessment.

**This European Technical Assessment is  
issued in accordance with regulation  
(EU) No 305/2011, on the basis of**

EAD 330076-00-0604 Metal injection  
anchors for use in masonry

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

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## 1. Technical description of the product

The WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical 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     |
|--------------------------------------|-----------------|
| Characteristic values for resistance | Annex C6 to C40 |
| Displacements                        | Annex C5 to C39 |
| Durability                           | Annex B1        |

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance                                 |
|--------------------------|---------------------------------------------|
| Reaction to fire         | Anchorage satisfy requirements for Class A1 |

### 3.3 Hygiene, health and environment (BWR 3)

No performance determined.

### 3.4 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 Commission<sup>1</sup> 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      |

<sup>1</sup> Official Journal of the European Communities L 073 of 14.03.1997

**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 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 Prague<sup>2</sup> The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

**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 17.09.2020

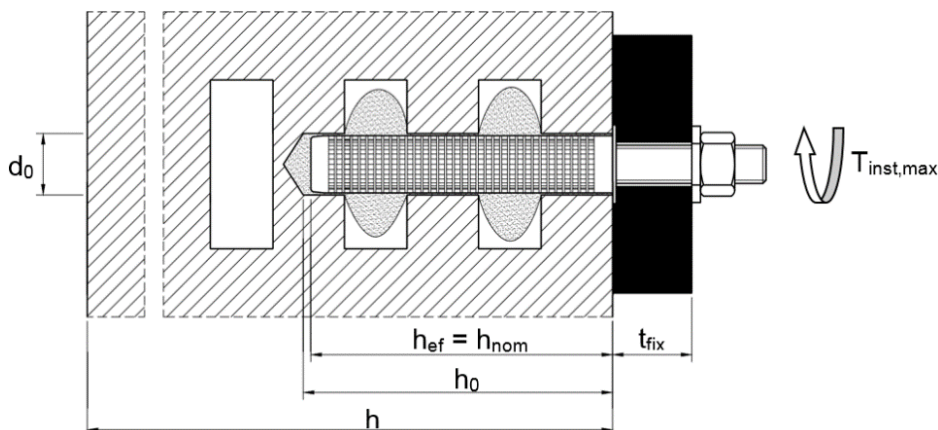
By

**Ing. Mária Schaan**  
Head of the TAB

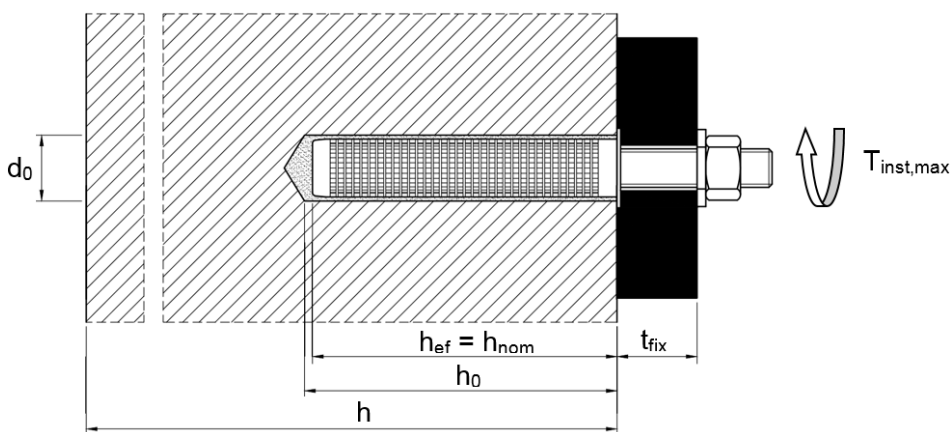
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<sup>2</sup> The control plan is a confidential part of the documentation of the European technical assessment, but not published together with the ETA and only handed over to the approved body involved in the procedure of AVCP.

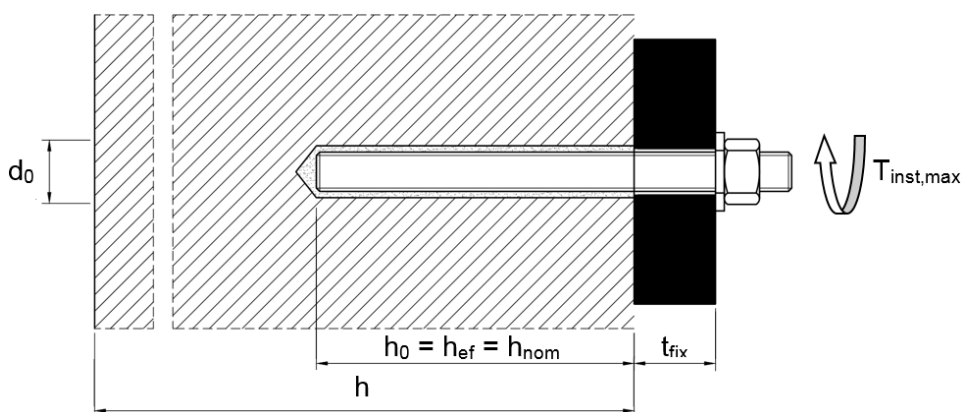
### Installation in hollow brick; threaded rod with sleeve



### Installation in solid brick; threaded rod with sleeve



### Installation in solid brick; threaded rod without sleeve



$d_0$  = nominal drill hole diameter  
 $t_{fix}$  = thickness of fixture  
 $T_{inst,max}$  = max installation torque moment

$h$  = thickness of member  
 $h_0$  = depth of drill hole at shoulder  
 $h_{ef}$  = effective anchorage depth  
 $h_{nom}$  = overall embedment depth

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

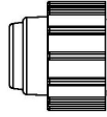
**Product description**  
 Installed condition

**Annex A 1**

**Cartridge: WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

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

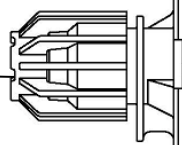
Sealing/Screw cap



Imprint: WIT-VM 210, Blue, Tropical, Express  
processing notes, charge-code, shelf life, hazard-code,  
storage temperature, curing- and processing time  
(depending on the temperature), optional: with travel  
scale

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

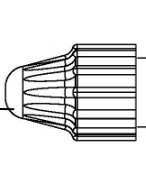
Sealing/Screw cap



Imprint: WIT-VM 210, Blue, Tropical, Express  
processing notes, charge-code, shelf life, hazard-code,  
storage temperature, curing- and processing time  
(depending on the temperature), optional: with travel  
scale

**165 ml and 300 ml cartridge (Type: “foil tube”)**

Sealing/Screw cap



Imprint: WIT-VM 210, Blue, Tropical, Express  
processing notes, charge-code, shelf life, hazard-code,  
storage temperature, curing- and processing time  
(depending on the temperature), optional: with travel  
scale

**Static mixer**

14W



or

Fill & Clean

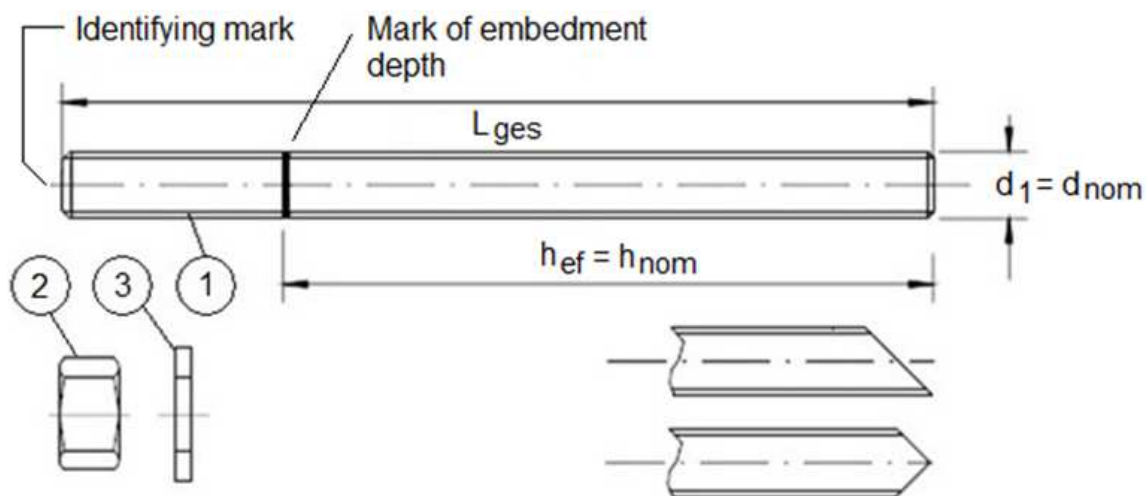


**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Product description**  
 Threaded rod

**Annex A 3**

**Table A1: Materials**

| Part                                                                                                                                                                                                                                                   | Designation                                                                                     | Material                                                                                                                                             |     |                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------|
| Steel, zinc plated (Steel acc. to EN 10087:1998 or EN 10263:2001)<br>zinc plated ≥ 5 µm acc. to EN ISO 4042:1999 or hot-dip galvanised ≥ 40 µm acc. to EN ISO 1461:2009 and EN ISO 10684:2004+AC:2009 or sherardized ≥ 40 µm acc. to EN ISO 17668:2016 |                                                                                                 |                                                                                                                                                      |     |                                                                                                 |
| 1                                                                                                                                                                                                                                                      | Anchor rod                                                                                      | Property class<br>acc. to<br>EN ISO 898-1:2013                                                                                                       | 4.6 | f <sub>uk</sub> =400 N/mm²; f <sub>yk</sub> =240 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 4.8 | f <sub>uk</sub> =400 N/mm²; f <sub>yk</sub> =320 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 5.6 | f <sub>uk</sub> =500 N/mm²; f <sub>yk</sub> =300 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 5.8 | f <sub>uk</sub> =500 N/mm²; f <sub>yk</sub> =400 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 8.8 | f <sub>uk</sub> =800 N/mm²; f <sub>yk</sub> =640 N/mm²; A <sub>5</sub> > 8% fracture elongation |
| 2                                                                                                                                                                                                                                                      | Hexagon nut                                                                                     | Property class<br>acc. to<br>EN ISO 898-2:2012                                                                                                       | 4   | for anchor rod class 4.6 or 4.8                                                                 |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 5   | for anchor rod class 5.6 or 5.8                                                                 |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 8   | for anchor rod class 8.8                                                                        |
| 3                                                                                                                                                                                                                                                      | Washer,<br>(e.g.: EN ISO 887:2006, EN ISO 7089:2000,<br>EN ISO 7093:2000 oder EN ISO 7094:2000) | Steel, zinc plated, hot-dip galvanised or sherardized                                                                                                |     |                                                                                                 |
| Stainless steel A2 (Material 1.4301 / 1.4303 / 1.4307 / 1.4567 or 1.4541, acc. to EN 10088-1:2014)<br>and<br>Stainless steel A4 (Material 1.4401 / 1.4404 / 1.4571 / 1.4362 or 1.4578, acc. to EN 10088-1:2014)                                        |                                                                                                 |                                                                                                                                                      |     |                                                                                                 |
| 1                                                                                                                                                                                                                                                      | Anchor rod <sup>1)</sup>                                                                        | Property class<br>acc. to<br>EN ISO 3506-1:2009                                                                                                      | 50  | f <sub>uk</sub> =500 N/mm²; f <sub>yk</sub> =210 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 70  | f <sub>uk</sub> =700 N/mm²; f <sub>yk</sub> =450 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 80  | f <sub>uk</sub> =800 N/mm²; f <sub>yk</sub> =600 N/mm²; A <sub>5</sub> > 8% fracture elongation |
| 2                                                                                                                                                                                                                                                      | Hexagon nut <sup>1)</sup>                                                                       | Property class<br>acc. to<br>EN ISO 3506-1:2009                                                                                                      | 50  | for anchor rod class 50                                                                         |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 70  | for anchor rod class 70                                                                         |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 80  | for anchor rod class 80                                                                         |
| 3                                                                                                                                                                                                                                                      | Washer,<br>(e.g.: EN ISO 887:2006, EN ISO 7089:2000,<br>EN ISO 7093:2000 oder EN ISO 7094:2000) | A2: Material 1.4301, 1.4303 / 1.4307 / 1.4567 or 1.4541, EN 10088-1:2014<br>A4: Material 1.4401, 1.4404 / 1.4571 / 1.4362 or 1.4578, EN 10088-1:2014 |     |                                                                                                 |
| High corrosion resistance steel (Material 1.4529 or 1.4565, acc. to EN 10088-1: 2014)                                                                                                                                                                  |                                                                                                 |                                                                                                                                                      |     |                                                                                                 |
| 1                                                                                                                                                                                                                                                      | Anchor rod                                                                                      | Property class<br>acc. to<br>EN ISO 3506-1:2009                                                                                                      | 50  | f <sub>uk</sub> =500 N/mm²; f <sub>yk</sub> =210 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 70  | f <sub>uk</sub> =700 N/mm²; f <sub>yk</sub> =450 N/mm²; A <sub>5</sub> > 8% fracture elongation |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 80  | f <sub>uk</sub> =800 N/mm²; f <sub>yk</sub> =600 N/mm²; A <sub>5</sub> > 8% fracture elongation |
| 2                                                                                                                                                                                                                                                      | Hexagon nut                                                                                     | Property class<br>acc. to<br>EN ISO 3506-1:2009                                                                                                      | 50  | for anchor rod class 50                                                                         |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 70  | for anchor rod class 70                                                                         |
|                                                                                                                                                                                                                                                        |                                                                                                 |                                                                                                                                                      | 80  | for anchor rod class 80                                                                         |
| 3                                                                                                                                                                                                                                                      | Washer,<br>(e.g.: EN ISO 887:2006, EN ISO 7089:2000,<br>EN ISO 7093:2000 oder EN ISO 7094:2000) | Material 1.4529 or 1.4565, acc. to EN 10088-1: 2014                                                                                                  |     |                                                                                                 |

