

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments

★ ★ ★  
★ Designated  
according to  
Article 29 of Regula-  
tion (EU) No 305/2011  
and member of EOTA  
(European Organi-  
sation for Technical  
Assessment)  
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★ ★

## European Technical Assessment

ETA-15/0764  
of 1 April 2022

English translation prepared by DIBt - Original version in German language

### General Part

Technical Assessment Body issuing the  
European Technical Assessment:

Trade name of the construction product

Product family  
to which the construction product belongs

Manufacturer

Manufacturing plant

This European Technical Assessment  
contains

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

This version replaces

Deutsches Institut für Bautechnik

BTI Universal Component Compound UVT Top  
for masonry

Metal Injection anchors for use in masonry

BTI Befestigungstechnik GmbH & Co. KG  
Salzstraße 51  
74653 Ingelfingen  
DEUTSCHLAND

BTI Herstellwerk 1

139 pages including 3 annexes which form an integral  
part of this assessment

EAD 330076-00-0604, Edition 11/2017

ETA-15/0764 issued on 4 December 2015

**European Technical Assessment**  
**ETA-15/0764**  
English translation prepared by DIBt

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**Specific Part****1 Technical description of the product**

The BTI Universal Component Compound UVT Top for masonry is a bonded anchor (injection type) consisting of a mortar cartridge with BTI injection mortar UVT Top, UVT Top S or UVT Top W, a perforated sleeve and an anchor rod with hexagon nut and washer or an internal threaded anchor in the range of M6 to M16. The steel elements are made of zinc coated steel, stainless steel or high corrosion resistant steel.

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

The product description is given in Annex A.

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

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

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

**3 Performance of the product and references to the methods used for its assessment****3.1 Mechanical resistance and stability (BWR 1)**

| Essential characteristic             | Performance                   |
|--------------------------------------|-------------------------------|
| Characteristic values for resistance | See Annexes B 20, C 1 to C110 |
| Displacements                        | See Annex C 110               |
| Durability                           | See annex B 2                 |

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

| Essential characteristic | Performance |
|--------------------------|-------------|
| Reaction to fire         | Class A1    |

**3.3 Hygiene, health and the environment (BWR 3)**

| Essential characteristic                                 | Performance             |
|--|-------------------------|
| Content, emission and/or release of dangerous substances | No performance assessed |

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

In accordance with the European Assessment Document EAD 330076-00-0604 the applicable European legal act is: [97/177/EC].

The system to be applied is: 1

**European Technical Assessment**

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

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

Issued in Berlin on 1 April 2022 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock

Head of Section

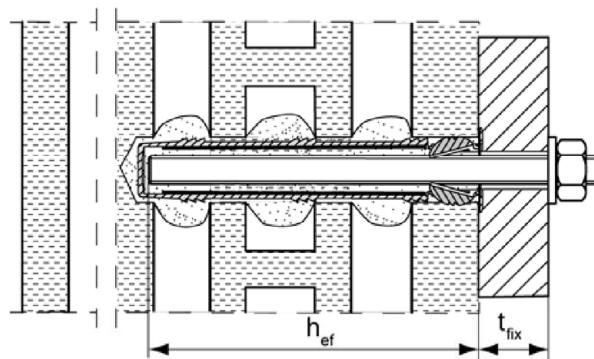
*beglaubigt:*

Baderschneider

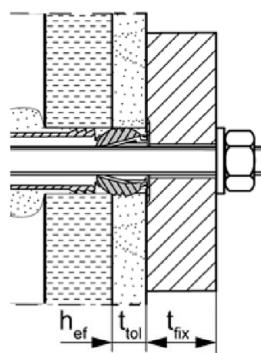
## Installation conditions part 1

### Anchor rods with perforated sleeve UVT Top H; Installation in perforated and solid brick masonry

#### Pre-positioned anchorage:



#### Installation with render bridge



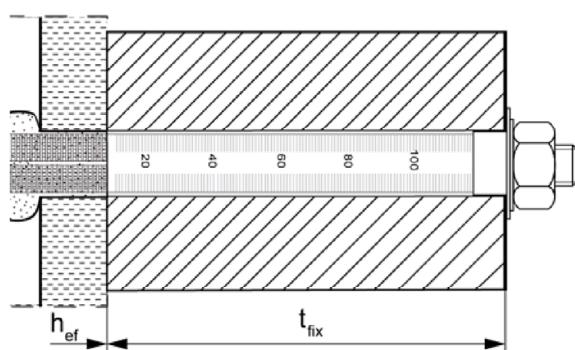
**Size of the perforated sleeve:** UVT Top H 12x50  
UVT Top H 12x85

UVT Top H 16x85  
UVT Top H 16x130

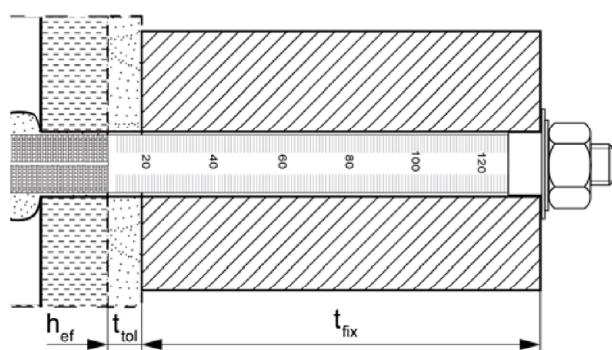
UVT Top H 20x85  
UVT Top H 20x130

UVT Top H 20x200

#### Push through anchorage:



#### Installation with render bridge

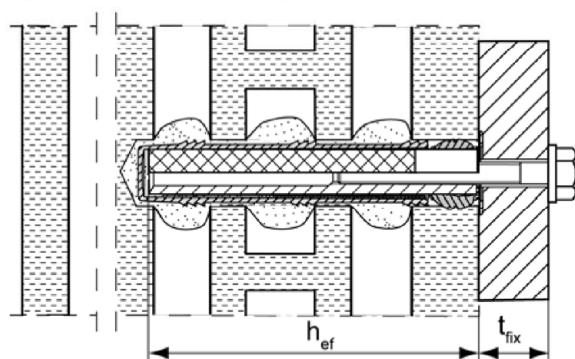


**Size of the perforated sleeve:** UVT Top H 18x130/200

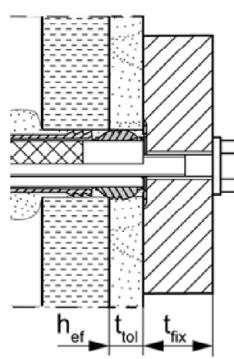
UVT Top H 22x130/200

### Internal threaded anchor UVT Top E with perforated sleeve UVT Top H; Installation in perforated and solid brick masonry

#### Pre-positioned anchorage:



#### Installation with render bridge



Pictures not to scale

$h_{ef}$  = effective anchorage depth

$t_{tol}$  = thickness of unbearing layer (e.g. plaster)

$t_{fix}$  = thickness of fixture

## BTI Universal Component Compound UVT Top for masonry

### Product description

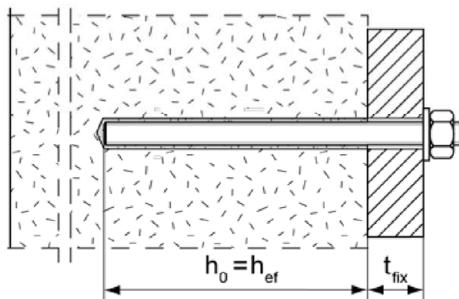
Installation conditions part 1,  
Anchor rods and internal threaded anchor with perforated sleeve

### Annex A 1

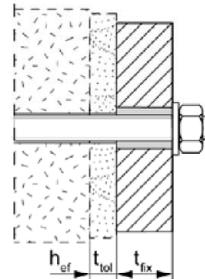
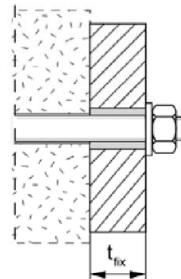
## Installation conditions part 2

**Anchor rods without perforated sleeve UVT Top H;**  
**installation in solid brick masonry and autoclaved aerated concrete**

**Pre-positioned anchorage:**



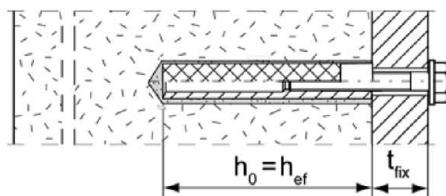
**Push through anchorage:** Annular gap filled with mortar



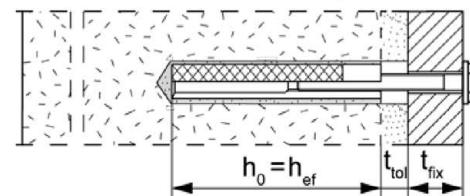
Installation with render bridge

**Internal threaded anchors UVT Top E without perforated sleeve UVT Top H;**  
**installation in solid brick masonry and autoclaved aerated concrete**

**Pre-positioned anchorage:**



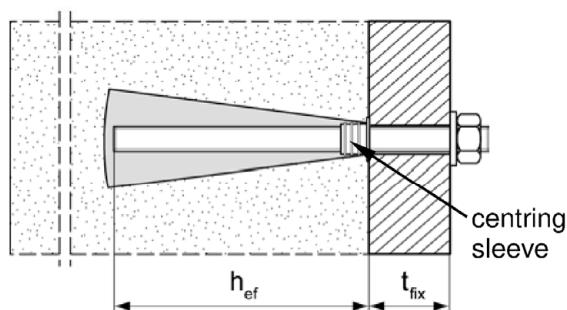
Installation with render bridge



**Anchor rods and internal threaded anchors UVT Top E without perforated sleeve UVT Top H; installation with centring sleeve in autoclaved aerated concrete with conical drill hole**  
**(installation with special conic drill bit PBB)**

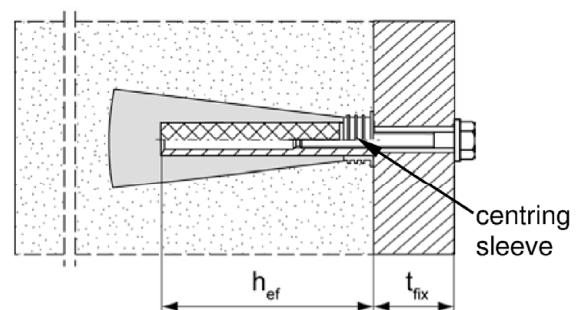
**Pre-positioned anchorage:**

anchor rods M8, M10, M12



**Pre-positioned anchorage:**

Internal threaded anchor UVT Top E 11x85 M6 / M8



Pictures not to scale

$h_0$  = depth of drill hole

$t_{tol}$  = thickness of unbearing layer (e.g. plaster)

$h_{ef}$  = effective anchorage depth

$t_{fix}$  = thickness of fixture

**BTI Universal Component Compound UVT Top for masonry**

### Product description

Installation conditions part 2, Anchor rods and internal threaded anchor without perforated sleeve / with centring sleeve

### Annex A 2

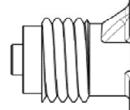
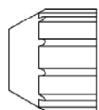
## Overview system components part 1

### Mortar cartridge (shuttle cartridge) with sealing cap

1

Sizes: 360 ml, 825 ml

**Imprint:** UVT Top or UVT Top S or UVT Top W, processing notes, shelf-life, hazard code, piston travel scale (optional), curing time and processing time (depending on temperature), size, volume

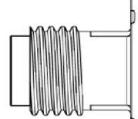
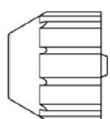


### Mortar cartridge (coaxial cartridge) with sealing cap

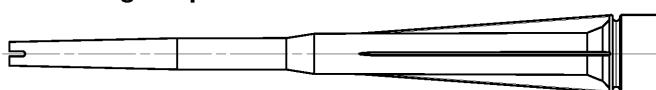
1

Sizes: 100 ml, 150 ml, 300 ml, 380 ml, 400 ml, 410 ml

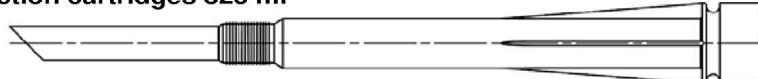
**Imprint:** UVT Top or UVT Top S or UVT Top W, processing notes, shelf-life, hazard code, piston travel scale (optional), curing time and processing time (depending on temperature), size, volume



### Static mixer Top / Top Z for injection cartridges up to 410 ml



### Static mixer Top-J for injection cartridges 825 ml



### Extension tube Ø 9 for static mixer Top / Top Z; Extension tube Ø 9 oder Ø 15 for static mixer Top-J



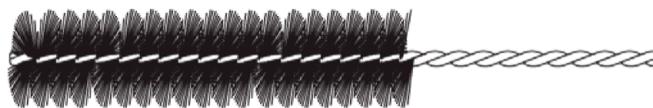
### Centering sleeve for aerated concrete



### Injection adapter



### Cleaning brush BTI



### BTI Universal Component Compound UVT Top for masonry

#### Product description

Overview system components part 1: cartridge / static mixer / cleaning tool

#### Annex A 3

## Overview system components part 2

### Anchor rod

(2)



Size: M6, M8, M10, M12, M16

### Internal threaded anchor UVT Top E

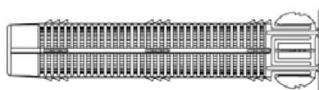
(5)



Size: 11x85 M6 / M8  
15x85 M10 / M12

### Perforated sleeve UVT Top H

(7)



Size: UVT Top H 12x50  
UVT Top H 12x85  
UVT Top H 16x85  
UVT Top H 20x85

(7)



Size: UVT Top H 16x130 K  
UVT Top H 20x130 K  
UVT Top H 20x200 K

### Perforated sleeve UVT Top H (push through anchorage)

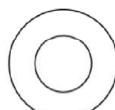
(7)



Size:  
UVT Top H 18x130/200  
UVT Top H 22x130/200

### Washer

(3)



### Hexagon nut

(4)



### Blow-out pump



### compressed-air cleaning tool



Pictures not to scale

BTI Universal Component Compound UVT Top for masonry

#### Product description

Overview system components part 2: steel parts / perforated sleeve, cleaning tools

#### Annex A 4

**Table A5.1:** Materials

| Part   | Designation  | Material   |   |  |
|--|--|--|---|--|
| 1  | Mortar cartridge   | Mortar, hardener; filler   |   |  |
|  |  | Steel<br>zinc plated   | Stainless steel R<br>acc. to EN 10088-1:2014<br>Corrosion resistance class<br>CRC III acc. to<br>EN 1993-1-4:2006+A1:2015   | High corrosion-resistant<br>steel HCR<br>acc. to EN 10088-1:2014<br>Corrosion resistance class<br>CRC V acc. to<br>EN 1993-1-4:2006+A1:2015  |
| 2  | Anchor rod   | Property class<br>4.6, 4.8; 5.8 or 8.8;<br>EN ISO 898-1: 2013<br>zinc plated $\geq 5\mu\text{m}$ ,<br>EN ISO 4042:2018<br>Zn5/An(A2K)<br>or hot-dip galvanised<br>EN ISO 10684: 2004+AC:2009<br>$f_{uk} \leq 1000 \text{ N/mm}^2$<br>$A_5 > 8\%$ fracture elongation | Property class<br>50, 70 or 80;<br>EN ISO 3506-1:2020<br>1.4401; 1.4404; 1.4578;<br>1.4571; 1.4439; 1.4362;<br>1.4062; 1.4662; 1.4462;<br>EN 10088-1:2014<br>$f_{uk} \leq 1000 \text{ N/mm}^2$<br>$A_5 > 8\%$ fracture elongation | Property class<br>50 or 80;<br>EN ISO 3506-1:2020<br>or property class 70 with<br>$f_{yk} = 560 \text{ N/mm}^2$<br>1.4565; 1.4529<br>EN 10088-1:2014<br>$f_{uk} \leq 1000 \text{ N/mm}^2$<br>$A_5 > 8\%$ fracture elongation |
| 3  | Washer<br>ISO 7089:2000  | zinc plated $\geq 5\mu\text{m}$ ,<br>EN ISO 4042:2018<br>Zn5/An(A2K)<br>or hot-dip galvanised<br>EN ISO 10684:2004+AC:2009   | 1.4401; 1.4404;<br>1.4578; 1.4571;<br>1.4439; 1.4362;<br>EN 10088-1:2014  | 1.4565; 1.4529<br>EN 10088-1:2014  |
| 4  | Hexagon nut  | Property class 5 or 8<br>EN ISO 898-2:2012<br>zinc plated $\geq 5\mu\text{m}$ ,<br>EN ISO 4042:2018<br>Zn5/An(A2K)<br>or hot-dip galvanised<br>EN ISO 10684:2004+AC:2009   | Property class<br>50, 70 or 80;<br>EN ISO 3506-2:2020<br>1.4401; 1.4404;<br>1.4578; 1.4571;<br>1.4439; 1.4362;<br>EN 10088-1:2014   | Property class<br>50, 70 or 80;<br>EN ISO 3506-2:2020<br>1.4565; 1.4529<br>EN 10088-1:2014   |
| 5  | Internal threaded<br>anchor<br>UVT Top E   | Property class 5.8;<br>EN 10277-1:2018<br>zinc plated $\geq 5\mu\text{m}$ ,<br>EN ISO 4042:2018<br>Zn5/An(A2K)   | Property class 70;<br>EN ISO 3506-1:2020<br>1.4401; 1.4404;<br>1.4578; 1.4571;<br>1.4439; 1.4362;<br>EN 10088-1:2014  | Property class 70<br>EN ISO 3506-1:2020<br>1.4565; 1.4529<br>EN 10088-1:2014   |
| 6  | Commercial<br>standard screw or<br>threaded rod for<br>internal threaded<br>anchor UVT Top E | Property class<br>5.8 or 8.8;<br>EN ISO 898-1:2013<br>zinc plated $\geq 5\mu\text{m}$ ,<br>EN ISO 4042:2018<br>Zn5/An(A2K)   | Property class 70;<br>EN ISO 3506-1:2020<br>1.4401; 1.4404;<br>1.4578; 1.4571;<br>1.4439; 1.4362;<br>EN 10088-1:2014  | Property class 70;<br>EN ISO 3506-1:2020<br>1.4565; 1.4529<br>EN 10088-1:2014  |
| 7  | Perforated sleeve  | PP / PE  |   |  |
| BTI Universal Component Compound UVT Top for masonry |  |  |   |  |
| <b>Product description</b><br>Materials              |  |  |   | <b>Annex A 5</b>   |

## Specifications of intended use part 1

**Table B1.1:** Overview installation and use

| Anchorage subject to  |   | UVT Top for masonry  |   |
|---|---|--|---|
| Hole drilling with hammer drill mode<br> |   | all bricks;<br>without C28 to C48, C75 to C78  |   |
| Hole drilling with rotary drill mode<br> |   | all bricks   |   |
| Static and quasi static load,<br>in masonry   |   | all bricks   |   |
| Use conditions  | dry or wet masonry  | all bricks   |   |
| Installation  | Pre-positioned<br>anchorage   | Anchor rod or<br>internal threaded anchor<br>(in solid brick masonry and<br>autoclaved aerated concrete)         | Perforated sleeve with anchor rod<br>or internal threaded anchor<br>(in perforated and solid brick<br>masonry)<br><br>Size:<br>UVT Top H 12x50<br>UVT Top H 12x85<br>UVT Top H 16x85<br>UVT Top H 16x130<br>UVT Top H 20x85<br>UVT Top H 20x130<br>UVT Top H 20x200 |
|   | Push through<br>anchorage   | Anchor rod;<br>use only in cylindrical drill hole<br>(in solid brick masonry and<br>autoclaved aerated concrete) | Perforated sleeve with anchor rod<br>(in perforated and solid brick<br>masonry)<br><br>Size:<br>UVT Top H 18x130/200<br>UVT Top H 22x130/200  |
| Installation and<br>use conditions  | condition d/d   | all bricks   |   |
|   | condition w/d   |  |   |
|   | condition w/w   |  |   |
| Installation temperature  | $T_{i,min} = 0 \text{ }^\circ\text{C}$ bis $T_{i,max} = +40 \text{ }^\circ\text{C}$ |  |   |
| In-service<br>temperature   | Temperature<br>range Tb   | -40 °C to +80 °C   | (max. short term temperature +80 °C<br>max. long term temperature +50 °C)   |
|   | Temperature<br>range Tc   | -40 °C to +120 °C  | (max. short term temperature +120 °C;<br>max. long term temperature +72 °C)   |
| BTI Universal Component Compound UVT Top for masonry  |   |  |   |
| Intended Use<br>Specifications part 1   |   |  | Annex B 1   |

## Specifications of intended use part 2

### Anchorage subject to:

- Static and quasi-static loads

### Base materials:

- Solid brick masonry (base material group b) and autoclaved aerated concrete (base material group d), acc. to Annex B 13 / B 14
- Hollow brick masonry (base material group c), according to Annex B 13 / B 14
- For minimum thickness of masonry member  $h_{\text{eff}}+30\text{mm}$  applies
- Mortar strength class of the masonry M2,5 at minimum according to EN 998-2:2016
- For other bricks in solid masonry, hollow or perforated masonry and autoclaved aerated concrete, the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 053:2016-04, Annex B under consideration of the  $\beta$ -factor according to Annex C 110, Table C110.1

Note (only applies to solid bricks and autoclaved aerated concrete):

The characteristic resistance is also valid for larger brick sizes, higher compressive strength and higher raw density of the masonry unit.

### Temperature Range:

- **T<sub>b</sub>:** From - 40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C)
- **T<sub>c</sub>:** From -40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C)

### Use conditions (Environmental conditions):

- **X1:** Structures subject to dry internal conditions exist  
(zinc coated steel, stainless steel or high corrosion resistant steel)
- **X2:** Structures subject to external atmospheric exposure including industrial and marine environment or exposure to permanently damp internal condition, if no particularly aggressive conditions exist  
(stainless steel or high corrosion resistant steel)
- **X3:** Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particularly aggressive conditions exist (high corrosion resistant steel)

Note: Particularly 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)

BTI Universal Component Compound UVT Top for masonry

Intended Use  
Specifications part 2

Annex B 2

## Specifications of intended use part 2 continued

### Design:

- The anchorages have to be designed in accordance with EOTA Technical Report TR 054:2016-04, Design method A under the responsibility of an engineer experienced in anchorages and masonry work.  
Applies to all bricks, if no other values are specified:

$$N_{Rk} = N_{Rk,b} = N_{Rk,p}$$

$$V_{Rk} = V_{Rk,b} = V_{Rk,c}$$

For the Calculation of pulling out a brick under tension loading  $N_{Rk,pb}$  or pushing out a brick under shear loading  $V_{Rk,pb}$  see EOTA Technical Report TR 054:2016-04.

$N_{Rk,s}$ ,  $V_{Rk,s}$  and  $M^0_{Rk,s}$  see annex C1-C3

Factors for job site tests and displacements see Annex C110

- Verifiable calculation notes and drawings have to be 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.

### Installation:

- Condition d/d: - Installation and use in dry structures
- Condition w/w: - Installation and use in dry and wet structures
- Condition w/d: - Installation in wet structures and use in dry structures
- Hole drilling see Annex C (drilling method)
- In case of aborted hole: The hole shall be filled with mortar
- Bridging of unbearing layer (e.g. plaster) at perforated brick masonry see Annex B 6, Table B6.1
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- Fastening screws or anchor rods (including nut and washer) must comply with the appropriate material and property class of the internal threaded anchor UVT Top E.
- minimum curing time see Annex B 8, Table B8.2
- Commercial standard threaded rods, washers and hexagon nuts may also be used if the following requirements are fulfilled:

Material dimensions and mechanical properties of the metal parts according to the specifications are given in Annex A 5, Table 5.1

Conformation of material and mechanical properties of the metal parts by inspection certificate 3.1 according to EN 10204:2004, the documents shall be stored

Marking of the anchor rod with the envisaged embedment depth. This may be done by the manufacturer of the rod or by a person on job site

BTI Universal Component Compound UVT Top for masonry

Intended Use  
Specifications part 2 continued

Annex B 3

**Table B4.1:** Installation parameters for anchor rods in solid bricks and autoclaved aerated concrete without perforated sleeves

| Anchor rod  | Thread   | M6     | M8      | M10                             | M12                             | M16      |
|---|--|--------|---------|---------------------------------|---------------------------------|----------|
| Nominal drill hole diameter   | $d_0$ [mm]   | 8      | 10      | 12                              | 14                              | 18       |
| Effective anchorage depth $h_{\text{ef}}^{(1)}$<br>in AAC cylindrical drill hole                                  | $h_{0,\text{min}}=h_{\text{ef,min}}$ [mm]<br>$h_{0,\text{max}}=h_{\text{ef,max}}$ [mm] |        |         | 100                             |                                 |          |
| Effective anchorage depth $h_{\text{ef}}^{(1)}$<br>in AAC conical drill hole                                      | $h_0$ [mm]<br>$h_{\text{ef},1}$ [mm]<br>$h_{\text{ef},2}$ [mm]                         | -      |         | $h_{\text{ef}} + 5$<br>75<br>95 |                                 | -        |
| Effective anchorage depth $h_{\text{ef}}^{(1)}$<br>in solid brick<br>(depth of drill hole $h_0 = h_{\text{ef}}$ ) | $h_{\text{ef,min}}$ [mm]<br>$h_{\text{ef,max}}$ [mm]                                   |        |         | 50                              |                                 |          |
| Diameter of clearance<br>hole in the fixture  | pre-position $d_f \leq$ [mm]<br>push through $d_f \leq$ [mm]                           | 7<br>9 | 9<br>11 | 12<br>14                        | 14<br>16                        | 18<br>20 |
| Diameter of cleaning brush  | $d_b \geq$ [mm]  |        |         |                                 | see Table B8.1                  |          |
| Maximum installation torque   | $T_{\text{inst}}$ [Nm]   |        |         |                                 | see parameters of brick Annex C |          |

<sup>(1)</sup>  $h_{\text{ef,min}} \leq h_{\text{ef}} \leq h_{\text{ef,max}}$  is possible.

**BTI anchor rods M6, M8, M10, M12, M16**

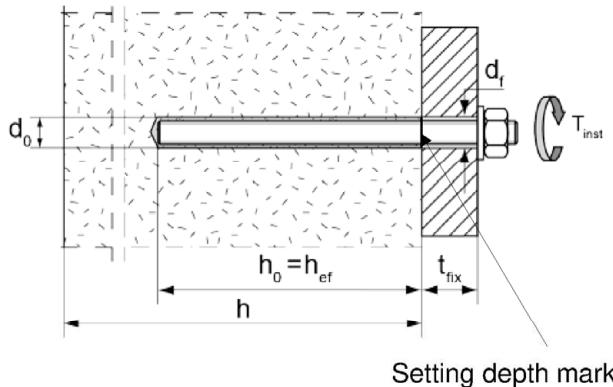


**Marking (on random place) BTI anchor rod:**

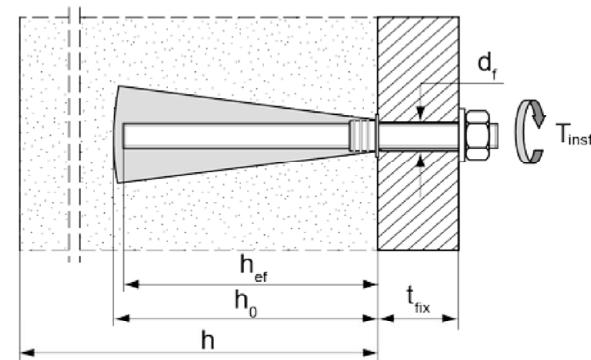
|   |                                    |   |   |
|---|------------------------------------|---|---|
| Steel zinc plated PC <sup>(1)</sup> 8.8   | • or +                             | Steel hot-dip galvanised PC <sup>(1)</sup> 8.8          | • |
| High corrosion resistant steel HCR PC <sup>(1)</sup> 50   | •                                  | High corrosion resistant steel HCR PC <sup>(1)</sup> 70 | - |
| High corrosion resistant steel HCR PC <sup>(1)</sup> 80   | (                                  | Stainless steel R property class 50                     | ~ |
| Stainless steel R property class 80   | *                                  |   |   |
| Alternatively: Colour coding according to DIN 976-1: 2016;<br>property class 4.6 marking according to EN ISO 898-1:2013 | <sup>(1)</sup> PC = property class |   |   |

**Installation conditions:**

Anchor rod in cylindrical drill hole



Anchor rod in conical drill hole



Pictures not to scale

**BTI Universal Component Compound UVT Top for masonry**

**Intended Use**

Installation parameters for anchor rods without perforated sleeve

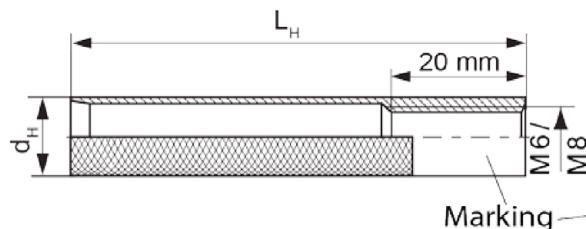
**Annex B 4**

**Table B5.1:** Installation parameters for internal threaded anchors UVT Top E in solid bricks and autoclaved aerated concrete without perforated sleeves

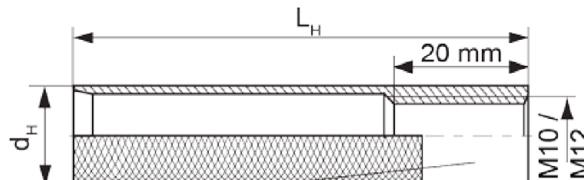
| Internal threaded anchor UVT Top E  | 11x85 M6                | 11x85 M8 | 15x85 M10                       | 15x85 M12 |
|---|-------------------------|----------|---------------------------------|-----------|
| Diameter of anchor $d_H$ [mm]   | 11                      |          | 15                              |           |
| Nominal drill hole diameter $d_0$ [mm]  |                         | 14       |                                 | 18        |
| Length of anchor $L_H$ [mm]   |                         |          | 85                              |           |
| Effective anchorage depth $h_0 = h_{\text{ef}}$ [mm]                          |                         |          | 85                              |           |
| Effective anchorage depth $h_{\text{ef}}$ [mm]<br>in AAC (conical drill hole) | $h_{\text{ef}}$ [mm]    | 100      |                                 | -         |
| Diameter of cleaning brush $d_b \geq$ [mm]                                    |                         |          | see Table B8.1                  |           |
| Maximum installation torque $T_{\text{inst}}$ [Nm]                            |                         |          | see parameters of brick Annex C |           |
| Diameter of clearance hole in the fixture $d_f$ [mm]                          | 7                       | 9        | 12                              | 14        |
| Screw-in depth $l_{E,\text{min}}$ [mm]  | 6                       | 8        | 10                              | 12        |
|   | $l_{E,\text{max}}$ [mm] |          | 60                              |           |

### Internal threaded anchor UVT Top E

UVT Top E 11x85 M6, UVT Top E 11x85 M8



UVT Top E 15x85 M10, UVT Top E 15x85 M12

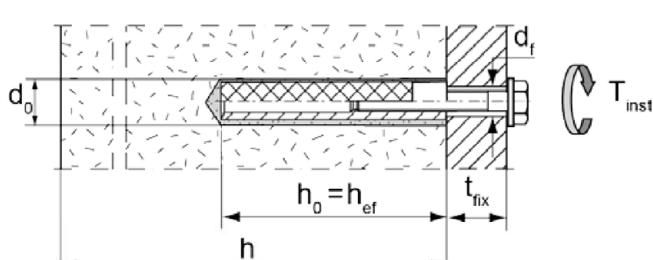


#### Marking:

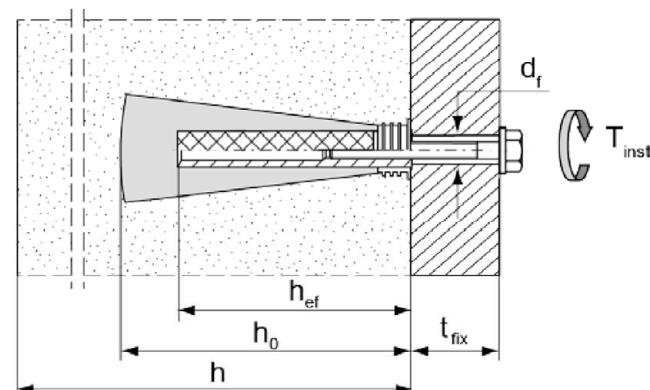
Size, e.g. **M8**, Stainless steel: R, e.g. **M8 R**, High corrosion-resistant steel: HCR, e.g. **M8 HCR**

### Installation conditions:

Internal threaded anchor in cylindrical drill hole



Internal threaded anchor in conical drill hole



Pictures not to scale

BTI Universal Component Compound UVT Top for masonry

#### Intended Use

Installation parameters for internal threaded rods UVT Top E without perforated sleeve

#### Annex B 5

**Table B6.1:** Installation parameters for anchor rods and internal threaded anchors UVT Top E with perforated sleeves (pre-positioned anchorage)

| perforated sleeve UVT Top H                                  | 12x50                    | 12x85 <sup>2)</sup> | 16x85 | 16x130 <sup>2)</sup> | 20x85                           | 20x130 <sup>2)</sup> | 20x200 <sup>2)</sup> |
|--|--------------------------|---------------------|-------|----------------------|---------------------------------|----------------------|----------------------|
| Nominal drill hole diameter<br>$d_0 = D_{\text{sleeve,nom}}$ | d <sub>0</sub> [mm]      | 12                  | 16    | 20                   |                                 |                      |                      |
| Depth of drill hole  | h <sub>0</sub> [mm]      | 55                  | 90    | 90                   | 135                             | 90                   | 135                  |
| Effective anchorage depth                                    | h <sub>ef,min</sub> [mm] | 50                  | 85    | 85                   | 110                             | 85                   | 110                  |
|  | h <sub>ef,max</sub> [mm] | 50                  | 85    | 85                   | 130                             | 85                   | 130                  |
| Size of threaded rod   | [ - ]                    | M6 und M8           |       | M8 und M10           |                                 | M12 und M16          |                      |
| Size of internal threaded anchor<br>UVT Top E                |                          | -                   | -     | 11x85                | -                               | 15x85                | -                    |
| Diameter of cleaning brush <sup>1)</sup>                     | d <sub>b</sub> ≥ [mm]    |                     |       |                      | see Table B8.1                  |                      |                      |
| Maximum installation torque                                  | T <sub>inst</sub> [Nm]   |                     |       |                      | see parameters of brick Annex C |                      |                      |

<sup>1)</sup> Only for solid areas in hollow bricks and solid bricks.

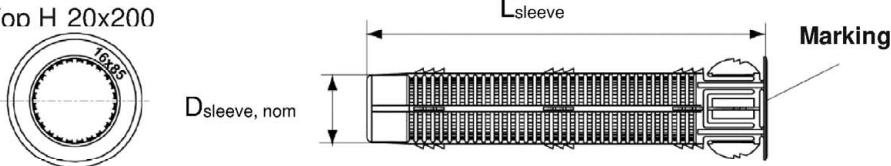
<sup>2)</sup> Bridging of unbearing layer (e.g. plaster) is possible. When reducing the effective anchorage depth h<sub>ef,min</sub>, the values of the next shorter perforated sleeve of the same diameter must be used. The smaller value of characteristic resistance must be taken.

#### Perforated sleeve

UVT Top H 12x50; UVT Top H 12x85; UVT Top H 16x85; UVT Top H 16x130;  
UVT Top H 20x85  
UVT Top H 20x130; UVT Top H 20x200

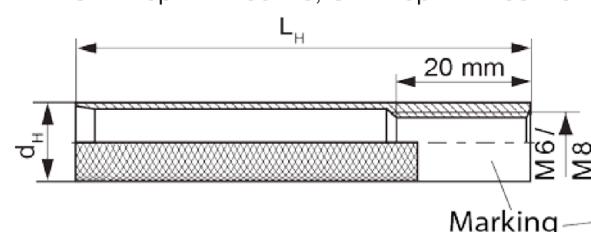
#### Marking:

Size D<sub>sleeve,nom</sub> x L<sub>sleeve</sub>  
(e.g.: 16x85)

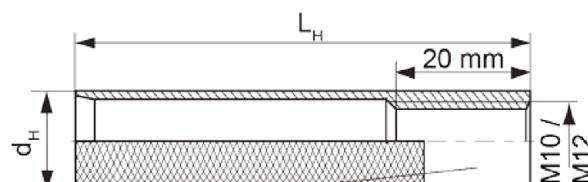


#### Internal threaded anchor UVT Top E

UVT Top E 11x85 M6, UVT Top E 11x85 M8

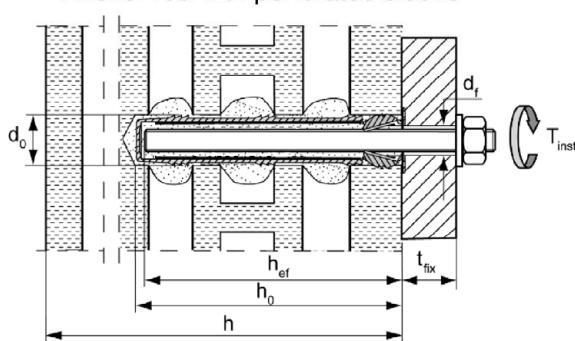


UVT Top E 15x85 M10, UVT Top E 15x85 M12

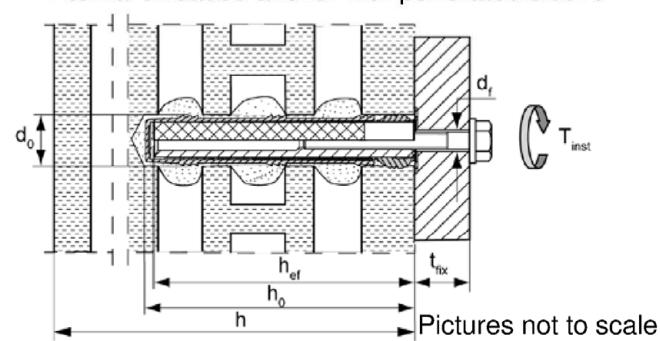


#### Installation conditions:

##### Anchor rod with perforated sleeve



##### Internal threaded anchor with perforated sleeve



#### BTI Universal Component Compound UVT Top for masonry

##### Intended Use

Installation parameters for anchor rods and internal threaded anchors UVT Top E with perforated sleeve (pre-positioned anchorage)

##### Annex B 6

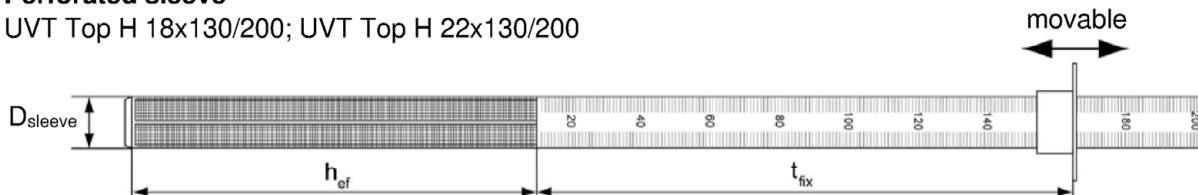
**Table B7.1:** Installation parameters for anchor rods with perforated sleeves (push through anchorage)

| Perforated sleeve UVT Top H                              | 18x130/200 | 22x130/200                      |
|--|------------|---------------------------------|
| Nominal sleeve diameter $D_{sleeve,nom}$ [mm]            | 16         | 20                              |
| Nominal drill hole diameter $d_0$ [mm]                   | 18         | 22                              |
| Depth of drill hole $h_0$ [mm]                           | 135        |                                 |
| Effective anchorage depth $h_{ef}$ [mm]                  |            | $\geq 130$                      |
| Diameter of cleaning brush <sup>1)</sup> $d_b \geq$ [mm] |            | Siehe Tabelle B8.1              |
| Size of threaded rod [-]                                 | M10        | M12                             |
| Maximum installation torque $T_{inst}$ [Nm]              |            | see parameters of brick Annex C |
| Thickness of fixture $t_{fix,max}$ [mm]                  |            | 200                             |

<sup>1)</sup> Only for solid areas in hollow bricks and solid bricks.