<sup>1)</sup> Strength class 80 only for stainless steel A4

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Product description**  
 Materials

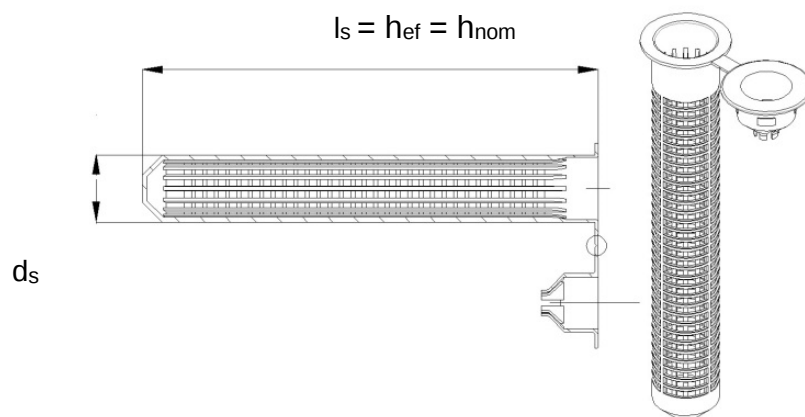
**Annex A 4**

## Sleeve (Plastic)

SH 12x80

SH 16x85

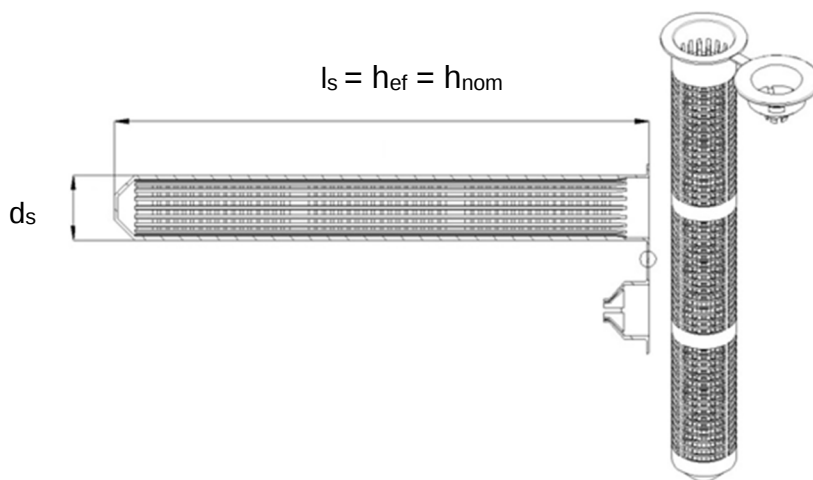
SH 20x85



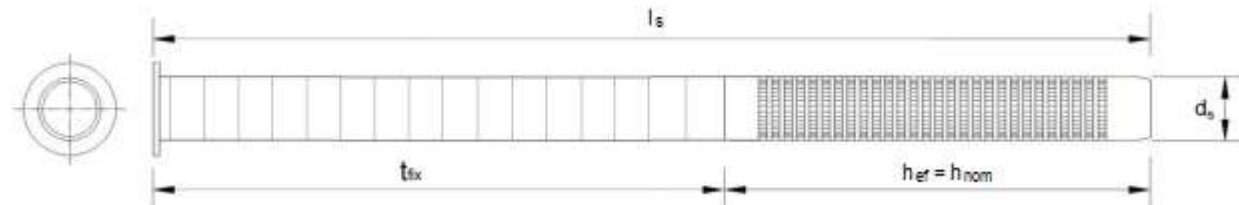
SH 16x130

SH 20x130

SH 20x200



SH 16x130/330



**Table A2: Sleeve sizes (mm)**

| Sleeve       |       |       |                    |
|--------------|-------|-------|--------------------|
| Size         | $d_s$ | $l_s$ | $h_{ef} = h_{nom}$ |
|              | [mm]  | [mm]  | [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Product description**  
 Sleeves

**Annex A 5**

## Specifications of intended use

### Anchorage subject to:

- Static and quasi-static loads

### Base materials

- Autoclaved Aerated Concrete (Masonry group d) to Annex B2.
- Solid brick masonry (Masonry group b), according to Annex B2 to B4.
- Hollow brick masonry (Masonry group c), according to Annex B2 to B4.
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2010.
- Joints of the masonry must be visible and filled with mortar.
- 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 EOTA Technical Report TR 053 under consideration of the  $\beta$ -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<sub>a</sub>: -40°C to +40°C (max. short. term temperature +40°C and max. long term temperature +24°C)
- T<sub>b</sub>: -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).  
(X1) Structures subject to dry internal conditions (zinc coated steel, stainless steel A2 resp. A4 or high corrosion resistant steel).
- (X2) 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 A4 or high corrosion resistant steel).
- (X3) 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 conditions in respect of installation and use:

- Category d/d: Installation and use in dry masonry
- Category w/w: Installation and use in wet masonry (incl. w/d installation in wet masonry and use in dry masonry)

### Design:

- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorage are designed in accordance with the EOTA Technical Report TR 054, Design method A under the responsibility of an engineer experienced in anchorages and masonry work.

### Installation:

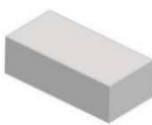
- Dry or wet structures
- Anchor Installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

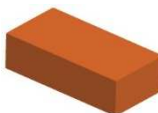
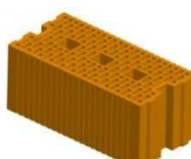
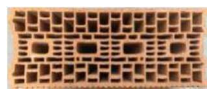
**Intended use**  
**Specifications**

**Annex B 1**

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

| Brick-Nr.                                                                                                  | Brick type                                       | picture                                                                             | Brick size<br>Length x width<br>x height | Compressive<br>strength | Bulk density | Sleeve - Anchor type                                                                                                                                                                       | Annex        |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                                                                            |                                                  |                                                                                     | [mm]                                     | [N/mm²]                 | [kg/dm³]     |                                                                                                                                                                                            |              |
| Autoclaved aerated concrete units according EN 771-4                                                       |                                                  |                                                                                     |                                          |                         |              |                                                                                                                                                                                            |              |
| 1                                                                                                          | Autoclaved<br>Aerated<br>Concrete<br>AAC2        |    | 599 x 375 x 249                          | 2                       | 0,35         | M8 / M10 / M12 / M16                                                                                                                                                                       | C4 /<br>C5   |
| 2                                                                                                          | Autoclaved<br>Aerated<br>Concrete<br>AAC4        |    | 499 x 375 x 249                          | 4                       | 0,5          | M8 / M10 / M12 / M16                                                                                                                                                                       | C6 /<br>C7   |
| 3                                                                                                          | Autoclaved<br>Aerated<br>Concrete<br>AAC6        |   | 499 x 240 x 249                          | 6                       | 0,6          | M8 / M10 / M12 / M16                                                                                                                                                                       | C8 /<br>C9   |
| Calcium silicate masonry units according EN 771-2                                                          |                                                  |                                                                                     |                                          |                         |              |                                                                                                                                                                                            |              |
| 4                                                                                                          | Calcium<br>silicate solid<br>brick<br>KS-NF      |  | 240 x 115 x 71                           | 10<br>20<br>27          | 2,0          | M8 / M10 / M12 / M16<br>SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16 | C10 /<br>C11 |
| 5                                                                                                          | Calcium<br>silicate<br>hollow brick<br>KS L-3DF  |  | 240 x 175 x 113                          | 8<br>12<br>14           | 1,4          | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16                         | C12 /<br>C13 |
| 6                                                                                                          | Calcium<br>silicate<br>hollow brick<br>KS L-12DF |  | 498 x 175 x 238                          | 10<br>12<br>16          | 1,4          | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x130 – M12 / M16                                                                          | C14 /<br>C15 |
| Würth Injection System for masonry<br>WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical |                                                  |                                                                                     |                                          |                         |              | Annex B 2                                                                                                                                                                                  |              |
| Intended use<br>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<br>Length x width<br>x height | Compressive<br>strength | Bulk density | Sleeve - Anchor type                                                                                                                                                                       | Annex        |
|---------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                       |                                               |                                                                                     | [mm]                                     | [N/mm²]                 | [kg/dm³]     |                                                                                                                                                                                            |              |
| Clay masonry units according EN 771-1 |                                               |                                                                                     |                                          |                         |              |                                                                                                                                                                                            |              |
| 7                                     | Clay solid brick<br>Mz – DF                   |    | 240 x 115 x 55                           | 10<br>20<br>28          | 1,64         | M8 / M10 / M12 / M16<br>SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16 | C16 /<br>C17 |
| 8                                     | Clay hollow<br>brick<br>HLZ-16DF              |    | 497 x 240 x 238                          | 6<br>9<br>12<br>14      | 0,83         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16                         | C18 /<br>C19 |
| 9                                     | Clay hollow<br>brick<br>Porotherm<br>Homebric |   | 500 x 200 x 299                          | 6<br>8<br>10            | 0,68         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                                                  | C20 /<br>C21 |
| 10                                    | Clay hollow<br>brick<br>BGV Thermo            |  | 500 x 200 x 314                          | 4<br>6<br>10            | 0,62         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                                                  | C22 /<br>C23 |
| 11                                    | Clay hollow<br>brick<br>Calibric Th           |  | 500 x 200 x 314                          | 6<br>9<br>12            | 0,62         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                                                  | C24 /<br>C25 |
| 12                                    | Clay hollow<br>brick<br>Urbanbric             |  | 560 x 200 x 274                          | 6<br>9                  | 0,74         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                                                  | C26 /<br>C27 |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Intended use**  
 Brick types and properties with corresponding fastening elements

**Annex B 3**

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

| Brick-Nr.                                                                                                  | Brick type                                               | picture                                                                             | Brick size<br>Length x width<br>x height | Compressive<br>strength | Bulk density | Sleeve - Anchor type                                                                                                                                               | Annex        |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|-------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                                                                            |                                                          |                                                                                     | [mm]                                     | [N/mm²]                 | [kg/dm³]     |                                                                                                                                                                    |              |
| Clay masonry units according EN 771-1                                                                      |                                                          |                                                                                     |                                          |                         |              |                                                                                                                                                                    |              |
| 13                                                                                                         | Clay hollow<br>brick<br>Blocchi<br>Leggeri               |    | 250 x 120 x 250                          | 4<br>6<br>8             | 0,55         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16 | C28 /<br>C29 |
| 14                                                                                                         | Clay hollow<br>brick<br>Doppio Uni                       |    | 250 x 120 x 120                          | 10<br>16<br>20<br>28    | 0,92         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16<br>SH 20x200 – M12 / M16 | C30 /<br>C31 |
| Light weight concrete according EN 771-3                                                                   |                                                          |                                                                                     |                                          |                         |              |                                                                                                                                                                    |              |
| 15                                                                                                         | Hollow light<br>weight<br>concrete<br>Bloc creux<br>B40  |   | 494 x 200 x 190                          | 4                       | 0,80         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                          | C32 /<br>C33 |
| 16                                                                                                         | Solid light<br>weight<br>concrete                        |  | 300 x 123 x 248                          | 2                       | 0,63         | M8 / M10 / M12 / M16                                                                                                                                               | C34 /<br>C35 |
| 17                                                                                                         | Hollow light<br>weight<br>Leca Lex<br>harkko RUH-<br>200 |  | 498 x 200 x 195                          | 2,7                     | 0,62         | SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16                          | C36 /<br>C37 |
| 18                                                                                                         | Solid light<br>weight<br>Leca Lex<br>RUH-200<br>Kulma    |  | 498 x 200 x 195                          | 3                       | 0,62         | M8 / M10 / M12 / M16<br>SH 12x80 – M8<br>SH 16x85 – M8 / M10<br>SH 16x130 – M8 / M10<br>SH 16x130/330 - M8 / M10<br>SH 20x85 – M12 / M16<br>SH 20x130 – M12 / M16  | C38 /<br>C39 |
| Würth Injection System for masonry<br>WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical |                                                          |                                                                                     |                                          |                         |              | Annex B 4                                                                                                                                                          |              |
| Intended use<br>Brick types and properties with corresponding fastening elements                           |                                                          |                                                                                     |                                          |                         |              |                                                                                                                                                                    |              |

## Installation: Steel brush WIT-RMB



**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                          | $h_0$              | [mm] | 80                                            | 90        | 100       | 100       |
| Effective anchorage depth                 | $h_{ef} = h_{nom}$ | [mm] | 80                                            | 90        | 100       | 100       |
| Minimum wall thickness                    | $h_{min}$          | [mm] | $h_{ef} + 30$                                 |           |           |           |
| Diameter of clearance hole in the fixture | $d_r \leq$         | [mm] | 9                                             | 12        | 14        | 18        |
| Diameter of Steel brush                   | $d_b \geq$         | [mm] | WIT-RMB10                                     | WIT-RMB12 | WIT-RMB14 | WIT-RMB18 |
|                                           |                    |      | 12                                            | 14        | 16        | 20        |
| Minimum diameter of steel brush           | $d_{b,min}$        | [mm] | 10,5                                          | 12,5      | 14,5      | 18,5      |
| Max torque moment                         | $T_{inst}$         | [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/<br>330                       | SH20x85             | SH20x130 | SH20x200 |
| Nominal drill hole diameter               | d <sub>0</sub>                     | [mm] | 12                                            | 16                | 16       | 16                                     | 20                  | 20       | 20       |
| Drill hole depth                          | h <sub>0</sub>                     | [mm] | 85                                            | 90                | 135      | 135<br>+t <sub>fix</sub> <sup>1)</sup> | 90                  | 135      | 205      |
| Effective anchorage depth                 | h <sub>ef</sub> = h <sub>nom</sub> | [mm] | 80                                            | 85                | 130      | 130                                    | 85                  | 130      | 200      |
| Minimum wall thickness                    | h <sub>min</sub>                   | [mm] | 115                                           | 115               | 195      | 195                                    | 115                 | 195      | 240      |
| Diameter of clearance hole in the fixture | d <sub>f</sub> ≤                   | [mm] | 9                                             | 9 (M8) / 12 (M10) |          |                                        | 14 (M12) / 18 (M16) |          |          |
| Diameter of brush                         | d <sub>b</sub> ≥                   | [mm] | WIT-RMB12                                     | WIT-RMB16         |          |                                        | WIT-RMB20           |          |          |
|                                           |                                    |      | 14                                            | 18                |          |                                        | 22                  |          |          |
| Minimum diameter of brush                 | d <sub>b,min</sub>                 | [mm] | 12,5                                          | 16,5              |          |                                        | 20,5                |          |          |
| Max torque moment                         | T <sub>inst</sub>                  | [Nm] | See parameters of brick Annex C4 to Annex C39 |                   |          |                                        |                     |          |          |

<sup>1)</sup>  $t_{fix} < 200$  mm

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Intended use**  
 Installation parameters and cleaning brush

**Annex B 5**

**Table B4: Maximum working time and minimum curing time**

| <b>Temperature in the base material</b> | <b>WIT-VM 210 Tropical</b> |                  | <b>WIT-VM 210, WIT-VM 210 Blue<sup>1)</sup></b> |                  | <b>WIT-VM 210 Express</b> |                  |
|-----------------------------------------|----------------------------|------------------|-------------------------------------------------|------------------|---------------------------|------------------|
|                                         | Max. working time          | Min. curing time | Max. working time                               | Min. curing time | Max. working time         | Min. curing time |
| 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             |                  |

<sup>1)</sup> The WIT-VM 210 Blue injection mortar has a curing time proof by changing the color from blue to gray after curing minimum time. The curing time proof is only valid for the standard version of the mortar.

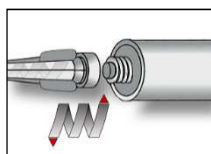
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Intended use**  
 Working and curing time

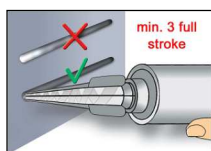
**Annex B 6**

## Installation instructions

### Preparation of cartridge

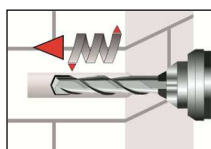


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. In case of a foil tube cartridge, cut off the clip before use. For every working interruption longer than the recommended working time (Table B4) as well as for new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

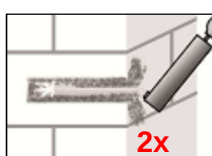
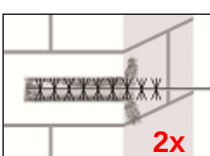
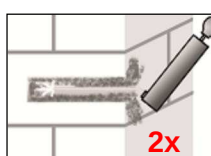


2. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes, for foil tube cartridges six full strokes, and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey or blue (WIT-VM 210 Blue) colour.

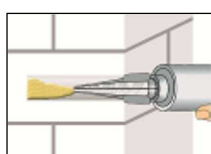
### Installation in solid masonry (without sleeve)



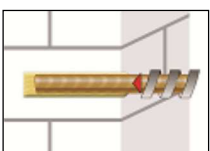
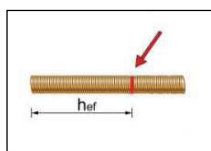
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drill method according to Annex C4 – C39, into the base material, with nominal drill hole diameter and bore hole depth acc. to the size and embedment depth required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



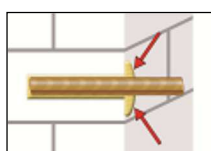
4. Blow out from the bottom of the drill hole two times. Attach the appropriate sized brush ( $> d_{b,min}$  Table B2 or B3) to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.



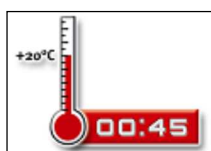
5. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. Observe the gel-/ working times given in Table B4.



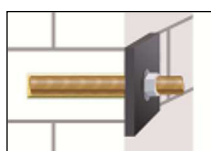
6. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the drill hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



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 C5 to Annex C39) by using a calibrated torque wrench.

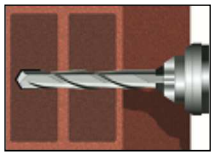
**Würth Injection System for masonry**  
WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical

**Intended use**  
Installation instruction Solid masonry and Autoclaved Aerated Concrete

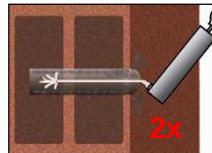
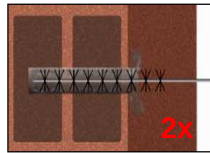
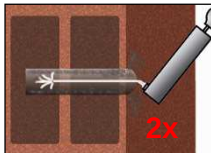
**Annex B 7**

## Installation instructions (continuation)

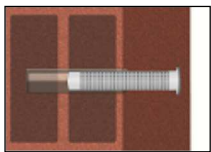
### Installation in solid and hollow masonry (with sleeve)



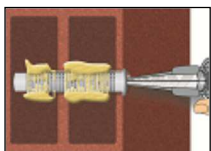
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, with drill method according to Annex C4 – C39, into the base material, with nominal drill hole diameter and drill hole depth acc. to the size and embedment depth required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



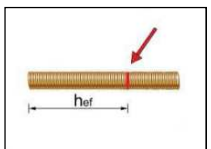
4. Blow out from the bottom of the drill hole two times. Attach the appropriate sized brush ( $> d_{b,min}$  Table B2 or B3) to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.



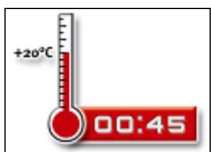
5. Insert the sleeve flush with the surface of the masonry. Only use sleeves that have the right length. Never cut the sleeve except the sleeve 16x130/330. For installing the sleeve 16x130/330 measure the required length of sleeve, cut the sleeve from the top and set the cap on it before pushing it through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



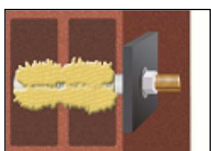
6. Starting from the bottom or back fill the sleeve with adhesive. For quantity of mortar attend cartridges label or installation instructions. Observe the gel-/ working times given in Table B4.



7. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the drill 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 C5 to Annex C39) by using a calibrated torque wrench.

**Würth Injection System for masonry**  
WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical

**Intended use**  
Installation instructions (hollow brick) and Solid lightweight Concrete

**Annex B 8**

**Table C1:  $\beta$ -factors for job-site testing under tension loading**

| Brick-Nr. | Installation & Use conditions | Anchor size    | $\beta$ -factor              |                              |
|-----------|-------------------------------|----------------|------------------------------|------------------------------|
|           |                               |                | T <sub>a</sub> : 24°C / 40°C | T <sub>b</sub> : 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<br>w/d<br>w/w             | For all anchor | 0,72                         | 0,50                         |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performances**  
 $\beta$ -factors for job site testing under tension load

**Annex C 1**

**Table C2: Characteristic tension, shear resistance and bending moment of threaded rod**

| Size                                             |                               |      | M8      | M10     | M12 | M16 |
|--------------------------------------------------|-------------------------------|------|---------|---------|-----|-----|
| Characteristic tension resistance                |                               |      |         |         |     |     |
| steel, property class 4.6 <sup>2)</sup>          | N <sub>Rk,s</sub>             | [kN] | 15 (13) | 23 (21) | 34  | 63  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 2,0     |         |     |     |
| steel, property class 4.8 <sup>2)</sup>          | N <sub>Rk,s</sub>             | [kN] | 15 (13) | 23 (21) | 34  | 63  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,5     |         |     |     |
| steel, property class 5.6 <sup>2)</sup>          | N <sub>Rk,s</sub>             | [kN] | 18 (17) | 29 (27) | 42  | 79  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 2,0     |         |     |     |
| steel, property class 5.8 <sup>2)</sup>          | N <sub>Rk,s</sub>             | [kN] | 18 (17) | 29 (27) | 42  | 79  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,5     |         |     |     |
| steel, property class 8.8 <sup>2)</sup>          | N <sub>Rk,s</sub>             | [kN] | 29 (27) | 46 (43) | 67  | 126 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,5     |         |     |     |
| Stainless steel A2 / A4 / HCR, property class 70 | N <sub>Rk,s</sub>             | [kN] | 26      | 41      | 59  | 110 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,87    |         |     |     |
| Stainless steel A4 / HCR, property class 80      | N <sub>Rk,s</sub>             | [kN] | 29      | 46      | 67  | 126 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,6     |         |     |     |
| Characteristic shear resistance                  |                               |      |         |         |     |     |
| steel, property class 4.6 <sup>2)</sup>          | V <sub>Rk,s</sub>             | [kN] | 7 (7)   | 12 (11) | 17  | 31  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,67    |         |     |     |
| steel, property class 4.8 <sup>2)</sup>          | V <sub>Rk,s</sub>             | [kN] | 7 (7)   | 12 (11) | 17  | 31  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| steel, property class 5.6 <sup>2)</sup>          | V <sub>Rk,s</sub>             | [kN] | 9 (8)   | 15 (13) | 21  | 39  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,67    |         |     |     |
| steel, property class 5.8 <sup>2)</sup>          | V <sub>Rk,s</sub>             | [kN] | 9 (8)   | 15 (13) | 21  | 39  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| steel, property class 8.8 <sup>2)</sup>          | V <sub>Rk,s</sub>             | [kN] | 15 (13) | 23 (21) | 34  | 63  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| Stainless steel A2 / A4 / HCR, property class 70 | V <sub>Rk,s</sub>             | [kN] | 13      | 20      | 30  | 55  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,56    |         |     |     |
| Stainless steel A4 / HCR, property class 80      | V <sub>Rk,s</sub>             | [kN] | 15      | 23      | 34  | 63  |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,33    |         |     |     |
| Characteristic bending moment                    |                               |      |         |         |     |     |
| steel, property class 4.6 <sup>2)</sup>          | M <sub>Rk,s</sub>             | [Nm] | 15 (13) | 30 (27) | 52  | 133 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,67    |         |     |     |
| steel, property class 4.8 <sup>2)</sup>          | M <sub>Rk,s</sub>             | [Nm] | 15 (13) | 30 (27) | 52  | 133 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| steel, property class 5.6 <sup>2)</sup>          | M <sub>Rk,s</sub>             | [Nm] | 19 (16) | 37 (33) | 65  | 166 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,67    |         |     |     |
| steel, property class 5.8 <sup>2)</sup>          | M <sub>Rk,s</sub>             | [Nm] | 19 (16) | 37 (33) | 65  | 166 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| steel, property class 8.8 <sup>2)</sup>          | M <sub>Rk,s</sub>             | [Nm] | 30 (26) | 60 (53) | 105 | 266 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,25    |         |     |     |
| Stainless steel A2 / A4 / HCR, property class 70 | M <sub>Rk,s</sub>             | [Nm] | 26      | 52      | 92  | 232 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,56    |         |     |     |
| Stainless steel A4 / HCR, property class 80      | M <sub>Rk,s</sub>             | [Nm] | 30      | 60      | 105 | 266 |
|                                                  | γ <sub>Ms</sub> <sup>1)</sup> | [-]  | 1,33    |         |     |     |