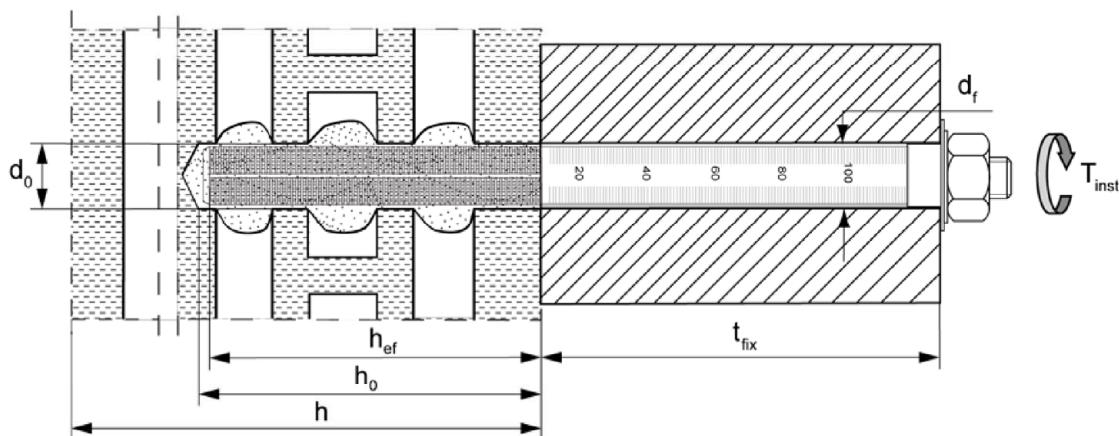
#### Perforated sleeve

UVT Top H 18x130/200; UVT Top H 22x130/200



#### Installation conditions:

Anchor rod with perforated sleeve



Pictures not to scale

BTI Universal Component Compound UVT Top for masonry

#### Intended Use

Installation parameters for anchor rods with perforated sleeves (push through anchorage)

**Annex B 7**

**Tabelle B8.1:** Parameters of the cleaning brush BTI (steel brush with steel bristles)

The size of the cleaning brush refers to the drill hole diameter

|                     |            |   |    |    |    |    |    |    |    |
|---------------------|------------|---|----|----|----|----|----|----|----|
| Drill hole diameter | $d_0$ [mm] | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 |
| Brush diameter      | $d_b$ [mm] | 9 | 11 | 14 | 16 | 20 | 20 | 25 | 25 |



Only for solid bricks and autoclaved aerated concrete or solid areas of perforated bricks and hollow blocks

**Table B8.2:** Maximum processing times and minimum curing times  
(During the curing time of the mortar the masonry temperature may not fall below the listed minimum temperature)

| Temperature at anchoring base<br>[°C] | Maximum processing time<br>$t_{work}$ |                       |                         | Minimum curing time <sup>1)</sup><br>$t_{cure}$ |                       |                         |
|---------------------------------------|---------------------------------------|-----------------------|-------------------------|---|-----------------------|-------------------------|
|                                       | UVT Top W <sup>3)</sup>               | UVT Top <sup>2)</sup> | UVT Top S <sup>2)</sup> | UVT Top W <sup>3)</sup>                         | UVT Top <sup>2)</sup> | UVT Top S <sup>2)</sup> |
| > 0 to 5                              | 5 min                                 | 13 min                | 20 min                  | 3 h   | 3 h                   | 6 h                     |
| > 5 to 10                             | 3 min                                 | 9 min                 | 20 min                  | 50 min  | 90 min                | 3 h                     |
| > 10 to 20                            | 1 min                                 | 5 min                 | 10 min                  | 30 min  | 60 min                | 2 h                     |
| > 20 to 30                            | -                                     | 4 min                 | 6 min                   | -   | 45 min                | 60 min                  |
| > 30 to 40                            | -                                     | 2 min                 | 4 min                   | -   | 35 min                | 30 min                  |

<sup>1)</sup> For wet bricks the curing time must be doubled

<sup>2)</sup> Minimum cartridge temperature +5°C

<sup>3)</sup> Minimum cartridge temperature ±0°C

Pictures not to scale

BTI Universal Component Compound UVT Top for masonry

**Intended use**

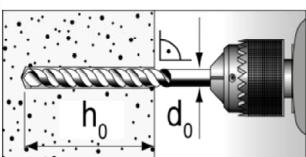
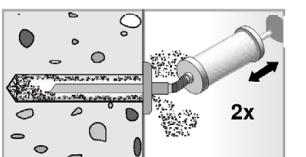
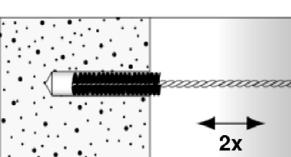
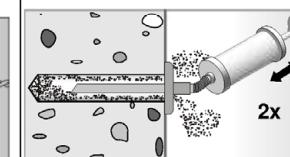
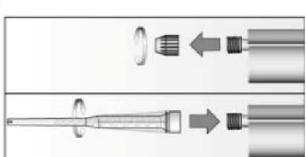
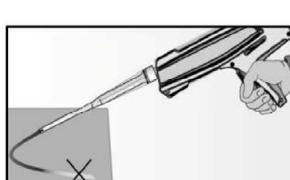
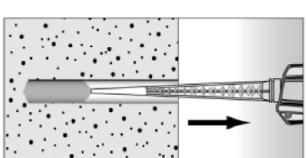
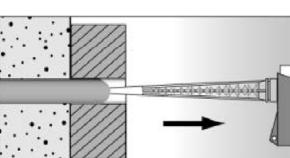
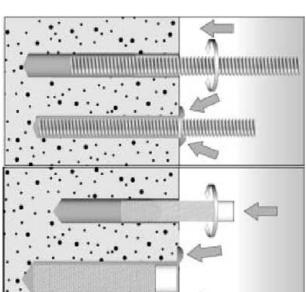
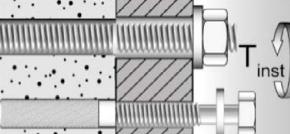
Cleaning brush (steel brush)

Maximum processing times and minimum curing times

**Annex B 8**

## Installation instruction part 1

Installation in solid brick and autoclaved aerated concrete (without perforated sleeve)

|  |  |
|--|--|
|  <p>1</p>   | <p>Drill the hole (drilling method see Annex C of the respective brick)<br/>depth of drill hole <math>h_0</math> and drill hole diameter <math>d_0</math> see <b>Table B4.1; B5.1</b></p>  |
|  <p>2</p>   |   <p>Blow out the drill hole twice. Brush twice and blow out twice again.</p>   |
|  <p>3</p>   | <p>Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)</p>   |
|  <p>4</p>  | <p>Place the cartridge into a suitable dispenser</p>  <p>Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of.</p> |
|  <p>5</p> | <p>Fill approximately 2/3 of the drill hole with mortar beginning from the bottom of the hole<sup>1)</sup>. Avoid bubbles!</p>  <p>For push through anchorage fill the annular clearance with mortar.</p>                    |
|  <p>6</p> | <p>Only use clean and oil-free metal parts.<br/>Mark the anchor rod for setting depth.<br/>Insert the anchor rod or internal threaded anchor UVT Top E by hand using light turning motions.<br/>When reaching the setting depth marking, excess mortar must emerge from the mouth of the drill hole.</p>         |
|  <p>7</p> | <p>Do not touch.<br/>Minimum curing time see <b>Table B8.2</b></p>  <p>Mounting the fixture. <math>T_{inst}</math> see parameter of brick.</p>   |

<sup>1)</sup> Exact volume of mortar see manufacturer's specification.

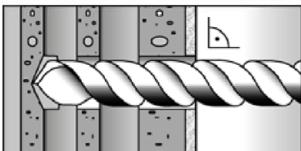
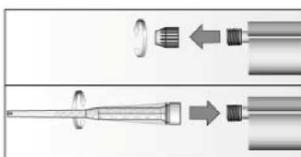
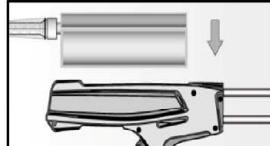
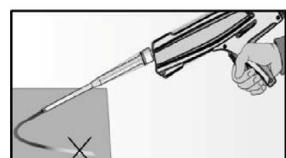
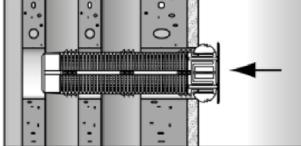
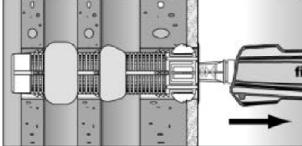
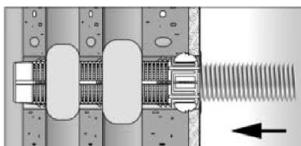
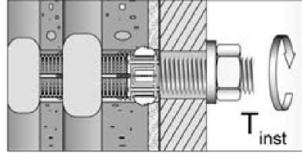
BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Installation instruction (without perforated sleeve) part 1

**Annex B 9**

## Installation instruction part 2

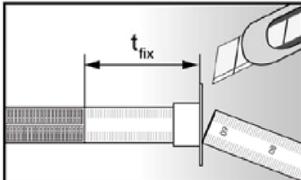
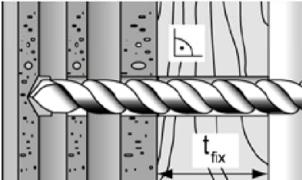
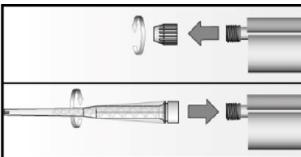
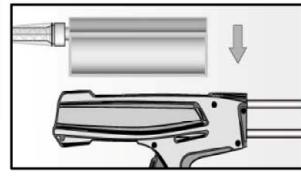
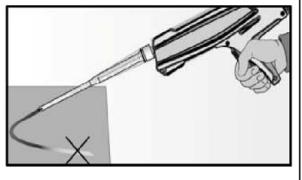
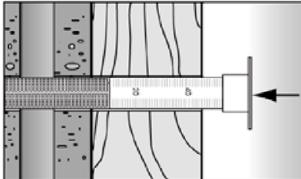
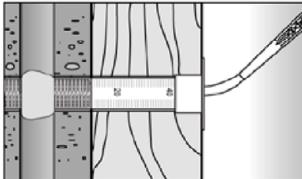
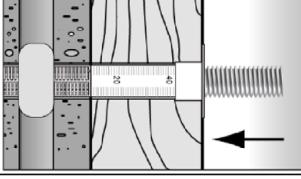
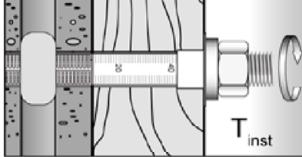
### Installation in perforated or solid brick with perforated sleeve (pre-positioned anchorage)

|   |   |   |  |
|---|---|---|--|
| 1 |    | Drill the hole (drilling method see Annex C of the respective brick). depth of drill hole $h_0$ and drill hole diameter $d_0$ see <b>Table B6.1</b>   | When install perforated sleeves in solid bricks or solid areas of hollow bricks, also clean the hole by blowing out and brushing.  |
| 2 |    | Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)   |  |
| 3 |    | Place the cartridge into a suitable dispenser.  | <br>Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of. |
| 4 |   | Insert the perforated sleeve flush with the surface of the masonry or plaster.  | <br>Fill the perforated sleeve completely with mortar beginning from the bottom of the hole <sup>1)</sup> .   |
| 5 |  | Only use clean and oil-free metal parts. Mark the anchor rod for setting depth. Insert the anchor rod or the internal threaded anchor UVT Top E by hand using light turning motions until reaching the setting depth marking (anchor rod) or flush with the surface (internal threaded anchor). |  |
| 6 |  | Do not touch.<br>Minimum curing time see <b>Table B8.2</b>  | <br>Mounting the fixture. $T_{inst}$ see parameter of brick.   |

<sup>1)</sup> Exact volume of mortar see manufacturer's specification.

### Installation instruction part 3

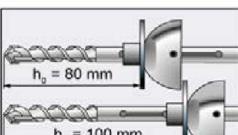
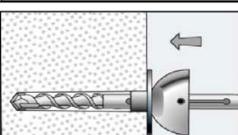
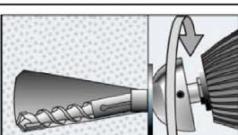
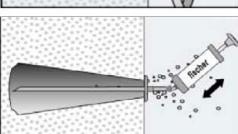
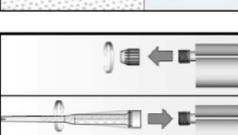
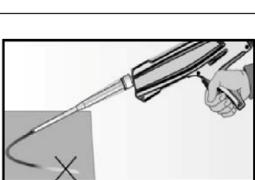
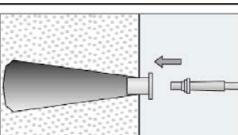
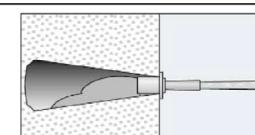
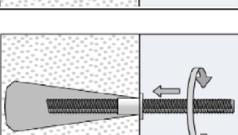
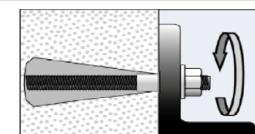
#### Installation in perforated or solid brick with perforated sleeve (push through anchorage)

|   |   |   |  |  |
|---|---|---|--|--|
| 1 |    | Push the movable stop up to the correct thickness of fixture and cut the overlap.   |    | Drill the hole through the fixture. Depth of drill hole ( $h_0 + t_{fix}$ ) and drill hole diameter see <b>Table B7.1</b>  |
| 2 |    | Remove the sealing cap. Screw on the static mixer. (the spiral in the static mixer must be clearly visible)   |  |  |
| 3 |    | Place the cartridge into a suitable dispenser.  |    | Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of. |
| 4 |   | Insert the perforated sleeve flush with the surface of the fixture into the drill hole.   |   | Fill the sleeve with mortar beginning from the bottom of the hole. <sup>1)</sup> For deep drill holes use an extension tube.                                     |
| 5 |  | Only use clean and oil-free metal parts. Mark the anchor rod for setting depth. Insert the anchor rod or the internal threaded anchor UVT Top E by hand using light turning motions until reaching the setting depth marking (anchor rod) or flush with the surface (internal threaded anchor). |  |  |
| 6 |  | Do not touch.<br>Minimum curing time see <b>Table B8.2</b>  |  | Mounting the fixture.<br>$T_{inst}$ see parameter of brick.  |

<sup>1)</sup> Exact volume of mortar see manufacturer's specification.

## Installation instruction part 4

Installation in autoclaved aerated concrete with special conic drill bit PBB  
(pre-positioned anchorage)

|   |   |  |  |  |
|---|---|--|--|--|
| 1 |    | Position the movable drill bit arrester on the used drill hole depth (see Annex B 4, Table B4.1)<br>For this, unlock the clamp screw and slide the arrester.<br>Now fix the clamp screw.   |  |  |
| 2 |    | Drill the cylindrical hole with rotating drill until the arrester contact the material surface. (drilling method see Annex C of the respective brick)  |  |  |
| 3 |    | Deviate the working power drill circulate to generate a conic undercut in the material.  |  |  |
| 4 |   | Blow out the drill hole four times.  |  |  |
| 5 |  | Remove the sealing cap. Screw on the static mixer.<br>(the spiral in the static mixer must be clearly visible)   |  |  |
| 6 |  | Place the cartridge into a suitable dispenser.   |  | Press out approximately 10 cm of mortar until the resin is permanently grey in colour. Mortar which is not grey in colour will not cure and must be disposed of. |
| 7 |  | Put the center sleeve into the drill hole and adapt the injection adapter onto the static mixer.   |  | Fill the drill hole with injection mortar.   |
| 8 |  | Only use clean and oil-free metal parts.<br>Mark the anchor rod for setting depth.<br>Insert the anchor rod or internal threaded anchor UVT Top E by hand using light turning motions.<br>When reaching the setting depth marking, excess mortar must emerge from the mouth of the drill hole. |  |  |
| 9 |  | Do not touch.<br>Minimum curing time<br>see <b>Table B8.2</b>  |  | Mounting the fixture.<br>$T_{inst}$ see parameter of brick.  |

BTI Universal Component Compound UVT Top for masonry

### Intended use

Installation instruction for autoclaved aerated concrete with special conic drill bit PBB  
(pre-positioned anchorage) part 4

**Annex B 12**

**Table B13.1:** Overview of controlled bricks part 1

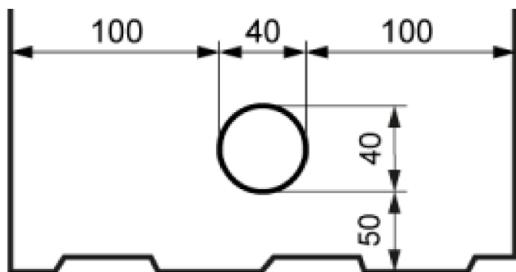
| Kind of masonry  | Brick format<br>[mm]     | Compressive<br>strength $f_b$<br>[N/mm <sup>2</sup> ] | Producing<br>country | Density $\rho$<br>[kg/dm <sup>3</sup> ] | Annex     |
|--|--------------------------|---|----------------------|---|-----------|
| <b>Solid brick Mz</b>  |                          |   |                      |   |           |
| <b>Solid brick Mz</b>  | <b>NF</b> ≥240x115x71    | 12 - 20   | Germany              | ≥1,8                                    | C4 - C7   |
|  | <b>2DF</b> ≥240x115x113  | 10 - 16   | Germany              | ≥1,8                                    | C8/C9     |
|  | ≥ 245x118x54             | 10 - 20   | Italy                | ≥1,8                                    | C10/C11   |
|  | ≥ 230x108x55             | 10 - 20   | Denmark              | ≥1,8                                    | C12/C13   |
| <b>Solid sand- lime brick KS / perforated Sand- lime brick KSL</b> |                          |   |                      |   |           |
| <b>Solid sand - lime brick KS</b>                                  | <b>NF</b> ≥240x115x71    | 12 - 28   | Germany              | ≥2,0                                    | C14/C15   |
|  | <b>8DF</b> ≥ 250x240x240 | 10 - 28   | Germany              | ≥2,0                                    | C16/C17   |
|  | ≥ 997x214x538            | 10 - 36   | Netherlands          | ≥1,8                                    | C18/C19   |
| <b>Perforated sand - lime<br/>brick KSL</b>                        | <b>3DF</b> 240x175x113   | 8 - 20  | Germany              | ≥1,4                                    | C20 - C23 |
| <b>Vertical perforated brick HLz</b>                               |                          |   |                      |   |           |
| <b>Vertical perforated brick<br/>HLz</b>                           | 370x240x237              | 4 - 12  | Germany              | ≥1,0                                    | C24/C25   |
|  | 500x175x237              | 4 - 12  | Germany              | ≥1,0                                    | C24/C25   |
|  | <b>2DF</b> 240x115x113   | 6 - 28  | Germany              | ≥1,4                                    | C26/C27   |
|  | 248x365x248              | 4 - 8   | Germany              | ≥0,6                                    | C28 - C31 |
|  | 248x365x249              | 8 - 12  | Germany              | ≥0,7                                    | C32 - C35 |
|  | 248x365x249              | 4 - 6   | Germany              | ≥0,5                                    | C36 - C39 |
|  | 248x425x248              | 4 - 8   | Germany              | ≥0,8                                    | C40 - C43 |
|  | 248x425x248              | 4 - 8   | Germany              | ≥0,6                                    | C44 - C47 |
|  | 500x200x315              | 4 - 8   | France               | ≥0,6                                    | C48 - C51 |
|  | 500x200x300              | 4 - 10  | France               | ≥0,7                                    | C52 - C55 |
|  | 500x200x315              | 2 - 8   | France               | ≥0,7                                    | C56 - C59 |
|  | 560x200x275              | 4 - 8   | France               | ≥0,7                                    | C60/C61   |
|  | 255x120x118              | 2 - 12  | Italy                | ≥1,0                                    | C62 - C64 |
|  | 275x130x94               | 6 - 20  | Spain                | ≥0,8                                    | C65/C66   |
|  | 220x190x290              | 6 - 10  | Portugal             | ≥0,7                                    | C67 - C70 |
|  | 253x300x240              | 2 - 6   | Austria              | ≥0,8                                    | C71 - C74 |
|  | 250x440x250              | 6 - 10  | Austria              | ≥0,7                                    | C75 - C78 |
|  | 230x108x55               | 2 - 8   | Denmark              | ≥1,4                                    | C79/C80   |
| <b>Horizontal perforated brick LLz</b>                             |                          |   |                      |   |           |
| <b>Horizontal perforated<br/>brick LLz</b>                         | 248x78x250               | 2 - 6   | Italy                | ≥0,7                                    | C81/C82   |
|  | 128x88x275               | 2   | Spain                | ≥0,8                                    | C83/C84   |
| <b>Light-weight concrete hollow block Hbl</b>                      |                          |   |                      |   |           |
| <b>Light-weight concrete<br/>hollow block Hbl</b>                  | 362x240x240              | 2 - 4   | Germany              | ≥1,0                                    | C85 - C88 |
|  | 500x200x200              | 2 - 6   | France               | ≥1,0                                    | C89/C90   |
|  | 440x215x215              | 4 - 10  | Ireland              | ≥1,2                                    | C91 - C94 |
| BTI Universal Component Compound UVT Top for masonry               |                          |   |                      |   |           |
| Intended use<br>Overview of controlled bricks part 1               |                          |   |                      |   |           |
| <b>Annex B 13</b>  |                          |   |                      |   |           |

**Table B14.1:** Overview of controlled bricks part 2

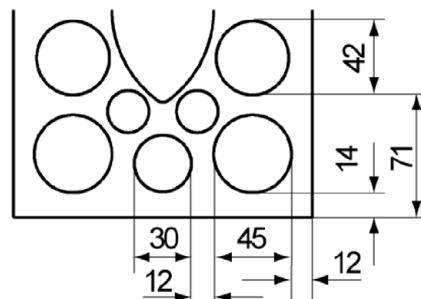
| Kind of masonry   | Brick format [mm] | Compressive strength $f_b$ [N/mm <sup>2</sup> ] | Producing country | Density $\rho$ [kg/dm <sup>3</sup> ] | Annex       |
|---|-------------------|---|-------------------|--------------------------------------|-------------|
| <b>Light-weight concrete solid block Vbl</b>                |                   |   |                   |                                      |             |
| Light-weight concrete solid block Vbl                       | ≥ 372x300x254     | 2   | Germany           | ≥0,6                                 | C95/C96     |
|   | ≥ 250x240x239     | 4 - 8   | Germany           | ≥1,6                                 | C97 - C100  |
|   | ≥ 440x100x215     | 4 - 10  | Ireland           | ≥2,0                                 | C101/C102   |
|   | ≥ 440x95x215      | 6 - 12  | England           | ≥2,0                                 | C103/C104   |
| <b>Autoclaved aerated concrete (AAC)</b>                    |                   |   |                   |                                      |             |
| PP2 / AAC   | -                 | 2   | Germany           | 0,35                                 | C105 - C109 |
| PP4 / AAC   | -                 | 4   | Germany           | 0,5                                  | C105 - C109 |
| PP6 / AAC   | -                 | 6   | Germany           | 0,65                                 | C105 - C109 |
|   |                   |   |                   |                                      |             |
| <b>BTI Universal Component Compound UVT Top for masonry</b> |                   |   |                   |                                      |             |
| <b>Intended use</b><br>Overview of controlled bricks part 2 |                   |   |                   |                                      |             |
| <b>Annex B 14</b>   |                   |   |                   |                                      |             |

**Table B15.1:** Overview dimensions of perforated and hollow bricks part 1

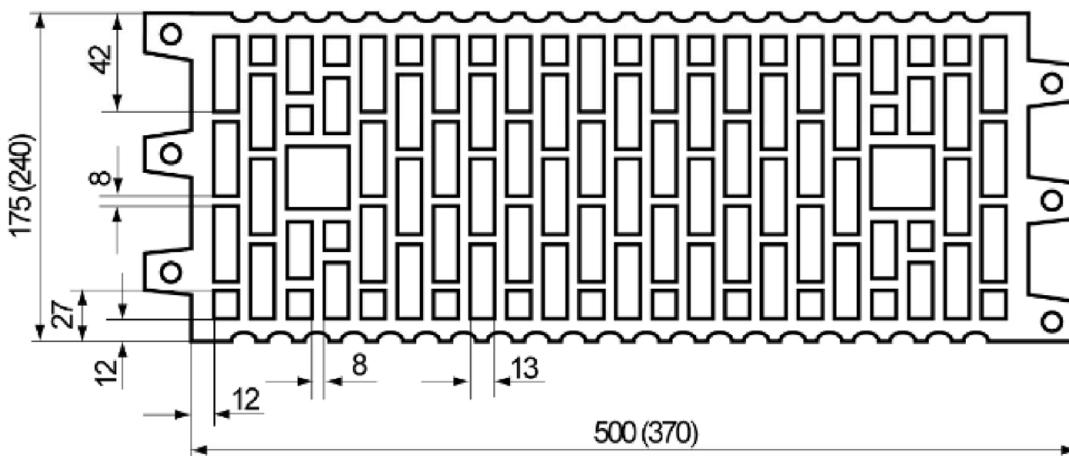
Solid sand-lime brick KS, 8DF,  
EN 771-2:2011+A1:2015  
according to Annex C 16



Perforated sand-lime brick KSL, 3DF,  
EN 771-2:2011+A1:2015; e.g. KS Wemding  
according to Annex C 20

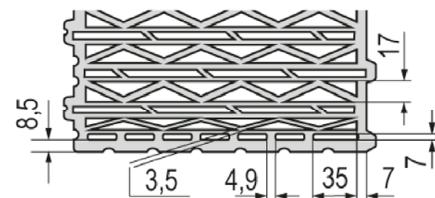
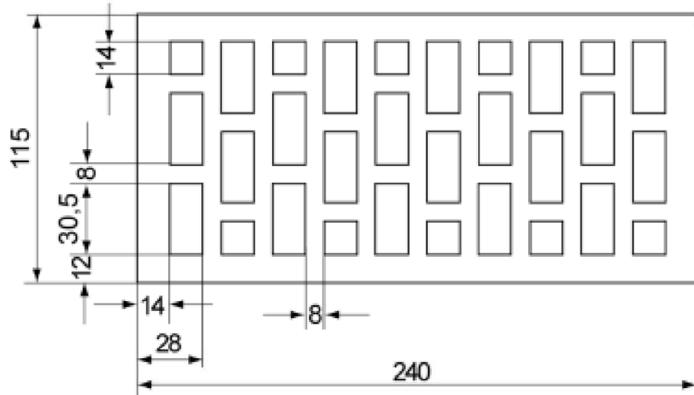


Vertical perforated brick HLz, EN 771-1:2011+A1:2015: e.g. Wienerberger, Poroton according to Annex C 24



Vertical perforated brick HLz, 2DF,  
EN 771-1:2011+A1:2015;  
e.g. Wienerberger according to Annex C 26

Vertical perforated brick HLz, U8,  
EN 771-1:2011+A1:2015; according to Annex C 28



Pictures not to scale

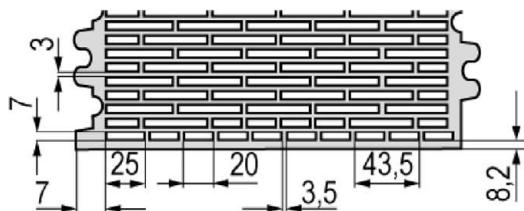
BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Overview dimensions of perforated and hollow bricks part 1

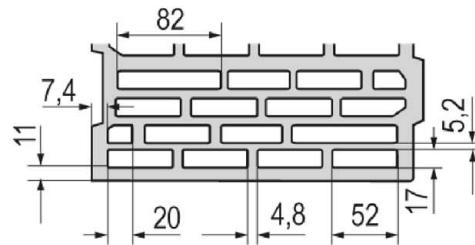
**Annex B 15**

**Table B16.1:** Overview dimensions of perforated and hollow bricks part 2

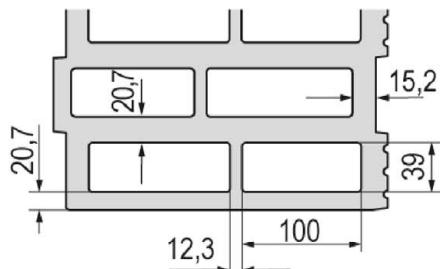
Vertical perforated brick HLz, T10, T11,  
EN 771-1:2011+A1:2015; according to Annex C32



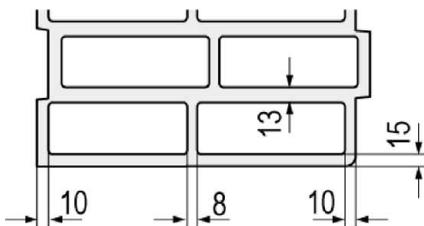
Vertical perforated brick HLz, T7 PF, filled with perlite,  
EN 771-1:2011+A1:2015; according to Annex C 36



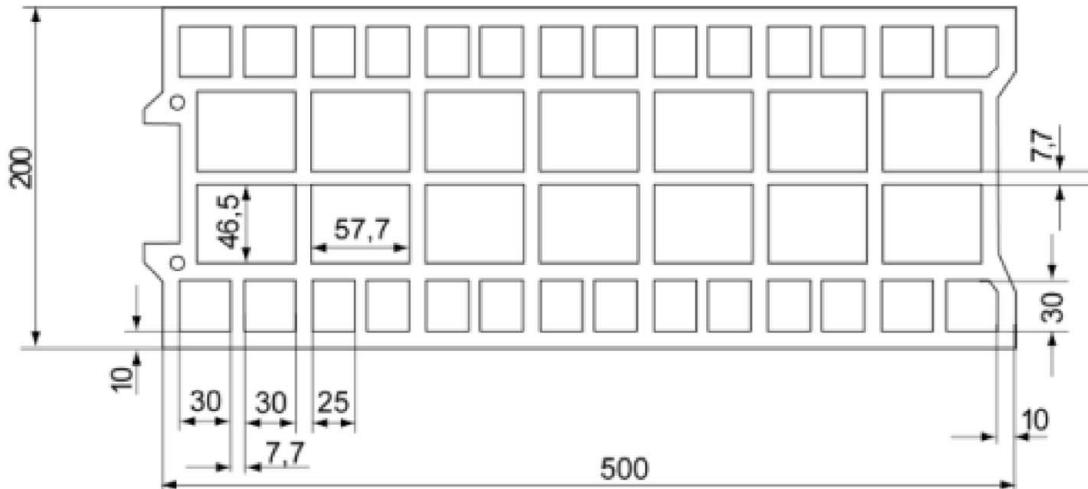
Vertical perforated brick HLz, T9 MW, filled with  
mineral wool, EN 771-1:2011+A1:2015; according to  
Annex C 40



Vertical perforated brick HLz, FZ 7, filled with mineral  
wool, EN 771-1:2011+A1:2015; according to Annex C  
44



Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Bouyer Leroux; According to Annex C 48



Pictures not to scale

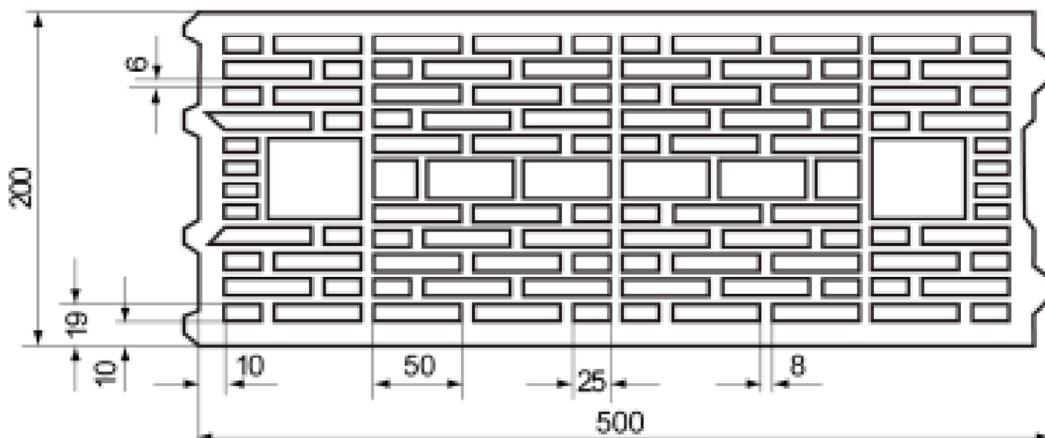
BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Overview dimensions of perforated and hollow bricks part 2

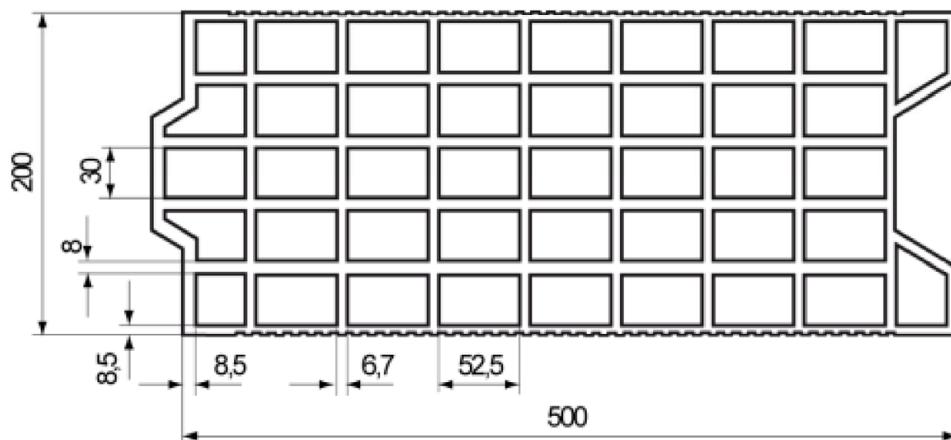
**Annex B 16**

**Table B17.1:** Overview dimensions of perforated and hollow bricks part 3

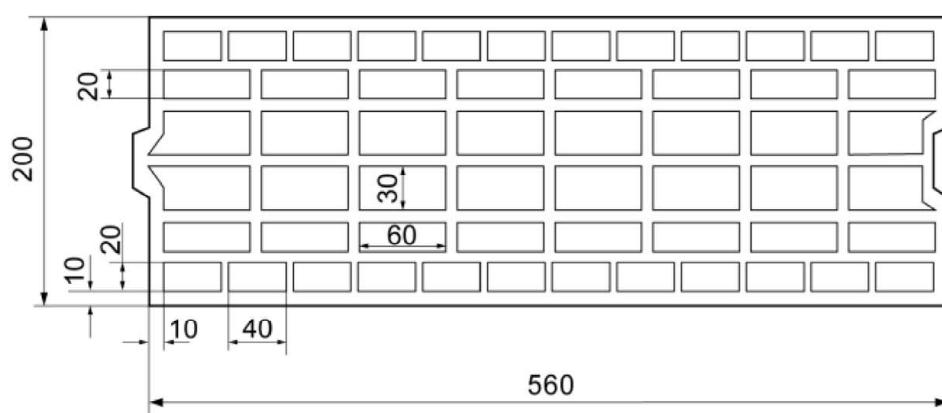
Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Wienerberger according to Annex C 52



Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Terreal according to Annex C 56



Vertical perforated brick HLz, EN 771-1:2011+A1:2015; e.g. Imery according to Annex C 60



Pictures not to scale

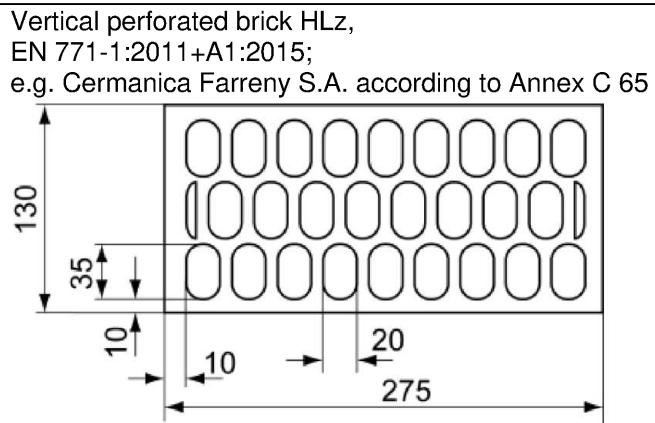
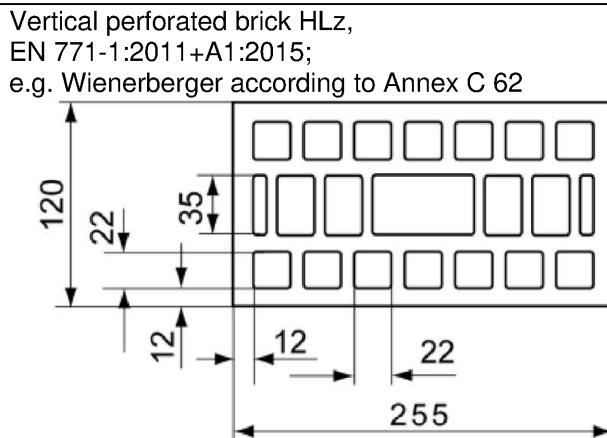
BTI Universal Component Compound UVT Top for masonry