<sup>1)</sup> In absence of national regulations

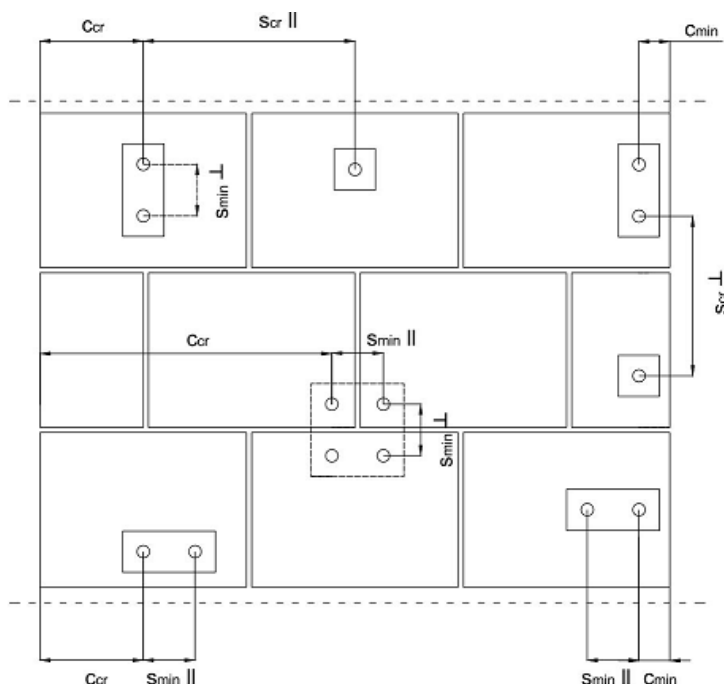
<sup>2)</sup> Values in brackets valid for hot dipped galvanized undersized threaded rods with smaller stress area  $A_s$  according to EN ISO 10684:2004+AC:2009

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performances**  
 Characteristic tension, shear resistance and bending moment of threaded rod

**Annex C 2**

## Spacing and edge distances



- $C_{cr}$  = Characteristic edge distance  
 $C_{min}$  = Minimum edge distance  
 $S_{cr}$  = Characteristic spacing  
 $S_{min}$  = Minimum spacing  
 $S_{cr II}; (S_{min II})$  = Characteristic (minimum) spacing for anchors placed parallel to bed joint  
 $S_{cr \perp}; (S_{min \perp})$  = Characteristic (minimum) spacing for anchors placed perpendicular to bed joint

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

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

Group of two anchors:  $N_{Rk}^g = \alpha_{g,N} * N_{Rk}$  and  $V_{Rk}^g = \alpha_{g,V} * V_{Rk}$   
 Group of four anchors:  $N_{Rk}^g = \alpha_{g,N,II} * \alpha_{g,N,\perp} * N_{Rk}$  and  $V_{Rk}^g = \alpha_{g,V,II} * \alpha_{g,V,\perp} * V_{Rk}$   
 ( $N_{Rk}$ :  $N_{Rk,b}$  or  $N_{Rk,b,j}$  for  $C_{cr}$ )  
 ( $V_{Rk}$ :  $V_{Rk,c}$ ;  $V_{Rk,c,j}$ ;  $V_{Rk,b}$  or  $V_{Rk,b,j}$  for  $C_{cr}$ )  
 (with the relevant  $\alpha_g$ )

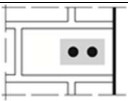
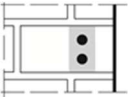
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performances**  
 Edge distance and anchor spacing

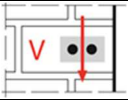
**Annex C 3**

## Group factor, valid for all brick types

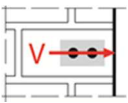
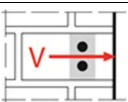
### Group factor for anchor group in case of tension loading

| Configuration                                       |                                                                                   | with $c \geq$ | with $s \geq$ |                   |     |     |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|---------------|---------------|-------------------|-----|-----|
| II: anchors placed parallel to horizontal joint     |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,N,II}$ | [-] | 2,0 |
| I: anchors placed perpendicular to horizontal joint |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,N,I}$  |     | 2,0 |

### Group factor for anchor group in case of shear loading parallel to free edge

| Configuration                                       |                                                                                   | with $c \geq$ | with $s \geq$ |                   |     |     |
|-----------------------------------------------------|-----------------------------------------------------------------------------------|---------------|---------------|-------------------|-----|-----|
| II: anchors placed parallel to horizontal joint     |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,V,II}$ | [-] | 2,0 |
| I: anchors placed perpendicular to horizontal joint |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,V,I}$  |     | 2,0 |

### Group factor for anchor group in case of shear loading perpendicular to free edge

| Configuration                                       |                                                                                     | with $c \geq$ | with $s \geq$ |                   |     |     |
|-----------------------------------------------------|-------------------------------------------------------------------------------------|---------------|---------------|-------------------|-----|-----|
| II: anchors placed parallel to horizontal joint     |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,V,II}$ | [-] | 2,0 |
| I: anchors placed perpendicular to horizontal joint |  | $C_{cr}$      | $S_{cr}$      | $\alpha_{g,V,I}$  |     | 2,0 |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performances**  
Group factor

**Annex C 4**

## Brick type: Autoclaved Aerated Concrete – AAC2

**Table C3: Description**

|                                           |                                  |                                                                                     |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type                                | Autoclaved Aerated Concrete AAC2 |  |
| Bulk density [kg/dm <sup>3</sup> ]        | 0,35                             |                                                                                     |
| Compressive strength [N/mm <sup>2</sup> ] | 2                                |                                                                                     |
| Code                                      | EN 771-4                         |                                                                                     |
| Producer (country code)                   | e.g. 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 |
|-------------|---------------------------|--------------------|----------------------------------------------|-----------------------------|
|             | $h_{ef}$                  | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel} = S_{min \perp}$ | $T_{inst,max}$              |
|             | [mm]                      |                    |                                              | [Nm]                        |
| <b>M8</b>   | 80                        | 120                | 240                                          | 2                           |
| <b>M10</b>  | 90                        | 135                | 270                                          |                             |
| <b>M12</b>  | 100                       | 150                | 300                                          |                             |
| <b>M16</b>  | 100                       | 150                | 300                                          |                             |

**Table C5: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                     | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                     | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|---------------------------------------|---------------|--------------------|---------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                  | [mm]          | [mm]               | [kN]                                  | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \bullet \gamma_M}$ | 0,29          | 0,58               | $\frac{V_{Rk}}{1,4 \bullet \gamma_M}$ | 1,23          | 1,84               |
| 90                                 |                                       | 0,23          | 0,46               |                                       | 0,87          | 1,31               |
| 100                                |                                       | 0,39          | 0,79               |                                       | 1,29          | 1,94               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Autoclaved Aerated Concrete – AAC2**

Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 5**

**Brick type: Autoclaved Aerated Concrete AAC2**

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

| Anchor size                                               | Effective anchorage depth | Characteristic resistance     |                               |                               |                               |                                 |
|-----------------------------------------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------------------------|
|                                                           |                           | Use conditions                |                               |                               |                               |                                 |
|                                                           |                           | d/d                           |                               | w/d<br>w/w                    |                               | d/d<br>w/d<br>w/w               |
|                                                           |                           | 40°C / 24°C                   | 80°C / 50°C                   | 40°C / 24°C                   | 80°C / 50°C                   | For all temperature range       |
|                                                           | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
|                                                           | [mm]                      | [kN]                          |                               |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 2 N/mm <sup>2</sup> |                           |                               |                               |                               |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

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

**Annex C 6**

## Brick type: Autoclaved Aerated Concrete AAC4

**Table C7: Description**

|                                           |                                  |                                                                                     |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type                                | Autoclaved Aerated Concrete AAC4 |  |
| Bulk density [kg/dm <sup>3</sup> ]        | 0,50                             |                                                                                     |
| Compressive strength [N/mm <sup>2</sup> ] | 4                                |                                                                                     |
| Code                                      | EN 771-4                         |                                                                                     |
| Producer (country code)                   | e.g. 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 |
|-------------|---------------------------|--------------------|----------------------------------------------|-----------------------------|
|             | $h_{ef}$                  | $c_{min} = c_{cr}$ | $s_{cr} = s_{min} \parallel = s_{min} \perp$ | $T_{inst,max}$              |
|             |                           | [mm]               |                                              | [Nm]                        |
| <b>M8</b>   | 80                        | 120                | 240                                          | 2                           |
| <b>M10</b>  | 90                        | 135                | 270                                          |                             |
| <b>M12</b>  | 100                       | 150                | 300                                          |                             |
| <b>M16</b>  | 100                       | 150                | 300                                          |                             |

**Table C9: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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               |
| 90                                 |                                     | 0,58          | 1,17               |                                     | 0,87          | 1,31               |
| 100                                |                                     | 0,10          | 0,21               |                                     | 1,29          | 1,94               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Autoclaved Aerated Concrete – AAC4**  
 Brick description, drawing,  
 Installation parameters, Displacement

**Annex C 7**

**Brick type: Autoclaved Aerated Concrete AAC4**

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

| Anchor size                                               | Effective anchorage depth | Characteristic resistance     |                               |                               |                               |                                 |
|-----------------------------------------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|---------------------------------|
|                                                           |                           | Use conditions                |                               |                               |                               |                                 |
|                                                           |                           | d/d                           |                               | w/d<br>w/w                    |                               | d/d<br>w/d<br>w/w               |
|                                                           |                           | 40°C / 24°C                   | 80°C / 50°C                   | 40°C / 24°C                   | 80°C / 50°C                   | For all temperature range       |
|                                                           | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
|                                                           | [mm]                      | [kN]                          |                               |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 4 N/mm <sup>2</sup> |                           |                               |                               |                               |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

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

**Annex C 8**

## Brick type: Autoclaved Aerated Concrete AAC6

**Table C11: Description**

|                                           |                                  |                                                                                     |
|-------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type                                | Autoclaved Aerated Concrete AAC6 |  |
| Bulk density [kg/dm <sup>3</sup> ]        | 0,60                             |                                                                                     |
| Compressive strength [N/mm <sup>2</sup> ] | 6                                |                                                                                     |
| Code                                      | EN 771-4                         |                                                                                     |
| Producer (country code)                   | e.g. 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 |
|-------------|---------------------------|--------------------|----------------------------------------------|-----------------------------|
|             | $h_{ef}$                  | $c_{min} = c_{cr}$ | $s_{cr} = s_{min \parallel} = s_{min \perp}$ | $T_{inst,max}$              |
|             | [mm]                      |                    |                                              | [Nm]                        |
| <b>M8</b>   | 80                        | 120                | 240                                          | 2                           |
| <b>M10</b>  | 90                        | 135                | 270                                          |                             |
| <b>M12</b>  | 100                       | 150                | 300                                          |                             |
| <b>M16</b>  | 100                       | 150                | 300                                          |                             |

**Table C13: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Autoclaved Aerated Concrete – AAC6**

Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 9**

**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 conditions                |                               |                               |                               |                                 |
|                                                           |                           | d/d                           |                               | w/d<br>w/w                    |                               | d/d<br>w/d<br>w/w               |
|                                                           |                           | 40°C / 24°C                   | 80°C / 50°C                   | 40°C / 24°C                   | 80°C / 50°C                   | For all temperature range       |
|                                                           | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
|                                                           | [mm]                      | [kN]                          |                               |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 6 N/mm <sup>2</sup> |                           |                               |                               |                               |                               |                                 |
| 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                            |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

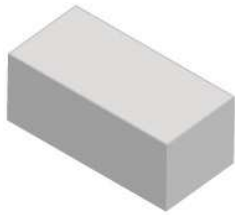
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

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

**Annex C 10**

# Brick type: Calcium silicate solid brick KS-NF

**Table C15: Description**

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

**Table C16: Installation parameter (Edge and spacing distances)**

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

**Table C17: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,08          | 0,16               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Calcium solid brick KS-NF**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 11**

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 conditions<br>d/d; w/d; w/w |                               |                                 |
|                                                            |                         |                           | 40°C / 24°C                     | 80°C / 50°C                   | For all temperature range       |
|                                                            |                         | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup>   | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
|                                                            |                         | [mm]                      | [kN]                            |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 10 N/mm <sup>2</sup> |                         |                           |                                 |                               |                                 |
| 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                             |
|                                                            | SH16x130/330            | 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 <sub>b</sub> ≥ 20 N/mm <sup>2</sup> |                         |                           |                                 |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330           | 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 <sub>b</sub> ≥ 27 N/mm <sup>2</sup> |                         |                           |                                 |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330           | 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

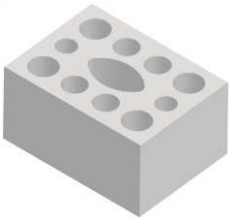
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

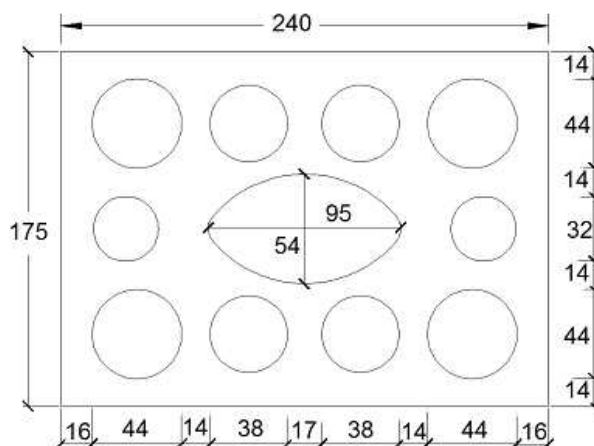
**Performance Calcium solid brick KS-NF**  
 Characteristic values of resistance under tension and shear load

**Annex C 12**

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

**Table C19: Description**

|                              |                                           |                                                                                     |
|------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Calcium silicate hollow brick<br>KS L-3DF |  |
| Bulk density [kg/dm³]        | 1,4                                       |                                                                                     |
| Compressive strength [N/mm²] | 8, 12 or 14                               |                                                                                     |
| Code                         | EN 771-2                                  |                                                                                     |
| Producer (country code)      | e.g. Wemding (DE)                         |                                                                                     |
| Brick dimensions [mm]        | 240 x 175 x 113                           |                                                                                     |
| Drilling method              | Rotary drilling                           |                                                                                     |



**Table C20: Installation parameter (Edge and spacing distances)**

| Anchor size | Sleeve        | Embedment depth | Edge distance      | Spacing                      |                 | Maximum installation torque |  |  |  |
|-------------|---------------|-----------------|--------------------|------------------------------|-----------------|-----------------------------|--|--|--|
|             |               | $h_{ef}$        | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | $S_{min \perp}$ | $T_{inst,max}$              |  |  |  |
|             |               |                 | [mm]               |                              |                 | [Nm]                        |  |  |  |
| M8          | SH 12x80      | 80              | 100                | 240                          | 113             | 8                           |  |  |  |
| M8 / M10    | SH 16x85      | 85              |                    |                              |                 |                             |  |  |  |
|             | 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<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                                  | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                    | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,36          | 0,73               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,82          | 1,23               |
| 85                                    |                                     | 1,62          | 3,24               |                                     | 1,83          | 2,75               |
| 130 ; 200                             |                                     | 1,70          | 3,40               |                                     | 1,98          | 2,98               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Calcium hollow brick KS L-3DF**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 13**

**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 conditions            |                           |                 |
|                                                   |                       |                           | d/d<br>w/d<br>w/w         |                           |                 |
|                                                   |                       | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                   |                       | $h_{ef}$                  | $N_{Rk}^{1)}$             | $N_{Rk}^{1)}$             | $V_{Rk,b}^{2)}$ |
|                                                   |                       | [mm]                      | [kN]                      |                           |                 |
| 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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

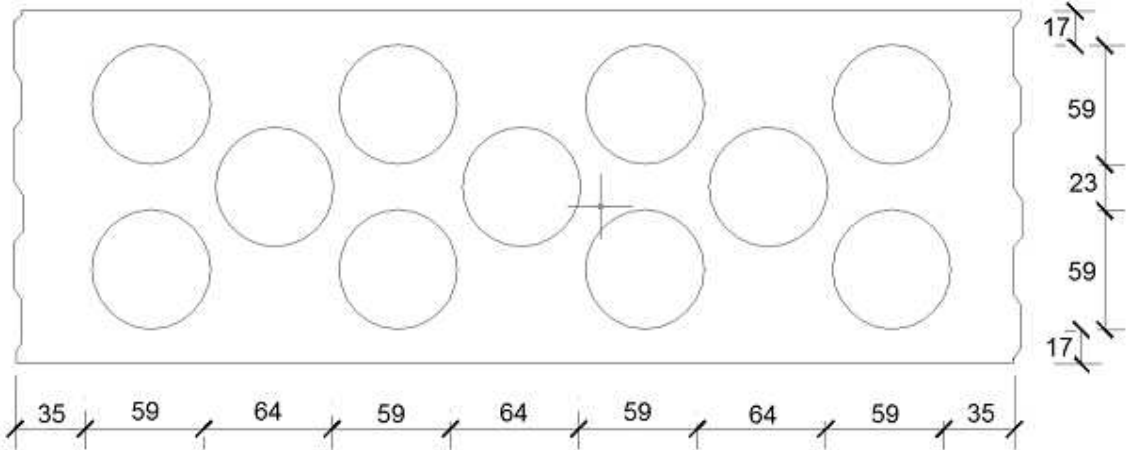
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Calcium hollow brick KS L-3DF**  
 Characteristic values of resistance under tension and shear load

**Annex C 14**

**Brick type: Calcium silicate hollow brick KS L-12DF**
**Table C23: Description**

|                              |                                            |                                                                                     |
|------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Calcium silicate hollow brick<br>KS L-12DF |  |
| Bulk density [kg/dm³]        | 1,40                                       |                                                                                     |
| Compressive strength [N/mm²] | 10, 12 or 16                               |                                                                                     |
| Code                         | EN 771-2                                   |                                                                                     |
| Producer (country code)      | e.g. Wemding (DE)                          |                                                                                     |
| Brick dimensions [mm]        | 498 x 175 x 238                            |                                                                                     |
| Drilling method              | Rotary drilling                            |                                                                                     |

  

**Table C24: Installation parameter (Edge and spacing distances)**

| Anchor size | Sleeve        | Embedment depth | Edge distance                      | Spacing                            |                    | Maximum installation torque   |
|-------------|---------------|-----------------|------------------------------------|------------------------------------|--------------------|-------------------------------|
|             |               | h <sub>ef</sub> | C <sub>min</sub> = C <sub>cr</sub> | S <sub>cr</sub> = S <sub>min</sub> | S <sub>min</sub> ⊥ |                               |
|             |               |                 | [mm]                               |                                    |                    | T <sub>inst,max</sub><br>[Nm] |
| M8          | SH 12x80      | 80              | 100                                | 498                                | 238                | 2                             |
| M8 / M10    | SH 16x85      | 85              |                                    |                                    |                    | 4                             |
|             | SH 16x130     | 130             |                                    |                                    |                    |                               |
|             | SH 16x130/330 | 130             |                                    |                                    |                    |                               |
| M12 / M16   | SH 20x85      | 85              | 120                                | 498                                | 238                | 4                             |
|             | SH 20x130     | 130             |                                    |                                    |                    |                               |

**Table C25: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Calcium hollow brick KS L-12DF**  
 Brick description, drawing,  
 Installation parameters, Displacement

**Annex C 15**

**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 conditions            |                           |                 |
|                                                   |                       |                           | d/d                       | w/d                       | w/w             |
|                                                   |                       | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                   |                       | $h_{ef}$                  | $N_{Rk}^{1)}$             | $N_{Rk}^{1)}$             | $V_{Rk,b}^{2)}$ |
| [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            |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pt}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pt}$  and  $V_{Rk,c}$  see TR 054

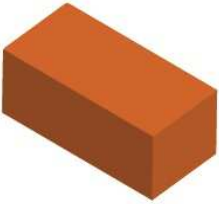
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Calcium hollow brick KS L-12DF**  
 Characteristic values of resistance under tension and shear load

**Annex C 16**

# Brick type: Clay solid brick Mz-DF

**Table C27: Description**

|                              |                           |                                                                                     |
|------------------------------|---------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay solid brick<br>Mz-DF |  |
| Bulk density [kg/dm³]        | 1,64                      |                                                                                     |
| Compressive strength [N/mm²] | 10, 20 or 28              |                                                                                     |
| Code                         | EN 771-1                  |                                                                                     |
| Producer (country code)      | e.g. Unipor (DE)          |                                                                                     |
| Brick dimensions [mm]        | 240 x 115 x 55            |                                                                                     |
| Drilling method              | Hammer drilling           |                                                                                     |

**Table C28: Installation parameter (Edge and spacing distances)**

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

**Table C29: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay solid brick Mz-DF**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 17**

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 conditions                |                               |                                 |
|                                                            |                           |                           | d/d; w/d; w/w                 |                               |                                 |
|                                                            |                           | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                            |                           | h <sub>ef</sub>           | N <sub>RK</sub> <sup>1)</sup> | N <sub>RK</sub> <sup>1)</sup> | V <sub>RK,b</sub> <sup>2)</sup> |
| [mm]                                                       | [kN]                      |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 10 N/mm <sup>2</sup> |                           |                           |                               |                               |                                 |
| 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 <sub>b</sub> ≥ 20 N/mm <sup>2</sup> |                           |                           |                               |                               |                                 |
| 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 <sub>b</sub> ≥ 28 N/mm <sup>2</sup> |                           |                           |                               |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{RK} = N_{RK,p} = N_{RK,b}$ ;  $N_{RK,s}$  according to Table C2 Annex C2; Calculation  $N_{RK,pb}$  see TR 054

<sup>2)</sup> For  $V_{RK,s}$  see Annex C 2, Table C2; Calculation of  $V_{RK,pb}$  and  $V_{RK,c}$  see TR 054

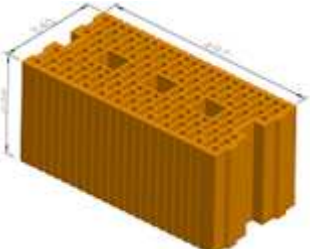
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

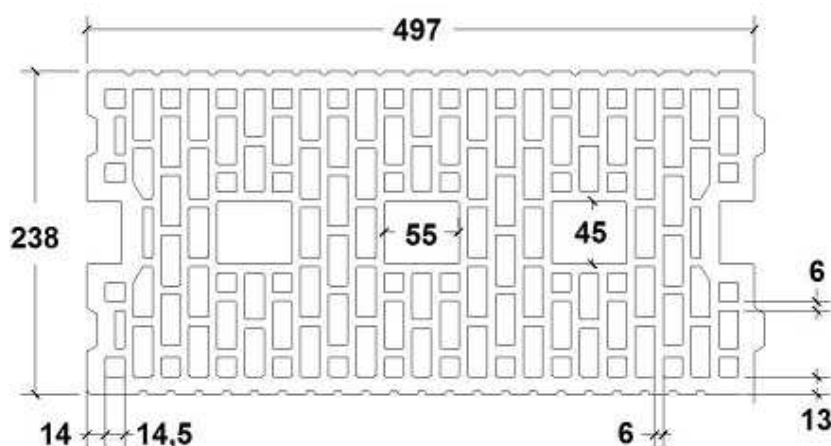
**Performance Clay solid brick Mz-DF**  
 Characteristic values of resistance under tension and shear load