**Intended use**

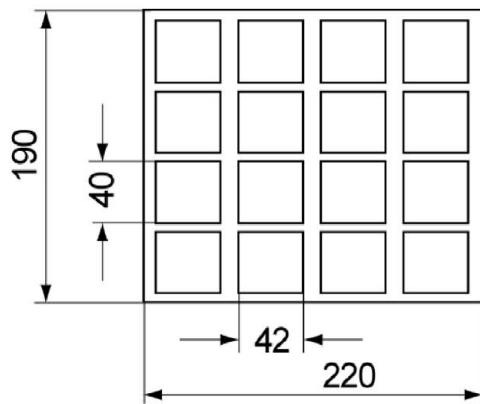
Overview dimensions of perforated and hollow bricks part 3

**Annex B 17**

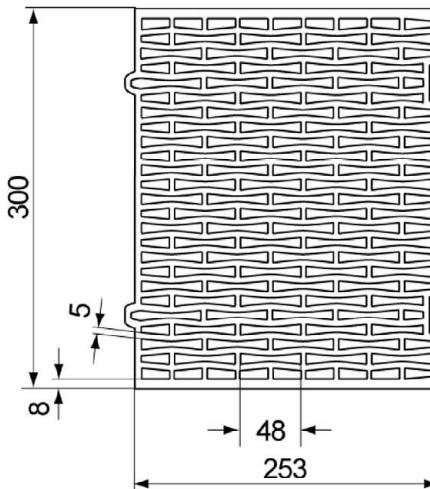
**Table B18.1:** Overview dimensions of perforated and hollow bricks part 4



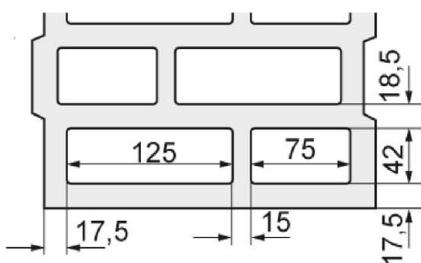
Vertical perforated brick HLz,  
EN 771-1:2011+A1:2015;  
e.g. Perceram according to Annex C 67



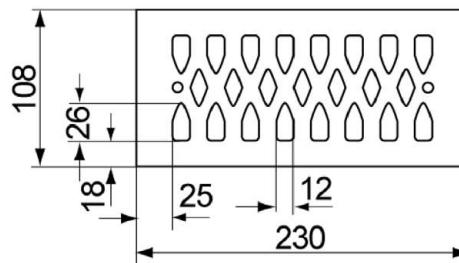
Vertical perforated brick HLz,  
EN 771-1:2011+A1:2015;  
e.g. Ziegelwerk Brenna according to Annex C 71



Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool, EN 771-1:2011+A1:2015 according to Annex C 75



Vertical perforated brick HLz,  
EN 771-1:2011+A1:2015;  
e.g. Wienerberger according to Annex C 79



Pictures not to scale

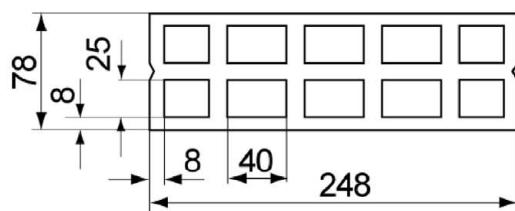
BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Overview dimensions of perforated and hollow bricks part 4

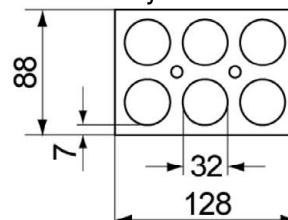
**Annex B 18**

**Table B19.1:** Overview dimensions of perforated and hollow bricks part 5

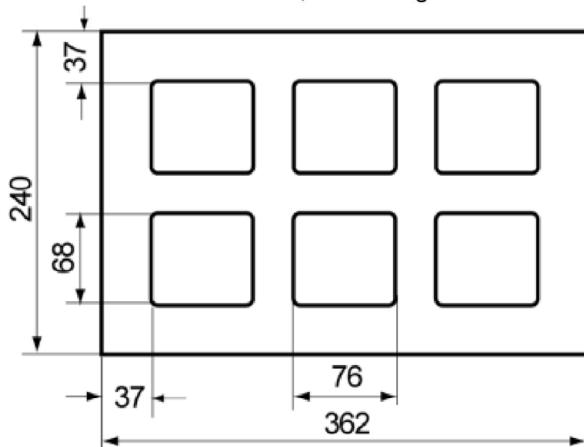
Horizontal perforated brick LLz,  
EN 771-1:2011+A1:2015; according to Annex C 81



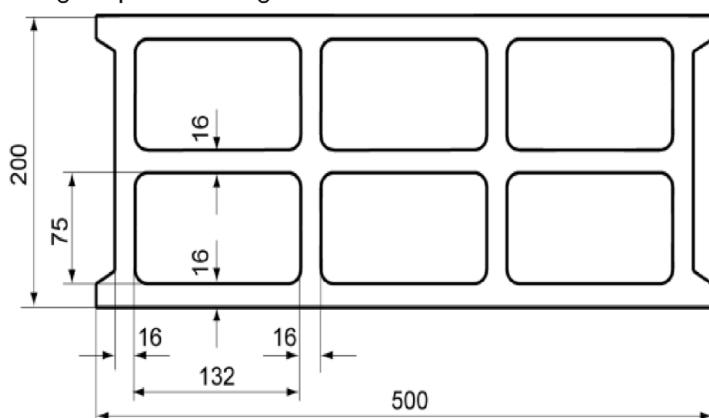
Horizontal perforated brick LLz,  
EN 771-1:2011+A1:2015;  
e.g. Germanica Farreny S.A according to Annex C 83



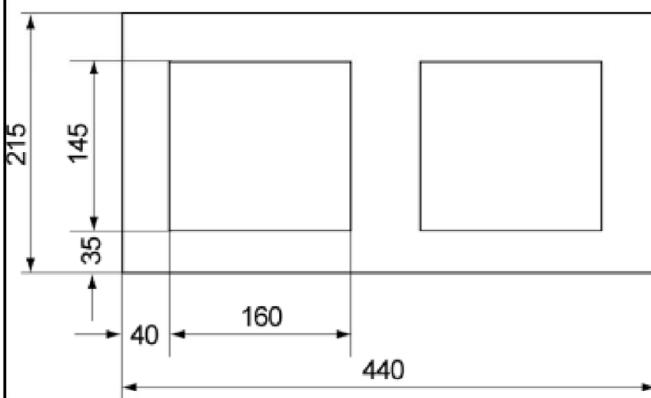
Light-weight concrete hollow block Hbl,  
EN 771-3:2011+A1:2015; according to Annex C 85



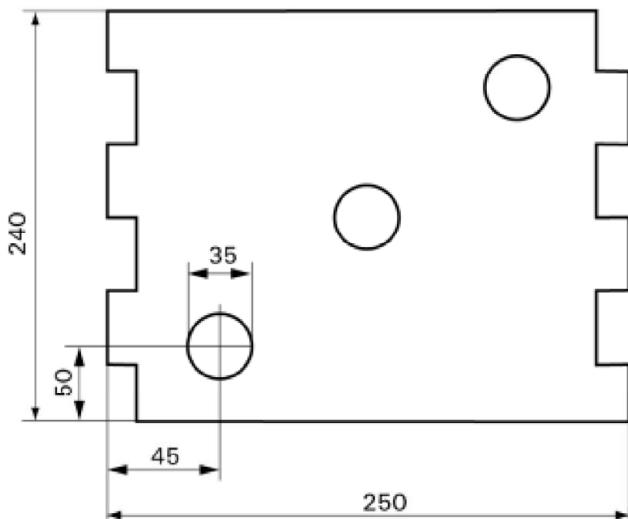
Light-weight concrete hollow block Hbl,  
EN 771-3:2011+A1:2015;  
e.g. Sepa according to Annex C 89



Light-weight concrete hollow block Hbl,  
EN 771-3:2011+A1:2015;  
e.g. Roadstone wood according to Annex C 91



Light-weight concrete solid block Vbl,  
EN 771-3:2011+A1:2015;  
e.g. Sepa according to Annex C 97



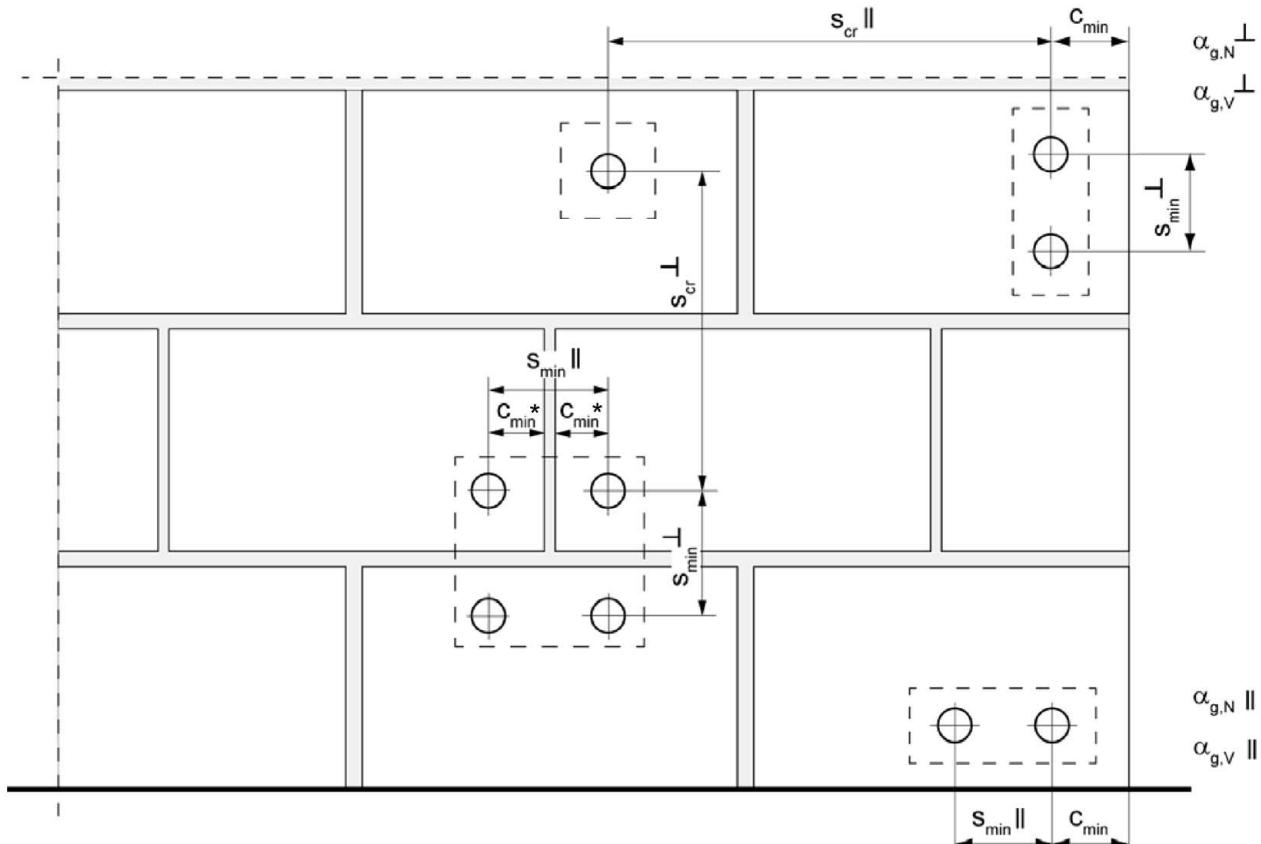
Pictures not to scale

BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Overview dimensions of perforated and hollow bricks part 5

**Annex B 19**

## Spacing and edge distance



\* Only, if vertical joints are not completely filled with mortar

|                          |  |
|--------------------------|--|
| $s_{\min} \parallel$     | = Minimum spacing parallel to bed joint                                |
| $s_{\min} \perp$         | = Minimum spacing vertical to bed joint                                |
| $s_{cr} \parallel$       | = Characteristic spacing parallel to bed joint                         |
| $s_{cr} \perp$           | = Characteristic spacing vertical to bed joint                         |
| $c_{cr} = c_{min}$       | = Edge distance  |
| $\alpha_{g,N} \parallel$ | = Group factor for tension loading, anchor group parallel to bed joint |
| $\alpha_{g,v} \parallel$ | = Group factor for shear loading, anchor group parallel to bed joint   |
| $\alpha_{g,N} \perp$     | = Group factor for tension loading, anchor group vertical to bed joint |
| $\alpha_{g,v} \perp$     | = Group factor for shear loading, anchor group vertical to bed joint   |

For  $s \geq s_{cr}$   $\alpha_g = 2$

For  $s_{\min} \leq s < s_{cr}$   $\alpha_g$  according to installation parameters of brick

$$N^g_{Rk} = \alpha_{g,N} \cdot N_{Rk}; \quad V^g_{Rk} = \alpha_{g,v} \cdot V_{Rk} \quad (\text{Group of 2 anchors})$$

$$N^g_{Rk} = \alpha_{g,N} \parallel \cdot \alpha_{g,N} \perp \cdot N_{Rk}; \quad V^g_{Rk} = \alpha_{g,v} \parallel \cdot \alpha_{g,v} \perp \cdot V_{Rk} \quad (\text{Group of 4 anchors})$$

BTI Universal Component Compound UVT Top for masonry

**Intended use**  
Spacing and edge distance

**Annex B 20**

**Table C1.1:** Characteristic **resistance to steel failure under tension loading** of BTI anchor rods and standard threaded rods

| Anchor rod / standard threaded rod  |                | M6  | M8 | M10    | M12    | M16 |
|---|----------------|-----|----|--------|--------|-----|
| <b>Characteristic resistance to steel failure under tension loading</b> <sup>3)</sup> |                |     |    |        |        |     |
| Characteristic resistance $N_{Rk,s}$  | Property class | 4.6 | 8  | 15(13) | 23(21) | 33  |
|   |                | 4.8 | 8  | 15(13) | 23(21) | 33  |
|   |                | 5.8 | 10 | 19(17) | 29(27) | 43  |
|   |                | 8.8 | 16 | 29(27) | 47(43) | 68  |
|   |                | 50  | 10 | 19     | 29     | 43  |
|   |                | 70  | 14 | 26     | 41     | 59  |
|   |                | 80  | 16 | 30     | 47     | 68  |
|   |                |     |    |        |        | 126 |

**Partial factors**<sup>1)</sup>

|                                |                |     |     |                           |
|--------------------------------|----------------|-----|-----|---------------------------|
| Partial factor $\gamma_{Ms,N}$ | Property class | 4.6 | [-] | 2,00                      |
|                                |                | 4.8 |     | 1,50                      |
|                                |                | 5.8 |     | 1,50                      |
|                                |                | 8.8 |     | 1,50                      |
|                                |                | 50  |     | 2,86                      |
|                                |                | 70  |     | 1,50 <sup>2)</sup> / 1,87 |
|                                |                | 80  |     | 1,60                      |
|                                |                |     |     |                           |

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

<sup>2)</sup> Only for BTI UVT Top A made of high corrosion-resistant steel HCR

<sup>3)</sup> Values in brackets are valid for undersized threaded rods with smaller stress area  $A_s$  for hot dip galvanised standard threaded rods according to EN ISO 10684:2004+AC:2009

BTI Universal Component Compound UVT Top for masonry

**Performance**

Characteristic steel bearing capacity of anchor rods under tension loading

**Annex C 1**

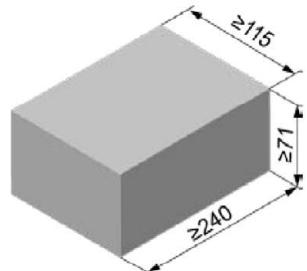
**Table C2.1:** Characteristic resistance to steel failure of BTI anchor rods and standard threaded rods under shear loading

| Anchor rod / standard threaded rod   |                | M6  | M8  | M10                       | M12    | M16 |  |
|--|----------------|-----|-----|---------------------------|--------|-----|--|
| <b>Characteristic resistance under shear loading, steel failure<sup>3)</sup></b>   |                |     |     |                           |        |     |  |
| <b>without lever arm</b>   |                |     |     |                           |        |     |  |
| Characteristic resistance $V_{Rk,s}$   | Property class | 4.6 | 4   | 9(8)                      | 14(13) | 20  |  |
|  |                | 4.8 | 4   | 9(8)                      | 14(13) | 20  |  |
|  |                | 5.8 | 6   | 11(10)                    | 17(16) | 25  |  |
|  |                | 8.8 | 8   | 15(13)                    | 23(21) | 34  |  |
|  |                | 50  | 5   | 9                         | 15     | 21  |  |
|  |                | 70  | 7   | 13                        | 20     | 30  |  |
|  |                | 80  | 8   | 15                        | 23     | 34  |  |
|  |                |     |     |                           |        | 63  |  |
| <b>with lever arm</b>  |                |     |     |                           |        |     |  |
| Characteristic resistance $M_{Rk,s}$   | Property class | 4.6 | 6   | 15(13)                    | 30(27) | 52  |  |
|  |                | 4.8 | 6   | 15(13)                    | 30(27) | 52  |  |
|  |                | 5.8 | 7   | 19(16)                    | 37(33) | 65  |  |
|  |                | 8.8 | 12  | 30(26)                    | 60(53) | 105 |  |
|  |                | 50  | 7   | 19                        | 37     | 65  |  |
|  |                | 70  | 10  | 26                        | 52     | 92  |  |
|  |                | 80  | 12  | 30                        | 60     | 105 |  |
|  |                |     |     |                           |        | 266 |  |
| <b>Partial factors<sup>1)</sup></b>  |                |     |     |                           |        |     |  |
| Partial factor $\gamma_{M,y}$  | Property class | 4.6 | [-] | 1,67                      |        |     |  |
|  |                | 4.8 |     | 1,25                      |        |     |  |
|  |                | 5.8 |     | 1,25                      |        |     |  |
|  |                | 8.8 |     | 1,25                      |        |     |  |
|  |                | 50  | [-] | 2,38                      |        |     |  |
|  |                | 70  |     | 1,25 <sup>2)</sup> / 1,56 |        |     |  |
|  |                | 80  |     | 1,33                      |        |     |  |
|  |                |     |     |                           |        |     |  |
| <sup>1)</sup> In absence of other national regulations   |                |     |     |                           |        |     |  |
| <sup>2)</sup> Only for BTI UVT Top A made of high corrosion-resistant steel HCR  |                |     |     |                           |        |     |  |
| <sup>3)</sup> Values in brackets are valid for undersized threaded rods with smaller stress area $A_s$ for hot dip galvanised standard threaded rods according to EN ISO 10684:2004+AC:2009. |                |     |     |                           |        |     |  |
| BTI Universal Component Compound UVT Top for masonry   |                |     |     |                           |        |     |  |
| <b>Performance</b><br>Characteristic steel bearing capacity of anchor rods under shear loading   |                |     |     |                           |        |     |  |
| <b>Annex C 2</b>   |                |     |     |                           |        |     |  |

**Table C3.1: Characteristic resistance to steel failure of internal threaded anchors UVT Top E under tension / shear loading**

| Internal threaded anchor UVT Top E  |                   |     | M6   | M8   | M10 | M12              |  |  |  |  |
|---|-------------------|-----|------|------|-----|------------------|--|--|--|--|
| <b>Characteristic resistance to steel failure under tension loading,</b>                          |                   |     |      |      |     |                  |  |  |  |  |
| Characteristic resistance with screw<br>$N_{Rk,s}$  | Property class    | 5.8 | [kN] | 10   | 18  | 29               |  |  |  |  |
|   | Property class R  | R   |      | 14   | 26  | 41               |  |  |  |  |
|   | Property class 70 | HCR |      | 14   | 26  | 41               |  |  |  |  |
| <b>Partial factors<sup>1)</sup></b>   |                   |     |      |      |     |                  |  |  |  |  |
| Partial factor<br>$\gamma_{Ms,N}$   | Property class    | 5.8 | [-]  | 1,50 |     |                  |  |  |  |  |
|   | Property class R  | R   |      | 1,87 |     |                  |  |  |  |  |
|   | Property class 70 | HCR |      | 1,87 |     |                  |  |  |  |  |
| <b>Characteristic resistance to steel failure under shear loading</b>                             |                   |     |      |      |     |                  |  |  |  |  |
| <b>without lever arm</b>  |                   |     |      |      |     |                  |  |  |  |  |
| Characteristic resistance with screw<br>$V_{Rk,s}$  | Property class    | 5.8 | [kN] | 5    | 9   | 15               |  |  |  |  |
|   | Property class R  | R   |      | 7    | 13  | 20               |  |  |  |  |
|   | Property class 70 | HCR |      | 7    | 13  | 20               |  |  |  |  |
| <b>with lever arm</b>   |                   |     |      |      |     |                  |  |  |  |  |
| Characteristic resistance<br>$M_{Rk,s}^0$   | Property class    | 5.8 | [Nm] | 8    | 19  | 37               |  |  |  |  |
|   | Property class R  | R   |      | 11   | 26  | 52               |  |  |  |  |
|   | Property class 70 | HCR |      | 11   | 26  | 52               |  |  |  |  |
| <b>Partial factors<sup>1)</sup></b>   |                   |     |      |      |     |                  |  |  |  |  |
| Partial factor<br>$\gamma_{Ms,V}$   | Property class    | 5.8 | [-]  | 1,25 |     |                  |  |  |  |  |
|   | Property class R  | R   |      | 1,56 |     |                  |  |  |  |  |
|   | Property class 70 | HCR |      | 1,56 |     |                  |  |  |  |  |
| <sup>1)</sup> In absence of other national regulations  |                   |     |      |      |     |                  |  |  |  |  |
| BTI Universal Component Compound UVT Top for masonry  |                   |     |      |      |     |                  |  |  |  |  |
| <b>Performance</b><br>Characteristic steel bearing capacity of internal threaded anchor UVT Top E |                   |     |      |      |     | <b>Annex C 3</b> |  |  |  |  |

### Solid brick Mz, NF, EN 771-1:2011+A1:2015



| Solid brick Mz, NF, EN 771-1:2011+A1:2015   |                       |         |          |
|---|-----------------------|---------|----------|
| Producer                                    | e.g. Wienerberger     |         |          |
| Nominal dimensions [mm]                     | length L              | width W | height H |
| ≥ 240                                       | ≥ 115                 | ≥ 71    |          |
| Density ρ [kg/dm³]                          | ≥ 1,8                 |         |          |
| Compressive strength f <sub>b</sub> [N/mm²] | 12 / 20               |         |          |
| Standard                                    | EN 771-1:2011+A1:2015 |         |          |

Table C4.1: Installation parameters for edge distance c=100mm

| Anchor rod   | M6   | M8  | M10 | M12 | -   | -  |  |  |  |  |  |
|--|------|-----|-----|-----|-----|----|--|--|--|--|--|
| Internal threaded anchor UVT Top E   | -    | -   | -   | -   | M6  | M8 |  |  |  |  |  |
| <b>Anchor rod and internal threaded anchor UVT Top E without perforated sleeve</b> |      |     |     |     |     |    |  |  |  |  |  |
| Effective anchorage depth h <sub>ef</sub>  | [mm] | 50  | 50  | 50  | 50  | 85 |  |  |  |  |  |
|  |      | 80  | 80  | 80  | 80  |    |  |  |  |  |  |
|  |      | 200 | 200 | 200 | 200 |    |  |  |  |  |  |
| Max. installation torque T <sub>inst</sub>   | [Nm] | 4   | 10  |     | 4   | 10 |  |  |  |  |  |
| <b>General installation parameters</b>   |      |     |     |     |     |    |  |  |  |  |  |
| Edge distance c <sub>min</sub>   |      | 100 |     | 100 |     |    |  |  |  |  |  |
| Edge distance h <sub>ef</sub> =200 c <sub>min</sub>                                |      | 150 |     | -   |     |    |  |  |  |  |  |
| Spacing s <sub>min</sub> II,N  |      | 60  |     | 60  |     |    |  |  |  |  |  |
|  |      | 240 |     | -   |     |    |  |  |  |  |  |
| h <sub>ef</sub> =200 s <sub>min</sub> II,N   |      | 240 |     | 240 |     |    |  |  |  |  |  |
|  |      | 240 |     | 240 |     |    |  |  |  |  |  |
| Spacing s <sub>min</sub> II,V  |      | 240 |     | 240 |     |    |  |  |  |  |  |
|  |      | 75  |     | 75  |     |    |  |  |  |  |  |
| <b>Drilling method</b>   |      |     |     |     |     |    |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                       |      |     |     |     |     |    |  |  |  |  |  |

<sup>1)</sup> No performance assessed

Table C4.2: Group factors

| Anchor rods                              | M6  | M8  | M10 | M12 | -  | -  |
|--|-----|-----|-----|-----|----|----|
| Internal threaded anchor UVT Top E       | -   | -   | -   | -   | M6 | M8 |
| <b>Edge distance c<sub>min</sub></b>     |     |     |     |     |    |    |
|  | 100 |     |     |     |    |    |
| Group factor α <sub>g,N</sub> II         |     | 1,5 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| h <sub>ef</sub> =200 α <sub>g,N</sub> II |     | 1,5 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| h <sub>ef</sub> =200 α <sub>g,V</sub> II |     | 2,0 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| α <sub>g,N</sub> ⊥                       |     | 2,0 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| h <sub>ef</sub> =200 α <sub>g,V</sub> ⊥  |     | 2,0 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| h <sub>ef</sub> =200 α <sub>g,N</sub> ⊥  |     | 2,0 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |
| h <sub>ef</sub> =200 α <sub>g,V</sub> ⊥  |     | 2,0 |     |     |    |    |
|  |     | 2,0 |     |     |    |    |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Solid brick Mz, NF, dimensions, installation parameters c=100mm

Annex C 4

### Solid brick Mz, NF, EN 771-1:2011+A1:2015

**Table C5.1:** Characteristic resistance under tension loading for edge distance c=100mm

| Anchor rod   | M6            | M8        | M10       |     | M12 |     | -   | -   |  |  |
|--|---------------|-----------|-----------|-----|-----|-----|-----|-----|--|--|
| Internal threaded anchor UVT Top E   | -             | -         | -         |     | -   |     | M6  | M8  |  |  |
|  |               |           | 11x85     |     |     |     |     |     |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |           |           |     |     |     |     |     |  |  |
| compressive strength $f_b$   | use condition | $\geq 50$ | $\geq 50$ | 50  | 80  | 200 | 50  | 80  |  |  |
|  |               |           |           |     |     |     |     | 200 |  |  |
|  |               |           |           |     |     |     |     | 85  |  |  |
| $12\text{N/mm}^2$  | w/w           | w/d       | 2,5       | 2,5 | 2   | 3   | 7,5 | 2   |  |  |
|  | d/d           |           | 4         | 4   | 3,5 | 5   | 12  | 3   |  |  |
| $20\text{N/mm}^2$  | w/w           | w/d       | 3,5       | 3,5 | 3   | 4,5 | 11  | 3   |  |  |
|  | d/d           |           | 5,5       | 5,5 | 5   | 7   | 4,5 | 8   |  |  |

Factor for temperature range 72/120°C: 0,83

**Table C5.2:** Characteristic resistance under shear loading for edge distance c=100mm

| Anchor rod  | M6            | M8        | M10       |           | M12 |           | -   | -    |  |  |
|---|---------------|-----------|-----------|-----------|-----|-----------|-----|------|--|--|
| Internal threaded anchor UVT Top E  | -             | -         | -         |           | -   |           | M6  | M8   |  |  |
|   |               |           | 11x85     |           |     |           |     |      |  |  |
| <b><math>V_{Rk} = V_{Rk,p} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |           |           |           |     |           |     |      |  |  |
| compressive strength $f_b$  | use condition | $\geq 50$ | $\geq 50$ | $\geq 50$ | 200 | $\geq 50$ | 200 | 85   |  |  |
|   |               |           |           |           |     |           |     |      |  |  |
| $12\text{N/mm}^2$   | w/w           | w/d       | 2,5       | 2,5       | 4   | 8,5       | 4   | 11,5 |  |  |
|   | d/d           |           |           |           |     |           |     | 2,5  |  |  |
| $20\text{N/mm}^2$   | w/w           | w/d       | 4,0       | 4,0       | 6   | 12        | 5,5 | 12   |  |  |
|   | d/d           |           |           |           |     |           |     | 4    |  |  |

Factor for job site tests and displacements see annex C110

|   |           |
|---|-----------|
| BTI Universal Component Compound UVT Top for masonry  | Annex C 5 |
| <b>Performance</b><br>Solid brick Mz, NF, Characteristic resistance under tension and shear loading c=100mm |           |

### Solid brick Mz, NF, EN 771-1:2011+A1:2015

**Table C6.1:** Installation parameters for edge distance c=60mm

| Anchor rod   | M6                     | M8   | M10         | M12 | M16 | -     | -     |  |  |  |  |  |  |  |  |
|--|------------------------|------|-------------|-----|-----|-------|-------|--|--|--|--|--|--|--|--|
| Internal threaded anchor<br>UVT Top E  | -                      | -    | -           | -   | -   | M6    | M8    |  |  |  |  |  |  |  |  |
|  |                        |      |             |     |     | 11x85 | 15x85 |  |  |  |  |  |  |  |  |
| <b>Anchor rod and internal threaded anchor UVT Top E without perforated sleeve</b> |                        |      |             |     |     |       |       |  |  |  |  |  |  |  |  |
| Effective<br>anchorage depth<br>$h_{ef}$   | [mm]                   | 50   | 50          | 50  | 50  | 50    | 85    |  |  |  |  |  |  |  |  |
|  |                        | 100  | 100         | 100 | 100 | 100   |       |  |  |  |  |  |  |  |  |
|  |                        | 200  | 200         | 200 | 200 | 200   |       |  |  |  |  |  |  |  |  |
| Max. installation<br>torque  | $T_{inst}$             | [Nm] | 4           | 10  |     | 4     | 10    |  |  |  |  |  |  |  |  |
| <b>General installation parameters</b>   |                        |      |             |     |     |       |       |  |  |  |  |  |  |  |  |
| Edge distance  | $c_{min}$              | [mm] | 60          |     |     |       |       |  |  |  |  |  |  |  |  |
| Edge distance<br>$h_{ef}=200$  | $c_{min}$              |      | 60          |     |     |       |       |  |  |  |  |  |  |  |  |
| $s_{min \parallel, N}$   | $h_{ef}=200$           |      | 80          |     |     |       |       |  |  |  |  |  |  |  |  |
|  |                        |      | 80          |     |     |       |       |  |  |  |  |  |  |  |  |
| Spacing  | $s_{min \parallel, v}$ |      | 80          |     |     |       |       |  |  |  |  |  |  |  |  |
|  |                        |      | 3x $h_{ef}$ |     |     |       |       |  |  |  |  |  |  |  |  |
| $s_{cr \parallel}$   | $s_{min \perp}$        |      | 80          |     |     |       |       |  |  |  |  |  |  |  |  |
|  |                        |      | 3x $h_{ef}$ |     |     |       |       |  |  |  |  |  |  |  |  |
| <b>Drilling method</b>   |                        |      |             |     |     |       |       |  |  |  |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                       |                        |      |             |     |     |       |       |  |  |  |  |  |  |  |  |

**Table C6.2:** Group factors

| Anchor rods  | M6                                  | M8   | M10 | M12 | M16 | -                | -  |  |
|--|-------------------------------------|------|-----|-----|-----|------------------|----|--|
| Internal threaded anchor<br>UVT Top E  | -                                   | -    | -   | -   | -   | M6               | M8 |  |
| Edge<br>distance   | $c_{min}$                           | [mm] | 60  |     |     |                  |    |  |
| Group<br>factor  | $\alpha_{g,N} \parallel$            |      | 0,6 |     |     |                  |    |  |
|  | $\alpha_{g,v} \parallel$            |      | 1,3 |     |     |                  |    |  |
|  | $h_{ef}=200 \alpha_{g,N} \parallel$ |      | 1,4 |     |     |                  |    |  |
|  | $h_{ef}=200 \alpha_{g,v} \parallel$ |      | 1,5 |     |     |                  |    |  |
|  | $\alpha_{g,N} \perp$                |      | 0,3 |     |     |                  |    |  |
|  | $\alpha_{g,v} \perp$                |      | 1,3 |     |     |                  |    |  |
|  | $h_{ef}=200 \alpha_{g,N} \perp$     |      | 2,0 |     |     |                  |    |  |
|  | $h_{ef}=200 \alpha_{g,v} \perp$     |      | 1,1 |     |     |                  |    |  |
| BTI Universal Component Compound UVT Top for masonry                                 |                                     |      |     |     |     |                  |    |  |
| <b>Performance</b><br>Solid brick Mz, NF, dimensions, installation parameters c=60mm |                                     |      |     |     |     | <b>Annex C 6</b> |    |  |

### Solid brick Mz, NF, EN 771-1:2011+A1:2015

**Table C7.1:** Characteristic resistance under tension loading for edge distance c=60mm

| Anchor rod  |               | M6                                      | M8  | M10 |     |     | M12 |                 |     | M16 |                 |     | -     | -               |                 |     |  |  |  |  |  |  |  |  |
|---|---------------|---|-----|-----|-----|-----|-----|-----------------|-----|-----|-----------------|-----|-------|-----------------|-----------------|-----|--|--|--|--|--|--|--|--|
| Internal threaded anchor<br>UVT Top E   |               | -                                       | -   | -   |     |     | -   |                 |     | -   |                 |     | M6    | M8              | M10             | M12 |  |  |  |  |  |  |  |  |
|   |               |   |     |     |     |     |     |                 |     |     |                 |     | 11x85 | 15x85           |                 |     |  |  |  |  |  |  |  |  |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |   |     |     |     |     |     |                 |     |     |                 |     |       |                 |                 |     |  |  |  |  |  |  |  |  |
| compressive strength $f_b$  | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |     |                 |     |     |                 |     |       | 85              |                 |     |  |  |  |  |  |  |  |  |
|   |               | 50                                      | 100 | 50  | 100 | 50  | 100 | 200             | 50  | 100 | 200             | 50  | 100   | 200             |                 |     |  |  |  |  |  |  |  |  |
| 12N/mm <sup>2</sup>   | w/w           | w/d                                     | 1,5 | 2,0 | 2,0 | 2,0 | 2,5 | - <sup>1)</sup> | 2,0 | 2,5 | - <sup>1)</sup> | 2,0 | 5,5   | - <sup>1)</sup> | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |
|   | d/d           |   | 2,5 | 3,0 | 4,0 | 3,0 | 4,0 | 9,5             | 3,0 | 4,0 | 9,5             | 3,0 | 8,5   | 9,5             | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |
| 20N/mm <sup>2</sup>   | w/w           | w/d                                     | 2,0 | 2,5 | 3,0 | 2,5 | 3,5 | - <sup>1)</sup> | 3,0 | 3,5 | - <sup>1)</sup> | 3,0 | 7,5   | - <sup>1)</sup> | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |
|   | d/d           |   | 3,5 | 4,5 | 5,5 | 4,5 | 5,5 | 12              | 4,5 | 5,5 | 12              | 4,5 | 12    | 12              | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |
| 28N/mm <sup>2</sup>   | w/w           | w/d                                     | 2,5 | 3,0 | 4,0 | 3,0 | 4,0 | - <sup>1)</sup> | 3,5 | 4,0 | - <sup>1)</sup> | 3,5 | 9,0   | - <sup>1)</sup> | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |
|   | d/d           |   | 4,0 | 5,5 | 6,5 | 5,5 | 6,5 | 12              | 5,5 | 6,5 | 12              | 5,5 | 12    | 12              | - <sup>1)</sup> |     |  |  |  |  |  |  |  |  |

<sup>1)</sup> No performance assessed

Factor for temperature range 72/120°C: 0,83

**Table C7.2:** Characteristic resistance under shear loading for edge distance c=60mm

| Anchor rod   |               | M6                                      | M8  | M10 |     |     | M12 |     |     | M16 |     |     | -     | -     |     |                 |  |  |  |  |  |  |  |  |
|--|---------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-----|-----------------|--|--|--|--|--|--|--|--|
| Internal threaded anchor<br>UVT Top E  |               | -                                       | -   | -   |     |     | -   |     |     | -   |     |     | M6    | M8    | M10 | M12             |  |  |  |  |  |  |  |  |
|  |               |   |     |     |     |     |     |     |     |     |     |     | 11x85 | 15x85 |     |                 |  |  |  |  |  |  |  |  |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |   |     |     |     |     |     |     |     |     |     |     |       |       |     |                 |  |  |  |  |  |  |  |  |
| compressive strength $f_b$   | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |     |     |     |     |     |     |       | 85    |     |                 |  |  |  |  |  |  |  |  |
|  |               | 50                                      | 100 | 50  | 100 | 50  | 100 | 200 | 50  | 100 | 200 | 50  | 100   | 200   |     |                 |  |  |  |  |  |  |  |  |
| 12N/mm <sup>2</sup>  | w/w           | w/d                                     | 1,2 | 2,5 | 1,2 | 3,0 | 2,0 | 3,0 | 1,5 | 1,5 | 3,0 | 3,0 | 0,6   | 3,0   | 4,5 | - <sup>1)</sup> |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |     |     |     |     |     |     |       |       |     |                 |  |  |  |  |  |  |  |  |
| 20N/mm <sup>2</sup>  | w/w           | w/d                                     | 1,5 | 3,5 | 1,5 | 4,5 | 3,0 | 4,5 | 2,5 | 2,0 | 4,5 | 4,5 | 0,9   | 4,5   | 6,0 | - <sup>1)</sup> |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |     |     |     |     |     |     |       |       |     |                 |  |  |  |  |  |  |  |  |
| 28N/mm <sup>2</sup>  | w/w           | w/d                                     | 2,0 | 4,0 | 2,0 | 5,0 | 3,5 | 5,0 | 3,0 | 2,5 | 5,0 | 5,0 | 1,2   | 5,0   | 7,5 | - <sup>1)</sup> |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |     |     |     |     |     |     |       |       |     |                 |  |  |  |  |  |  |  |  |

<sup>1)</sup> No performance assessed

Factor for job site tests and displacements see annex C110

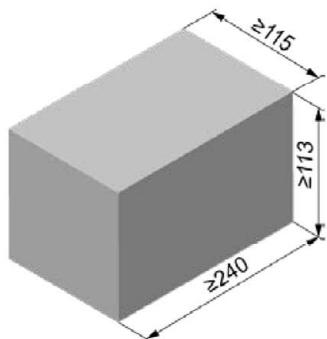
BTI Universal Component Compound UVT Top for masonry

**Performance**

Solid brick Mz, NF, Characteristic resistance under tension and shear loading c=60mm