**Annex C 18**

# Brick type: Clay hollow brick HLz-16DF

**Table C31: Description**

|                              |                               |                                                                                     |
|------------------------------|-------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick<br>HLz-16DF |  |
| Bulk density [kg/dm³]        | 0,83                          |                                                                                     |
| Compressive strength [N/mm²] | 6, 9, 12 or 14                |                                                                                     |
| Code                         | EN 771-1                      |                                                                                     |
| Producer (country code)      | e.g. Unipor (DE)              |                                                                                     |
| Brick dimensions [mm]        | 497 x 238 x 240               |                                                                                     |
| Drilling method              | Rotary drilling               |                                                                                     |



**Table C32: Installation parameter (Edge and spacing distances)**

| Anchor size | Sleeve        | Embedment depth | Edge distance      | Spacing                      |                 | Maximum installation torque |
|-------------|---------------|-----------------|--------------------|------------------------------|-----------------|-----------------------------|
|             |               | $h_{ef}$        | $C_{min} = C_{Cr}$ | $S_{Cr} = S_{min \parallel}$ | $S_{min \perp}$ | $T_{inst,max}$              |
|             |               | [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                |                              |                 |                             |
|             | SH 20x130     | 130             |                    |                              |                 |                             |
|             | SH 20x200     | 200             |                    |                              |                 |                             |

**Table C33: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|----------------------------------|---------------|--------------------|----------------------------------|---------------|--------------------|
| [mm]                                  | [kN]                             | [mm]          | [mm]               | [kN]                             | [mm]          | [mm]               |
| 80                                    | $N_{Rk}$<br>$1,4 \cdot \gamma_M$ | 0,27          | 0,55               | $V_{Rk}$<br>$1,4 \cdot \gamma_M$ | 1,02          | 1,53               |
| 85                                    |                                  | 0,55          | 1,10               |                                  | 2,14          | 3,22               |
| 130 ; 200                             |                                  | 0,19          | 0,38               |                                  | 2,26          | 3,39               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick HLz-16DF**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 19**

**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 conditions<br>d/d; w/d; w/w |                               |                                 |
|                                                            |                       |                           | 40°C / 24°C                     | 80°C / 50°C                   | For all temperature range       |
|                                                            |                       | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup>   | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
|                                                            |                       | [mm]                      | [kN]                            |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 6 N/mm <sup>2</sup>  |                       |                           |                                 |                               |                                 |
| 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 <sub>b</sub> ≥ 9 N/mm <sup>2</sup>  |                       |                           |                                 |                               |                                 |
| 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 <sub>b</sub> ≥ 12 N/mm <sup>2</sup> |                       |                           |                                 |                               |                                 |
| 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 <sub>b</sub> ≥ 14 N/mm <sup>2</sup> |                       |                           |                                 |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

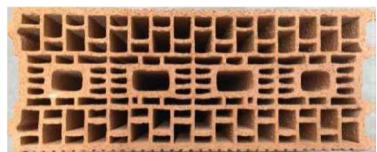
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

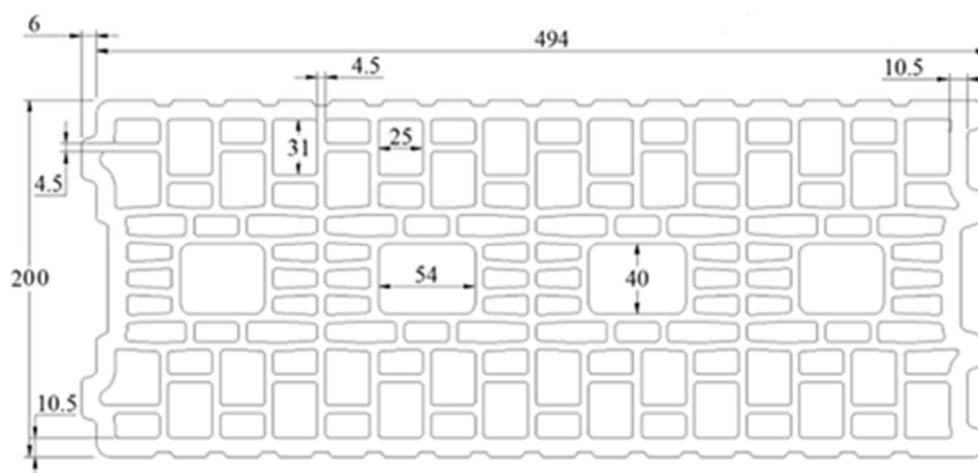
**Performance Clay hollow brick HLz-16DF**  
 Characteristic values of resistance under tension and shear load

**Annex C 20**

# Brick type: Clay hollow brick Porotherm Homebric

**Table C35: Description**

|                              |                                         |                                                                                     |
|------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick<br>Porotherm Homebric |  |
| Bulk density [kg/dm³]        | 0,68                                    |                                                                                     |
| Compressive strength [N/mm²] | 6, 8 or 10                              |                                                                                     |
| Code                         | EN 771-1                                |                                                                                     |
| Producer (country code)      | e.g. 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 |
|-------------|---------------|-----------------|------------------------------------|---------------------------------------|--------------------|-----------------------------|
|             |               | h <sub>ef</sub> | C <sub>min</sub> = C <sub>cr</sub> | S <sub>cr</sub> = S <sub>min II</sub> | S <sub>min</sub> ⊥ | T <sub>inst,max</sub>       |
|             |               | [mm]            |                                    |                                       |                    | [Nm]                        |
| 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                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Porotherm Homebric**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 21**

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 conditions            |                           |                 |
|                                                   |               |                           | d/d<br>w/d<br>w/w         |                           |                 |
|                                                   |               | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                   |               | $h_{ef}$                  | $N_{Rk}^{1)}$             | $N_{Rk}^{1)}$             | $V_{Rk,b}^{2)}$ |
| [mm]                                              | [kN]          |                           |                           |                           |                 |
| 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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

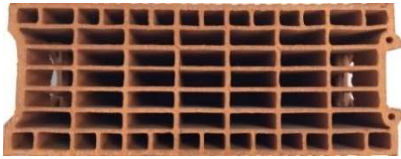
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

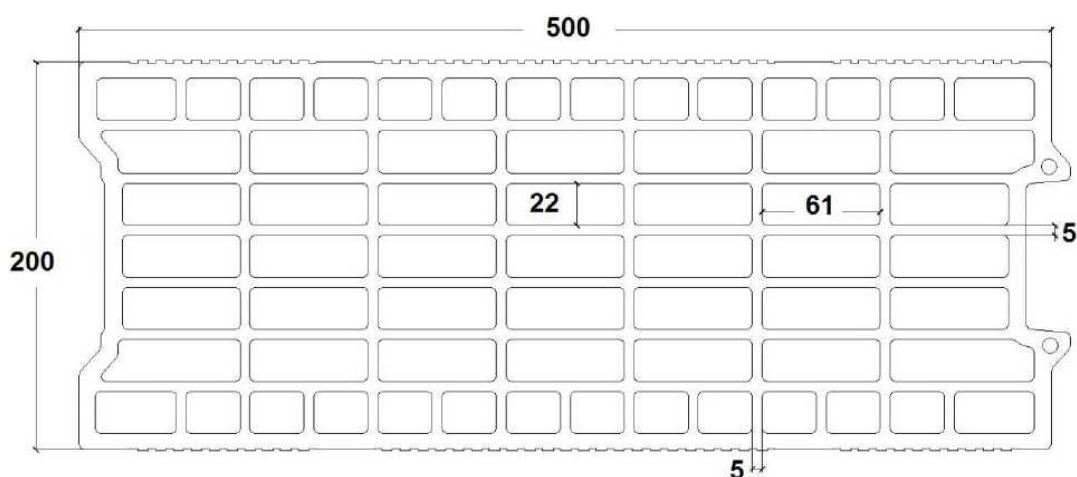
**Performance Clay hollow brick Porotherm Homebric**  
 Characteristic values of resistance under tension and shear load

**Annex C 22**

# Brick type: Clay hollow brick BGV Thermo

**Table C39: Description**

|                              |                                 |                                                                                     |
|------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick<br>BGV Thermo |  |
| Bulk density [kg/dm³]        | 0,62                            |                                                                                     |
| Compressive strength [N/mm²] | 4, 6 or 10                      |                                                                                     |
| Code                         | EN 771-1                        |                                                                                     |
| Producer (country code)      | e.g. Leroux (FR)                |                                                                                     |
| Brick dimensions [mm]        | 500 x 200 x 314                 |                                                                                     |
| Drilling method              | Rotary drilling                 |                                                                                     |



**Table C40: Installation parameter (Edge and spacing distances)**

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

**Table C41: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick BGV Thermo**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 23**

**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 conditions            |                           |                 |
|                                                   |               |                           | d/d                       | w/d                       | w/w             |
|                                                   |               | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                   |               | $h_{ef}$                  | $N_{Rk}^{1)}$             | $N_{Rk}^{1)}$             | $V_{Rk,b}^{2)}$ |
| [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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

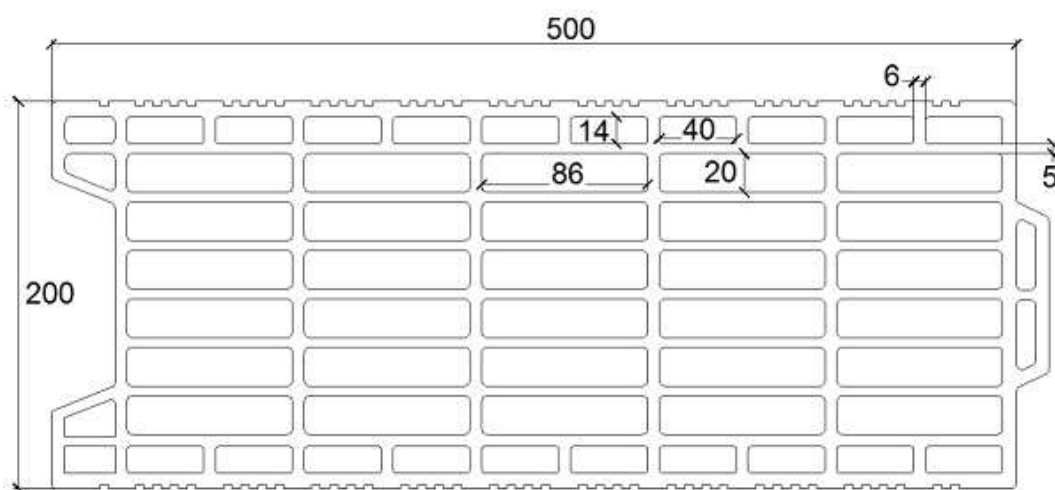
**Performance Clay hollow brick BGV Thermo**  
 Characteristic values of resistance under tension and shear load

**Annex C 24**

# Brick type: Clay hollow brick Calibric Th

**Table C43: Description**

|                              |                                  |                                                                                     |
|------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick<br>Calibric Th |  |
| Bulk density [kg/dm³]        | 0,62                             |                                                                                     |
| Compressive strength [N/mm²] | 6, 9 or 12                       |                                                                                     |
| Code                         | EN 771-1                         |                                                                                     |
| Producer (country code)      | e.g. Terreal (FR)                |                                                                                     |
| Brick dimensions [mm]        | 500 x 200 x 314                  |                                                                                     |
| Drilling method              | Rotary drilling                  |                                                                                     |



**Table C44: Installation parameter (Edge and spacing distances)**

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

**Table C45: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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                                |                                     | 0,37          | 0,74               |                                     | 2,31          | 3,46               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Calibric Th**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 25**

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 conditions            |                           |                 |
|                                                   |               |                           | d/d<br>w/d<br>w/w         |                           |                 |
|                                                   |               | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                   |               | $h_{ef}$                  | $N_{Rk}^{1)}$             | $N_{Rk}^{1)}$             | $V_{Rk,b}^{2)}$ |
| [mm]                                              | [kN]          |                           |                           |                           |                 |
| 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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Calibric Th**  
 Characteristic values of resistance under tension and shear load

**Annex C 26**

# Brick type: Clay hollow brick Urbanbric

Table C47: Description

|                              |                             |                                                                                     |
|------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick Urbanbric |  |
| Bulk density [kg/dm³]        | 0,74                        |                                                                                     |
| Compressive strength [N/mm²] | 6 or 9                      |                                                                                     |
| Code                         | EN 771-1                    |                                                                                     |
| Producer (country code)      | e.g. Imerys (FR)            |                                                                                     |
| Brick dimensions [mm]        | 560 x 200 x 274             |                                                                                     |
| Drilling method              | Rotary drilling             |                                                                                     |

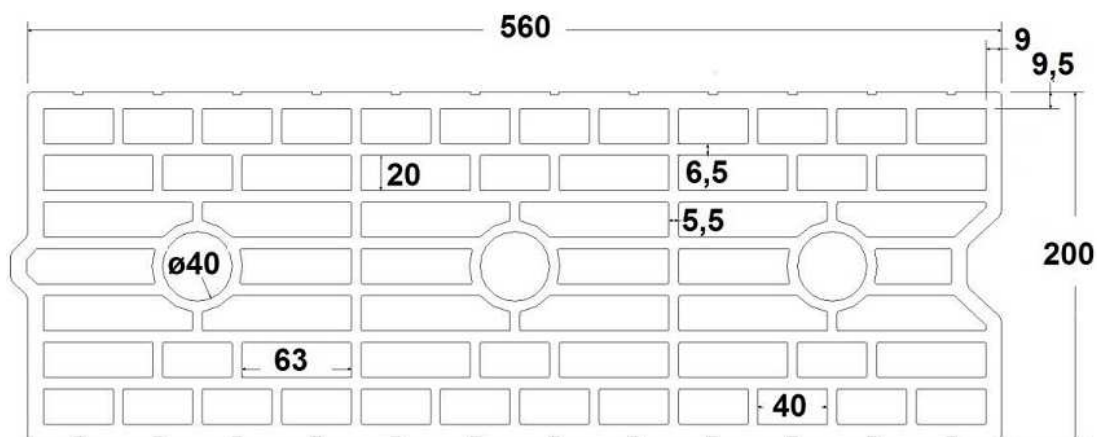


Table C48: Installation parameter (Edge and spacing distances)

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

Table C49: Displacement

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,34          | 0,67               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,71          | 1,06               |
| 85                                 |                                     | 0,52          | 1,04               |                                     | 1,37          | 2,06               |
| 130                                |                                     | 0,62          | 1,24               |                                     | 1,62          | 2,44               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Urbanbric**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 27**

**Brick type: Clay hollow brick Urbanbric**

**Table C50: Characteristic values of resistance under tension and shear loads**

| Anchor size                                               | Sleeve        | Effective anchorage depth | Characteristic resistance     |                               |                                 |
|-----------------------------------------------------------|---------------|---------------------------|-------------------------------|-------------------------------|---------------------------------|
|                                                           |               |                           | Use conditions                |                               |                                 |
|                                                           |               |                           | d/d<br>w/d<br>w/w             |                               |                                 |
|                                                           |               | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                           |               | h <sub>ef</sub>           | N <sub>RK</sub> <sup>1)</sup> | N <sub>RK</sub> <sup>1)</sup> | V <sub>RK,b</sub> <sup>2)</sup> |
| [mm]                                                      | [kN]          |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 6 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                           | SH 16x130/330 | 130                       | 1,5                           | 1,2                           | 3,5                             |
| M12 / M16                                                 | SH 20x85      | 85                        | 1,2                           | 0,75                          | 4,0                             |
|                                                           | SH 20x130     | 130                       | 1,5                           | 1,2                           | 4,0                             |
| Compressive strength f <sub>b</sub> ≥ 9 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                           | SH 16x130/330 | 130                       | 2,0                           | 1,5                           | 4,5                             |
| M12 / M16                                                 | SH 20x85      | 85                        | 1,5                           | 0,9                           | 5,0                             |
|                                                           | SH 20x130     | 130                       | 2,0                           | 1,5                           | 5,0                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pt}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pt}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

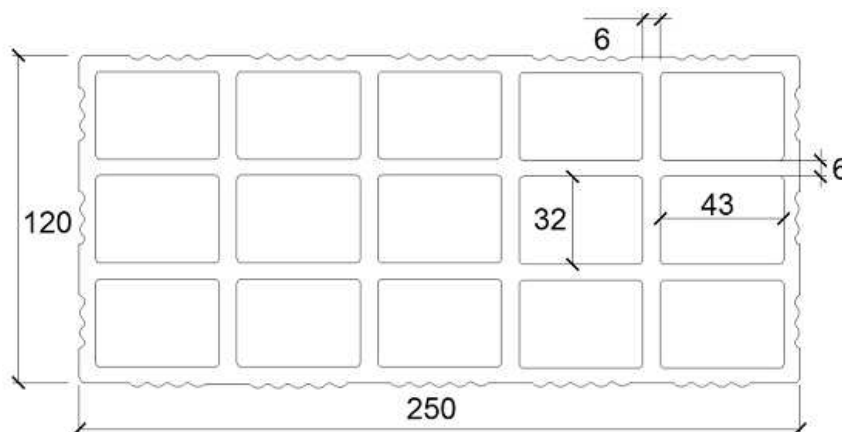
**Performance Clay hollow brick Urbanbric**  
 Characteristic values of resistance under tension and shear load

**Annex C 28**

# Brick type: Clay hollow brick Blocchi Leggeri

**Table C51: Description**

|                              |                                      |                                                                                     |
|------------------------------|--------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick<br>Blocchi Leggeri |  |
| Bulk density [kg/dm³]        | 0,55                                 |                                                                                     |
| Compressive strength [N/mm²] | 4, 6 or 8                            |                                                                                     |
| Code                         | EN 771-1                             |                                                                                     |
| Producer (country code)      | e.g. 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 |
|------------------|---------------|-----------------|--------------------|------------------------------|-----------------|-----------------------------|
|                  |               | $h_{ef}$        | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | $S_{min \perp}$ | $T_{inst,max}$              |
|                  |               | [mm]            |                    |                              |                 | [Nm]                        |
| <b>M8</b>        | SH 12x80      | 80              | 100                | 250                          | 250             | 4                           |
| <b>M8 / M10</b>  | SH 16x85      | 85              |                    |                              |                 |                             |
|                  | SH 16x130     | 130             |                    |                              |                 |                             |
|                  | SH 16x130/330 | 130             |                    |                              |                 |                             |
| <b>M12 / M16</b> | SH 20x85      | 85              | 120                | 250                          | 250             | 4                           |
|                  | SH 20x130     | 130             |                    |                              |                 |                             |
|                  | SH 20x200     | 200             |                    |                              |                 |                             |

**Table C53: Displacement**

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

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Blocchi Leggeri**

Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 29**

**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 conditions                |                               |                                 |
|                                                           |               |                           | d/d<br>w/d<br>w/w             |                               |                                 |
|                                                           |               | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                           |               | h <sub>ef</sub>           | N <sub>RK</sub> <sup>1)</sup> | N <sub>RK</sub> <sup>1)</sup> | V <sub>RK,b</sub> <sup>2)</sup> |
| [mm]                                                      | [kN]          |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 4 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                           | SH 16x130/330 | 130                       | 0,5                           | 0,3                           | 2,0                             |
| M12 / M16                                                 | SH 20x85      | 85                        | 0,4                           | 0,3                           | 2,0                             |
|                                                           | SH 20x130     | 130                       | 0,5                           | 0,3                           | 2,0                             |
|                                                           | SH 20x200     | 200                       | 0,5                           | 0,3                           | 2,0                             |
| Compressive strength f <sub>b</sub> ≥ 6 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                           | SH 16x130/330 | 130                       | 0,6                           | 0,4                           | 2,0                             |
| M12 / M16                                                 | SH 20x85      | 85                        | 0,5                           | 0,3                           | 2,5                             |
|                                                           | SH 20x130     | 130                       | 0,6                           | 0,4                           | 2,5                             |
|                                                           | SH 20x200     | 200                       | 0,6                           | 0,4                           | 2,5                             |
| Compressive strength f <sub>b</sub> ≥ 8 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                           | SH 16x130/330 | 130                       | 0,6                           | 0,5                           | 2,5                             |
| M12 / M16                                                 | SH 20x85      | 85                        | 0,6                           | 0,4                           | 3,0                             |
|                                                           | SH 20x130     | 130                       | 0,6                           | 0,5                           | 3,0                             |
|                                                           | SH 20x200     | 200                       | 0,6                           | 0,5                           | 3,0                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pt}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pt}$  and  $V_{Rk,c}$  see TR 054

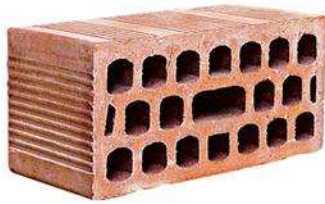
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

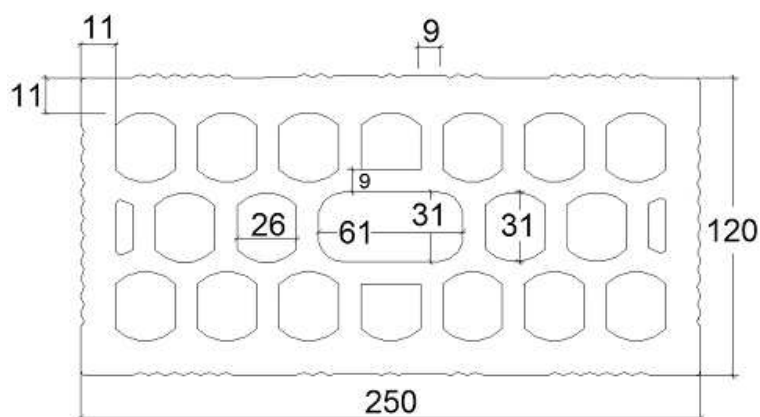
**Performance Clay hollow brick Blocchi Leggeri**  
 Characteristic values of resistance under tension and shear load

**Annex C 30**

# Brick type: Clay hollow brick Doppio Uni

**Table C55: Description**

|                              |                              |                                                                                     |
|------------------------------|------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Clay hollow brick Doppio Uni |  |
| Bulk density [kg/dm³]        | 0,92                         |                                                                                     |
| Compressive strength [N/mm²] | 10, 16, 20 or 28             |                                                                                     |
| Code                         | EN 771-1                     |                                                                                     |
| Producer (country code)      | e.g. Wienerberger (IT)       |                                                                                     |
| Brick dimensions [mm]        | 250 x 120 x 120              |                                                                                     |
| Drilling method              | Rotary drilling              |                                                                                     |



**Table C56: Installation parameter (Edge and spacing distances)**

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

**Table C57: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,54          | 1,08               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 1,63          | 2,45               |
| 85                                 |                                     | 0,17          | 0,34               |                                     | 1,75          | 2,63               |
| 130 ; 200                          |                                     | 0,54          | 1,08               |                                     | 1,75          | 2,63               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Clay hollow brick Doppio Uni**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 31**

**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 conditions                |                               |                                 |
|                                                            |               |                           | d/d                           | w/d                           | w/w                             |
|                                                            |               | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                            |               | h <sub>ef</sub>           | N <sub>Rk</sub> <sup>1)</sup> | N <sub>Rk</sub> <sup>1)</sup> | V <sub>Rk,b</sub> <sup>2)</sup> |
| [mm]                                                       | [kN]          |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 10 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330 | 130                       | 0,9                           | 0,6                           | 2,0                             |
| M12 / M16                                                  | SH 20x85      | 85                        | 1,2                           | 0,75                          | 2,0                             |
|                                                            | SH 20x130     | 130                       | 1,2                           | 0,75                          | 2,0                             |
|                                                            | SH 20x200     | 200                       | 1,2                           | 0,75                          | 2,0                             |
| Compressive strength f <sub>b</sub> ≥ 16 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330 | 130                       | 1,2                           | 0,9                           | 2,5                             |
| M12 / M16                                                  | SH 20x85      | 85                        | 1,5                           | 0,9                           | 2,5                             |
|                                                            | SH 20x130     | 130                       | 1,5                           | 0,9                           | 2,5                             |
|                                                            | SH 20x200     | 200                       | 1,5                           | 0,9                           | 2,5                             |
| Compressive strength f <sub>b</sub> ≥ 20 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330 | 130                       | 1,5                           | 0,9                           | 3,0                             |
| M12 / M16                                                  | SH 20x85      | 85                        | 1,5                           | 0,9                           | 3,0                             |
|                                                            | SH 20x130     | 130                       | 1,5                           | 0,9                           | 3,0                             |
|                                                            | SH 20x200     | 200                       | 1,5                           | 0,9                           | 3,0                             |
| Compressive strength f <sub>b</sub> ≥ 28 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |
|                                                            | SH 16x130/330 | 130                       | 1,5                           | 1,2                           | 3,5                             |
| M12 / M16                                                  | SH 20x85      | 85                        | 2,0                           | 1,2                           | 3,5                             |
|                                                            | SH 20x130     | 130                       | 2,0                           | 1,2                           | 3,5                             |
|                                                            | SH 20x200     | 200                       | 2,0                           | 1,2                           | 3,5                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