**Annex C 7**

### Solid brick Mz, 2DF, EN 771-1:2011+A1:2015



| Solid brick Mz, 2DF, EN 771-1:2011+A1:2015      |                       |                  |                   |
|---|-----------------------|------------------|-------------------|
| Producer  | e.g. Wienerberger     |                  |                   |
| Nominal dimensions [mm]                         | length L<br>≥ 240     | width W<br>≥ 115 | height H<br>≥ 113 |
| Density $\rho$ [kg/dm <sup>3</sup> ]            | ≥ 1,8                 |                  |                   |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] | 10 / 16               |                  |                   |
| Standard  | EN 771-1:2011+A1:2015 |                  |                   |

**Table C8.1:** Installation parameters

| Anchor rod                         | M6 | M8 | M10 | M12 | M16 | -           | -           |
|------------------------------------|----|----|-----|-----|-----|-------------|-------------|
| Internal threaded anchor UVT Top E | -  | -  | -   | -   | -   | M6<br>11x85 | M8<br>15x85 |

#### Anchor rod and internal threaded anchor UVT Top E without perforated sleeve

|  |    |     |    |     |    |     |    |     |    |
|--|----|-----|----|-----|----|-----|----|-----|----|
| Effective anchorage depth $h_{ef}$ [mm]  | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 85 |
| Max. installation torque $T_{inst}$ [Nm] | 4  |     |    |     | 10 |     |    | 4   | 10 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H 16x85 K

|  |     |    |     |    |     |
|--|-----|----|-----|----|-----|
| Effective anchorage depth $h_{ef}$ [mm]  | -1) | 85 | -1) | 85 | -1) |
| Max. installation torque $T_{inst}$ [Nm] |     | 10 |     | 4  |     |

#### General installation parameters

|                                |      |     |
|--------------------------------|------|-----|
| Edge distance $C_{min}$        | [mm] | 60  |
| $S_{min \parallel}$            |      | 120 |
| $S_{cr \parallel}$             |      | 240 |
| $S_{cr \perp} = S_{min \perp}$ |      | 115 |

#### Drilling method

Hammer drilling with hard metal hammer drill

<sup>1)</sup> No performance assessed

**Table C8.2:** Group factors

| Anchor rods                        | M6                       | M8  | M10 | M12 | M16 | -           | -           |
|------------------------------------|--------------------------|-----|-----|-----|-----|-------------|-------------|
| Internal threaded anchor UVT Top E | -                        | -   | -   | -   | -   | M6<br>11x85 | M8<br>15x85 |
| Group factor                       | $\alpha_{g,N \parallel}$ | 1,5 |     |     |     |             |             |
|                                    | $\alpha_{g,v \parallel}$ | 1,4 |     |     |     |             |             |
|                                    | $\alpha_{g,N \perp}$     | 2   |     |     |     |             |             |
|                                    | $\alpha_{g,v \perp}$     |     |     |     |     |             |             |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Solid brick Mz, 2DF, dimensions, installation parameters

**Annex C 8**

**Solid brick Mz, 2DF, EN 771-1:2011+A1:2015**

**Table C9.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8  | M10 | M12 | M16 | -     | -     | M8  | M10 | -                                       |
|--|---------------|-----|-----|-----|-----|-------|-------|-----|-----|---|
| Internal threaded anchor UVT Top E   | -             | -   | -   | -   | -   | M6    | M8    | M10 | M12 | M6   M8<br>11x85                        |
|  |               |     |     |     |     | 11x85 | 15x85 |     |     |   |
| Perforated sleeve UVT Top H  | -             | -   | -   | -   | -   | -     | -     | -   | -   | 16x85                                   |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |     |     |     |       |       |     |     |   |
| compressive strength $f_b$   | use condition | 50  | 100 | 50  | 100 | 50    | 100   | 50  | 100 | Effective anchorage depth $h_{ef}$ [mm] |
| 10N/mm <sup>2</sup>  | w/w           | 1,5 | 2,5 | 1,5 | 2,5 | 1,5   | 3     | 2   | 3,5 | 2                                       |
|  | d/d           | 3   | 4,0 | 3,0 | 4,0 | 3,0   | 4,5   | 3   | 5,5 | 3                                       |
| 16N/mm <sup>2</sup>  | w/w           | 2,5 | 4   | 2,5 | 4   | 2,5   | 4,5   | 3,5 | 5,5 | 3,5                                     |
|  | d/d           | 4,5 | 7,0 | 4,5 | 7,0 | 4,5   | 7,5   | 5,5 | 8   | 5,5                                     |
| Factor for temperature range 72/120°C: 0,83  |               |     |     |     |     |       |       |     |     |   |

**Table C9.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8                                      | M10 | M12 | M16 | -     | -     | M8  | M10 | -                |     |
|---|---------------|---|-----|-----|-----|-------|-------|-----|-----|------------------|-----|
| Internal threaded anchor UVT Top E  | -             | -                                       | -   | -   | -   | M6    | M8    | M10 | M12 | M6   M8<br>11x85 |     |
|   |               |   |     |     |     | 11x85 | 15x85 |     |     |                  |     |
| Perforated sleeve UVT Top H   | -             | -                                       | -   | -   | -   | -     | -     | -   | -   | 16x85            |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |   |     |     |     |       |       |     |     |                  |     |
| compressive strength $f_b$  | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |       | 85    |     |     |                  |     |
| 10N/mm <sup>2</sup>   | w/w           | 2,5                                     | 3,0 | 3,0 | 3,5 | 3,0   | 2,5   | 3,0 | 3,0 | 3,0              | 3,5 |
|   | d/d           |   |     |     |     |       |       |     |     |                  |     |
| 16N/mm <sup>2</sup>   | w/w           | 4,0                                     | 5,0 | 5,5 | 5,5 | 5,0   | 4,0   | 5,0 | 5,0 | 5,0              | 6,0 |
|   | d/d           |   |     |     |     |       |       |     |     |                  |     |
| Factor for job site tests and displacements see annex C110  |               |   |     |     |     |       |       |     |     |                  |     |

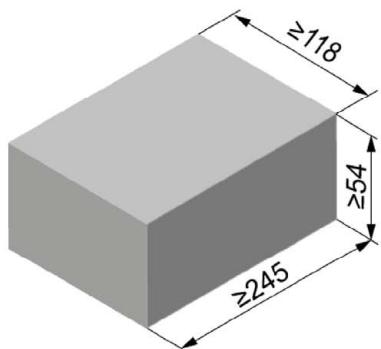
BTI Universal Component Compound UVT Top for masonry

**Performance**

Solid brick Mz, 2DF, Characteristic resistance under tension and shear loading

**Annex C 9**

### Solid brick Mz, EN 771-1:2011+A1:2015



| Solid brick Mz, EN 771-1:2011+A1:2015           |                       |                  |                  |
|---|-----------------------|------------------|------------------|
| Producer  | e.g. Nigra            |                  |                  |
| Nominal dimensions [mm]                         | length L<br>≥ 245     | width W<br>≥ 118 | height H<br>≥ 54 |
| Density $\rho$ [kg/dm <sup>3</sup> ]            | ≥ 1,8                 |                  |                  |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] | 10 / 20               |                  |                  |
| Standard  | EN 771-1:2011+A1:2015 |                  |                  |

Table C10.1: Installation parameters

| Anchor rod   | M6   | M8  | M10 | M12 | M16 | -   | -   |  |  |  |  |  |  |  |
|--|------|-----|-----|-----|-----|-----|-----|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E   | -    | -   | -   | -   | -   | M6  | M10 |  |  |  |  |  |  |  |
| <b>Anchor rod and internal threaded anchor UVT Top E without perforated sleeve</b> |      |     |     |     |     |     |     |  |  |  |  |  |  |  |
| Effective anchorage depth $h_{\text{ef}}$ [mm]                                     | 50   | 100 | 50  | 100 | 50  | 100 | 85  |  |  |  |  |  |  |  |
| Max. installation torque $T_{\text{inst}}$ [Nm]                                    | 4    |     |     | 10  |     | 4   | 10  |  |  |  |  |  |  |  |
| <b>General installation parameters</b>   |      |     |     |     |     |     |     |  |  |  |  |  |  |  |
| Edge distance $c_{\min}$   | [mm] | 60  |     |     |     |     |     |  |  |  |  |  |  |  |
| Spacing $s_{\text{cr II}} = s_{\min \parallel}$                                    |      | 245 |     |     |     |     |     |  |  |  |  |  |  |  |
| $s_{\text{cr } \perp} = s_{\min \perp}$  |      | 60  |     |     |     |     |     |  |  |  |  |  |  |  |
| <b>Drilling method</b>   |      |     |     |     |     |     |     |  |  |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                       |      |     |     |     |     |     |     |  |  |  |  |  |  |  |

Table C10.2: Group factors

| Anchor rods   | M6   | M8    | M10 | M12 | M16 | -     | -                 |
|---|--|-------|-----|-----|-----|-------|-------------------|
| Internal threaded anchor UVT Top E  | -  | -     | -   | -   | -   | M6    | M10               |
|   |  |       |     |     |     | 11x85 | 15x85             |
| Group factor  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [-] 2 |     |     |     |       |                   |
| BTI Universal Component Compound UVT Top for masonry                      |  |       |     |     |     |       |                   |
| <b>Performance</b><br>Solid brick Mz, dimensions, installation parameters |  |       |     |     |     |       | <b>Annex C 10</b> |

**Solid brick Mz, EN 771-1:2011+A1:2015**

**Table C11.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8  | M10                                     | M12 | M16  | -    | -    |     |      |
|--|---------------|-----|---|-----|------|------|------|-----|------|
| Internal threaded anchor UVT Top E   | -             | -   | -                                       | -   | -    | M6   | M8   | M10 | M12  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |   |     |      |      |      |     |      |
| compressive strength $f_b$   | use condition |     | Effective anchorage depth $h_{ef}$ [mm] |     |      |      |      |     | 85   |
|  | w/w           | w/d | 0,6                                     | 0,9 | 0,75 | 0,75 | 0,75 | 0,6 | 0,75 |
| <b>10N/mm<sup>2</sup></b>  | d/d           |     | 1,2                                     | 1,5 | 1,2  | 1,2  | 1,2  | 1,2 | 1,2  |
|  | w/w           | w/d | 0,9                                     | 1,5 | 1,2  | 1,2  | 1,2  | 0,9 | 1,2  |
| <b>20N/mm<sup>2</sup></b>  | d/d           |     | 1,5                                     | 2,5 | 2,0  | 2,0  | 2,0  | 1,5 | 2,0  |

Factor for temperature range 72/120°C: 0,83

**Table C11.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8  | M10                                     | M12 | M16 | -   | -   |     |     |     |
|---|---------------|-----|---|-----|-----|-----|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -   | -                                       | -   | -   | M6  | M8  | M10 | M12 |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |   |     |     |     |     |     |     |     |
| compressive strength $f_b$  | use condition |     | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |     | 85  |     |
|   | w/w           | w/d | 2,0                                     | 3,0 | 4,0 | 4,5 | 5,5 | 2,0 | 3,0 | 4,0 |
| <b>10N/mm<sup>2</sup></b>   | d/d           |     |   |     |     |     |     |     |     |     |
|   | w/w           | w/d | 2,5                                     | 4,0 | 5,5 | 6,0 | 8,0 | 2,5 | 4,0 | 5,5 |
| <b>20N/mm<sup>2</sup></b>   | d/d           |     |   |     |     |     |     |     |     |     |

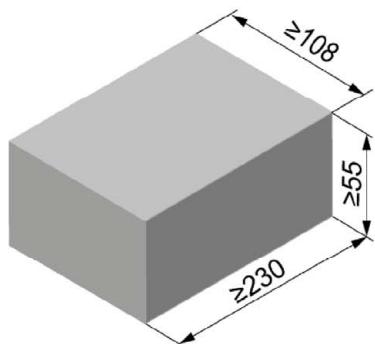
Factor for job site tests and displacements see annex C110

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Solid brick Mz, Characteristic resistance under tension and shear loading

**Annex C 11**

### Solid brick Mz, EN 771-1:2011+A1:2015



| Solid brick Mz, EN 771-1:2011+A1:2015           |                       |                  |
|---|-----------------------|------------------|
| Producer  | e.g. Wienerberger     |                  |
| Nominal dimensions [mm]                         | length L<br>≥ 230     | width W<br>≥ 108 |
| Density $\rho$ [kg/dm <sup>3</sup> ]            | ≥ 1,8                 |                  |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] | 10 / 20               |                  |
| Standard  | EN 771-1:2011+A1:2015 |                  |

Table C12.1: Installation parameters

| Anchor rod   | M6   | M8  | M10 | M12 | M16 | -  | -   |  |  |  |  |  |  |  |
|--|------|-----|-----|-----|-----|----|-----|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E   | -    | -   | -   | -   | -   | M6 | M10 |  |  |  |  |  |  |  |
| <b>Anchor rod and internal threaded anchor UVT Top E without perforated sleeve</b> |      |     |     |     |     |    |     |  |  |  |  |  |  |  |
| Effective anchorage depth $h_{\text{ef}}$ [mm]                                     | 50   | 90  | 50  | 90  | 50  | 90 | 85  |  |  |  |  |  |  |  |
| Max. installation torque $T_{\text{inst}}$ [Nm]                                    | 4    |     |     | 10  |     | 4  | 10  |  |  |  |  |  |  |  |
| <b>General installation parameters</b>   |      |     |     |     |     |    |     |  |  |  |  |  |  |  |
| Edge distance $c_{\min}$   | [mm] | 60  |     |     |     |    |     |  |  |  |  |  |  |  |
| Spacing $s_{\text{cr II}} = s_{\min \parallel}$                                    |      | 230 |     |     |     |    |     |  |  |  |  |  |  |  |
| $s_{\text{cr } \perp} = s_{\min \perp}$  |      | 60  |     |     |     |    |     |  |  |  |  |  |  |  |
| <b>Drilling method</b>   |      |     |     |     |     |    |     |  |  |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                       |      |     |     |     |     |    |     |  |  |  |  |  |  |  |

Table C12.2: Group factors

| Anchor rods   | M6   | M8    | M10 | M12 | M16 | -     | -                 |
|---|--|-------|-----|-----|-----|-------|-------------------|
| Internal threaded anchor UVT Top E  | -  | -     | -   | -   | -   | M6    | M10               |
|   |  |       |     |     |     | 11x85 | 15x85             |
| Group factor  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [-] 2 |     |     |     |       |                   |
| <b>BTI Universal Component Compound UVT Top for masonry</b>               |  |       |     |     |     |       |                   |
| <b>Performance</b><br>Solid brick Mz, dimensions, installation parameters |  |       |     |     |     |       | <b>Annex C 12</b> |

### Solid brick Mz, EN 771-1:2011+A1:2015

**Table C13.1:** Characteristic resistance under tension loading

| Anchor rod                         | M6 | M8 | M10 | M12 | M16 | -     | -     |
|------------------------------------|----|----|-----|-----|-----|-------|-------|
| Internal threaded anchor UVT Top E | -  | -  | -   | -   | -   | M6    | M8    |
|                                    |    |    |     |     |     | 11x85 | 15x85 |

$N_{Rk} = N_{Rk,p} = N_{Rk,b}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C)

| compressive strength $f_b$ | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |      |      |      |      |
|----------------------------|---------------|---|-----|------|------|------|------|
|                            |               | $\geq 50$                               |     |      |      | 85   |      |
| 10N/mm <sup>2</sup>        | w/w           | 0,6                                     | 0,9 | 0,75 | 0,75 | 0,75 | 0,75 |
|                            | d/d           | 1,2                                     | 1,5 | 1,2  | 1,2  | 1,2  | 1,2  |
| 20N/mm <sup>2</sup>        | w/w           | 0,9                                     | 1,5 | 1,2  | 1,2  | 1,2  | 1,2  |
|                            | d/d           | 1,5                                     | 2,5 | 2,0  | 2,0  | 2,0  | 2,0  |

Factor for temperature range 72/120°C: 0,83

**Table C13.2:** Characteristic resistance under shear loading

| Anchor rod                         | M6 | M8 | M10 | M12 | M16 | -     | -     |
|------------------------------------|----|----|-----|-----|-----|-------|-------|
| Internal threaded anchor UVT Top E | -  | -  | -   | -   | -   | M6    | M8    |
|                                    |    |    |     |     |     | 11x85 | 15x85 |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |     |
|----------------------------|---------------|---|-----|-----|-----|-----|-----|
|                            |               | $\geq 50$                               |     |     |     | 85  |     |
| 10N/mm <sup>2</sup>        | w/w           | 2,0                                     | 3,0 | 4,0 | 4,5 | 5,5 | 2,0 |
|                            | d/d           |   |     |     |     |     |     |
| 20N/mm <sup>2</sup>        | w/w           | 2,5                                     | 4,0 | 5,5 | 6,0 | 8,0 | 2,5 |
|                            | d/d           |   |     |     |     |     |     |

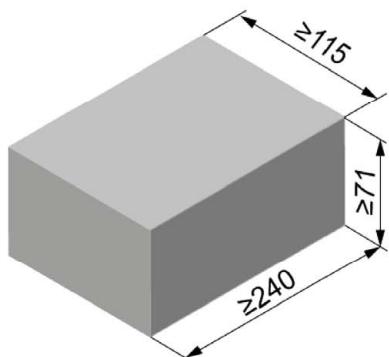
Factor for job site tests and displacements see annex C110

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Solid brick Mz, Characteristic resistance under tension and shear loading

**Annex C 13**

### Solid sand-lime brick KS, NF, EN 771-2:2011+A1:2015



| Solid sand-lime brick KS, NF, EN 771-2:2011+A1:2015 |                       |                  |                  |
|---|-----------------------|------------------|------------------|
| Producer  |                       |                  |                  |
| Nominal dimensions [mm]                             | length L<br>≥ 240     | width W<br>≥ 115 | height H<br>≥ 71 |
| Density $\rho$ [kg/dm <sup>3</sup> ]                | ≥ 1,8                 |                  |                  |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]     | 12 / 20 / 28          |                  |                  |
| Standard  | EN 771-2:2011+A1:2015 |                  |                  |

Table C14.1: Installation parameters

| Anchor rod  | M6   | M8                 | M10 | M12 | M16       | -           | -            |  |  |  |  |  |  |
|---|------|--------------------|-----|-----|-----------|-------------|--------------|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E  | -    | -                  | -   | -   | -         | M6<br>11x85 | M10<br>15x85 |  |  |  |  |  |  |
| Anchor rod and internal threaded anchor UVT Top E without perforated sleeve |      |                    |     |     |           |             |              |  |  |  |  |  |  |
| Effective anchorage depth $h_{\text{ef}}$ [mm]                              | 50   | 100                | 50  | 100 | 50<br>200 | 100<br>200  | 50<br>200    |  |  |  |  |  |  |
| Max. installation torque $T_{\text{inst}}$ [Nm]                             | 3    | 5                  | 15  | 15  | 25        | 3           | 5            |  |  |  |  |  |  |
| General installation parameters   |      |                    |     |     |           |             |              |  |  |  |  |  |  |
| Edge distance $C_{\text{min}}$  | [mm] | 60                 |     |     |           |             |              |  |  |  |  |  |  |
| $S_{\text{min II}}$   |      | 80                 |     |     |           |             |              |  |  |  |  |  |  |
| $S_{\text{cr II}}$  |      | 3x $h_{\text{ef}}$ |     |     |           |             |              |  |  |  |  |  |  |
| $S_{\text{min I}}$  |      | 80                 |     |     |           |             |              |  |  |  |  |  |  |
| $S_{\text{cr I}}$   |      | 3x $h_{\text{ef}}$ |     |     |           |             |              |  |  |  |  |  |  |
| Drilling method   |      |                    |     |     |           |             |              |  |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                |      |                    |     |     |           |             |              |  |  |  |  |  |  |

Table C14.2: Group factors

| Anchor rod                         | M6  | M8  | M10 | M12 | M16 | -           | -            |
|------------------------------------|-----|-----|-----|-----|-----|-------------|--------------|
| Internal threaded anchor UVT Top E | -   | -   | -   | -   | -   | M6<br>11x85 | M10<br>15x85 |
| Group factor                       |     |     |     |     |     |             |              |
| $\alpha_{g,N} \parallel$           | [-] | 0,7 |     |     |     |             |              |
| $\alpha_{g,v} \parallel$           |     | 1,3 |     |     |     |             |              |
| $\alpha_{g,N} \perp$               |     | 2,0 |     |     |     |             |              |
| $\alpha_{g,v} \perp$               |     | 2,0 |     |     |     |             |              |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Solid sand-lime brick KS, NF, dimensions, installation parameters

#### Annex C 14

### Solid sand-lime brick KS, NF, EN 771-2:2011+A1:2015

**Table C15.1:** Characteristic resistance under tension loading

| Anchor rod  |               | M6                                      |     | M8  |     | M10 |     | M12 |     | M16 |     | -     |     | -       |     |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|---------|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E  |               | -                                       |     | -   |     | -   |     | -   |     | -   |     | M6 M8 |     | M10 M12 |     |  |  |  |  |  |  |  |  |  |  |  |  |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |   |     |     |     |     |     |     |     |     |     |       |     |         |     |  |  |  |  |  |  |  |  |  |  |  |  |
| compressive strength $f_b$  | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |     |     |     |     |     |       |     |         |     |  |  |  |  |  |  |  |  |  |  |  |  |
|   |               | 50                                      | 100 | 50  | 100 | 50  | 100 | 50  | 100 | 200 | 50  | 100   | 200 | 50      | 100 |  |  |  |  |  |  |  |  |  |  |  |  |
| $12\text{N/mm}^2$   | w/w           | 2,0                                     | 3,0 | 2,5 | 4,5 | 2,5 | 3,5 | 7,0 | 2,5 | 3,0 | 6,5 | 2,5   | 3,5 | 8,0     | 2,5 |  |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           | 4,0                                     | 5,5 | 4,0 | 8,0 | 4,0 | 5,5 | 12  | 4,0 | 4,5 | 12  | 4,5   | 5,5 | 12      | 4,0 |  |  |  |  |  |  |  |  |  |  |  |  |
| $20\text{N/mm}^2$   | w/w           | 3,0                                     | 4,5 | 3,5 | 6,5 | 3,5 | 4,5 | 10  | 3,5 | 4,0 | 9,5 | 4,0   | 5,0 | 11      | 3,5 |  |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           | 5,5                                     | 7,5 | 6,0 | 11  | 6,0 | 8,0 | 12  | 6,0 | 6,5 | 12  | 6,5   | 8,0 | 12      | 6,0 |  |  |  |  |  |  |  |  |  |  |  |  |
| $28\text{N/mm}^2$   | w/w           | 3,5                                     | 5,0 | 4,0 | 8,0 | 4,5 | 5,5 | 12  | 4,5 | 5,0 | 11  | 4,5   | 5,5 | 12      | 4,5 |  |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           | 6,5                                     | 9,0 | 7,0 | 12  | 7,0 | 9,0 | 12  | 7,0 | 7,5 | 12  | 7,5   | 9,5 | 12      | 7,0 |  |  |  |  |  |  |  |  |  |  |  |  |

Factor for temperature range 72/120°C: 0,83

**Table C15.2:** Characteristic resistance under shear loading

| Anchor rod   |               | M6                                      |     | M8  |     | M10 |            | M12 |            | M16 |            | -     |  | -       |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---------------|---|-----|-----|-----|-----|------------|-----|------------|-----|------------|-------|--|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E   |               | -                                       |     | -   |     | -   |            | -   |            | -   |            | M6 M8 |  | M10 M12 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |   |     |     |     |     |            |     |            |     |            |       |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |
| compressive strength $f_b$   | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |     |            |     |            |     |            |       |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |               | 50                                      | 100 | 50  | 100 | 50  | $\geq 100$ | 50  | $\geq 100$ | 50  | $\geq 100$ | 85    |  | 85      |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $12\text{N/mm}^2$  | w/w           | 1,5                                     | 3,0 | 1,5 | 3,0 | 1,2 | 2,0        | 1,2 | 2,0        | 1,2 | 2,0        | 1,2   |  | 1,2     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |            |     |            |     |            |       |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $20\text{N/mm}^2$  | w/w           | 2,5                                     | 4,0 | 2,5 | 4,0 | 1,5 | 3,0        | 1,5 | 3,0        | 1,5 | 3,0        | 1,5   |  | 1,5     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |            |     |            |     |            |       |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $28\text{N/mm}^2$  | w/w           | 3,0                                     | 4,5 | 3,0 | 4,5 | 1,5 | 3,5        | 1,5 | 3,5        | 1,5 | 3,5        | 1,5   |  | 1,5     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |   |     |     |     |     |            |     |            |     |            |       |  |         |  |  |  |  |  |  |  |  |  |  |  |  |  |

Factor for job site tests and displacements see annex C110

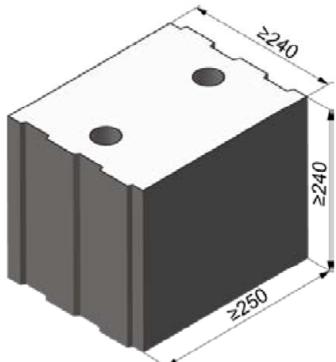
BTI Universal Component Compound UVT Top for masonry

**Performance**

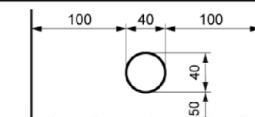
Solid sand-lime brick KS, NF, Characteristic resistance under tension and shear loading

**Annex C 15**

### Solid sand-lime brick KS, 8DF, EN 771-2:2011+A1:2015



| Solid sand-lime brick KS, 8DF, EN 771-2:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | -                     |         |
| Nominal dimensions [mm]                              | length L              | width W |
| ≥ 250  | ≥ 240                 | ≥ 240   |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | ≥ 2,0                 |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 10 / 20 / 28          |         |
| Standard   | EN 771-2:2011+A1:2015 |         |



Dimension see also Annex B 15

Table C16.1: Installation parameters

| Anchor rod                            | M6 | M8 | M10 | M12 | M16 | -     | -     |
|---------------------------------------|----|----|-----|-----|-----|-------|-------|
| Internal threaded anchor<br>UVT Top E | -  | -  | -   | -   | -   | M6    | M8    |
|                                       |    |    |     |     |     | 11x85 | 15x85 |

#### Anchor rod and internal threaded anchor UVT Top E without perforated sleeve

|   |    |     |    |     |    |     |    |     |    |
|---|----|-----|----|-----|----|-----|----|-----|----|
| Effective anchorage depth $h_{\text{ef}}$ [mm]  | 50 | 100 | 50 | 100 | 50 | 100 | 50 | 100 | 85 |
| Max. installation torque $T_{\text{inst}}$ [Nm] | 4  |     |    |     | 10 |     |    | 4   | 10 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H 16x85 K

|   |                 |    |                 |    |                 |
|---|-----------------|----|-----------------|----|-----------------|
| Effective anchorage depth $h_{\text{ef}}$ [mm]  | - <sup>1)</sup> | 85 | - <sup>1)</sup> | 85 | - <sup>1)</sup> |
| Max. installation torque $T_{\text{inst}}$ [Nm] |                 | 10 |                 | 4  |                 |

#### General installation parameters

|                                |      |                    |
|--------------------------------|------|--------------------|
| Edge distance $C_{\text{min}}$ | [mm] | 60                 |
| $S_{\text{min II}}$            |      | 80                 |
| $S_{\text{cr II}}$             |      | 3x $h_{\text{ef}}$ |
| $S_{\text{min I}}$             |      | 80                 |
| $S_{\text{cr I}}$              |      | 3x $h_{\text{ef}}$ |

#### Drilling method

Hammer drilling with hard metal hammer drill

<sup>1)</sup> No performance assessed

Table C16.2: Group factors

| Anchor rods                           | M6                       | M8 | M10 | M12 | M16 | -  | -  |
|---------------------------------------|--------------------------|----|-----|-----|-----|----|----|
| Internal threaded anchor<br>UVT Top E | -                        | -  | -   | -   | -   | M6 | M8 |
| Group factors                         | $\alpha_{g,N \parallel}$ |    |     |     | 1,5 |    |    |
|                                       | $\alpha_{g,v \parallel}$ |    |     |     | 1,2 |    |    |
|                                       | $\alpha_{g,N \perp}$     |    |     |     | 1,5 |    |    |
|                                       | $\alpha_{g,v \perp}$     |    |     |     | 1,2 |    |    |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Solid sand-lime brick KS, 8DF, dimensions, installation parameters

Annex C 16

### Solid sand-lime brick KS, 8DF, EN 771-2:2011+A1:2015

**Table C17.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8                                      | M10 | M12  | M16  | -     | -     | M8      | M10   | -     |
|--|---------------|---|-----|------|------|-------|-------|---------|-------|-------|
| Internal threaded anchor UVT Top E   | -             | -                                       | -   | -    | -    | M6    | M8    | M10 M12 | - -   | M6 M8 |
|  |               |   |     |      |      | 11x85 | 15x85 |         |       | 11x85 |
| Perforated sleeve UVT Top H  | -             | -                                       | -   | -    | -    | -     | -     |         | 16x85 |       |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |   |     |      |      |       |       |         |       |       |
| compressive strength $f_b$   | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |      |      |       | 85    |         |       |       |
| 10N/mm <sup>2</sup>  | w/w           | w/d                                     | 3,0 | 4,0  | 4,5  | 4,5   | 3,5   | 3,0     | 3,5   | 4,5   |
|  | d/d           |   | 5,0 | 7,0  | 7,0  | 7,0   | 5,5   | 5,0     | 5,5   | 8,0   |
| 20N/mm <sup>2</sup>  | w/w           | w/d                                     | 4,5 | 6,0  | 6,0  | 6,0   | 5,0   | 4,5     | 5,0   | 6,5   |
|  | d/d           |   | 7,5 | 10,0 | 10,0 | 10,0  | 7,5   | 7,5     | 7,5   | 11,0  |
| 28N/mm <sup>2</sup>  | w/w           | w/d                                     | 5,0 | 8,0  | 8,5  | 8,5   | 7,0   | 5,0     | 7,0   | 8,5   |
|  | d/d           |   | 8,5 | 12,0 | 12,0 | 12,0  | 11,0  | 8,5     | 11,0  | 12,0  |

Factor for temperature range 72/120°C: 0,83

**Table C17.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8                                      | M10 | M12 | M16 | -     | -     | M8      | M10   | -     |
|---|---------------|---|-----|-----|-----|-------|-------|---------|-------|-------|
| Internal threaded anchor UVT Top E  | -             | -                                       | -   | -   | -   | M6    | M8    | M10 M12 | - -   | M6 M8 |
|   |               |   |     |     |     | 11x85 | 15x85 |         |       | 11x85 |
| Perforated sleeve UVT Top H   | -             | -                                       | -   | -   | -   | -     | -     |         | 16x85 |       |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |   |     |     |     |       |       |         |       |       |
| compressive strength $f_b$  | use condition | Effective anchorage depth $h_{ef}$ [mm] |     |     |     |       | 85    |         |       |       |
| 10N/mm <sup>2</sup>   | w/w           | w/d                                     | 2,5 | 4,5 |     |       | 2,5   | 4,5     |       | 4,5   |
|   | d/d           |   |     |     |     |       |       |         |       | 2,5   |
| 20N/mm <sup>2</sup>   | w/w           | w/d                                     | 4,0 | 6,5 |     |       | 4,0   | 6,5     |       | 6,5   |
|   | d/d           |   |     |     |     |       |       |         |       | 4,0   |
| 28N/mm <sup>2</sup>   | w/w           | w/d                                     | 5,0 | 9,0 |     |       | 5,0   | 9,0     |       | 9,0   |
|   | d/d           |   |     |     |     |       |       |         |       | 5,0   |

Factor for job site tests and displacements see annex C110

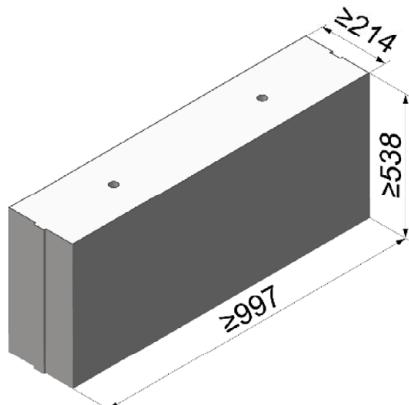
BTI Universal Component Compound UVT Top for masonry

**Performance**

Solid sand-lime brick KS, 8DF, Characteristic resistance under tension and shear loading

**Annex C 17**

## Solid sand-lime brick KS, EN 771-2:2011+A1:2015



| Solid sand-lime brick KS, EN 771-2:2011+A1:2015 |                       |         |          |
|---|-----------------------|---------|----------|
| Producer  | e.g. Calduran         |         |          |
| Nominal dimensions [mm]                         | length L              | width W | height H |
|   | ≥ 997                 | ≥ 214   | ≥ 538    |
| Density $\rho$ [kg/dm <sup>3</sup> ]            | 1,8                   | 2,2     |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] | 10 / 20               |         | 36       |
| Standard  | EN 771-2:2011+A1:2015 |         |          |

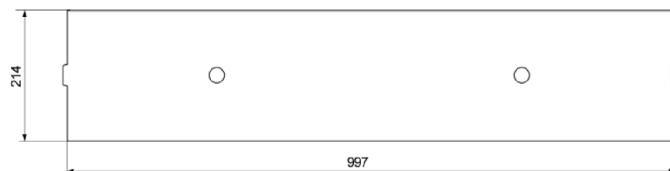


Table C18.1: Installation parameters

| Anchor rod   | M6   | M8                 | M10 | M12 | M16 | -   | -  |  |  |  |  |  |  |  |
|--|------|--------------------|-----|-----|-----|-----|----|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E   | -    | -                  | -   | -   | -   | M6  | M8 |  |  |  |  |  |  |  |
| <b>Anchor rod and internal threaded anchor UVT Top E without perforated sleeve</b> |      |                    |     |     |     |     |    |  |  |  |  |  |  |  |
| Effective anchorage depth $h_{\text{ef}}$ [mm]                                     | 50   | 100                | 50  | 100 | 50  | 100 | 85 |  |  |  |  |  |  |  |
| Max. installation torque $T_{\text{inst}}$ [Nm]                                    | 4    |                    |     | 10  |     | 4   | 10 |  |  |  |  |  |  |  |
| <b>General installation parameters</b>   |      |                    |     |     |     |     |    |  |  |  |  |  |  |  |
| Edge distance $c_{\min}$   | [mm] | 75                 |     |     |     |     |    |  |  |  |  |  |  |  |
| Spacing $s_{\text{cr} \parallel} = s_{\min \parallel}$                             |      | 3x $h_{\text{ef}}$ |     |     |     |     |    |  |  |  |  |  |  |  |
| $s_{\text{cr} \perp} = s_{\min \perp}$   |      | 3x $h_{\text{ef}}$ |     |     |     |     |    |  |  |  |  |  |  |  |
| <b>Drilling method</b>   |      |                    |     |     |     |     |    |  |  |  |  |  |  |  |
| Hammer drilling with hard metal hammer drill                                       |      |                    |     |     |     |     |    |  |  |  |  |  |  |  |

Table C18.2: Group factors

| Anchor rod  | M6   | M8  | M10 | M12 | M16 | -                 | -     |  |
|---|--|-----|-----|-----|-----|-------------------|-------|--|
| Internal threaded anchor UVT Top E  | -  | -   | -   | -   | -   | M6                | M8    |  |
|   |  |     |     |     |     | M10               | M12   |  |
|   |  |     |     |     |     | 11x85             | 15x85 |  |
| Group factors   | $\alpha_{g,N \parallel}$<br>$\alpha_{g,v \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,v \perp}$ | [-] | 2   |     |     |                   |       |  |
| <b>BTI Universal Component Compound UVT Top for masonry</b>                         |  |     |     |     |     |                   |       |  |
| <b>Performance</b><br>Solid sand-lime brick KS, dimensions, installation parameters |  |     |     |     |     | <b>Annex C 18</b> |       |  |

### Solid sand-lime brick KS, EN 771-2:2011+A1:2015

**Table C19.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8  | M10  | M12  | M16  | -    | -    |
|--|---------------|-----|------|------|------|------|------|
| Internal threaded anchor UVT Top E   | -             | -   | -    | -    | -    | M6   | M8   |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |      |      |      |      |      |
| compressive strength $f_b$   | use condition | 50  | 100  | 50   | 100  | 50   | 100  |
| 10N/mm <sup>2</sup>  | w/w           | 4,0 | 4,0  | 7,0  | 5,0  | 6,0  | 5,0  |
|  | d/d           | 7,0 | 7,0  | 12,0 | 8,0  | 9,5  | 8,0  |
| 20N/mm <sup>2</sup>  | w/w           | 5,5 | 6,0  | 10,0 | 7,0  | 8,5  | 7,0  |
|  | d/d           | 8,5 | 10,5 | 12,0 | 11,5 | 12,0 | 11,0 |
| 36N/mm <sup>2</sup>  | w/w           | 4,5 | 8,0  | 12,0 | 11,5 | 12,0 | 12,0 |
|  | d/d           | 8,0 | 12,0 | 12,0 | 12,0 | 12,0 | 12,0 |
| Effective anchorage depth $h_{ef}$ [mm]  |               |     |      |      |      |      |      |
|  |               |     |      |      |      |      | 85   |

Factor for temperature range 72/120°C: 0,83

**Table C19.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8  | M10 | M12                                     | M16  | -    | -   |
|---|---------------|-----|-----|---|------|------|-----|
| Internal threaded anchor UVT Top E  | -             | -   | -   | -                                       | -    | M6   | M8  |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |     |   |      |      |     |
| compressive strength $f_b$  | use condition | 50  |     | Effective anchorage depth $h_{ef}$ [mm] |      |      |     |
| 10N/mm <sup>2</sup>   | w/w           | 3,0 | 5,0 | 5,5                                     | 4,0  | 4,0  | 85  |
|   | d/d           |     |     |   |      |      |     |
| 20N/mm <sup>2</sup>   | w/w           | 4,5 | 7,0 | 7,5                                     | 6,0  | 6,0  | 4,5 |
|   | d/d           |     |     |   |      |      |     |
| 36N/mm <sup>2</sup>   | w/w           | 4,5 | 9,0 | 11,0                                    | 12,0 | 12,0 | 4,5 |
|   | d/d           |     |     |   |      |      |     |

Factor for job site tests and displacements see annex C110

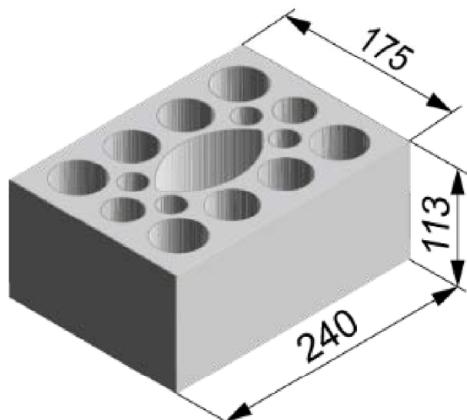
BTI Universal Component Compound UVT Top for masonry