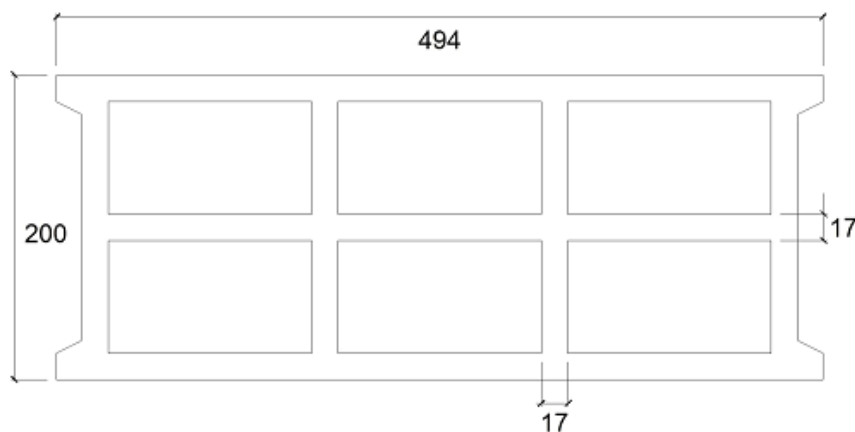
**Performance Clay hollow brick Doppio Uni**  
 Characteristic values of resistance under tension and shear load

**Annex C 32**

# Brick type: Hollow Light weight concrete Bloc creux B40

**Table C59: Description**

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



**Table C60: Installation parameter (Edge and spacing distances)**

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

**Table C61: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                                  | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                    | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,14          | 0,29               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,25          | 0,37               |
| 85                                    |                                     | 0,45          | 0,90               |                                     | 0,98          | 1,47               |
| 130                                   |                                     | 0,61          | 1,22               |                                     | 1,10          | 1,65               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance hollow light weight concrete Bloc creux B40**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 33**

**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 conditions                |                               |                                 |
|                                                           |               |                           | d/d<br>w/d<br>w/w             |                               |                                 |
|                                                           |               | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                           |               | h <sub>ef</sub>           | N <sub>RK</sub> <sup>1)</sup> | N <sub>RK</sub> <sup>1)</sup> | V <sub>RK,b</sub> <sup>2)</sup> |
| [mm]                                                      | [kN]          |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 4 N/mm <sup>2</sup> |               |                           |                               |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance hollow light weight concrete Bloc creux B40**  
 Characteristic values of resistance under tension and shear load

**Annex C 34**

**Brick type: Solid light weight concrete brick**

**Table C63: Description**

|                              |                                   |                                                                                     |
|------------------------------|-----------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Solid light weight concrete brick |  |
| Bulk density [kg/dm³]        | 0,63                              |                                                                                     |
| Compressive strength [N/mm²] | 2                                 |                                                                                     |
| Code                         | EN 771-3                          |                                                                                     |
| Producer (country code)      | e.g. Bisotherm (DE)               |                                                                                     |
| Brick dimensions [mm]        | 300 x 123 x 248                   |                                                                                     |
| Drilling method              | Rotary drilling                   |                                                                                     |

**Table C64: Installation parameter (Edge and spacing distances)**

| Anchor size | Sleeve | Embedment depth | Edge distance      | Spacing                                      | Maximum installation torque |
|-------------|--------|-----------------|--------------------|----------------------------------------------|-----------------------------|
|             |        | $h_{ef}$        | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel} = S_{min \perp}$ | $T_{inst,max}$              |
|             |        | [mm]            |                    |                                              | [Nm]                        |
| <b>M8</b>   | -      | 80              | 120                | 240                                          | 6                           |
| <b>M10</b>  | -      | 90              | 135                | 270                                          |                             |
| <b>M12</b>  | -      | 100             | 150                | 300                                          | 10                          |
| <b>M16</b>  | -      | 100             | 150                | 300                                          | 14                          |

**Table C65: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,64          | 1,28               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,50          | 0,75               |
| 90                                 |                                     | 0,70          | 1,41               |                                     | 0,68          | 1,03               |
| 100                                |                                     | 0,21          | 0,42               |                                     | 0,54          | 0,81               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance Solid light weight concrete LAC**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 35**

**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 conditions                |                               |                                 |
|                                                           |        |                           | d/d<br>w/d<br>w/w             |                               |                                 |
|                                                           |        | 40°C / 24°C               | 80°C / 50°C                   | For all temperature range     |                                 |
|                                                           |        | h <sub>ef</sub>           | N <sub>RK</sub> <sup>1)</sup> | N <sub>RK</sub> <sup>1)</sup> | V <sub>RK,b</sub> <sup>2)</sup> |
| [mm]                                                      | [kN]   |                           |                               |                               |                                 |
| Compressive strength f <sub>b</sub> ≥ 2 N/mm <sup>2</sup> |        |                           |                               |                               |                                 |
| 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                             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

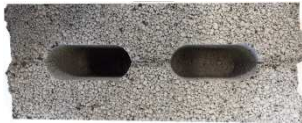
**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

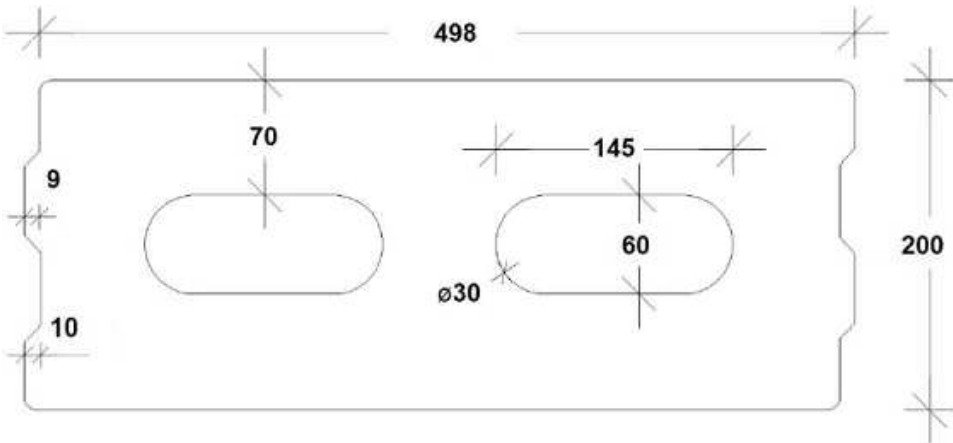
**Performance Solid light weight concrete LAC**  
 Characteristic values of resistance under tension and shear load

**Annex C 36**

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

**Table C67: Description**

|                              |                                                         |                                                                                     |
|------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Hollow light weight concrete<br>Leca Lex harkko RUH-200 |  |
| Bulk density [kg/dm³]        | 0,7                                                     |                                                                                     |
| Compressive strength [N/mm²] | 2,7                                                     |                                                                                     |
| Code                         | EN 771-3                                                |                                                                                     |
| Producer (country code)      | e.g. 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 |
|------------------|---------------|-----------------|--------------------|------------------------------|-----------------|-----------------------------|
|                  |               | $h_{ef}$        | $C_{min} = C_{cr}$ | $S_{cr} = S_{min \parallel}$ | $S_{min \perp}$ | $T_{inst,max}$              |
|                  |               | [mm]            |                    |                              |                 | [Nm]                        |
| <b>M8</b>        | SH 12x80      | 80              | 120                | 498                          | 195             | 8                           |
| <b>M8 / M10</b>  | SH 16x85      | 85              | 127                |                              |                 |                             |
|                  | SH 16x130     | 130             | 195                |                              |                 |                             |
|                  | SH 16x130/330 | 130             | 195                |                              |                 |                             |
| <b>M12 / M16</b> | SH 20x85      | 85              | 127                | 498                          | 195             | 8                           |
|                  | SH 20x130     | 130             | 195                |                              |                 |                             |

**Table C69: Displacement**

| Effective anchorage depth $h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [mm]                               | [kN]                                | [mm]          | [mm]               | [kN]                                | [mm]          | [mm]               |
| 80                                 | $\frac{N_{Rk}}{1,4 \cdot \gamma_M}$ | 0,11          | 0,22               | $\frac{V_{Rk}}{1,4 \cdot \gamma_M}$ | 0,47          | 0,70               |
| 85                                 |                                     | 0,11          | 0,23               |                                     | 0,38          | 0,57               |
| 130                                |                                     | 0,10          | 0,20               |                                     | 0,56          | 0,85               |

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance LECA LEX harkko RUH-200 Hollow**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 37**

**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 conditions            |                           |                 |
|                                                    |               |                           | d/d                       | w/d                       | w/w             |
|                                                    |               | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                    |               | $h_{ef}$                  | $N_{RK}^{1)}$             | $N_{RK}^{1)}$             | $V_{RK,b}^{2)}$ |
| [mm]                                               | [kN]          |                           |                           |                           |                 |
| 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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance LECA LEX harkko RUH-200 Hollow**  
 Characteristic values of resistance under tension and shear load  
 Displacement

**Annex C 38**

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

**Table C71: Description**

|                              |                                                              |                                                                                     |
|------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Brick type                   | Solid light weight concrete<br>Leca Lex harkko RUH-200 kulma |  |
| Bulk density [kg/dm³]        | 0,78                                                         |                                                                                     |
| Compressive strength [N/mm²] | 3                                                            |                                                                                     |
| Code                         | EN 771-3                                                     |                                                                                     |
| Producer (country code)      | e.g. 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 |
|------------------|---------------|-----------------|--------------------|---------------------------------------|-----------------------------|
|                  |               | $h_{ef}$        | $C_{min} = C_{cr}$ | $S_{cr} = S_{min II} = S_{min \perp}$ | $T_{inst,max}$              |
|                  |               | [mm]            |                    |                                       | [Nm]                        |
| <b>M8</b>        | -             | 80              | 120                | 240                                   | 6                           |
| <b>M10</b>       | -             | 90              | 135                | 270                                   | 12                          |
| <b>M12</b>       | -             | 100             | 150                | 300                                   | 14                          |
| <b>M16</b>       | -             | 100             | 150                | 300                                   | 16                          |
| <b>M8</b>        | SH 12x80      | 80              | 120                | 240                                   | 8                           |
| <b>M8 / M10</b>  | SH 16x85      | 85              | 127                | 255                                   |                             |
|                  | SH 16x130     | 130             | 195                | 390                                   |                             |
|                  | SH 16x130/330 | 130             | 195                | 390                                   |                             |
| <b>M12 / M16</b> | SH 20x85      | 85              | 127                | 255                                   | 12                          |
|                  | SH 20x130     | 130             | 195                | 390                                   | 16                          |

**Table C73: Displacement**

| Effective anchorage depth<br>$h_{ef}$ | N                                   | $\delta_{N0}$ | $\delta_{N\infty}$ | V                                   | $\delta_{V0}$ | $\delta_{V\infty}$ |
|---------------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|---------------|--------------------|
| [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 for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

**Performance LECA LEX harkko RUH-200 Kulma Solid**  
 Brick description, drawing,  
 Installation parameters, Displacements

**Annex C 39**

**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 conditions            |                           |                 |
|                                                    |               |                           | d/d<br>w/d<br>w/w         |                           |                 |
|                                                    |               | 40°C / 24°C               | 80°C / 50°C               | For all temperature range |                 |
|                                                    |               | $h_{ef}$                  | $N_{RK}^{1)}$             | $N_{RK}^{1)}$             | $V_{RK,b}^{2)}$ |
| [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             |

<sup>1)</sup> For design according TR 054:  $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ ;  $N_{Rk,s}$  according to Table C2 Annex C2; Calculation  $N_{Rk,pb}$  see TR 054

<sup>2)</sup> For  $V_{Rk,s}$  see Annex C 2, Table C2; Calculation of  $V_{Rk,pb}$  and  $V_{Rk,c}$  see TR 054

**Würth Injection System for masonry**  
**WIT-VM 210, WIT-VM 210 Blue, WIT-VM 210 Express, WIT-VM 210 Tropical**

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

**Annex C 40**