**Performance**

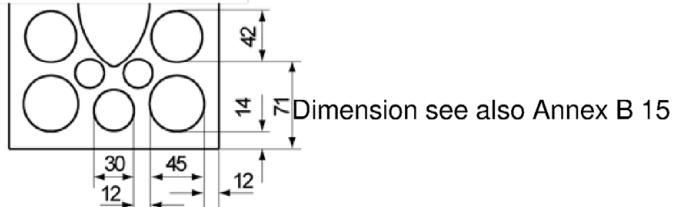
Solid sand-lime brick KS, Characteristic resistance under tension and shear loading

**Annex C 19**

Perforated sand-lime brick KSL, 3DF, EN 771-2:2011+A1:2015



| Perforated sand-lime brick KSL, 3DF,<br>EN 771-2:2011+A1:2015 |                       |         |          |
|---|-----------------------|---------|----------|
| Producer  | e.g. KS Wemding       |         |          |
| Nominal dimensions [mm]                                       | length L              | width W | height H |
|   | 240                   | 175     | 113      |
| Density $\rho$ [kg/dm <sup>3</sup> ]                          | $\geq 1,4$            |         |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]               | 8 / 10 / 12 / 16 / 20 |         |          |
| Standard  | EN 771-2:2011+A1:2015 |         |          |



**Tabelle C20.1:** Installation parameters  
 (Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6    | M8 | -      | -  | -   | M10   | M12 | -      | -   |     |
|                                    |       |       |    |    | 11x85 |    |        |    |     | 15x85 |     |        |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    |     | 20x85 |     | 20x130 |     |     |

#### **Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H**

|  |                    |      |     |    |
|--|--------------------|------|-----|----|
| Max. installation torque               | $T_{inst}$         | [Nm] |     | 2  |
| <b>General installation parameters</b> |                    |      |     |    |
| Edge distance                          | $C_{min}$          | [mm] | 60  | 80 |
| Spacing                                | $S_{min\parallel}$ |      | 100 |    |
|  | $S_{cr\parallel}$  |      | 240 |    |
|  | $S_{min\perp}$     |      | 115 |    |
|  | $S_{cr\perp}$      |      | 115 |    |

#### **Drilling method**

Hammer drilling with hard metal hammer drill

**Table C20-2:** Group factors

| Anchor rod                            | M6   | M8  | M6 | M8    | -     | M8    | M10   | M8     | M10   | -      | M12   | M16 | M12 | M16 |
|---------------------------------------|--|-----|----|-------|-------|-------|-------|--------|-------|--------|-------|-----|-----|-----|
| Internal threaded anchor<br>UVT Top E | -  | -   | -  | 11x85 | M6    | M8    | -     | -      | -     | M10    | M12   | -   | -   |     |
|                                       |  |     |    |       | 11x85 | 15x85 |       |        |       | 15x85  | 15x85 |     |     |     |
|                                       |  |     |    |       | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 |       |     |     |     |
| Group factors                         | $\alpha_{g,N} \parallel = \alpha_{g,v} \parallel$<br>$\alpha_{g,N} \perp = \alpha_{g,v} \perp$ | [-] |    |       |       |       | 1,5   |        |       |        |       |     |     |     |
|                                       |  |     |    |       |       |       | 2,0   |        |       |        |       |     |     |     |

BTI Universal Component Compound UV Top for masonry

**Performance** Perforated sand-lime brick KSI 3DE dimensions, installation parameters

Annex C 20

**Perforated sand-lime brick KSL, 3DF, EN 771-2:2011+A1:2015**

**Table C21.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12 | M16        |
|--|---------------------|-----|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |     |            |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |     | 2          |
| <b>General installation parameters</b>             |                     |     |            |
| Edge distance                                      | $C_{min}$           | 80  |            |
|  | $S_{min} \parallel$ | 100 |            |
| Spacing  | $S_{cr} \parallel$  | 240 |            |
|  | $S_{min} \perp$     | 115 |            |
|  | $S_{cr} \perp$      | 115 |            |
| <b>Drilling method</b>                             |                     |     |            |
| Hammer drilling with hard metal hammer drill       |                     |     |            |

**Table C21.2:** Group factors

| Anchor rod                     | M10  | M12            | M16        |
|--------------------------------|--|----------------|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200   |                | 22x130/200 |
| Group factors                  | $\alpha_{g,N} \parallel$<br>$\alpha_{g,V} \parallel$<br>$\alpha_{g,N} \perp$<br>$\alpha_{g,V} \perp$ | [<br>-]<br>1,5 | 2,0        |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Perforated sand-lime brick KSL, 3DF, dimensions, installation parameters

**Annex C 21**

### Perforated sand-lime brick KSL, 3DF, EN 771-2:2011+A1:2015

**Table C22.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6 | M8  | -     | M8  | M10    | M8  | M10 | -     | M12 | M16    | M12 | M16 |
|--|---------------|-------|----|-----|-------|-----|--------|-----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E   | -             |       | -  |     | M6    | M8  |        |     |     | M10   | M12 |        | -   | -   |
|  |               |       |    |     | 11x85 |     |        |     |     | 15x85 |     |        |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |    |     | 16x85 |     | 16x130 |     |     | 20x85 |     | 20x130 |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |    |     |       |     |        |     |     |       |     |        |     |     |
| compressive strength $f_b$   | use condition |       |    |     |       |     |        |     |     |       |     |        |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   |    | 1,5 |       | 2,0 |        | 2,0 |     | 2,0   |     | 2,0    |     | 2,0 |
|  | d/d           |       |    | 1,5 |       | 2,0 |        | 2,5 |     | 2,5   |     | 2,5    |     | 2,5 |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   |    | 2,0 |       | 2,0 |        | 2,5 |     | 2,5   |     | 2,5    |     | 2,5 |
|  | d/d           |       |    | 2,0 |       | 2,5 |        | 3,0 |     | 3,0   |     | 3,0    |     | 3,0 |
| 12 N/mm <sup>2</sup>   | w/w           | w/d   |    | 2,5 |       | 2,5 |        | 3,0 |     | 3,0   |     | 3,0    |     | 3,0 |
|  | d/d           |       |    | 2,5 |       | 3,0 |        | 3,5 |     | 3,5   |     | 3,5    |     | 3,5 |
| 16 N/mm <sup>2</sup>   | w/w           | w/d   |    | 3,0 |       | 3,5 |        | 4,5 |     | 4,5   |     | 4,5    |     | 4,5 |
|  | d/d           |       |    | 3,5 |       | 4,0 |        | 4,5 |     | 4,5   |     | 4,5    |     | 4,5 |
| 20 N/mm <sup>2</sup>   | w/w           | w/d   |    | 4,0 |       | 4,5 |        | 5,5 |     | 5,5   |     | 5,5    |     | 5,5 |
|  | d/d           |       |    | 4,5 |       | 5,0 |        | 6,0 |     | 6,0   |     | 6,0    |     | 6,0 |

**Table C22.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12        | M16 |
|--|---------------|------------|-----|
| Perforated sleeve UVT Top H  | 18x130/200    | 22x130/200 |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |            |     |
| compressive strength $f_b$   | use condition |            |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d        | 2,0 |
|  | d/d           |            | 2,5 |
| 10 N/mm <sup>2</sup>   | w/w           | w/d        | 2,5 |
|  | d/d           |            | 3,0 |
| 12 N/mm <sup>2</sup>   | w/w           | w/d        | 3,0 |
|  | d/d           |            | 3,5 |
| 16 N/mm <sup>2</sup>   | w/w           | w/d        | 4,5 |
|  | d/d           |            | 4,5 |
| 20 N/mm <sup>2</sup>   | w/w           | w/d        | 5,5 |
|  | d/d           |            | 6,0 |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Perforated sand-lime brick KSL, 3DF, Characteristic resistance under tension loading

**Annex C 22**

### Perforated sand-lime brick KSL, 3DF, EN 771-2:2011+A1:2015

**Table C23.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod   |               | M6    | M8  | M6    | M8    | -     | M8  | M10    | M8 | M10   | -     | M12    | M16 | M12 | M16 |     |
|--|---------------|-------|-----|-------|-------|-------|-----|--------|----|-------|-------|--------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   |               | -     |     | -     |       | M6    | M8  |        |    |       | M10   | M12    |     | -   |     |     |
|  |               |       |     |       | 11x85 |       |     |        |    |       | 15x85 |        |     |     |     |     |
| Perforated sleeve UVT Top H  |               | 12x50 |     | 12x85 |       | 16x85 |     | 16x130 |    | 20x85 |       | 20x130 |     |     |     |     |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| compressive strength $f_b$   | use condition |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   |     |       |       | 1,5   |     |        |    |       | 3,0   |        |     | 2,5 | 3,0 | 2,5 |
|  | d/d           |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   |     |       |       | 2,0   |     |        |    |       | 3,5   |        |     |     |     |     |
|  | d/d           |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| 12 N/mm <sup>2</sup>   | w/w           | w/d   |     |       |       | 2,5   |     |        |    |       | 4,5   |        |     | 4,0 | 4,5 | 4,0 |
|  | d/d           |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| 16 N/mm <sup>2</sup>   | w/w           | w/d   | 3,0 | 3,5   | 3,0   | 3,5   | 3,0 |        |    |       | 6,0   |        |     | 5,5 | 6,0 | 5,5 |
|  | d/d           |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |
| 20 N/mm <sup>2</sup>   | w/w           | w/d   | 4,0 | 4,5   | 4,0   | 4,5   | 4,0 |        |    |       | 7,5   |        |     | 6,5 | 7,5 | 6,5 |
|  | d/d           |       |     |       |       |       |     |        |    |       |       |        |     |     |     |     |

**Table C23.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod   |               | M10        | M12 | M16        |
|--|---------------|------------|-----|------------|
| Perforated sleeve UVT Top H  |               | 18x130/200 |     | 22x130/200 |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |            |     |            |
| compressive strength $f_b$   | use condition |            |     |            |
| 8 N/mm <sup>2</sup>  | w/w           | w/d        |     |            |
|  | d/d           |            | 3,0 | 2,5        |
| 10 N/mm <sup>2</sup>   | w/w           | w/d        |     |            |
|  | d/d           |            | 3,5 | 3,5        |
| 12 N/mm <sup>2</sup>   | w/w           | w/d        |     |            |
|  | d/d           |            | 4,5 | 4,0        |
| 16 N/mm <sup>2</sup>   | w/w           | w/d        |     |            |
|  | d/d           |            | 6,0 | 5,5        |
| 20 N/mm <sup>2</sup>   | w/w           | w/d        |     |            |
|  | d/d           |            | 7,5 | 6,5        |

Factor for job site tests and displacements see annex C110

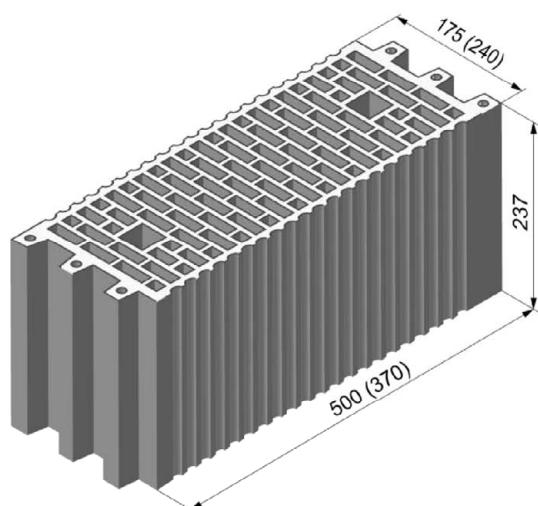
BTI Universal Component Compound UVT Top for masonry

**Performance**

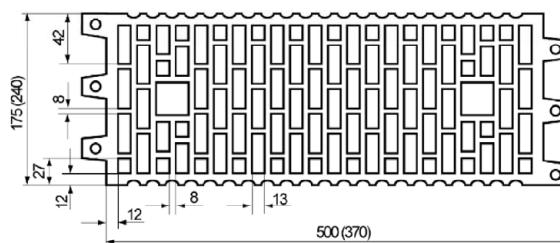
Perforated sand-lime brick KSL, 3DF, Characteristic resistance under shear loading

**Annex C 23**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |          |                            |
|--|----------|----------------------------|
| Producer   |          | e.g. Wienerberger, Poroton |
| Nominal dimensions [mm]                              | length L | width W                    |
|  | 500      | 175                        |
| Nominal dimensions [mm]                              | 370      | 240                        |
|  | 237      |                            |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 |          | $\geq 1,0$                 |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      |          | 4 / 6 / 8 / 10 / 12        |
| Standard   |          | EN 771-1:2011+A1:2015      |



Dimension  
see also  
Annex B  
15

Table C24.1: Installation parameters

|                                    |       |       |       |        |       |        |     |    |     |     |     |     |     |     |
|------------------------------------|-------|-------|-------|--------|-------|--------|-----|----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10 | M8 | M10 | -   | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -   | -  | -   | M10 | M12 | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 |     |    |     |     |     |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|  |                     |      |           |
|--|---------------------|------|-----------|
| Max. installation torque               | $T_{inst}$          | [Nm] | 2         |
| <b>General installation parameters</b> |                     |      |           |
| Edge distance                          | $c_{min}$           |      | 100       |
| Spacing                                | $s_{min \parallel}$ |      | 100       |
|  | $s_{cr \parallel}$  | [mm] | 500 (370) |
|  | $s_{min \perp}$     |      | 100       |
|  | $s_{cr \perp}$      |      | 240       |

#### Drilling method

Hammer drilling with hard metal hammer drill

Table C24.2: Group factors

|                                    |   |   |             |        |       |        |     |    |     |     |     |     |     |     |
|------------------------------------|---|---|-------------|--------|-------|--------|-----|----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6  | M8  | M6          | M8     | -     | M8     | M10 | M8 | M10 | -   | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -   | -   | -           | -      | M6    | M8     | -   | -  | -   | M10 | M12 | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50   | 12x85                                     | 16x85       | 16x130 | 20x85 | 20x130 |     |    |     |     |     |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel} = \alpha_{g,V \parallel}$ | $\alpha_{g,N \perp} = \alpha_{g,V \perp}$ | [ $\cdot$ ] | 1      |       |        |     |    |     |     |     |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 24

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C25.1:** Characteristic resistance under tension loading

| Anchor rod  |               | M6    | M8    | M6   | M8 | -     | M8 | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|---|---------------|-------|-------|------|----|-------|----|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E  |               | -     | -     |      |    | M6    | M8 |        |    |     | M10   | M12 |        | -   | -   |
|   |               |       |       |      |    | 11x85 |    |        |    |     | 15x85 |     |        |     |     |
| Perforated sleeve UVT Top H   |               | 12x50 | 12x85 |      |    | 16x85 |    | 16x130 |    |     | 20x85 |     | 20x130 |     |     |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |       |       |      |    |       |    |        |    |     |       |     |        |     |     |
| compressive strength $f_b$  | use condition |       |       |      |    |       |    |        |    |     |       |     |        |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   |       | 0,3  |    |       |    |        |    |     | 0,9   |     |        |     | 1,2 |
|   | d/d           |       |       | 0,4  |    |       |    |        |    |     | 0,9   |     |        |     | 1,2 |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   |       | 0,5  |    |       |    |        |    |     | 1,5   |     |        |     | 2,0 |
|   | d/d           |       |       | 0,6  |    |       |    |        |    |     | 1,5   |     |        |     | 2,0 |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   |       | 0,75 |    |       |    |        |    |     | 2,0   |     |        |     | 2,5 |
|   | d/d           |       |       | 0,75 |    |       |    |        |    |     | 2,0   |     |        |     | 2,5 |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   |       | 0,9  |    |       |    |        |    |     | 2,5   |     |        |     | 3,0 |
|   | d/d           |       |       | 0,9  |    |       |    |        |    |     | 2,5   |     |        |     | 3,5 |
| 12 N/mm <sup>2</sup>  | w/w           | w/d   |       | 0,9  |    |       |    |        |    |     | 3,0   |     |        |     | 3,5 |
|   | d/d           |       |       | 1,2  |    |       |    |        |    |     | 3,0   |     |        |     | 4,0 |

Factor for temperature range 72/120°C: 0,83

**Table C25.2:** Characteristic resistance under shear loading

| Anchor rod   |               | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|--|---------------|-------|-------|----|----|-------|----|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E   |               | -     | -     |    |    | M6    | M8 |        |    |     | M10   | M12 |        | -   | -   |
|  |               |       |       |    |    | 11x85 |    |        |    |     | 15x85 |     |        |     |     |
| Perforated sleeve UVT Top H  |               | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    |     | 20x85 |     | 20x130 |     |     |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| compressive strength $f_b$   | use condition |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   |       |    |    | 0,5   |    |        |    |     | 0,6   |     | 0,5    |     | 0,6 |
|  | d/d           |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   |       |    |    | 0,75  |    |        |    |     | 0,9   |     | 0,75   |     | 0,9 |
|  | d/d           |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   |       |    |    | 0,9   |    |        |    |     | 1,2   |     | 0,9    |     | 1,2 |
|  | d/d           |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   |       |    |    | 1,2   |    |        |    |     | 1,5   |     | 1,2    |     | 1,5 |
|  | d/d           |       |       |    |    |       |    |        |    |     |       |     |        |     |     |
| 12 N/mm <sup>2</sup>   | w/w           | w/d   |       |    |    | 1,5   |    |        |    |     | 2,0   |     | 1,5    |     | 2,0 |
|  | d/d           |       |       |    |    |       |    |        |    |     |       |     |        |     |     |

Factor for job site tests and displacements see annex C110

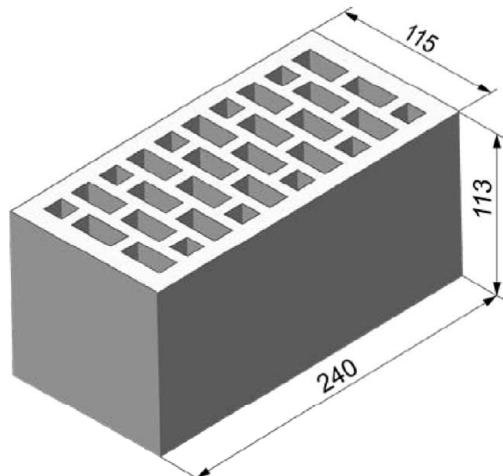
BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension and shear loading

**Annex C 25**

### Vertical perforated brick HLz, 2DF, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, 2DF,<br>EN 771-1:2011+A1:2015 |                       |         |  |  |
|--|-----------------------|---------|--|--|
| Producer   | e.g. Wienerberger     |         |  |  |
| Nominal dimensions [mm]                                      | length L              | width W |  |  |
|  | 240                   | 115     |  |  |
| Density $\rho$ [kg/dm <sup>3</sup> ]                         | $\geq 1,4$            |         |  |  |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]              | 6 / 10 / 16 / 20 / 28 |         |  |  |
| Standard   | EN 771-1:2011+A1:2015 |         |  |  |
|  |                       |         |  |  |
| Dimension see also Annex B 15                                |                       |         |  |  |

Table C26.1: Installation parameters

| Anchor rod   | M6    | M8    | M6 | M8 | -     | M8  | M10     | -     | M12 | M16 |
|--|-------|-------|----|----|-------|-----|---------|-------|-----|-----|
| Internal threaded anchor UVT Top E   | -     | -     | -  | -  | M6 M8 | -   | M10 M12 | -     | -   | -   |
|  |       |       |    |    | 11x85 |     |         | 15x85 |     |     |
| Perforated sleeve UVT Top H  | 12x50 | 12x85 |    |    | 16x85 |     |         | 20x85 |     |     |
| Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H |       |       |    |    |       |     |         |       |     |     |
| Max. installation torque $T_{inst}$ [Nm]   |       |       |    |    |       | 2   |         |       |     |     |
| General installation parameters  |       |       |    |    |       |     |         |       |     |     |
| Edge distance $C_{min}$  | [mm]  |       |    |    |       | 80  |         |       |     |     |
| Spacing $s_{cr \parallel} = s_{min \parallel}$                                     |       |       |    |    |       | 240 |         |       |     |     |
| $s_{cr \perp} = s_{min \perp}$   |       |       |    |    |       | 115 |         |       |     |     |
| Drilling method  |       |       |    |    |       |     |         |       |     |     |
| Hammer drilling with hard metal hammer drill                                       |       |       |    |    |       |     |         |       |     |     |

Table C26.2: Group factors

| Anchor rod                         | M6   | M8          | M6 | M8 | -     | M8 | M10     | -     | M12 | M16 |
|------------------------------------|--|-------------|----|----|-------|----|---------|-------|-----|-----|
| Internal threaded anchor UVT Top E | -  | -           | -  | -  | M6 M8 | -  | M10 M12 | -     | -   | -   |
|                                    |  |             |    |    | 11x85 |    |         | 15x85 |     |     |
| Perforated sleeve UVT Top H        | 12x50  | 12x85       |    |    | 16x85 |    |         | 20x85 |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$<br>$\alpha_{g,v \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,v \perp}$ | [ $\cdot$ ] |    |    |       | 2  |         |       |     |     |

BTI Universal Component Compound UVT Top for masonry

Performance  
Vertical perforated brick HLz, 2DF, dimensions, installation parameters

Annex C 26

### Vertical perforated brick HLz, 2DF, EN 771-1:2011+A1:2015

**Table C27.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8    | M6    | M8    | -     | M8    | M10   | -     | M12   | M16   |
|--|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Internal threaded anchor UVT Top E   | -             | -     | -     | -     | M6    | M8    | -     | M10   | M12   | -     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 | 12x85 | 16x85 | 16x85 | 16x85 | 16x85 | 20x85 | 20x85 | 20x85 |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |       |       |       |       |       |       |       |       |
| compressive strength $f_b$   | use condition |       |       |       |       |       |       |       |       |       |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,75  | 0,9   | 0,75  | 0,75  | 0,9   |       |       |       |
|  | d/d           |       | 0,75  | 1,2   | 0,75  | 0,75  | 0,9   |       |       |       |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2   | 1,5   | 1,2   | 1,2   | 1,5   |       |       |       |
|  | d/d           |       | 1,2   | 2,0   | 1,2   | 1,2   | 1,5   |       |       |       |
| 16 N/mm <sup>2</sup>   | w/w           | w/d   | 2,0   | 2,5   | 2,0   | 2,0   | 2,0   | 2,0   |       |       |
|  | d/d           |       | 2,0   | 3,0   | 2,0   | 2,0   | 2,5   |       |       |       |
| 20 N/mm <sup>2</sup>   | w/w           | w/d   | 2,5   | 3,5   | 2,5   | 2,5   | 3,0   |       |       |       |
|  | d/d           |       | 2,5   | 4,0   | 2,5   | 2,5   | 3,0   |       |       |       |
| 28 N/mm <sup>2</sup>   | w/w           | w/d   | 3,0   | 5,0   | 3,5   | 3,5   | 4,0   |       |       |       |
|  | d/d           |       | 3,5   | 5,5   | 3,5   | 3,5   | 4,5   |       |       |       |

Factor for temperature range 72/120°C: 0,83

**Table C27.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8    | M6    | M8    | -     | M8    | M10   | -     | M12   | M16   |
|---|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Internal threaded anchor UVT Top E  | -             | -     | -     | -     | M6    | M8    | -     | M10   | M12   | -     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 | 12x85 | 16x85 | 16x85 | 16x85 | 16x85 | 20x85 | 20x85 | 20x85 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |       |       |       |       |       |       |       |       |
| compressive strength $f_b$  | use condition |       |       |       |       |       |       |       |       |       |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2   | 1,5   | 1,2   | 2,0   | 1,2   | 1,5   | 2,5   |       |
|   | d/d           |       |       |       |       |       |       |       |       |       |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   | 2,0   | 2,5   | 2,0   | 4,0   | 2,0   | 2,5   | 4,5   |       |
|   | d/d           |       |       |       |       |       |       |       |       |       |
| 16 N/mm <sup>2</sup>  | w/w           | w/d   | 3,0   | 3,5   | 3,0   | 6,0   | 3,0   | 3,5   | 7,0   |       |
|   | d/d           |       |       |       |       |       |       |       |       |       |
| 20 N/mm <sup>2</sup>  | w/w           | w/d   | 4,0   | 4,5   | 4,0   | 7,5   | 4,0   | 4,5   | 8,5   |       |
|   | d/d           |       |       |       |       |       |       |       |       |       |
| 28 N/mm <sup>2</sup>  | w/w           | w/d   | 5,0   | 6,5   | 5,0   | 9,5   | 5,0   | 6,5   | 12,0  |       |
|   | d/d           |       |       |       |       |       |       |       |       |       |

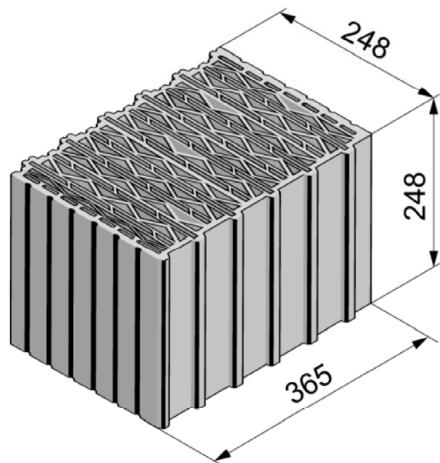
Factor for job site tests and displacements see annex C110

BTI Universal Component Compound UVT Top for masonry

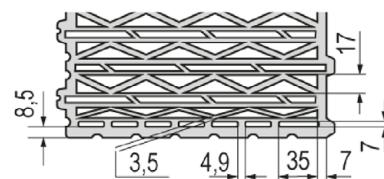
**Performance**  
Vertical perforated brick HLz, 2DF,  
Characteristic resistance under tension and shear loading

**Annex C 27**

### Vertical perforated brick HLz, U8, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, U8, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | -                     |         |
| Nominal dimensions [mm]                                  | length L              | width W |
|  | 248                   | 365     |
| height H   | 248                   |         |
| Density $\rho$ [kg/dm <sup>3</sup> ]                     | 0,6                   |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]          | 4 / 6 / 8             |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



Dimension see also  
Annex B 15

**Table C28.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
|------------------------------------|-------|-------|-------|--------|-------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Max. installation torque | $T_{inst}$ [Nm] | 3 | 5 | 3 | 5 | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
|--------------------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

#### General installation parameters

|               |                     |      |     |
|---------------|---------------------|------|-----|
| Edge distance | $C_{min}$           | [mm] | 60  |
|               | $S_{min \parallel}$ |      | 80  |
| Spacing       | $S_{cr \parallel}$  |      | 250 |
|               | $S_{min \perp}$     |      | 80  |
|               | $S_{cr \perp}$      |      | 250 |

#### Drilling method

Rotary drilling with carbide drill

### Table C28.2: Group factors

| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    | 16x85                | 16x130               | 20x85 | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,v \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,v \perp}$ | [-]   | 1,3    |        |    |     |     |     |     |     |     |     |     |
|                                    |                          |                          |                      |                      |       | 1,2    |        |    |     |     |     |     |     |     |     |     |
|                                    |                          |                          |                      |                      |       | 1,3    |        |    |     |     |     |     |     |     |     |     |
|                                    |                          |                          |                      |                      |       | 1,0    |        |    |     |     |     |     |     |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, U8, dimensions, installation parameters

Annex C 28

### Vertical perforated brick HLz, U8, EN 771-1:2011+A1:2015

**Table C29.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |      | 5          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $c_{min}$           | [mm] | 60         |  |
|  | $s_{min \parallel}$ |      | 80         |  |
| Spacing  | $s_{cr \parallel}$  |      | 250        |  |
|  | $s_{min \perp}$     |      | 80         |  |
|  | $s_{cr \perp}$      |      | 250        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Rotary drilling with carbide drill                 |                     |      |            |  |

**Table C29.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$ | [-] | 1,3        |
|                                | $\alpha_{g,V \parallel}$ |     | 1,2        |
|                                | $\alpha_{g,N \perp}$     |     | 1,3        |
|                                | $\alpha_{g,V \perp}$     |     | 1,0        |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, U8, dimensions, installation parameters

**Annex C 29**

### Vertical perforated brick HLz, U8, EN 771-1:2011+A1:2015

**Table C30.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------|---------------|-----|-----|--|--|--|--|--|--|--|--|--|--|--|
| 4 N/mm <sup>2</sup>                 | w/w           | w/d | 1,2 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     | 1,2 |  |  |  |  |  |  |  |  |  |  |  |
| 6 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     | 1,5 |  |  |  |  |  |  |  |  |  |  |  |
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     | 2,0 |  |  |  |  |  |  |  |  |  |  |  |

**Table C30.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           |     | M12 |            | M16 |  |  |  |
|--|---------------|-----|-----|------------|-----|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     |     | 22x130/200 |     |  |  |  |
| <b>N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)</b> |               |     |     |            |     |  |  |  |
| compressive strength f <sub>b</sub>  | use condition |     |     |            |     |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |     |            | 1,2 |  |  |  |
|  | d/d           |     |     |            | 1,5 |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |     |            | 1,5 |  |  |  |
|  | d/d           |     |     |            | 1,5 |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d |     |            | 2,0 |  |  |  |
|  | d/d           |     |     |            | 2,0 |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, U8, Characteristic resistance under tension loading

**Annex C 30**

**Vertical perforated brick HLz, U8, EN 771-1:2011+A1:2015**

**Table C31.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

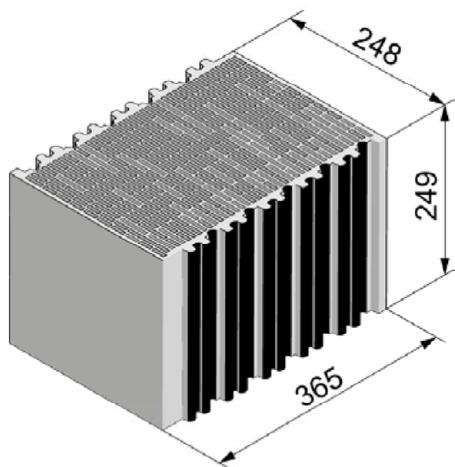
| compressive strength $f_b$ | use condition |     |  |  |  |  |  |  |  |  |  |  |  |  |     |  |
|----------------------------|---------------|-----|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|
| 4 N/mm <sup>2</sup>        | w/w           | w/d |  |  |  |  |  |  |  |  |  |  |  |  | 1,2 |  |
|                            | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  |     |  |
| 6 N/mm <sup>2</sup>        | w/w           | w/d |  |  |  |  |  |  |  |  |  |  |  |  | 1,5 |  |
|                            | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  |     |  |
| 8 N/mm <sup>2</sup>        | w/w           | w/d |  |  |  |  |  |  |  |  |  |  |  |  | 1,5 |  |
|                            | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  |     |  |

**Table C31.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod   | M10           |     | M12        |  | M16 |  |     |  |
|--|---------------|-----|------------|--|-----|--|-----|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |  |     |  |     |  |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |     |            |  |     |  |     |  |
| compressive strength $f_b$   | use condition |     |            |  |     |  |     |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            |  |     |  | 1,2 |  |
|  | d/d           |     |            |  |     |  |     |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |            |  |     |  | 1,5 |  |
|  | d/d           |     |            |  |     |  |     |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d |            |  |     |  | 1,5 |  |
|  | d/d           |     |            |  |     |  |     |  |

Factor for job site tests and displacements see annex C108

### Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, T10, T11,<br>EN 771-1:2011+A1:2015 |                       |         |
|---|-----------------------|---------|
| Producer  | -                     |         |
| Nominal dimensions [mm]   | length L              | width W |
|   | 248                   | 365     |
| height H  | 249                   |         |
| Density $\rho$ [kg/dm <sup>3</sup> ]                              | 0,7                   |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                   | 8 / 10 / 12           |         |
| Standard  | EN 771-1:2011+A1:2015 |         |

**Table C32.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -   | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|-----|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     | -  | -  | M6    | M8 | -      | -  | -     | M10 | M12    | -   | -      | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |     | 20x130 |     | 20x200 |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |   |   |   |
|--------------------------|-----------------|---|---|---|---|
| Max. installation torque | $T_{inst}$ [Nm] | 3 | 5 | 3 | 5 |
|--------------------------|-----------------|---|---|---|---|

#### General installation parameters

|               |                     |      |     |
|---------------|---------------------|------|-----|
| Edge distance | $c_{min}$           | [mm] | 60  |
|               | $s_{min \parallel}$ |      | 80  |
| Spacing       | $s_{cr \parallel}$  |      | 250 |
|               | $s_{min \perp}$     |      | 80  |
|               | $s_{cr \perp}$      |      | 250 |

#### Drilling method

Rotary drilling with carbide drill

**Table C32.2:** Group factors

| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8  | M10    | M8 | M10   | -   | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|-----|--------|----|-------|-----|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8  | -      | -  | -     | M10 | M12    | -   | -      | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    |                      |                      | 16x85 |     | 16x130 |    | 20x85 |     | 20x130 |     | 20x200 |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,V \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,V \perp}$ | [-]   | 1,7 |        |    |       |     |        |     |        |     |     |     |
|                                    |                          |                          |                      |                      |       | 0,5 |        |    |       |     |        |     |        |     |     |     |
|                                    |                          |                          |                      |                      |       | 1,3 |        |    |       |     |        |     |        |     |     |     |
|                                    |                          |                          |                      |                      |       | 0,5 |        |    |       |     |        |     |        |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, T10, T11, dimensions, installation parameters

**Annex C 32**

**Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015**

**Table C33.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |      | 5          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $c_{min}$           | [mm] | 60         |  |
|  | $s_{min \parallel}$ |      | 80         |  |
| Spacing  | $s_{cr \parallel}$  |      | 250        |  |
|  | $s_{min \perp}$     |      | 80         |  |
|  | $s_{cr \perp}$      |      | 250        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Rotary drilling with carbide drill                 |                     |      |            |  |

**Table C33.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$ | [-] | 1,7        |
|                                | $\alpha_{g,v \parallel}$ |     | 0,5        |
|                                | $\alpha_{g,N \perp}$     |     | 1,3        |
|                                | $\alpha_{g,v \perp}$     |     | 0,5        |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Vertical perforated brick HLz, T10, T11, dimensions, installation parameters

**Annex C 33**

**Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015**

**Table C34.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 | -  | -      |    |       | M10 M12 | -      | -   | -      | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |  |  |  |  |  |  |  |  |  |  |     |
|-------------------------------------|---------------|-----|-----|--|--|--|--|--|--|--|--|--|--|--|-----|
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 |  |  |  |  |  |  |  |  |  |  |  | 1,5 |
|                                     | d/d           |     | 1,5 |  |  |  |  |  |  |  |  |  |  |  | 2,0 |
| 10 N/mm <sup>2</sup>                | w/w           | w/d | 1,5 |  |  |  |  |  |  |  |  |  |  |  | 2,0 |
|                                     | d/d           |     | 2,0 |  |  |  |  |  |  |  |  |  |  |  | 2,0 |
| 12 N/mm <sup>2</sup>                | w/w           | w/d | 2,0 |  |  |  |  |  |  |  |  |  |  |  | 2,0 |
|                                     | d/d           |     | 2,0 |  |  |  |  |  |  |  |  |  |  |  | 2,5 |

**Table C34.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod                  | M10        |  | M12        |  | M16 |  |
|-----------------------------|------------|--|------------|--|-----|--|
| Perforated sleeve UVT Top H | 18x130/200 |  | 22x130/200 |  |     |  |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |     |  |
|-------------------------------------|---------------|-----|-----|--|-----|--|
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 |  | 1,5 |  |
|                                     | d/d           |     | 2,0 |  | 2,0 |  |
| 10 N/mm <sup>2</sup>                | w/w           | w/d | 2,0 |  | 2,0 |  |
|                                     | d/d           |     | 2,0 |  | 2,0 |  |
| 12 N/mm <sup>2</sup>                | w/w           | w/d | 2,0 |  | 2,0 |  |
|                                     | d/d           |     | 2,5 |  | 2,5 |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T10, T11, Characteristic resistance under tension loading

**Annex C 34**

**Vertical perforated brick HLz, T10, T11, EN 771-1:2011+A1:2015**

**Table C35.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |  |  |     |  |  |  |     |  |
|-------------------------------------|---------------|-----|-----|--|--|--|-----|--|--|--|-----|--|
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 0,9 |  |  |  | 1,5 |  |  |  | 2,0 |  |
|                                     | d/d           |     |     |  |  |  |     |  |  |  |     |  |
| 10 N/mm <sup>2</sup>                | w/w           | w/d | 0,9 |  |  |  | 1,5 |  |  |  | 2,0 |  |
|                                     | d/d           |     |     |  |  |  |     |  |  |  |     |  |
| 12 N/mm <sup>2</sup>                | w/w           | w/d | 1,2 |  |  |  | 2,0 |  |  |  | 2,0 |  |
|                                     | d/d           |     |     |  |  |  |     |  |  |  |     |  |

**Table C35.2:** Characteristic resistance under shear loading (Push through anchorage)

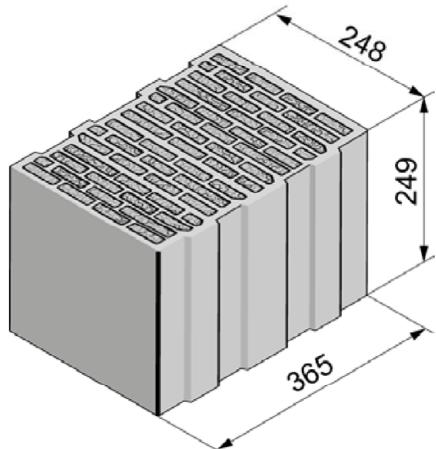
| Anchor rod                  | M10        |  | M12 |            | M16 |  |
|-----------------------------|------------|--|-----|------------|-----|--|
| Perforated sleeve UVT Top H | 18x130/200 |  |     | 22x130/200 |     |  |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |     |  |
|-------------------------------------|---------------|-----|-----|--|-----|--|
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 |  | 2,0 |  |
|                                     | d/d           |     |     |  |     |  |
| 10 N/mm <sup>2</sup>                | w/w           | w/d | 1,5 |  | 2,0 |  |
|                                     | d/d           |     |     |  |     |  |
| 12 N/mm <sup>2</sup>                | w/w           | w/d | 2,0 |  | 2,0 |  |
|                                     | d/d           |     |     |  |     |  |

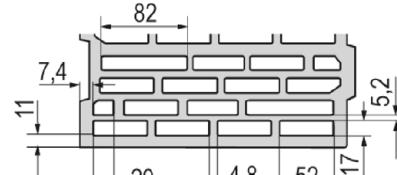
Factor for job site tests and displacements see annex C110

### Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1:2011+A1:2015



Vertical perforated brick HLz, T7 PF, filled with perlite,  
EN 771-1:2011+A1:2015

| Producer  | -                     |         |          |
|---|-----------------------|---------|----------|
| Nominal dimensions [mm]                         | length L              | width W | height H |
| 248   | 365                   | 249     |          |
| Density $\rho$ [kg/dm <sup>3</sup> ]            |                       | 0,5     |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] |                       | 4 / 6   |          |
| Standard  | EN 771-1:2011+A1:2015 |         |          |



Dimension see also  
Annex B 16

Table C36.1: Installation parameters

(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod  | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -     | M12    | M16 | M12    | M16 | M12 | M16 |
|---|-------|-------|----|----|-------|----|--------|----|-------|-------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -     | -     | -  | -  | M6    | M8 | -      | -  | -     | M10   | M12    | -   | -      | -   | -   | -   |
|   |       |       |    |    | 11x85 |    |        |    |       | 15x85 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H   | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |       | 20x130 |     | 20x200 |     |     |     |
| <b>Ankerstangen und Innengewindeanker UVT Top E mit Injektionsanker-Hülse UVT Top H</b> |       |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Max. installation torque $T_{inst}$ [Nm]  | 2     |       |    |    | 5     | 2  |        |    |       | 5     |        |     |        |     |     |     |
| <b>General installation parameters</b>  |       |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Edge distance $C_{min}$   |       |       |    |    |       |    |        |    |       | 60    |        |     |        |     |     |     |
| Spacing $S_{min \parallel}$   |       |       |    |    |       |    |        |    |       | 80    |        |     |        |     |     |     |
|   |       |       |    |    |       |    |        |    |       | 250   |        |     |        |     |     |     |
|   |       |       |    |    |       |    |        |    |       | 80    |        |     |        |     |     |     |
|   |       |       |    |    |       |    |        |    |       | 250   |        |     |        |     |     |     |
| <b>Drilling method</b>  |       |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Rotary drilling with carbide drill  |       |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |

Table C36.2: Group factors

| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8 | M10    | M8 | M10   | -     | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|----|--------|----|-------|-------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8 | -      | -  | -     | M10   | M12    | -   | -      | -   | -   | -   |
|                                    |                          |                          |                      |                      | 11x85 |    |        |    |       | 15x85 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    |                      |                      | 16x85 |    | 16x130 |    | 20x85 |       | 20x130 |     | 20x200 |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,v \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,v \perp}$ | [ - ] |    |        |    |       |       |        |     |        |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, T7 PF, filled with perlite,  
dimensions, installation parameters

#### Annex C 36

**Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1:2011+A1:2015**

**Table C37.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation torque                           | $T_{inst}$<br>[Nm]  |      | 5          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $c_{min}$           | [mm] | 60         |  |
|  | $s_{min \parallel}$ |      | 80         |  |
| Spacing  | $s_{cr \parallel}$  |      | 250        |  |
|  | $s_{min \perp}$     |      | 80         |  |
|  | $s_{cr \perp}$      |      | 250        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Rotary drilling with carbide drill                 |                     |      |            |  |

**Table C37.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N} \parallel$ | [-] | 1,1        |
|                                | $\alpha_{g,v} \parallel$ |     | 1,2        |
|                                | $\alpha_{g,N} \perp$     |     | 1,1        |
|                                | $\alpha_{g,v} \perp$     |     | 1,2        |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Vertical perforated brick HLz, T7 PF, filled with perlite,  
dimensions, installation parameters

**Annex C 37**

**Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1:2011+A1:2015**

**Table C38.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6 | M8 | -     | M8 | M10    | M8  | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|--|---------------|-------|----|----|-------|----|--------|-----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |    |    | M6 M8 |    |        |     |       | M10 M12 |        |     | -      | -   | -   | -   |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |    |    | 16x85 |    | 16x130 |     | 20x85 |         | 20x130 |     | 20x200 |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |    |    |       |    |        |     |       |         |        |     |        |     |     |     |
| compressive strength $f_b$   | use condition |       |    |    |       |    |        |     |       |         |        |     |        |     |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   |    |    | 1,2   |    |        | 1,2 |       | 1,2     |        | 1,2 |        | 1,2 |     | 2,0 |
|  | d/d           |       |    |    | 1,5   |    |        | 1,5 |       | 1,5     |        | 1,5 |        | 1,5 |     | 2,0 |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   |    |    | 1,5   |    |        | 1,5 |       | 1,5     |        | 1,5 |        | 1,5 |     | 2,5 |
|  | d/d           |       |    |    | 1,5   |    |        | 2,0 |       | 1,5     |        | 1,5 |        | 2,0 |     | 3,0 |

**Table C38.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           |     | M12        |     | M16 |     |
|--|---------------|-----|------------|-----|-----|-----|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |     |     |     |
| compressive strength $f_b$   | use condition |     |            |     |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            | 1,2 |     | 1,2 |
|  | d/d           |     |            | 1,5 |     | 1,5 |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |            | 1,5 |     | 1,5 |
|  | d/d           |     |            | 2,0 |     | 2,0 |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T7 PF, filled with perlite,  
Characteristic resistance under tension loading

**Annex C 38**

**Vertical perforated brick HLz, T7 PF, filled with perlite, EN 771-1:2011+A1:2015**

**Table C39.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |     |  |  |     |  |  |     |  |  |  |  |  |
|----------------------------|---------------|-----|-----|--|--|-----|--|--|-----|--|--|--|--|--|
| 4 N/mm <sup>2</sup>        | w/w           | w/d | 0,9 |  |  | 1,5 |  |  | 1,2 |  |  |  |  |  |
|                            | d/d           |     |     |  |  |     |  |  |     |  |  |  |  |  |
| 6 N/mm <sup>2</sup>        | w/w           | w/d | 1,2 |  |  | 2,0 |  |  | 1,5 |  |  |  |  |  |
|                            | d/d           |     |     |  |  |     |  |  |     |  |  |  |  |  |

**Table C39.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod   | M10           |     | M12 |            | M16 |     |  |  |
|--|---------------|-----|-----|------------|-----|-----|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     |     | 22x130/200 |     |     |  |  |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |     |     |            |     |     |  |  |
| compressive strength $f_b$   | use condition |     |     |            |     |     |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d | 1,5 |            |     | 1,2 |  |  |
|  | d/d           |     |     |            |     |     |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 2,0 |            |     | 1,5 |  |  |
|  | d/d           |     |     |            |     |     |  |  |

Factor for job site tests and displacements see annex C110

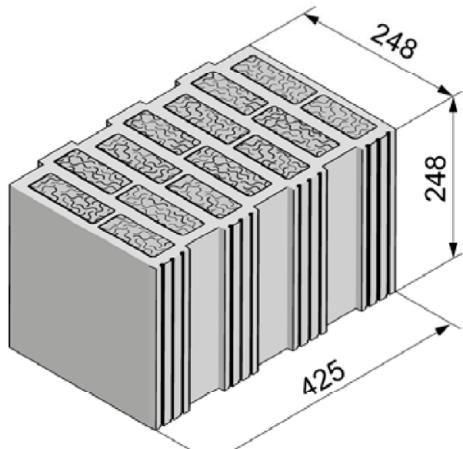
BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T7 PF, filled with perlite,  
Characteristic resistance under shear loading

**Annex C 39**

**Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1:2011+A1:2015**



| Vertical perforated brick HLz, T9 MW,<br>filled with mineral wool, EN 771-1:2011+A1:2015 |                       |         |  |  |
|--|-----------------------|---------|--|--|
| Producer   | -                     |         |  |  |
| Nominal dimensions [mm]  | length L              | width W |  |  |
|  | 248                   | 425     |  |  |
| height H   | 248                   |         |  |  |
| Density $\rho$ [kg/dm <sup>3</sup> ]   | 0,8                   |         |  |  |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]  | 4 / 6 / 8             |         |  |  |
| Standard   | EN 771-1:2011+A1:2015 |         |  |  |
|  |                       |         |  |  |
| Dimension see also Annex B 16  |                       |         |  |  |

**Table C40.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|   |                     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|---|---------------------|-------|----|----|-------|----|--------|----|-------|-------|--------|-----|--------|-----|-----|-----|
| Anchor rod  | M6                  | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -     | M12    | M16 | M12    | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E  | -                   | -     | -  | -  | M6    | M8 | -      | -  | -     | M10   | M12    | -   | -      | -   | -   |     |
|   |                     |       |    |    | 11x85 |    |        |    |       | 15x85 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H   | 12x50               | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |       | 20x130 |     | 20x200 |     |     |     |
| <b>Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H</b> |                     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Max. installation torque  | $T_{inst}$          | [Nm]  |    |    | 3     |    | 5      | 3  |       |       | 5      |     |        |     |     |     |
| <b>General installation parameters</b>  |                     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Edge distance   | $C_{min}$           | [mm]  |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|   | $S_{min \parallel}$ |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Spacing   | $S_{cr \parallel}$  |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|   | $S_{min \perp}$     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|   | $S_{cr \perp}$      |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| <b>Drilling method</b>  |                     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
| Rotary drilling with carbide drill  |                     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |

**Table C40.2:** Group factors

|                                    |                          |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|------------------------------------|--------------------------|-------|----|----|-------|----|--------|----|-------|-------|--------|-----|--------|-----|-----|-----|
| Anchor rod                         | M6                       | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -     | M12    | M16 | M12    | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -                        | -     | -  | -  | M6    | M8 | -      | -  | -     | M10   | M12    | -   | -      | -   | -   |     |
|                                    |                          |       |    |    | 11x85 |    |        |    |       | 15x85 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |       | 20x130 |     | 20x200 |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ | [-]   |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|                                    | $\alpha_{g,v \parallel}$ |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|                                    | $\alpha_{g,N \perp}$     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |
|                                    | $\alpha_{g,v \perp}$     |       |    |    |       |    |        |    |       |       |        |     |        |     |     |     |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T9 MW, filled with mineral wool, dimensions, installation parameters

**Annex C 40**

**Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C41.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |      | 5          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $C_{min}$           | [mm] | 60         |  |
|  | $S_{min} \parallel$ |      | 80         |  |
| Spacing  | $S_{cr} \parallel$  |      | 250        |  |
|  | $S_{min} \perp$     |      | 80         |  |
|  | $S_{cr} \perp$      |      | 250        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Rotary drilling with carbide drill                 |                     |      |            |  |

**Table C41.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N} \parallel$ | [-] | 1,3        |
|                                | $\alpha_{g,v} \parallel$ |     | 1,2        |
|                                | $\alpha_{g,N} \perp$     |     | 0,6        |
|                                | $\alpha_{g,v} \perp$     |     | 1,2        |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T9 MW, filled with mineral wool,  
dimensions, installation parameters

**Annex C 41**

**Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C42.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 | -  | -      |    |       | M10 M12 | -      | -   | -      | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |  |     |  |     |  |     |  |     |  |     |  |  |  |  |  |
|-------------------------------------|---------------|--|-----|--|-----|--|-----|--|-----|--|-----|--|--|--|--|--|
| 4 N/mm <sup>2</sup>                 | w/w w/d       |  | 1,5 |  | 2,0 |  | 3,0 |  | 2,5 |  | 4,0 |  |  |  |  |  |
|                                     | d/d           |  | 2,0 |  | 2,5 |  | 3,0 |  | 2,5 |  | 4,5 |  |  |  |  |  |
| 6 N/mm <sup>2</sup>                 | w/w w/d       |  | 2,0 |  | 2,5 |  | 3,5 |  | 3,0 |  | 5,0 |  |  |  |  |  |
|                                     | d/d           |  | 2,0 |  | 3,0 |  | 4,0 |  | 3,0 |  | 5,5 |  |  |  |  |  |
| 8 N/mm <sup>2</sup>                 | w/w w/d       |  | 2,5 |  | 3,0 |  | 4,0 |  | 3,5 |  | 6,0 |  |  |  |  |  |
|                                     | d/d           |  | 2,5 |  | 3,0 |  | 4,5 |  | 3,5 |  | 6,5 |  |  |  |  |  |

**Table C42.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod                  | M10 |  | M12        |  | M16        |  |
|-----------------------------|-----|--|------------|--|------------|--|
| Perforated sleeve UVT Top H |     |  | 18x130/200 |  | 22x130/200 |  |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |  |     |  |  |     |  |
|-------------------------------------|---------------|--|-----|--|--|-----|--|
| 4 N/mm <sup>2</sup>                 | w/w w/d       |  | 3,0 |  |  | 4,0 |  |
|                                     | d/d           |  | 3,0 |  |  | 4,5 |  |
| 6 N/mm <sup>2</sup>                 | w/w w/d       |  | 3,5 |  |  | 5,0 |  |
|                                     | d/d           |  | 4,0 |  |  | 5,5 |  |
| 8 N/mm <sup>2</sup>                 | w/w w/d       |  | 4,0 |  |  | 6,0 |  |
|                                     | d/d           |  | 4,5 |  |  | 6,5 |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, T9 MW, filled with mineral wool;  
Characteristic resistance under tension loading

**Annex C 42**

**Vertical perforated brick HLz, T9 MW, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C43.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

|                                    |       |    |       |    |       |    |        |    |       |     |        |     |        |     |     |     |
|------------------------------------|-------|----|-------|----|-------|----|--------|----|-------|-----|--------|-----|--------|-----|-----|-----|
| Anchor rod                         | M6    | M8 | M6    | M8 | -     | M8 | M10    | M8 | M10   | -   | M12    | M16 | M12    | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -  |       |    | M6    | M8 |        |    |       | M10 | M12    |     |        | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 |    | 12x85 |    | 16x85 |    | 16x130 |    | 20x85 |     | 20x130 |     | 20x200 |     |     |     |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |     |     |  |  |     |     |  |     |
|----------------------------|---------------|-----|-----|-----|--|--|-----|-----|--|-----|
| <b>4 N/mm<sup>2</sup></b>  | w/w           | w/d | 2,0 | 2,0 |  |  | 2,5 | 2,0 |  | 1,5 |
|                            | d/d           |     |     |     |  |  |     |     |  |     |
| <b>6 N/mm<sup>2</sup></b>  | w/w           | w/d | 2,5 | 2,5 |  |  | 3,0 | 2,5 |  | 2,0 |
|                            | d/d           |     |     |     |  |  |     |     |  |     |
| <b>8 N/mm<sup>2</sup></b>  | w/w           | w/d | 2,5 | 3,0 |  |  | 4,0 | 3,0 |  | 2,5 |
|                            | d/d           |     |     |     |  |  |     |     |  |     |

**Table C43.2:** Characteristic resistance under shear loading (Push through anchorage)

|                             |            |     |            |
|-----------------------------|------------|-----|------------|
| Anchor rod                  | M10        | M12 | M16        |
| Perforated sleeve UVT Top H | 18x130/200 |     | 22x130/200 |

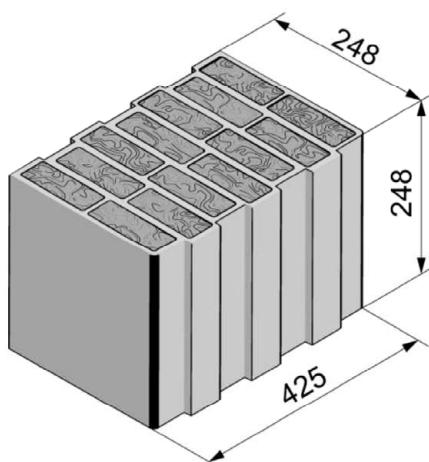
$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |     |  |  |     |
|----------------------------|---------------|-----|-----|--|--|-----|
| <b>4 N/mm<sup>2</sup></b>  | w/w           | w/d | 2,5 |  |  | 2,0 |
|                            | d/d           |     |     |  |  |     |
| <b>6 N/mm<sup>2</sup></b>  | w/w           | w/d | 3,0 |  |  | 2,5 |
|                            | d/d           |     |     |  |  |     |
| <b>8 N/mm<sup>2</sup></b>  | w/w           | w/d | 4,0 |  |  | 3,0 |
|                            | d/d           |     |     |  |  |     |

Factor for job site tests and displacements see annex C110

|  |            |
|--|------------|
| BTI Universal Component Compound UVT Top for masonry   | Annex C 43 |
| <b>Performance</b><br>Vertical perforated brick HLz, T9 MW, filled with mineral wool;<br>Characteristic resistance under shear loading |            |

### Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2015



| Vertical perforated brick HLz, FZ 7,<br>filled with mineral wool, EN 771-1:2011+A1:2015 |                       |         |
|---|-----------------------|---------|
| Producer  | -                     |         |
| Nominal dimensions [mm]   | length L              | width W |
|   | 248                   | 425     |
| height H  | 248                   |         |
| Density $\rho$ [kg/dm <sup>3</sup> ]  | 0,6                   |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]   | 4 / 6 / 8             |         |
| Standard  | EN 771-1:2011+A1:2015 |         |

Dimension see also Annex B 16

**Table C44.1:** Installation parameters

(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10 | M8 | M10   | -       | M12   | M16 | M12    | M16 | M12    | M16 |
|------------------------------------|-------|-------|----|----|-------|----|-----|----|-------|---------|-------|-----|--------|-----|--------|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 | -  | -   |    | -     | M10 M12 | -     | -   | -      | -   | -      | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 11x85 |    |     |    | 15x85 |         | 20x85 |     | 20x130 |     | 20x200 |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|  |                         |   |     |   |   |
|--|-------------------------|---|-----|---|---|
| Max. installation torque               | $T_{inst}$ [Nm]         | 2 | 5   | 2 | 5 |
| <b>General installation parameters</b> |                         |   |     |   |   |
| Edge distance                          | $c_{min}$               |   | 60  |   |   |
|  | $s_{min \parallel}$     |   | 80  |   |   |
| Spacing                                | $s_{cr \parallel}$ [mm] |   | 250 |   |   |
|  | $s_{min \perp}$         |   | 80  |   |   |
|  | $s_{cr \perp}$          |   | 250 |   |   |

#### Drilling method

Rotary drilling with carbide drill

**Table C44.2:** Group factors

| Anchor rod                         | M6                       | M8    | M6 | M8 | -     | M8 | M10 | M8 | M10   | -       | M12   | M16 | M12    | M16 | M12    | M16 |
|------------------------------------|--------------------------|-------|----|----|-------|----|-----|----|-------|---------|-------|-----|--------|-----|--------|-----|
| Internal threaded anchor UVT Top E | -                        | -     |    |    | M6 M8 | -  | -   |    | -     | M10 M12 | -     | -   | -      | -   | -      | -   |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85 |    |    | 11x85 |    |     |    | 15x85 |         | 20x85 |     | 20x130 |     | 20x200 |     |
| Group factors                      | $\alpha_{g,N \parallel}$ |       |    |    |       |    |     |    |       |         | 1,9   |     |        |     |        |     |
|                                    | $\alpha_{g,V \parallel}$ |       |    |    |       |    |     |    |       |         | 0,9   |     |        |     |        |     |
|                                    | $\alpha_{g,N \perp}$     |       |    |    |       |    |     |    |       |         | 1,0   |     |        |     |        |     |
|                                    | $\alpha_{g,V \perp}$     |       |    |    |       |    |     |    |       |         | 0,7   |     |        |     |        |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, FZ 7, filled with mineral wool;  
dimensions, installation parameters

**Annex C 44**

**Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C45.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation torque                           | $T_{inst}$<br>[Nm]  |      | 5          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $c_{min}$           | [mm] | 60         |  |
|  | $s_{min \parallel}$ |      | 80         |  |
| Spacing  | $s_{cr \parallel}$  |      | 250        |  |
|  | $s_{min \perp}$     |      | 80         |  |
|  | $s_{cr \perp}$      |      | 250        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Rotary drilling with carbide drill                 |                     |      |            |  |

**Table C45.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$ | [-] | 1,9        |
|                                | $\alpha_{g,v \parallel}$ |     | 0,9        |
|                                | $\alpha_{g,N \perp}$     |     | 1,0        |
|                                | $\alpha_{g,v \perp}$     |     | 0,7        |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, FZ 7, filled with mineral wool;  
dimensions, installation parameters

**Annex C 45**

**Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C46.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 | -  | -      |    |       | M10 M12 | -      | -   | -      | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |     |      |      |     |     |     |     |     |     |
|-------------------------------------|---------------|-----|------|------|-----|-----|-----|-----|-----|-----|
| <b>4 N/mm<sup>2</sup></b>           | w/w           | w/d | 0,6  | 0,75 | 1,5 | 2,0 | 1,2 | 2,0 | 2,0 | 2,0 |
|                                     | d/d           |     | 0,6  | 0,9  | 1,5 | 2,0 | 1,5 | 2,0 | 2,0 | 2,5 |
| <b>6 N/mm<sup>2</sup></b>           | w/w           | w/d | 0,75 | 0,9  | 1,5 | 2,0 | 1,5 | 2,5 | 2,5 | 2,5 |
|                                     | d/d           |     | 0,9  | 0,9  | 2,0 | 2,5 | 2,0 | 2,5 | 2,5 | 3,0 |
| <b>8 N/mm<sup>2</sup></b>           | w/w           | w/d | 0,9  | 1,2  | 2,0 | 2,5 | 2,0 | 2,5 | 2,5 | 3,0 |
|                                     | d/d           |     | 0,9  | 1,2  | 2,0 | 3,0 | 2,0 | 3,0 | 3,0 | 3,5 |

**Table C46.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod                          | M10           |     | M12        |  | M16        |  |
|-------------------------------------|---------------|-----|------------|--|------------|--|
| Perforated sleeve UVT Top H         |               |     | 18x130/200 |  | 22x130/200 |  |
| compressive strength f <sub>b</sub> | use condition |     |            |  |            |  |
| <b>4 N/mm<sup>2</sup></b>           | w/w           | w/d | 2,0        |  | 2,0        |  |
|                                     | d/d           |     | 2,0        |  | 2,0        |  |
| <b>6 N/mm<sup>2</sup></b>           | w/w           | w/d | 2,0        |  | 2,5        |  |
|                                     | d/d           |     | 2,5        |  | 2,5        |  |
| <b>8 N/mm<sup>2</sup></b>           | w/w           | w/d | 2,5        |  | 2,5        |  |
|                                     | d/d           |     | 3,0        |  | 3,0        |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, FZ 7, filled with mineral wool;  
Characteristic resistance under tension loading

**Annex C 46**

**Vertical perforated brick HLz, FZ 7, filled with mineral wool, EN 771-1:2011+A1:2015**

**Table C47.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |  |  |  |  |  |  |  |  |  |  |  |  |     |
|-------------------------------------|---------------|-----|--|--|--|--|--|--|--|--|--|--|--|--|-----|
| 4 N/mm <sup>2</sup>                 | w/w w/d       | 1,2 |  |  |  |  |  |  |  |  |  |  |  |  | 1,5 |
|                                     | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  | 1,5 |
| 6 N/mm <sup>2</sup>                 | w/w w/d       | 1,5 |  |  |  |  |  |  |  |  |  |  |  |  | 2,0 |
|                                     | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  | 1,5 |
| 8 N/mm <sup>2</sup>                 | w/w w/d       | 1,5 |  |  |  |  |  |  |  |  |  |  |  |  | 2,5 |
|                                     | d/d           |     |  |  |  |  |  |  |  |  |  |  |  |  | 2,0 |

**Table C47.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod                  | M10        | M12 | M16        |
|-----------------------------|------------|-----|------------|
| Perforated sleeve UVT Top H | 18x130/200 |     | 22x130/200 |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |  |  |
|-------------------------------------|---------------|-----|--|--|
| 4 N/mm <sup>2</sup>                 | w/w w/d       | 1,5 |  |  |
|                                     | d/d           |     |  |  |
| 6 N/mm <sup>2</sup>                 | w/w w/d       | 2,0 |  |  |
|                                     | d/d           |     |  |  |
| 8 N/mm <sup>2</sup>                 | w/w w/d       | 2,5 |  |  |
|                                     | d/d           |     |  |  |

Factor for job site tests and displacements see annex C110

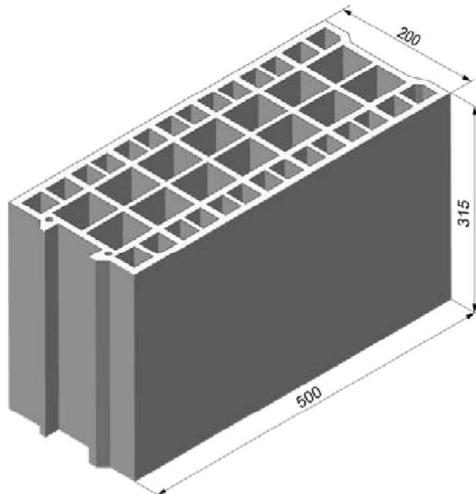
BTI Universal Component Compound UVT Top for masonry

**Performance**

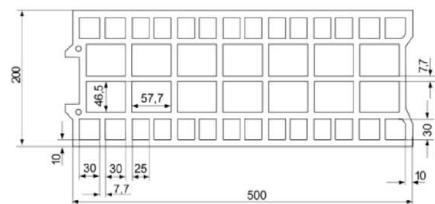
Vertical perforated brick HLz, FZ 7, filled with mineral wool;  
Characteristic resistance under shear loading

**Annex C 47**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Bouyer Leroux    |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 500                   | 200     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,6$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 4 / 6 / 8             |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



Dimension see also  
Annex B 16

**Table C48.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |        |       |        |       |        |       |        |       |        |       |        |
|------------------------------------|-------|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10   | M8     | M10   | -      | M12   | M16    | M12   | M16    |
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -     | -      | -     | M10    | M12   | -      | -     | -      |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 16x85 | 16x130 | 20x85 | 20x130 | 20x85 | 20x130 | 20x85 | 20x130 | 20x85 | 20x130 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |                                |      |     |
|---------------|--------------------------------|------|-----|
| Edge distance | $C_{min}$                      | [mm] | 120 |
|               | $S_{min \parallel}$            |      | 120 |
| Spacing       | $S_{cr \parallel}$             |      | 500 |
|               | $S_{min \perp} = S_{cr \perp}$ |      | 315 |

#### Drilling method

Hammer drilling with hard metal hammer drill

### Table C48.2: Group factors

|                                    |   |       |       |        |       |        |       |        |       |        |       |        |       |        |
|------------------------------------|---|-------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|
| Anchor rod                         | M6  | M8    | M6    | M8     | -     | M8     | M10   | M8     | M10   | -      | M12   | M16    | M12   | M16    |
| Internal threaded anchor UVT Top E | -   | -     | -     | -      | M6    | M8     | -     | -      | -     | M10    | M12   | -      | -     | -      |
| Perforated sleeve UVT Top H        | 12x50                                     | 12x85 | 16x85 | 16x130 | 16x85 | 16x130 | 20x85 | 20x130 | 20x85 | 20x130 | 20x85 | 20x130 | 20x85 | 20x130 |
| Group factors                      | $\alpha_{g,N \parallel}$                  | [-]   | 1,3   |        |       |        |       |        |       |        |       |        |       |        |
|                                    | $\alpha_{g,V \parallel}$                  |       | 1,7   |        |       |        |       |        |       |        |       |        |       |        |
|                                    | $\alpha_{g,N \perp} = \alpha_{g,V \perp}$ |       | 2     |        |       |        |       |        |       |        |       |        |       |        |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 48

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C49.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10   | M12  | M16               |
|--|---|------|-------------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200  |      | 22x130/200        |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |   |      |                   |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |      | 2                 |
| <b>General installation parameters</b>             |   |      |                   |
| Edge distance                                      | $c_{min}$   | 120  |                   |
| Spacing  | $s_{min \parallel}$<br>$s_{cr \parallel}$<br>$s_{min \perp} = s_{cr \perp}$                       | [mm] | 120<br>500<br>315 |
| <b>Drilling method</b>                             |   |      |                   |
| Hammer drilling with hard metal hammer drill       |   |      |                   |
| Anchor rod   | M10   | M12  | M16               |
| Perforated sleeve<br>UVT Top H                     | 18x130/200  |      | 22x130/200        |
| Group<br>factors                                   | $\alpha_{g,N \parallel}$<br>$\alpha_{g,v \parallel}$<br>$\alpha_{g,N \perp} = \alpha_{g,v \perp}$ | -    | 1,3<br>1,7<br>2   |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, dimensions, installation parameters

**Annex C 49**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C50.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6   | M8             | -   | M8     | M10  | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|--|---------------|-------|------|----------------|-----|--------|------|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |      | M6 M8<br>11x85 |     | -      | -    | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|  |               |       |      |                |     |        |      |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |      | 16x85          |     | 16x130 |      | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |      |                |     |        |      |       |     |                  |     |     |     |     |
| compressive strength $f_b$   | use condition |       |      |                |     |        |      |       |     |                  |     |     |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 0,5  |                | 1,5 |        | 0,75 |       | 1,5 |                  | 1,5 |     | 1,5 |     |
|  | d/d           |       | 0,6  |                | 1,5 |        | 0,9  |       | 1,5 |                  | 2,0 |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,75 |                | 2,0 |        | 1,2  |       | 2,0 |                  | 2,5 |     |     |     |
|  | d/d           |       | 0,9  |                | 2,5 |        | 1,2  |       | 2,5 |                  | 2,5 |     |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 0,9  |                | 3,0 |        | 1,5  |       | 3,0 |                  | 3,5 |     |     |     |
|  | d/d           |       | 1,2  |                | 3,0 |        | 2,0  |       | 3,0 |                  | 3,5 |     |     |     |

**Table C50.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |      |  |  |  |  |  |     |  |  |  |  |
|--|---------------|-----|------------|------|--|--|--|--|--|-----|--|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |      |  |  |  |  |  |     |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |      |  |  |  |  |  |     |  |  |  |  |
| compressive strength $f_b$   | use condition |     |            |      |  |  |  |  |  |     |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            | 0,75 |  |  |  |  |  | 1,5 |  |  |  |  |
|  | d/d           |     |            | 0,9  |  |  |  |  |  | 2,0 |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |            | 1,2  |  |  |  |  |  | 2,5 |  |  |  |  |
|  | d/d           |     |            | 1,2  |  |  |  |  |  | 2,5 |  |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d |            | 1,5  |  |  |  |  |  | 3,5 |  |  |  |  |
|  | d/d           |     |            | 2,0  |  |  |  |  |  | 3,5 |  |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension loading

**Annex C 50**

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C51.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod  | M6            | M8    | M6 | M8 | -     | M8  | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|---|---------------|-------|----|----|-------|-----|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |    |    | M6    | M8  |        |    |     | M10   | M12 |        |     |     |
|   |               |       |    |    | 11x85 |     | -      | -  |     | 15x85 |     | -      |     | -   |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |    |    | 16x85 |     | 16x130 |    |     | 20x85 |     | 20x130 |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |    |    |       |     |        |    |     |       |     |        |     |     |
| compressive strength $f_b$  | use condition |       |    |    |       |     |        |    |     |       |     |        |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       | 1,5 |        |    |     | 0,9   |     | 1,5    |     | 2,5 |
|   | d/d           |       |    |    |       |     |        |    |     |       |     |        |     | 0,9 |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       | 2,5 |        |    |     | 1,5   |     | 2,5    |     | 3,5 |
|   | d/d           |       |    |    |       |     |        |    |     |       |     |        |     | 1,5 |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       | 3,5 |        |    |     | 2,0   |     | 3,5    |     | 4,5 |
|   | d/d           |       |    |    |       |     |        |    |     |       |     |        |     | 2,0 |

**Table C51.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod  | M10           | M12 | M16        |
|---|---------------|-----|------------|
| Perforated sleeve UVT Top H   | 18x130/200    |     | 22x130/200 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |            |
| compressive strength $f_b$  | use condition |     |            |
| 4 N/mm <sup>2</sup>   | w/w           | w/d |            |
|   | d/d           |     | 0,9        |
| 6 N/mm <sup>2</sup>   | w/w           | w/d |            |
|   | d/d           |     | 1,5        |
| 8 N/mm <sup>2</sup>   | w/w           | w/d |            |
|   | d/d           |     | 2,0        |

Factor for job site tests and displacements see annex C110

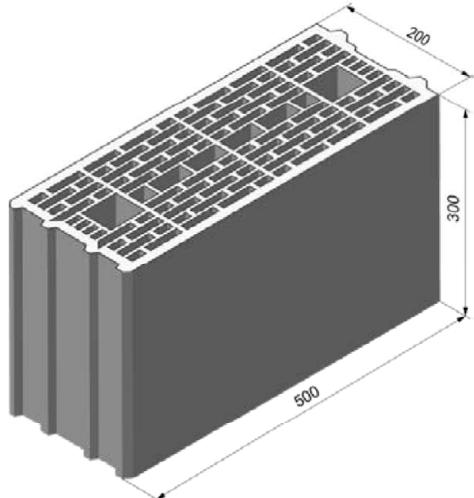
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**Performance**

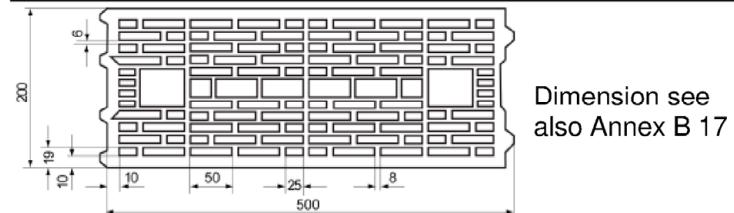
Vertical perforated brick HLz, Characteristic resistance under shear loading

**Annex C 51**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Wienerberger     |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 500                   | 200     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,7$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 4 / 6 / 8 / 10        |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



**Table C52.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |       |       |       |        |        |        |       |       |        |        |        |
|------------------------------------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|--------|--------|--------|
| Anchor rod                         | M6    | M8    | M6    | M8    | -     | M8    | M10    | M8     | M10    | -     | M12   | M16    | M12    | M16    |
| Internal threaded anchor UVT Top E | -     | -     | -     | -     | M6    | M8    | -      | -      | -      | M10   | M12   | -      | -      | -      |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 12x85 | 12x85 | 16x85 | 16x85 | 16x130 | 16x130 | 16x130 | 20x85 | 20x85 | 20x130 | 20x130 | 20x130 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |                                |      |     |    |    |    |
|---------------|--------------------------------|------|-----|----|----|----|
| Edge distance | $C_{min}$                      | [mm] | 50  | 80 | 50 | 80 |
| Spacing       | $S_{min \parallel}$            |      | 100 |    |    |    |
|               | $S_{cr \parallel}$             |      | 500 |    |    |    |
|               | $S_{min \perp} = S_{cr \perp}$ |      | 300 |    |    |    |

#### Drilling method

Hammer drilling with hard metal hammer drill

### Table C52.2: Group factors

|                                    |                          |                          |                      |                      |       |       |        |        |        |       |       |        |        |        |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|-------|--------|--------|--------|-------|-------|--------|--------|--------|
| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8    | M10    | M8     | M10    | -     | M12   | M16    | M12    | M16    |
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8    | -      | -      | -      | M10   | M12   | -      | -      | -      |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    | 12x85                | 12x85                | 16x85 | 16x85 | 16x130 | 16x130 | 16x130 | 20x85 | 20x85 | 20x130 | 20x130 | 20x130 |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,V \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,V \perp}$ | [-]   | 1,4   |        |        |        |       |       |        |        |        |
|                                    |                          |                          |                      |                      |       | 2     |        |        |        |       |       |        |        |        |

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#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 52

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C53.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                            | M12 | M16        |
|--|--------------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200                     |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                                |     |            |
| Max. installation torque                           | $T_{inst}$ [Nm]                |     | 2          |
| <b>General installation parameters</b>             |                                |     |            |
| Edge distance                                      | $C_{min}$                      | 80  |            |
| Spacing  | $S_{min \parallel}$            | 100 |            |
|  | $S_{cr \parallel}$             | 500 |            |
|  | $S_{min \perp} = S_{cr \perp}$ | 300 |            |
| <b>Drilling method</b>                             |                                |     |            |
| Hammer drilling with hard metal hammer drill       |                                |     |            |

**Table C53.2:** Group factors

| Anchor rod                     | M10                                       | M12 | M16        |
|--------------------------------|---|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200                                |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$                  | 1,4 |            |
|                                | $\alpha_{g,v \parallel}$                  | 2   |            |
|                                | $\alpha_{g,N \perp} = \alpha_{g,v \perp}$ |     |            |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, dimensions, installation parameters

**Annex C 53**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C54.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6   | M8 | -     | M8   | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|--|---------------|-------|------|----|-------|------|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E   | -             |       | -    |    | M6    | M8   |        |    |     | M10   | M12 |        | -   | -   |
|  |               |       |      |    | 11x85 |      |        |    |     | 15x85 |     |        |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |      |    | 16x85 |      | 16x130 |    |     | 20x85 |     | 20x130 |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |      |    |       |      |        |    |     |       |     |        |     |     |
| compressive strength $f_b$   | use condition |       |      |    |       |      |        |    |     |       |     |        |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 0,5  |    |       | 0,6  |        |    | 1,2 | 0,75  |     |        | 1,5 |     |
|  | d/d           |       | 0,6  |    |       | 0,75 |        |    | 1,2 | 0,9   |     |        | 1,5 |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,75 |    |       | 0,9  |        |    | 1,5 | 1,2   |     |        | 2,0 |     |
|  | d/d           |       | 0,9  |    |       | 1,2  |        |    | 2,0 | 1,2   |     |        | 2,5 |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 0,9  |    |       | 1,2  |        |    | 2,0 | 1,5   |     |        | 2,5 |     |
|  | d/d           |       | 1,2  |    |       | 1,5  |        |    | 2,5 | 1,5   |     |        | 3,0 |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2  |    |       | 1,5  |        |    | 2,5 | 2,0   |     |        | 3,5 |     |
|  | d/d           |       | 1,5  |    |       | 2,0  |        |    | 3,0 | 2,0   |     |        | 4,0 |     |

**Table C54.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |  |  |
|--|---------------|-----|------------|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |  |  |
|  |               |     |            |  |  |
| compressive strength $f_b$   | use condition |     |            |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d | 1,2        |  |  |
|  | d/d           |     | 1,2        |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 1,5        |  |  |
|  | d/d           |     | 2,0        |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d | 2,0        |  |  |
|  | d/d           |     | 2,5        |  |  |
| 10 N/mm <sup>2</sup>   | w/w           | w/d | 2,5        |  |  |
|  | d/d           |     | 3,0        |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension loading

**Annex C 54**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C55.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod  | M6            | M8    | M6  | M8             | -   | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|---|---------------|-------|-----|----------------|-----|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |     | M6 M8<br>11x85 |     | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|   |               |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |     | 16x85          |     | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$  | use condition |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   | 0,9 | 1,2            | 0,9 | 1,2    | 0,6 | 2,0   | 0,6 |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2 | 1,5            | 1,2 | 1,5    | 0,9 | 3,0   | 0,9 |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 1,5 | 2,0            | 1,5 | 2,0    | 1,2 | 4,0   | 1,2 |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   | 2,0 | 3,0            | 2,0 | 3,0    | 1,5 | 5,0   | 1,5 |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |

**Table C55.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod  | M10           | M12        | M16 |  |
|---|---------------|------------|-----|--|
| Perforated sleeve UVT Top H   | 18x130/200    | 22x130/200 |     |  |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |            |     |  |
| compressive strength $f_b$  | use condition |            |     |  |
| 4 N/mm <sup>2</sup>   | w/w           | w/d        | 0,6 |  |
|   | d/d           |            |     |  |
| 6 N/mm <sup>2</sup>   | w/w           | w/d        | 0,9 |  |
|   | d/d           |            |     |  |
| 8 N/mm <sup>2</sup>   | w/w           | w/d        | 1,2 |  |
|   | d/d           |            |     |  |
| 10 N/mm <sup>2</sup>  | w/w           | w/d        | 1,5 |  |
|   | d/d           |            |     |  |

Factor for job site tests and displacements see annex C110

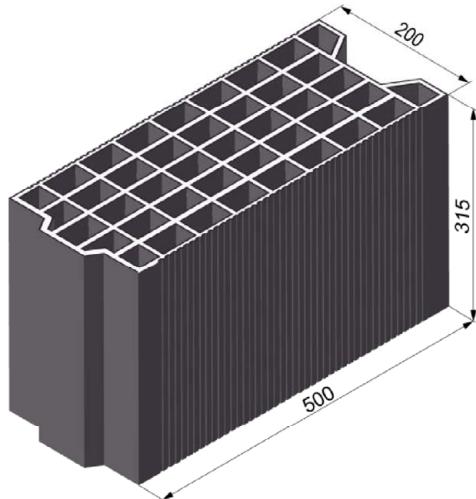
BTI Universal Component Compound UVT Top for masonry

**Performance**

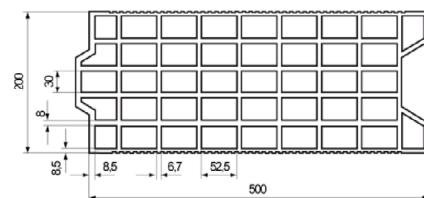
Vertical perforated brick HLz, Characteristic resistance under shear loading

**Annex C 55**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Terreal          |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 500                   | 200     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,7$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 2 / 4 / 6 / 8         |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



Dimension see also  
Annex B 17

**Table C56.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10 | M8 | M10 | -       | M12 | M16 | M12 | M16 |
|------------------------------------|-------|-------|-------|--------|-------|--------|-----|----|-----|---------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6 M8 | -      | -   | -  | -   | M10 M12 | -   | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 |     |    |     |         |     |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |                         |     |    |    |    |
|---------------|-------------------------|-----|----|----|----|
| Edge distance | $c_{min}$               | 50  | 80 | 50 | 80 |
|               | $s_{min \parallel}$     | 100 |    |    |    |
| Spacing       | $s_{cr \parallel}$ [mm] | 500 |    |    |    |
|               | $s_{min \perp}$         | 100 |    |    |    |
|               | $s_{cr \perp}$          | 315 |    |    |    |

#### Drilling method

Hammer drilling with hard metal hammer drill

**Table C56.2:** Group factors

| Anchor rod                         | M6                       | M8    | M6    | M8     | -     | M8     | M10 | M8 | M10 | -       | M12 | M16 | M12 | M16 |
|------------------------------------|--------------------------|-------|-------|--------|-------|--------|-----|----|-----|---------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E | -                        | -     | -     | -      | M6 M8 | -      | -   | -  | -   | M10 M12 | -   | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 |     |    |     |         |     |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ |       |       |        |       |        |     |    |     |         |     |     |     |     |
|                                    | $\alpha_{g,v \parallel}$ |       |       |        |       |        |     |    |     |         |     |     |     |     |
|                                    | $\alpha_{g,N \perp}$     |       |       |        |       |        |     |    |     |         |     |     |     |     |
|                                    | $\alpha_{g,v \perp}$     |       |       |        |       |        |     |    |     |         |     |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

#### Annex C 56

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C57.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12 | M16        |
|--|---------------------|-----|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |     |            |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]  |     | 2          |
| <b>General installation parameters</b>             |                     |     |            |
| Edge distance                                      | $c_{min}$           | 80  |            |
| Spacing  | $s_{min \parallel}$ | 100 |            |
|  | $s_{cr \parallel}$  | 500 |            |
|  | $s_{min \perp}$     | 100 |            |
|  | $s_{cr \perp}$      | 315 |            |
|  | [mm]                |     |            |
| <b>Drilling method</b>                             |                     |     |            |
| Hammer drilling with hard metal hammer drill       |                     |     |            |

**Table C57.2:** Group factors

| Anchor rod                     | M10  | M12         | M16                      |
|--------------------------------|--|-------------|--------------------------|
| Perforated sleeve<br>UVT Top H | 18x130/200   |             | 22x130/200               |
| Group factors                  | $\alpha_{g,N} \parallel$<br>$\alpha_{g,v} \parallel$<br>$\alpha_{g,N} \perp$<br>$\alpha_{g,v} \perp$ | [ $\cdot$ ] | 1,1<br>1,2<br>1,1<br>1,2 |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, dimensions, installation parameters

**Annex C 57**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C58.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6  | M8             | - | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|--|---------------|-------|-----|----------------|---|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |     | M6 M8<br>11x85 |   | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|  |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |     | 16x85          |   | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$   | use condition |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| 2 N/mm <sup>2</sup>  | w/w           | w/d   |     |                |   |        |     |       |     | 0,5              |     |     |     |     |
|  | d/d           |       |     |                |   | 0,5    |     |       |     | 0,6              | 0,5 |     | 0,5 | 0,6 |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   |     |                |   |        |     |       |     | 0,9              |     |     |     |     |
|  | d/d           |       | 0,9 |                |   |        |     |       |     | 1,2              |     |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   |     |                |   |        |     |       |     | 1,5              |     |     |     |     |
|  | d/d           |       |     |                |   |        |     |       |     | 1,5              |     |     |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   |     |                |   |        |     |       |     | 2,0              |     |     |     |     |
|  | d/d           |       |     |                |   |        |     |       |     | 2,0              |     |     |     |     |

**Table C58.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |  |  |  |  |  |  |     |  |  |  |  |
|--|---------------|-----|------------|--|--|--|--|--|--|-----|--|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |  |  |  |  |  |  |     |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |  |  |  |  |  |  |     |  |  |  |  |
| compressive strength $f_b$   | use condition |     |            |  |  |  |  |  |  |     |  |  |  |  |
| 2 N/mm <sup>2</sup>  | w/w           | w/d |            |  |  |  |  |  |  | 0,5 |  |  |  |  |
|  | d/d           |     |            |  |  |  |  |  |  | 0,6 |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            |  |  |  |  |  |  | 0,9 |  |  |  |  |
|  | d/d           |     |            |  |  |  |  |  |  | 1,2 |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |            |  |  |  |  |  |  | 1,5 |  |  |  |  |
|  | d/d           |     |            |  |  |  |  |  |  | 1,5 |  |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d |            |  |  |  |  |  |  | 2,0 |  |  |  |  |
|  | d/d           |     |            |  |  |  |  |  |  | 2,0 |  |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension loading

**Annex C 58**

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C59.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod  | M6            | M8    | M6   | M8             | -    | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|---|---------------|-------|------|----------------|------|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |      | M6 M8<br>11x85 |      | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|   |               |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |      | 16x85          |      | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$  | use condition |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| 2 N/mm <sup>2</sup>   | w/w           | w/d   | 0,3  | 0,6            | 0,3  | 0,6    | 0,6 | 0,9   | 0,9 | 0,75             |     |     |     |     |
|   | d/d           |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   | 0,75 | 1,2            | 0,75 | 1,2    | 1,2 | 1,2   | 2,0 | 2,0              | 1,5 |     |     |     |
|   | d/d           |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 0,9  | 2,0            | 0,9  | 2,0    | 1,5 | 3,0   | 3,0 | 2,0              |     |     |     |     |
|   | d/d           |       |      |                |      |        |     |       |     |                  |     |     |     |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 1,5  | 2,5            | 1,5  | 2,5    | 2,0 | 4,0   | 4,0 | 3,0              |     |     |     |     |
|   | d/d           |       |      |                |      |        |     |       |     |                  |     |     |     |     |

**Table C59.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod  | M10           | M12 | M16        |
|---|---------------|-----|------------|
| Perforated sleeve UVT Top H   | 18x130/200    |     | 22x130/200 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |            |
| compressive strength $f_b$  | use condition |     |            |
| 2 N/mm <sup>2</sup>   | w/w           | w/d | 0,6        |
|   | d/d           |     |            |
| 4 N/mm <sup>2</sup>   | w/w           | w/d | 1,2        |
|   | d/d           |     |            |
| 6 N/mm <sup>2</sup>   | w/w           | w/d | 1,5        |
|   | d/d           |     |            |
| 8 N/mm <sup>2</sup>   | w/w           | w/d | 2,0        |
|   | d/d           |     |            |

Factor for job site tests and displacements see annex C110

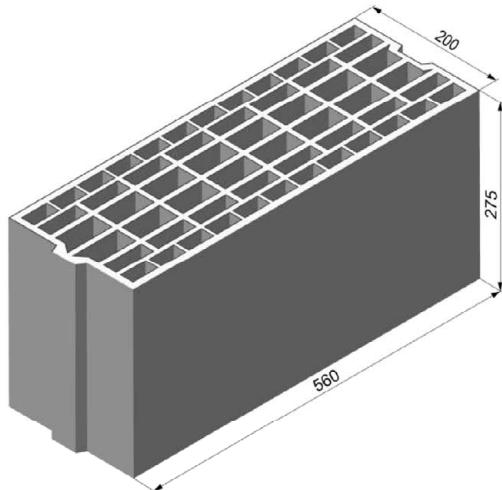
BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under shear loading

**Annex C 59**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Imery            |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 560                   | 200     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,7$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 4 / 6 / 8             |         |
| Standard   | EN 771-1:2011+A1:2015 |         |

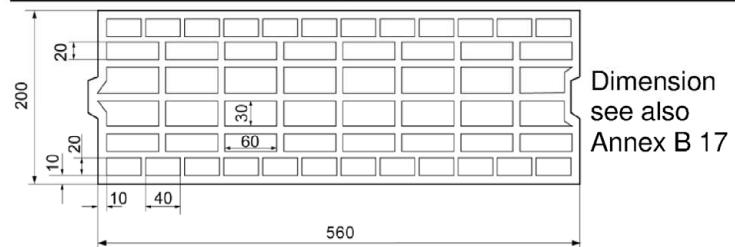


Table C60.1: Installation parameters

| Anchor rod  | M8     | M10 | M10        | M12 | M12    | M16 | M16        |
|---|--------|-----|------------|-----|--------|-----|------------|
| Perforated sleeve UVT Top H                         | 16x130 |     | 18x130/200 |     | 20x130 |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b>  |        |     |            |     |        |     |            |
| Max. installation torque $T_{inst}$ [Nm]            |        |     |            |     |        | 2   |            |
| Edge distance $C_{min}$                             |        |     |            |     | 80     |     |            |
| Spacing $S_{min \parallel} = S_{cr \parallel}$ [mm] |        |     |            |     | 560    |     |            |
|   |        |     |            |     | 275    |     |            |
| <b>Drilling method</b>                              |        |     |            |     |        |     |            |
| Hammer drilling with hard metal hammer drill        |        |     |            |     |        |     |            |

Table C60.2: Group factors

| Anchor rod                  | M8   | M10   | M10        | M12 | M12    | M16 | M16        |
|-----------------------------|--|-------|------------|-----|--------|-----|------------|
| Perforated sleeve UVT Top H | 16x130   |       | 18x130/200 |     | 20x130 |     | 22x130/200 |
| Group factors               | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ - ] |            |     | 2      |     |            |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Vertical perforated brick HLz, dimensions, installation parameters

**Annex C 60**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C61.1:** Characteristic resistance under tension loading

| Anchor rod   |               | M8     | M10 | M10        | M12 | M12    | M16 |
|--|---------------|--------|-----|------------|-----|--------|-----|
| <b>Perforated sleeve<br/>UVT Top H</b>   |               | 16x130 |     | 18x130/200 |     | 20x130 |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |        |     |            |     |        |     |
| compressive strength $f_b$   | use condition |        |     |            |     |        |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d    |     | 0,9        |     |        | 1,2 |
|  | d/d           |        |     | 1,2        |     |        | 1,5 |
| 6 N/mm <sup>2</sup>  | w/w           | w/d    |     | 1,5        |     |        | 2,0 |
|  | d/d           |        |     | 1,5        |     |        | 2,0 |
| 8 N/mm <sup>2</sup>  | w/w           | w/d    |     | 2,0        |     |        | 2,5 |
|  | d/d           |        |     | 2,5        |     |        | 3,0 |

Factor for temperature range 72/120°C: 0,83

**Table C61.2:** Characteristic resistance under shear loading

| Anchor rod  |               | M8     | M10 | M10        | M12 | M12    | M16 |
|---|---------------|--------|-----|------------|-----|--------|-----|
| <b>Perforated sleeve<br/>UVT Top H</b>  |               | 16x130 |     | 18x130/200 |     | 20x130 |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |        |     |            |     |        |     |
| compressive strength $f_b$  | use condition |        |     |            |     |        |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d    |     |            |     | 0,9    |     |
|   | d/d           |        |     |            |     |        |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d    |     |            |     | 1,5    |     |
|   | d/d           |        |     |            |     |        |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d    |     |            |     | 2,0    |     |
|   | d/d           |        |     |            |     |        |     |

Factor for job site tests and displacements see annex C110

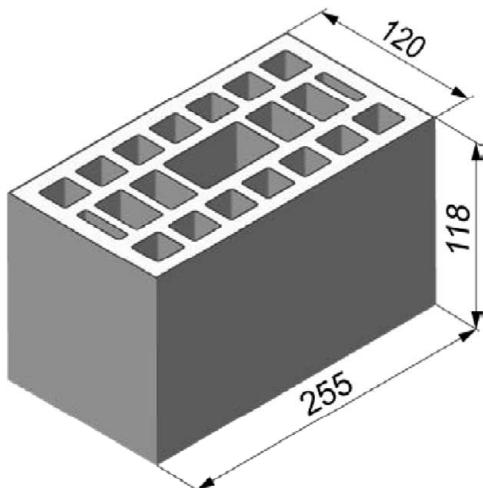
BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension and shear loading

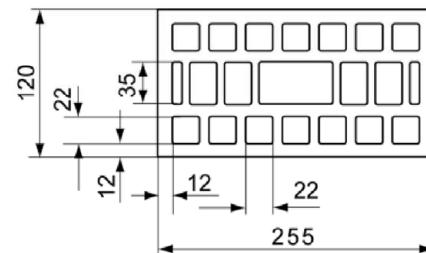
**Annex C 61**

### Vertical perforated brick HLz, EN 771-1:2015



#### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

|   |                         |         |          |
|---|-------------------------|---------|----------|
| Producer  | e.g. Wienerberger       |         |          |
| Nominal dimensions [mm]                         | length L                | width W | height H |
|   | 255                     | 120     | 118      |
| Density $\rho$ [kg/dm <sup>3</sup> ]            | $\geq 1,0$              |         |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ] | 2 / 4 / 6 / 8 / 10 / 12 |         |          |
| Standard  | EN 771-1:2011+A1:2015   |         |          |



Dimension see also  
Annex B 18

Table C62.1: Installation parameters

| Anchor rod                         | M6    | M8    | M6    | M8    | -     | M8    | M10     | -     | M12   | M16   |
|------------------------------------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|
| Internal threaded anchor UVT Top E | -     | -     | -     | -     | M6 M8 | -     | M10 M12 | -     | -     | -     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 12x85 | 16x85 | 16x85 | 16x85 | 20x85   | 20x85 | 20x85 | 20x85 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |   |     |
|---------------|---|-----|
| Edge distance | $c_{min}$                                   | 60  |
| Spacing       | $s_{cr \parallel} = s_{min \parallel}$ [mm] | 255 |
|               | $s_{cr \perp} = s_{min \perp}$              | 120 |

#### Drilling method

Hammer drilling with hard metal hammer drill

Table C62.2: Group factors

| Anchor rod                         | M6   | M8    | M6    | M8    | -     | M8    | M10     | -     | M12   | M16   |
|------------------------------------|--|-------|-------|-------|-------|-------|---------|-------|-------|-------|
| Internal threaded anchor UVT Top E | -  | -     | -     | -     | M6 M8 | -     | M10 M12 | -     | -     | -     |
| Perforated sleeve UVT Top H        | 12x50  | 12x85 | 12x85 | 16x85 | 16x85 | 16x85 | 20x85   | 20x85 | 20x85 | 20x85 |
| Group factors                      | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ - ] |       |       |       | 2     |         |       |       |       |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 62

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C63.1:** Characteristic resistance under tension loading

| Anchor rod   | M6               | M8  | M6    | M8 | -     | M8    | M10 | -               | M12   | M16 |  |  |  |  |  |  |  |  |  |
|--|------------------|-----|-------|----|-------|-------|-----|-----------------|-------|-----|--|--|--|--|--|--|--|--|--|
| Internal threaded<br>anchor UVT Top E  | -                | -   | -     | -  | M6    | M8    | -   | -               | M10   | M12 |  |  |  |  |  |  |  |  |  |
|  |                  |     |       |    | 11x85 | 15x85 |     |                 | 15x85 | -   |  |  |  |  |  |  |  |  |  |
| Perforated sleeve<br>UVT Top H   | 12x50            |     | 12x85 |    | 16x85 |       |     | 20x85           |       |     |  |  |  |  |  |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |                  |     |       |    |       |       |     |                 |       |     |  |  |  |  |  |  |  |  |  |
| compressive<br>strength $f_b$  | use<br>condition |     |       |    |       |       |     |                 |       |     |  |  |  |  |  |  |  |  |  |
| 2 N/mm <sup>2</sup>  | w/w              | w/d | 0,4   |    | 0,5   |       |     | - <sup>1)</sup> |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 0,5   |    | 0,5   |       |     | - <sup>1)</sup> |       |     |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w              | w/d | 0,9   |    | 0,9   |       |     | 0,5             |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 0,9   |    | 1,2   |       |     | 0,5             |       |     |  |  |  |  |  |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w              | w/d | 1,2   |    | 1,5   |       |     | 0,75            |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 1,5   |    | 1,5   |       |     | 0,75            |       |     |  |  |  |  |  |  |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w              | w/d | 1,5   |    | 2,0   |       |     | 0,9             |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 2,0   |    | 2,0   |       |     | 0,9             |       |     |  |  |  |  |  |  |  |  |  |
| 10 N/mm <sup>2</sup>   | w/w              | w/d | 2,0   |    | 2,5   |       |     | 1,2             |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 2,5   |    | 2,5   |       |     | 1,2             |       |     |  |  |  |  |  |  |  |  |  |
| 12 N/mm <sup>2</sup>   | w/w              | w/d | 2,5   |    | 3,0   |       |     | 1,5             |       |     |  |  |  |  |  |  |  |  |  |
|  | d/d              |     | 3,0   |    | 3,5   |       |     | 1,5             |       |     |  |  |  |  |  |  |  |  |  |

<sup>1)</sup> No performance assesses

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

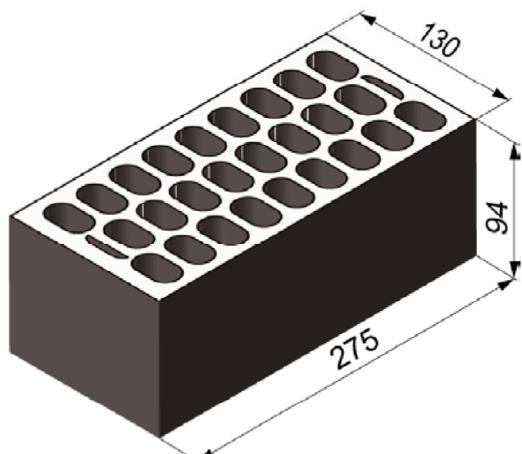
**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C64.1:** Characteristic resistance under shear loading

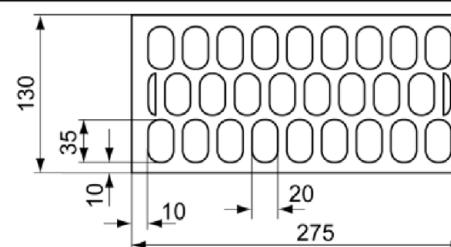
| Anchor rod  | M6            | M8    | M6  | M8    | -     | M8    | M10 | - | M12   | M16 |
|---|---------------|-------|-----|-------|-------|-------|-----|---|-------|-----|
| Internal threaded anchor<br>UVT Top E   | -             | -     | -   | -     | M6    | M8    | -   | - | M10   | M12 |
|   |               |       |     |       | 11x85 | 11x85 |     |   | 15x85 | -   |
| Perforated sleeve<br>UVT Top H  | 12x50         | 12x85 |     | 16x85 |       | 20x85 |     |   |       |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |     |       |       |       |     |   |       |     |
| compressive strength $f_b$  | use condition |       |     |       |       |       |     |   |       |     |
| 2 N/mm <sup>2</sup>   | w/w           | w/d   | 0,6 | 0,75  | 0,6   | 0,75  |     |   |       |     |
|   | d/d           |       |     |       |       |       | 0,9 |   |       |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2 | 1,5   | 1,2   | 1,5   |     |   |       |     |
|   | d/d           |       |     |       |       |       | 2,0 |   |       |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 2,0 | 2,0   | 2,0   | 2,0   |     |   |       |     |
|   | d/d           |       |     |       |       |       | 2,5 |   |       |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 2,5 | 3,0   | 2,5   | 3,0   |     |   |       |     |
|   | d/d           |       |     |       |       |       | 3,5 |   |       |     |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   | 3,0 | 3,5   | 3,0   | 3,5   |     |   |       |     |
|   | d/d           |       |     |       |       |       | 4,5 |   |       |     |
| 12 N/mm <sup>2</sup>  | w/w           | w/d   | 4,0 | 4,5   | 4,0   | 4,5   |     |   |       |     |
|   | d/d           |       |     |       |       |       | 5,5 |   |       |     |

Factor for job site tests and displacements see annex C110

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |                             |
|--|-----------------------|-----------------------------|
| Producer   |                       | e.g. Cermanica Farreny S.A. |
| Nominal dimensions [mm]                              | length L              | width W                     |
|  | 275                   | 130                         |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,8$            |                             |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 6 / 8 / 12 / 16 / 20  |                             |
| Standard   | EN 771-1:2011+A1:2015 |                             |



Dimension see also Annex B 18

Table C65.1: Installation parameters

| Anchor rod   | M6              | M8    | M6 | M8 | -     | M8  | M10     | -     | M12 | M16 |  |
|--|-----------------|-------|----|----|-------|-----|---------|-------|-----|-----|--|
| Internal threaded anchor UVT Top E   | -               | -     | -  | -  | M6 M8 | -   | M10 M12 | -     | -   | -   |  |
|  |                 |       |    |    | 11x85 |     |         | 15x85 |     |     |  |
| Perforated sleeve UVT Top H  | 12x50           | 12x85 |    |    | 16x85 |     |         | 20x85 |     |     |  |
| Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H |                 |       |    |    |       |     |         |       |     |     |  |
| Max. installation torque   | $T_{inst}$ [Nm] |       |    |    |       |     | 2       |       |     |     |  |
| General installation parameters  |                 |       |    |    |       |     |         |       |     |     |  |
| Edge distance $c_{min}$  |                 |       |    |    | 100   |     |         | 120   |     |     |  |
| Spacing $s_{cr \parallel} = s_{min \parallel}$                                     | [mm]            |       |    |    |       | 275 |         |       |     |     |  |
| $s_{cr \perp} = s_{min \perp}$   |                 |       |    |    |       | 95  |         |       |     |     |  |
| Drilling method  |                 |       |    |    |       |     |         |       |     |     |  |
| Hammer drilling with hard metal hammer drill                                       |                 |       |    |    |       |     |         |       |     |     |  |

Table C65.2: Group factors

| Anchor rod                         | M6   | M8          | M6 | M8 | -     | M8 | M10     | -     | M12 | M16 |
|------------------------------------|--|-------------|----|----|-------|----|---------|-------|-----|-----|
| Internal threaded anchor UVT Top E | -  | -           | -  | -  | M6 M8 | -  | M10 M12 | -     | -   | -   |
|                                    |  |             |    |    | 11x85 |    |         | 15x85 |     |     |
| Perforated sleeve UVT Top H        | 12x50  | 12x85       |    |    | 16x85 |    |         | 20x85 |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ $\cdot$ ] |    |    |       | 2  |         |       |     |     |

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#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

#### Annex C 65

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C66.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8    | M6   | M8    | -     | M8    | M10 | - | M12   | M16 |
|--|---------------|-------|------|-------|-------|-------|-----|---|-------|-----|
| Internal threaded anchor UVT Top E   | -             | -     | -    | -     | M6    | M8    | -   | - | M10   | M12 |
|  |               |       |      |       | 11x85 | 11x85 |     |   | 15x85 | -   |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |      | 16x85 |       | 20x85 |     |   |       |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |      |       |       |       |     |   |       |     |
| compressive strength $f_b$   | use condition |       |      |       |       |       |     |   |       |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,4  |       |       |       | 0,9 |   |       |     |
|  | d/d           |       | 0,4  |       |       |       | 0,9 |   |       |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 0,5  |       |       |       | 1,2 |   |       |     |
|  | d/d           |       | 0,6  |       |       |       | 1,2 |   |       |     |
| 12 N/mm <sup>2</sup>   | w/w           | w/d   | 0,75 |       |       |       | 1,5 |   |       |     |
|  | d/d           |       | 0,9  |       |       |       | 2,0 |   |       |     |
| 16 N/mm <sup>2</sup>   | w/w           | w/d   | 0,9  |       |       |       | 2,0 |   |       |     |
|  | d/d           |       | 1,2  |       |       |       | 2,5 |   |       |     |
| 20 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2  |       |       |       | 3,0 |   |       |     |
|  | d/d           |       | 1,5  |       |       |       | 3,0 |   |       |     |

Factor for temperature range 72/120°C: 0,83

**Table C66.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8    | M6  | M8    | -     | M8    | M10 | - | M12   | M16 |
|---|---------------|-------|-----|-------|-------|-------|-----|---|-------|-----|
| Internal threaded anchor UVT Top E  | -             | -     | -   | -     | M6    | M8    | -   | - | M10   | M12 |
|   |               |       |     |       | 11x85 | 11x85 |     |   | 15x85 | -   |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |     | 16x85 |       | 20x85 |     |   |       |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |     |       |       |       |     |   |       |     |
| compressive strength $f_b$  | use condition |       |     |       |       |       |     |   |       |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2 |       |       |       | 1,2 |   |       |     |
|   | d/d           |       |     |       |       |       |     |   |       |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 1,5 |       |       |       | 1,5 |   |       |     |
|   | d/d           |       |     |       |       |       |     |   |       |     |
| 12 N/mm <sup>2</sup>  | w/w           | w/d   | 2,0 |       |       |       | 2,5 |   |       |     |
|   | d/d           |       |     |       |       |       |     |   |       |     |
| 16 N/mm <sup>2</sup>  | w/w           | w/d   | 3,0 |       |       |       | 3,0 |   |       |     |
|   | d/d           |       |     |       |       |       |     |   |       |     |
| 20 N/mm <sup>2</sup>  | w/w           | w/d   | 4,0 |       |       |       | 4,0 |   |       |     |
|   | d/d           |       |     |       |       |       |     |   |       |     |

Factor for job site tests and displacements see annex C110

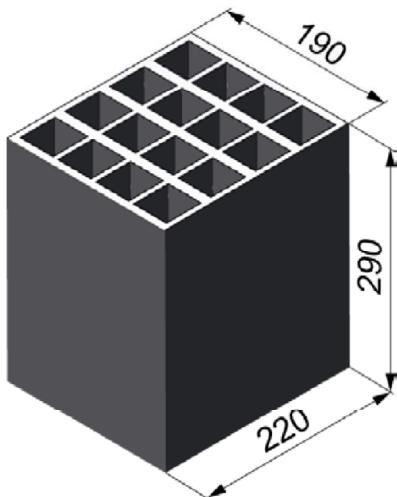
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**Performance**

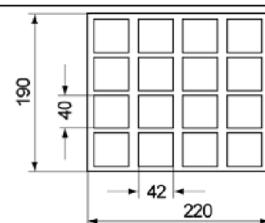
Vertical perforated brick HLz, Characteristic resistance under tension and shear loading

**Annex C 66**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Perceram         |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 220                   | 190     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,7$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 6 / 8 / 10            |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



Dimension see also  
Annex B 18

**Table C67.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |        |       |        |     |    |     |     |     |     |     |     |
|------------------------------------|-------|-------|-------|--------|-------|--------|-----|----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10 | M8 | M10 | -   | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -   | -  | -   | M10 | M12 | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 |     |    |     |     |     |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|  |   |     |
|--|---|-----|
| Max. installation torque               | $T_{inst}$ [Nm]                             | 2   |
| <b>General installation parameters</b> |   |     |
| Edge distance                          | $C_{min}$                                   | 110 |
| Spacing                                | $S_{min \parallel} = S_{cr \parallel}$ [mm] | 220 |
|  | $S_{min \perp} = S_{cr \perp}$              | 290 |

#### Drilling method

Hammer drilling with hard metal hammer drill

**Table C67.2:** Group factors

|                                    |                          |                          |                      |                      |       |        |     |    |     |     |     |     |     |     |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|--------|-----|----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8     | M10 | M8 | M10 | -   | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8     | -   | -  | -   | M10 | M12 | -   | -   | -   |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    | 16x85                | 16x130               | 20x85 | 20x130 |     |    |     |     |     |     |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,v \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,v \perp}$ | [-]   | 2      |     |    |     |     |     |     |     |     |

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#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

**Annex C 67**

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C68.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod                     | M10        | M12 | M16        |
|--------------------------------|------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200 |     | 22x130/200 |

**Anchor rod with perforated sleeve UVT Top H**

|                          |            |      |   |
|--------------------------|------------|------|---|
| Max. installation torque | $T_{inst}$ | [Nm] | 2 |
|--------------------------|------------|------|---|

**General installation parameters**

|               |  |      |     |
|---------------|--|------|-----|
| Edge distance | $c_{min}$                              | [mm] | 110 |
| Spacing       | $s_{min \parallel} = s_{cr \parallel}$ |      | 220 |
|               | $s_{min \perp} = s_{cr \perp}$         |      | 290 |

**Drilling method**

Hammer drilling with hard metal hammer drill

**Table C68.2:** Group factors

| Anchor rod                     | M10  | M12 | M16        |
|--------------------------------|--|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200   |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [-] | 2          |

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C69.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6  | M8             | - | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|--|---------------|-------|-----|----------------|---|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |     | M6 M8<br>11x85 |   | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|  |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |     | 16x85          |   | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$   | use condition |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,3 | 1,2            |   | 1,2    |     | 1,5   |     | 1,2              |     | 1,5 |     |     |
|  | d/d           |       | 0,4 | 1,5            |   | 1,5    |     | 1,5   |     | 1,5              |     | 1,5 |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 0,5 | 1,5            |   | 1,5    |     | 2,0   |     | 1,5              |     | 2,0 |     |     |
|  | d/d           |       | 0,5 | 2,0            |   | 2,0    |     | 2,5   |     | 2,0              |     | 2,5 |     |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   | 0,6 | 2,0            |   | 2,0    |     | 2,5   |     | 2,0              |     | 2,5 |     |     |
|  | d/d           |       | 0,6 | 2,5            |   | 2,5    |     | 3,0   |     | 2,5              |     | 3,0 |     |     |

**Table C69.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |
|--|---------------|-----|------------|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |
| compressive strength $f_b$   | use condition |     |            |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 1,5        |
|  | d/d           |     | 1,5        |
| 8 N/mm <sup>2</sup>  | w/w           | w/d | 2,0        |
|  | d/d           |     | 2,5        |
| 10 N/mm <sup>2</sup>   | w/w           | w/d | 2,5        |
|  | d/d           |     | 3,0        |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C70.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod  | M6            | M8    | M6  | M8             | -   | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|---|---------------|-------|-----|----------------|-----|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |     | M6 M8<br>11x85 |     | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|   |               |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |     | 16x85          |     | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$  | use condition |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 1,5 | 1,5            | 1,5 | 2,5    | 1,5 | 2,0   |     |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 2,0 | 2,0            | 2,0 | 3,5    | 2,0 | 3,0   |     |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   | 2,5 | 3,0            | 3,0 | 4,5    | 3,0 | 3,5   |     |                  |     |     |     |     |
|   | d/d           |       |     |                |     |        |     |       |     |                  |     |     |     |     |

**Table C70.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod  | M10           | M12 | M16        |
|---|---------------|-----|------------|
| Perforated sleeve UVT Top H   | 18x130/200    |     | 22x130/200 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |            |
|   |               |     |            |
| compressive strength $f_b$  | use condition |     |            |
| 6 N/mm <sup>2</sup>   | w/w           | w/d | 2,0        |
|   | d/d           |     |            |
| 8 N/mm <sup>2</sup>   | w/w           | w/d | 3,0        |
|   | d/d           |     |            |
| 10 N/mm <sup>2</sup>  | w/w           | w/d | 3,5        |
|   | d/d           |     |            |

Factor for job site tests and displacements see annex C110

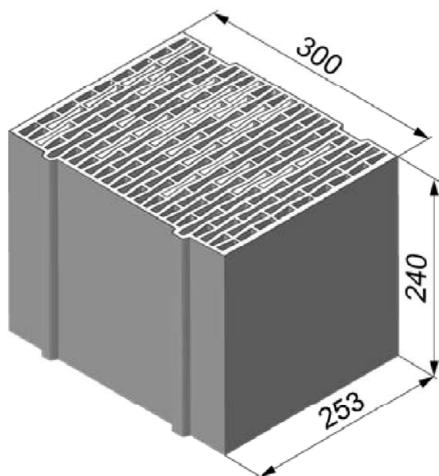
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**Performance**

Vertical perforated brick HLz, Characteristic resistance under shear loading

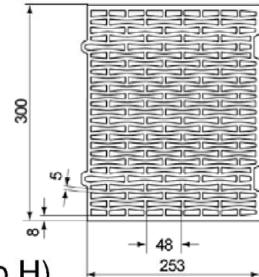
**Annex C 70**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                        |         |
|--|------------------------|---------|
| Producer   | e.g. Ziegelwerk Brenna |         |
| Nominal dimensions [mm]                              | length L               | width W |
|  | 253                    | 300     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 0,8$             |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 2 / 4 / 6              |         |
| Standard   | EN 771-1:2011+A1:2015  |         |

Dimension see also Annex B 18



**Table C71.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |       |       |       |        |        |        |       |       |       |        |        |
|------------------------------------|-------|-------|-------|-------|-------|-------|--------|--------|--------|-------|-------|-------|--------|--------|
| Anchor rod                         | M6    | M8    | M6    | M8    | -     | M8    | M10    | M8     | M10    | -     | M12   | M16   | M12    | M16    |
| Internal threaded anchor UVT Top E | -     | -     | -     | -     | M6    | M8    | -      | -      | -      | M10   | M12   | -     | -      | -      |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 12x85 | 12x85 | 16x85 | 16x85 | 16x130 | 16x130 | 16x130 | 20x85 | 20x85 | 20x85 | 20x130 | 20x130 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |   |     |
|---------------|---|-----|
| Edge distance | $C_{min}$                                   | 60  |
| Spacing       | $S_{min \parallel} = S_{cr \parallel}$ [mm] | 255 |
|               | $S_{min \perp} = S_{cr \perp}$              | 240 |

#### Drilling method

Hammer drilling with hard metal hammer drill

### Table C71.2: Group factors

|                                    |                          |                          |                      |                      |       |       |        |        |        |       |       |       |        |        |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|-------|--------|--------|--------|-------|-------|-------|--------|--------|
| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8    | M10    | M8     | M10    | -     | M12   | M16   | M12    | M16    |
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6    | M8    | -      | -      | -      | M10   | M12   | -     | -      | -      |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    | 12x85                | 12x85                | 16x85 | 16x85 | 16x130 | 16x130 | 16x130 | 20x85 | 20x85 | 20x85 | 20x130 | 20x130 |
| Group factors                      | $\alpha_{g,N \parallel}$ | $\alpha_{g,v \parallel}$ | $\alpha_{g,N \perp}$ | $\alpha_{g,v \perp}$ | [ - ] | 2     |        |        |        |       |       |       |        |        |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 71

**Vertical perforated brick HLz, EN 771-1:2011+A1:2015**

**Table C72.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10  | M12  | M16        |
|--|--|------|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200   |      | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |  |      |            |
| Max. installation<br>torque                        | $T_{inst}$<br>[Nm]   |      | 2          |
| <b>General installation parameters</b>             |  |      |            |
| Edge distance                                      | $c_{min}$  | 60   |            |
| Spacing  | $s_{min \parallel} = s_{cr \parallel}$<br>$s_{min \perp} = s_{cr \perp}$ | [mm] | 255<br>240 |
| <b>Drilling method</b>                             |  |      |            |
| Hammer drilling with hard metal hammer drill       |  |      |            |

**Table C72.2:** Group factors

| Anchor rod                     | M10  | M12     | M16        |
|--------------------------------|--|---------|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200   |         | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ $-$ ] | 2          |

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C73.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6              | M8             | - | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|--|---------------|-------|-----------------|----------------|---|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |                 | M6 M8<br>11x85 |   | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|  |               |       |                 |                |   |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |                 | 16x85          |   | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |                 |                |   |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$   | use condition |       |                 |                |   |        |     |       |     |                  |     |     |     |     |
| 2 N/mm <sup>2</sup>  | w/w           | w/d   | - <sup>1)</sup> | 0,5            |   | 0,5    |     | 0,4   |     | 0,5              |     | 0,4 |     |     |
|  | d/d           |       | 0,3             | 0,5            |   | 0,5    |     | 0,5   |     | 0,5              |     | 0,5 |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 0,5             | 0,9            |   | 0,9    |     | 0,9   |     | 0,9              |     | 0,9 |     |     |
|  | d/d           |       | 0,6             | 0,9            |   | 0,9    |     | 0,9   |     | 0,9              |     | 0,9 |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,75            | 1,5            |   | 1,5    |     | 1,2   |     | 1,5              |     | 1,2 |     |     |
|  | d/d           |       | 0,9             | 1,5            |   | 1,5    |     | 1,5   |     | 1,5              |     | 1,5 |     |     |

<sup>1)</sup> No performance assessed

**Table C73.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |     |  |  |  |  |  |  |  |  |  |  |
|--|---------------|-----|------------|-----|--|--|--|--|--|--|--|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |     |  |  |  |  |  |  |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |     |  |  |  |  |  |  |  |  |  |  |
| compressive strength $f_b$   | use condition |     |            |     |  |  |  |  |  |  |  |  |  |  |
| 2 N/mm <sup>2</sup>  | w/w           | w/d |            | 0,4 |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |     |            | 0,5 |  |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            | 0,9 |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |     |            | 0,9 |  |  |  |  |  |  |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d |            | 1,2 |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |     |            | 1,5 |  |  |  |  |  |  |  |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Characteristic resistance under tension loading

**Annex C 73**

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C74.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10 | -     | M12 | M16    | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-----|-------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6    | M8 |        |    |     | M10   | M12 |        |     |     |
|                                    |       |       |    |    | 11x85 |    | -      | -  |     | 15x85 |     | -      |     | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    |     | 20x85 |     | 20x130 |     |     |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |     |  |  |  |  |  |  |  |     |  |  |  |
|----------------------------|---------------|-----|-----|--|--|--|--|--|--|--|-----|--|--|--|
| 2 N/mm <sup>2</sup>        | w/w           | w/d | 0,5 |  |  |  |  |  |  |  | 0,6 |  |  |  |
|                            | d/d           |     |     |  |  |  |  |  |  |  |     |  |  |  |
| 4 N/mm <sup>2</sup>        | w/w           | w/d | 0,9 |  |  |  |  |  |  |  | 1,2 |  |  |  |
|                            | d/d           |     |     |  |  |  |  |  |  |  |     |  |  |  |
| 6 N/mm <sup>2</sup>        | w/w           | w/d | 1,5 |  |  |  |  |  |  |  | 1,5 |  |  |  |
|                            | d/d           |     |     |  |  |  |  |  |  |  |     |  |  |  |

**Table C74.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod   | M10           |     | M12 |  | M16        |  |  |  |  |  |     |  |  |  |
|--|---------------|-----|-----|--|------------|--|--|--|--|--|-----|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     |     |  | 22x130/200 |  |  |  |  |  |     |  |  |  |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |     |     |  |            |  |  |  |  |  |     |  |  |  |
|  |               |     |     |  |            |  |  |  |  |  |     |  |  |  |
| compressive strength $f_b$   | use condition |     |     |  |            |  |  |  |  |  |     |  |  |  |
| 2 N/mm <sup>2</sup>  | w/w           | w/d | 0,5 |  |            |  |  |  |  |  | 0,6 |  |  |  |
|  | d/d           |     |     |  |            |  |  |  |  |  |     |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d | 0,9 |  |            |  |  |  |  |  | 1,2 |  |  |  |
|  | d/d           |     |     |  |            |  |  |  |  |  |     |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 1,5 |  |            |  |  |  |  |  | 1,5 |  |  |  |
|  | d/d           |     |     |  |            |  |  |  |  |  |     |  |  |  |

Factor for job site tests and displacements see annex C110

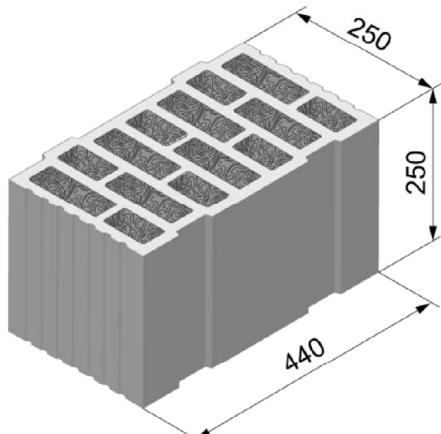
BTI Universal Component Compound UVT Top for masonry

**Performance**

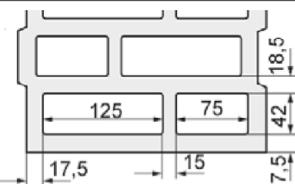
Vertical perforated brick HLz, Characteristic resistance under shear loading

**Annex C 74**

**Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,  
EN 771-1:2011+A1:2015**



| Vertical perforated brick HLz, Porotherm W 44,<br>filled with mineral wool, EN 771-1:2011+A1:2015 |                       |            |          |
|---|-----------------------|------------|----------|
| Producer  | -                     |            |          |
| Nominal dimensions [mm]   | length L              | width W    | height H |
|   | 250                   | 440        | 250      |
| Density $\rho$ [kg/dm <sup>3</sup> ]  |                       | 0,7        |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]   |                       | 6 / 8 / 10 |          |
| Standard  | EN 771-1:2011+A1:2015 |            |          |



Dimension see also  
Annex B 18

**Table C75.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |        |       |        |        |    |     |     |     |     |     |     |     |     |
|------------------------------------|-------|-------|-------|--------|-------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |

**Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H**

|                          |                 |   |   |   |   |   |
|--------------------------|-----------------|---|---|---|---|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 | 5 | 2 | 5 | 6 |
|--------------------------|-----------------|---|---|---|---|---|

**General installation parameters**

|               |                     |      |     |
|---------------|---------------------|------|-----|
| Edge distance | $c_{min}$           | [mm] | 60  |
|               | $s_{min \parallel}$ |      | 80  |
| Spacing       | $s_{cr \parallel}$  |      | 250 |
|               | $s_{min \perp}$     |      | 80  |
|               | $s_{cr \perp}$      |      | 250 |

**Drilling method**

Rotary drilling with carbide drill

**Table C75.2:** Group factors

|                                    |                          |       |       |        |       |        |        |    |     |     |     |     |     |     |     |     |
|------------------------------------|--------------------------|-------|-------|--------|-------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6                       | M8    | M6    | M8     | -     | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -                        | -     | -     | -      | M6    | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   |     |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |
| Group factors                      | $\alpha_{q,N \parallel}$ | [-]   | 1,3   |        |       |        |        |    |     |     |     |     |     |     |     |     |
|                                    | $\alpha_{q,V \parallel}$ |       | 1,3   |        |       |        |        |    |     |     |     |     |     |     |     |     |
|                                    | $\alpha_{q,N \perp}$     |       | 0,8   |        |       |        |        |    |     |     |     |     |     |     |     |     |
|                                    | $\alpha_{q,V \perp}$     |       | 1,3   |        |       |        |        |    |     |     |     |     |     |     |     |     |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool;  
dimensions, installation parameters

**Annex C 75**

**Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,  
EN 771-1:2011+A1:2015**

**Table C76.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                     | M12 | M16        |
|--|-------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200              |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                         |     |            |
| Max. installation<br>torque                        | T <sub>inst</sub> [Nm]  | 5   | 6          |
| <b>General installation parameters</b>             |                         |     |            |
| Edge distance                                      | C <sub>min</sub>        | 60  |            |
|  | S <sub>min</sub> II     | 80  |            |
| Spacing  | S <sub>cr</sub> II [mm] | 250 |            |
|  | S <sub>min</sub> ⊥      | 80  |            |
|  | S <sub>cr</sub> ⊥       | 250 |            |
| <b>Drilling method</b>                             |                         |     |            |
| Rotary drilling with carbide drill                 |                         |     |            |

**Table C76.2:** Group factors

| Anchor rod                     | M10                 | M12 | M16        |
|--------------------------------|---------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200          |     | 22x130/200 |
| Group factors                  | α <sub>g,N</sub> II | 1,3 |            |
|                                | α <sub>g,v</sub> II | 1,3 |            |
|                                | α <sub>g,N</sub> ⊥  | 0,8 |            |
|                                | α <sub>g,v</sub> ⊥  | 1,3 |            |

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool;  
dimensions, installation parameters

**Annex C 76**

**Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,  
EN 771-1:2011+A1:2015**

**Table C77.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod  |               | M6    | M8    | M6  | M8 | -     | M8 | M10 | M8    | M10    | -   | M12   | M16 | M12    | M16 | M12    | M16 |
|---|---------------|-------|-------|-----|----|-------|----|-----|-------|--------|-----|-------|-----|--------|-----|--------|-----|
| Internal threaded anchor UVT Top E  |               | -     | -     |     |    | M6    | M8 |     |       |        | M10 | M12   |     | -      | -   | -      | -   |
| Perforated sleeve UVT Top H   |               | 12x50 | 12x85 |     |    | 11x85 |    |     | 16x85 | 16x130 |     | 20x85 |     | 20x130 |     | 20x200 |     |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |       |       |     |    |       |    |     |       |        |     |       |     |        |     |        |     |
| compressive strength $f_b$  | use condition |       |       |     |    |       |    |     |       |        |     |       |     |        |     |        |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 0,75  | 1,5 |    | 1,2   |    |     |       |        | 1,5 |       |     |        |     |        | 2,5 |
|   | d/d           |       | 0,9   | 1,5 |    | 1,2   |    |     |       |        | 1,5 |       |     |        |     |        | 2,5 |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 0,9   | 1,5 |    | 1,2   |    |     |       |        | 1,5 |       |     |        |     |        | 2,5 |
|   | d/d           |       | 0,9   | 2,0 |    | 1,5   |    |     |       |        | 2,0 |       |     |        |     |        | 3,0 |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   | 0,9   | 2,0 |    | 1,5   |    |     |       |        | 2,0 |       |     |        |     |        | 3,0 |
|   | d/d           |       | 1,2   | 2,0 |    | 1,5   |    |     |       |        | 2,0 |       |     |        |     |        | 3,5 |

**Table C77.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod  |               | M10        | M12 | M16        |  |  |
|---|---------------|------------|-----|------------|--|--|
| Perforated sleeve UVT Top H   |               | 18x130/200 |     | 22x130/200 |  |  |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |            |     |            |  |  |
|   |               |            |     |            |  |  |
| compressive strength $f_b$  | use condition |            |     |            |  |  |
| 6 N/mm <sup>2</sup>   | w/w           | w/d        |     | 1,5        |  |  |
|   | d/d           |            |     | 1,5        |  |  |
| 8 N/mm <sup>2</sup>   | w/w           | w/d        |     | 1,5        |  |  |
|   | d/d           |            |     | 2,0        |  |  |
| 10 N/mm <sup>2</sup>  | w/w           | w/d        |     | 2,0        |  |  |
|   | d/d           |            |     | 2,0        |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,  
Characteristic resistance under tension loading

**Annex C 77**

**Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool,  
EN 771-1:2011+A1:2015**

**Table C78.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod   |               | M6    | M8    | M6 | M8    | -   | M8     | M10 | M8    | M10 | -      | M12 | M16    | M12 | M16 | M12 | M16 |
|--|---------------|-------|-------|----|-------|-----|--------|-----|-------|-----|--------|-----|--------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   |               | -     | -     |    | M6    | M8  |        |     |       |     | M10    | M12 |        | -   | -   | -   | -   |
| Perforated sleeve UVT Top H  |               | 12x50 | 12x85 |    | 16x85 |     | 16x130 |     | 20x85 |     | 20x130 |     | 20x200 |     |     |     |     |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |       |       |    |       |     |        |     |       |     |        |     |        |     |     |     |     |
| compressive strength $f_b$   | use condition |       |       |    |       |     |        |     |       |     |        |     |        |     |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   |       |    |       | 0,9 |        |     |       |     | 1,2    |     | 0,9    |     | 1,2 |     | 1,2 |
|  | d/d           |       |       |    |       |     |        |     |       |     |        |     |        |     |     |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   |       |    |       | 0,9 |        |     |       |     | 1,5    |     | 0,9    |     | 1,5 |     | 1,2 |
|  | d/d           |       |       |    |       |     |        |     |       |     |        |     |        |     |     |     |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   |       |    |       | 1,2 |        |     |       |     | 1,5    |     | 1,2    |     | 1,5 |     | 1,5 |
|  | d/d           |       |       |    |       |     |        |     |       |     |        |     |        |     |     |     |     |

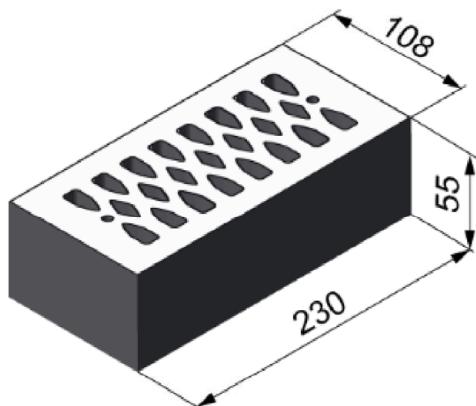
**Table C78.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod   |               | M10        | M12 | M16        |
|--|---------------|------------|-----|------------|
| Perforated sleeve UVT Top H  |               | 18x130/200 |     | 22x130/200 |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |            |     |            |
| compressive strength $f_b$   | use condition |            |     |            |
| 6 N/mm <sup>2</sup>  | w/w           | w/d        |     | 1,2        |
|  | d/d           |            |     |            |
| 8 N/mm <sup>2</sup>  | w/w           | w/d        |     | 1,5        |
|  | d/d           |            |     |            |
| 10 N/mm <sup>2</sup>   | w/w           | w/d        |     | 1,5        |
|  | d/d           |            |     |            |

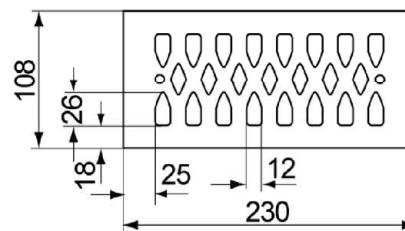
Factor for job site tests and displacements see annex C110

|  |            |
|--|------------|
| BTI Universal Component Compound UVT Top for masonry   | Annex C 78 |
| Performance<br>Vertical perforated brick HLz, Porotherm W 44, filled with mineral wool;<br>Characteristic resistance under shear loading |            |

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015



| Vertical perforated brick HLz, EN 771-1:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Wienerberger.    |         |
| Nominal dimensions [mm]                              | length L              | width W |
|  | 230                   | 108     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                 | $\geq 1,4$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]      | 2 / 4 / 6 / 8         |         |
| Standard   | EN 771-1:2011+A1:2015 |         |



Dimension see also Annex B 18

Table C79.1: Installation parameters

| Anchor rod                         | M6    | M8    | M6    | M8    | -     | M8    | M10   | -       | M12   | M16   |
|------------------------------------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| Internal threaded anchor UVT Top E | -     | -     | -     | -     | M6 M8 | -     | -     | M10 M12 | -     | -     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 12x85 | 16x85 | 16x85 | 16x85 | 16x85 | 20x85   | 20x85 | 20x85 |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |            |      |   |
|--------------------------|------------|------|---|
| Max. installation torque | $T_{inst}$ | [Nm] | 2 |
|--------------------------|------------|------|---|

#### General installation parameters

|               |                     |      |     |
|---------------|---------------------|------|-----|
| Edge distance | $c_{min}$           | [mm] | 60  |
| Spacing       | $s_{min \parallel}$ |      | 80  |
|               | $s_{cr \parallel}$  |      | 230 |
|               | $s_{min \perp}$     |      | 60  |
|               | $s_{cr \perp}$      |      | 60  |

#### Drilling method

Hammer drilling with hard metal hammer drill

Table C79.2: Group factors

| Anchor rod                         | M6                       | M8                       | M6                   | M8                   | -     | M8    | M10   | -       | M12   | M16   |
|------------------------------------|--------------------------|--------------------------|----------------------|----------------------|-------|-------|-------|---------|-------|-------|
| Internal threaded anchor UVT Top E | -                        | -                        | -                    | -                    | M6 M8 | -     | -     | M10 M12 | -     | -     |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85                    | 12x85                | 16x85                | 16x85 | 16x85 | 16x85 | 20x85   | 20x85 | 20x85 |
| Group factors                      | $\alpha_{a,N} \parallel$ | $\alpha_{a,V} \parallel$ | $\alpha_{a,N} \perp$ | $\alpha_{a,V} \perp$ | [-]   | 2     |       |         |       |       |
|                                    |                          |                          |                      |                      |       | 2     |       |         |       |       |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Vertical perforated brick HLz, dimensions, installation parameters

Annex C 79

### Vertical perforated brick HLz, EN 771-1:2011+A1:2015

**Table C80.1:** Characteristic resistance under tension loading <sup>1)</sup>

| Anchor rod   | M6            | M8    | M6    | M8  | -     | M8    | M10 | -   | M12   | M16 |  |  |  |  |  |  |  |  |  |  |  |
|--|---------------|-------|-------|-----|-------|-------|-----|-----|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E   | -             | -     | -     | -   | M6    | M8    | -   | -   | M10   | M12 |  |  |  |  |  |  |  |  |  |  |  |
|  |               |       |       |     | 11x85 | 15x85 |     |     | 15x85 | -   |  |  |  |  |  |  |  |  |  |  |  |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 | 16x85 |     |       | 20x85 |     |     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |       |     |       |       |     |     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| compressive strength $f_b$   | use condition |       |       |     |       |       |     |     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 2 N/mm <sup>2</sup>  | w/w           | w/d   | 0,3   | 0,9 | 0,75  |       |     | 0,5 |       |     |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |       | 0,3   | 0,9 | 0,9   |       |     | 0,6 |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 0,6   | 1,5 | 1,5   |       |     | 0,9 |       |     |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |       | 0,75  | 2,0 | 1,5   |       |     | 1,2 |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 0,9   | 2,5 | 2,5   |       |     | 1,5 |       |     |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |       | 0,9   | 3,0 | 2,5   |       |     | 1,5 |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 1,2   | 3,5 | 3,0   |       |     | 2,0 |       |     |  |  |  |  |  |  |  |  |  |  |  |
|  | d/d           |       | 1,5   | 4,0 | 3,5   |       |     | 2,5 |       |     |  |  |  |  |  |  |  |  |  |  |  |

<sup>1)</sup> If the fixing is in a solid area, for use condition w/w, the characteristic value shall be reduced with the factor 0,64.

Factor for temperature range 72/120°C: 0,83

**Table C80.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8    | M6    | M8 | -     | M8    | M10 | - | M12   | M16 |  |  |  |  |  |  |  |  |  |  |  |
|---|---------------|-------|-------|----|-------|-------|-----|---|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| Internal threaded anchor UVT Top E  | -             | -     | -     | -  | M6    | M8    | -   | - | M10   | M12 |  |  |  |  |  |  |  |  |  |  |  |
|   |               |       |       |    | 11x85 | 15x85 |     |   | 15x85 | -   |  |  |  |  |  |  |  |  |  |  |  |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 | 16x85 |    |       | 20x85 |     |   |       |     |  |  |  |  |  |  |  |  |  |  |  |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |       |    |       |       |     |   |       |     |  |  |  |  |  |  |  |  |  |  |  |
| compressive strength $f_b$  | use condition |       |       |    |       |       |     |   |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 2 N/mm <sup>2</sup>   | w/w           | w/d   | 0,6   |    |       |       |     |   | 0,4   |     |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           |       | 0,6   |    |       |       |     |   | 0,4   |     |  |  |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   | 1,2   |    |       |       |     |   | 0,9   |     |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           |       | 1,2   |    |       |       |     |   | 0,9   |     |  |  |  |  |  |  |  |  |  |  |  |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   | 1,5   |    |       |       |     |   | 1,2   |     |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           |       | 1,5   |    |       |       |     |   | 1,2   |     |  |  |  |  |  |  |  |  |  |  |  |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   | 2,5   |    |       |       |     |   | 1,5   |     |  |  |  |  |  |  |  |  |  |  |  |
|   | d/d           |       | 2,5   |    |       |       |     |   | 1,5   |     |  |  |  |  |  |  |  |  |  |  |  |

Factor for job site tests and displacements see annex C110

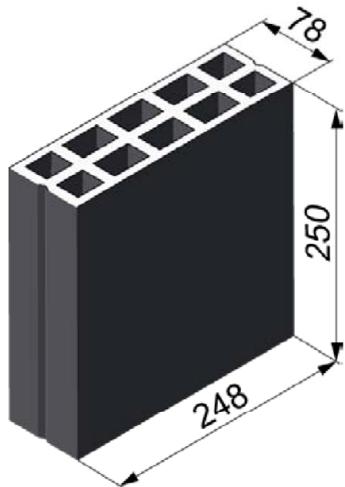
BTI Universal Component Compound UVT Top for masonry

**Performance**

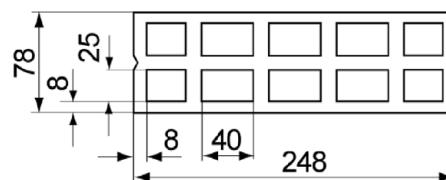
Vertical perforated brick HLz, Characteristic resistance under tension and shear loading

**Annex C 80**

### Horizontal perforated brick LLz, EN 771-1:2011+A1:2015



| Horizontal perforated brick LLz, EN 771-1:2011+A1:2015 |                       |         |          |
|--|-----------------------|---------|----------|
| Producer   | -                     |         |          |
| Nominal dimensions [mm]                                | length L              | width W | height H |
|  | 250                   | 78      | 248      |
| Density $\rho$ [kg/dm <sup>3</sup> ]                   | $\geq 0,7$            |         |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]        | 2 / 4 / 6             |         |          |
| Standard   | EN 771-1:2011+A1:2015 |         |          |



Dimension see also Annex B 19

Table C81.1: Installation parameters

|  |                                |     |
|--|--------------------------------|-----|
| Anchor rod   | M6                             | M8  |
| Perforated sleeve<br>UVT Top H                     | 12x50                          |     |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                                |     |
| Max. installation torque                           | $T_{inst}$ [Nm]                | 2   |
| <b>General installation parameters</b>             |                                |     |
| Edge distance                                      | $C_{min}$                      | 100 |
| Spacing  | $S_{min \parallel}$            | 75  |
|  | $S_{cr \parallel}$             | 250 |
|  | $S_{min \perp} = S_{cr \perp}$ | 250 |
| <b>Drilling method</b>                             |                                |     |
| Hammer drilling with hard metal hammer drill       |                                |     |

Table C81.2: Group factors

|   |       |     |
|---|-------|-----|
| Anchor rod  | M6    | M8  |
| Perforated sleeve<br>UVT Top H                              | 12x50 |     |
| <b>Group factors</b>  |       |     |
| $\alpha_{g,N \parallel}$                                    |       | 1,6 |
| $\alpha_{g,V \parallel}$                                    |       | 1,1 |
| $\alpha_{g,N \perp}$  |       | 2,0 |
| $\alpha_{g,V \perp}$  |       |     |
| <b>BTI Universal Component Compound UVT Top for masonry</b> |       |     |

**Performance**  
Horizontal perforated brick LLz, dimensions, installation parameters

**Annex C 81**

## Horizontal perforated brick LLz, EN 771-1:2011+A1:2015

**Table C82.1:** Characteristic resistance under tension loading

| Anchor rod   |               | M6    | M8 |
|--|---------------|-------|----|
| <b>Perforated sleeve</b><br><b>UVT Top H</b>   |               | 12x50 |    |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |    |
| compressive strength $f_b$   | use condition |       |    |
| <b>2 N/mm<sup>2</sup></b>  | w/w           | 0,5   |    |
|  | d/d           | 0,6   |    |
| <b>4 N/mm<sup>2</sup></b>  | w/w           | 0,9   |    |
|  | d/d           | 1,2   |    |
| <b>6 N/mm<sup>2</sup></b>  | w/w           | 1,5   |    |
|  | d/d           | 1,5   |    |

Factor for temperature range 72/120°C: 0,83

**Table C82.2:** Characteristic resistance under shear loading

| Anchor rod  |               | M6    | M8 |
|---|---------------|-------|----|
| <b>Perforated sleeve</b><br><b>UVT Top H</b>  |               | 12x50 |    |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |    |
| compressive strength $f_b$  | use condition |       |    |
| <b>2 N/mm<sup>2</sup></b>   | w/w           | 0,5   |    |
|   | d/d           |       |    |
| <b>4 N/mm<sup>2</sup></b>   | w/w           | 0,9   |    |
|   | d/d           |       |    |
| <b>6 N/mm<sup>2</sup></b>   | w/w           | 1,5   |    |
|   | d/d           |       |    |

Factor for job site tests and displacements see annex C110

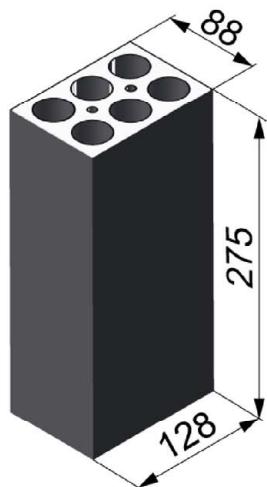
BTI Universal Component Compound UVT Top for masonry

**Performance**

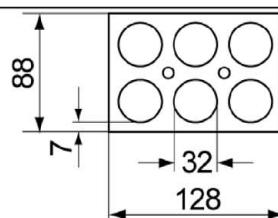
Horizontal perforated brick LLz, Characteristic resistance under tension and shear loading

**Annex C 82**

### Horizontal perforated brick LLz, EN 771-1:2011+A1:2015



| Horizontal perforated brick LLz, EN 771-1:2011+A1:2015 |                             |         |
|--|-----------------------------|---------|
| Producer   | e.g. Cermanica Farreny S.A. |         |
| Nominal dimensions [mm]                                | length L                    | width W |
|  | 275                         | 88      |
| Density $\rho$ [kg/dm <sup>3</sup> ]                   | $\geq 0,8$                  |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]        | 2                           |         |
| Standard   | EN 771-1:2011+A1:2015       |         |



Dimension see also  
Annex B 19

Table C83.1: Installation parameters

|  |                         |     |
|--|-------------------------|-----|
| Anchor rod   | M6                      | M8  |
| Perforated sleeve<br>UVT Top H                     | 12x50                   |     |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                         |     |
| Max. installation torque                           | $T_{inst}$ [Nm]         | 2   |
| <b>General installation parameters</b>             |                         |     |
| Edge distance                                      | $C_{min}$               | 60  |
| Spacing  | $S_{min \parallel}$     | 75  |
|  | $S_{cr \parallel}$ [mm] | 275 |
|  | $S_{min \perp}$         | 75  |
|  | $S_{cr \perp}$          | 130 |
|  |                         |     |
| <b>Drilling method</b>                             |                         |     |
| Hammer drilling with hard metal hammer drill       |                         |     |

Table C83.2: Group factors

|  |  |                   |
|--|--|-------------------|
| Anchor rod   | M6   | M8                |
| Perforated sleeve<br>UVT Top H                       | 12x50  |                   |
| <b>Group factors</b>                                 |  |                   |
| $\alpha_{g,N \parallel}$                             |  | 1,3               |
| $\alpha_{g,v \parallel}$                             |  | 1,5               |
| $\alpha_{g,N \perp}$                                 |  | 1,3               |
| $\alpha_{g,v \perp}$                                 |  | 1,5               |
| BTI Universal Component Compound UVT Top for masonry |  |                   |
| <b>Performance</b>                                   | Horizontal perforated brick LLz, dimensions, installation parameters |                   |
|  |  | <b>Annex C 83</b> |

### Horizontal perforated brick LLz, EN 771-1:2011+A1:2015

**Table C84.1:** Characteristic resistance under tension loading

| Anchor rod   | M6                | M8    |
|--|-------------------|-------|
| Perforated sleeve<br>UVT Top H   |                   | 12x50 |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |                   |       |
| compressive strength $f_b$   | use condition     |       |
| 2 N/mm <sup>2</sup>  | w/w    w/d<br>d/d | 1,5   |

Factor for temperature range 72/120°C: 0,83

**Table C84.2:** Characteristic resistance under shear loading

| Anchor rod  | M6                | M8    |
|---|-------------------|-------|
| Perforated sleeve<br>UVT Top H  |                   | 12x50 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |                   |       |
| compressive strength $f_b$  | use condition     |       |
| 2 N/mm <sup>2</sup>   | w/w    w/d<br>d/d | 1,2   |

Factor for job site tests and displacements see annex C110

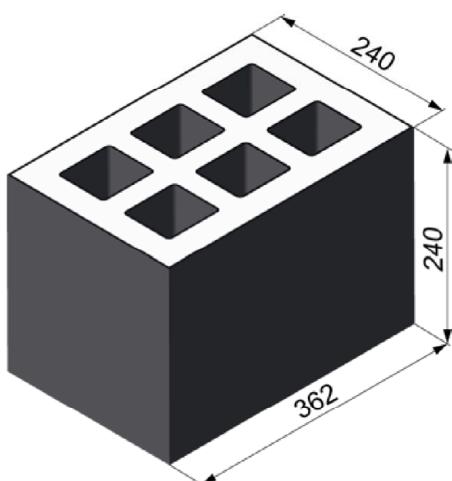
BTI Universal Component Compound UVT Top for masonry

**Performance**

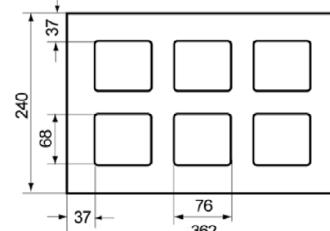
Horizontal perforated brick LLz, Characteristic resistance under tension and shear loading

**Annex C 84**

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015



| Light-weight concrete hollow block Hbl,<br>EN 771-3:2011+A1:2015 |                       |          |
|--|-----------------------|----------|
| Producer   | -                     |          |
| Nominal dimensions [mm]  | Länge L               | Breite B |
|  | 362                   | 240      |
| Höhe H   | 240                   |          |
| Density $\rho$ [kg/dm <sup>3</sup> ]                             | $\geq 1,0$            |          |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                  | 2 / 4                 |          |
| Standard   | EN 771-3:2011+A1:2015 |          |



Dimension see also  
Annex B 19

**Table C85.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |       |        |       |        |        |    |     |     |     |     |     |     |     |     |
|------------------------------------|-------|-------|-------|--------|-------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6    | M8    | M6    | M8     | -     | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -     | -     | -      | M6    | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|  |   |
|--|---|
| Max. installation torque $T_{inst}$ [Nm] | 2 |
|--|---|

#### General installation parameters

|                                |     |
|--------------------------------|-----|
| Edge distance $c_{min}$        | 60  |
| Spacing $s_{min \parallel}$    | 100 |
| $s_{cr \parallel}$             | 362 |
| $s_{min \perp} = s_{cr \perp}$ | 240 |

#### Drilling method

Hammer drilling with hard metal hammer drill

**Table C85.2:** Group factors

|                                    |                        |                        |                      |                      |             |        |        |    |     |     |     |     |     |     |     |     |
|------------------------------------|------------------------|------------------------|----------------------|----------------------|-------------|--------|--------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Anchor rod                         | M6                     | M8                     | M6                   | M8                   | -           | M8     | M10    | M8 | M10 | -   | M12 | M16 | M12 | M16 | M12 | M16 |
| Internal threaded anchor UVT Top E | -                      | -                      | -                    | -                    | M6          | M8     | -      | -  | -   | M10 | M12 | -   | -   | -   | -   |     |
| Perforated sleeve UVT Top H        | 12x50                  | 12x85                  | 16x85                | 16x130               | 20x85       | 20x130 | 20x200 |    |     |     |     |     |     |     |     |     |
| Group factors                      | $\alpha_{n \parallel}$ | $\alpha_{a \parallel}$ | $\alpha_{q,N \perp}$ | $\alpha_{g,v \perp}$ | [ $\cdot$ ] | 1,2    |        |    |     |     |     |     |     |     |     |     |
|                                    |                        |                        |                      |                      |             | 1,1    |        |    |     |     |     |     |     |     |     |     |
|                                    |                        |                        |                      |                      |             | 2,0    |        |    |     |     |     |     |     |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Light-weight concrete hollow block Hbl, dimensions, installation parameters

#### Annex C 85

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C86.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                            | M12 | M16        |
|--|--------------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200                     |     | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                                |     |            |
| Max. installation torque                           | $T_{inst}$ [Nm]                |     | 2          |
| <b>General installation parameters</b>             |                                |     |            |
| Edge distance                                      | $c_{min}$                      | 60  |            |
| Spacing  | $s_{min \parallel}$ [mm]       | 100 |            |
|  | $s_{cr \parallel}$             | 362 |            |
|  | $s_{min \perp} = s_{cr \perp}$ | 240 |            |
| <b>Drilling method</b>                             |                                |     |            |
| Hammer drilling with hard metal hammer drill       |                                |     |            |

**Table C86.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$ | 1,2 |            |
|                                | $\alpha_{g,v \parallel}$ | 1,1 |            |
|                                | $\alpha_{g,N \perp}$     |     | 2,0        |
|                                | $\alpha_{g,v \perp}$     |     |            |

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C87.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6  | M8 | -     | M8 | M10    | M8 | M10 | -       | M12 | M16    | M12 | M16    | M12 | M16 |
|--|---------------|-------|-----|----|-------|----|--------|----|-----|---------|-----|--------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |     |    | M6 M8 |    |        |    |     | M10 M12 |     |        | -   | -      | -   | -   |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |     |    | 16x85 |    | 16x130 |    |     | 20x85   |     | 20x130 |     | 20x200 |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |     |    |       |    |        |    |     |         |     |        |     |        |     |     |
| compressive strength $f_b$   | use condition |       |     |    |       |    |        |    |     |         |     |        |     |        |     |     |
| 2 N/mm <sup>2</sup>  | w/w           | w/d   | 1,2 |    |       |    |        |    |     | 1,5     |     |        |     |        |     | 2,5 |
|  | d/d           |       | 1,2 |    |       |    |        |    |     | 1,5     |     |        |     |        |     | 2,5 |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 2,0 |    |       |    |        |    |     | 3,0     |     |        |     |        |     | 5,0 |
|  | d/d           |       | 2,5 |    |       |    |        |    |     | 3,0     |     |        |     |        |     | 5,5 |

**Table C87.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           |     | M12        |  | M16 |  |
|--|---------------|-----|------------|--|-----|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |  |     |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |  |     |  |
| compressive strength $f_b$   | use condition |     |            |  |     |  |
| 2 N/mm <sup>2</sup>  | w/w           | w/d |            |  | 1,5 |  |
|  | d/d           |     |            |  | 1,5 |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d |            |  | 3,0 |  |
|  | d/d           |     |            |  | 3,0 |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete hollow block Hbl, Characteristic resistance under tension loading

**Annex C 87**

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C88.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------|---------------|-----|-----|--|--|--|--|--|--|--|--|--|--|--|
| 2 N/mm <sup>2</sup>                 | w/w           | w/d | 0,9 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     |     |  |  |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>                 | w/w           | w/d | 2,0 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     |     |  |  |  |  |  |  |  |  |  |  |  |

**Table C88.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod                  | M10        |  | M12 |            | M16 |  |
|-----------------------------|------------|--|-----|------------|-----|--|
| Perforated sleeve UVT Top H | 18x130/200 |  |     | 22x130/200 |     |  |

**V<sub>Rk</sub> = V<sub>Rk,b</sub> = V<sub>Rk,c</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C and 72/120°C)**

| compressive strength f <sub>b</sub> | use condition |     |     |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------------------|---------------|-----|-----|--|--|--|--|--|--|--|--|--|--|--|
| 2 N/mm <sup>2</sup>                 | w/w           | w/d | 0,9 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     |     |  |  |  |  |  |  |  |  |  |  |  |
| 4 N/mm <sup>2</sup>                 | w/w           | w/d | 2,0 |  |  |  |  |  |  |  |  |  |  |  |
|                                     | d/d           |     |     |  |  |  |  |  |  |  |  |  |  |  |

Factor for job site tests and displacements see annex C110

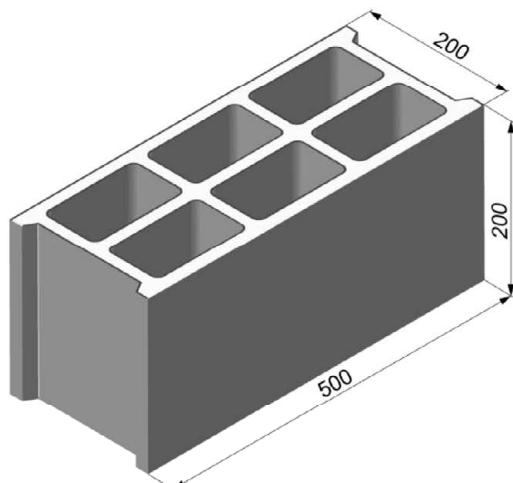
BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete hollow block Hbl, Characteristic resistance under shear loading

**Annex C 88**

## Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015



| Light-weight concrete hollow block Hbl,<br>EN 771-3:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Sepa             |         |
| Nominal dimensions [mm]  | length L              | width W |
|  | 500                   | 200     |
| Density $\rho$ [kg/dm <sup>3</sup> ]                             | $\geq 1,0$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                  | 2 / 4 / 6             |         |
| Standard   | EN 771-1:2011+A1:2015 |         |

Dimension see also Annex B 19

Table C89.1: Installation parameters

| Anchor rod                         | M6 | M8 | M6 | M8 | -     | M8 | M10 | M8 | M10 | M10 | M12 | -     | M12 | M16 |
|------------------------------------|----|----|----|----|-------|----|-----|----|-----|-----|-----|-------|-----|-----|
| Internal threaded anchor UVT Top E | -  | -  |    |    | M6    | M8 |     | -  |     |     |     | M10   | M12 |     |
|                                    |    |    |    |    | 11x85 |    |     |    |     |     |     | 15x85 |     |     |

### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |   |
|--------------------------|-----------------|---|---|
| Max. installation torque | $T_{inst}$ [Nm] | 1 | 2 |
|--------------------------|-----------------|---|---|

### General installation parameters

|               |   |     |
|---------------|---|-----|
| Edge distance | $c_{min}$                                   | 100 |
| Spacing       | $s_{min \parallel} = s_{cr \parallel}$ [mm] | 500 |
|               | $s_{min \perp} = s_{cr \perp}$              | 200 |

### Drilling method

Hammer drilling with hard metal hammer drill

Table C89.2: Group factors

| Anchor rod                         | M6   | M8    | M6 | M8 | -     | M8 | M10 | M8     | M10        | M10 | M12 | -     | M12 | M16 |
|------------------------------------|--|-------|----|----|-------|----|-----|--------|------------|-----|-----|-------|-----|-----|
| Internal threaded anchor UVT Top E | -  | -     | -  |    | M6    | M8 |     | -      |            |     |     | M10   | M12 |     |
|                                    |  |       |    |    | 11x85 |    |     |        |            |     |     | 15x85 |     |     |
| Perforated sleeve UVT Top H        | 12x50  | 12x85 |    |    | 16x85 |    |     | 16x130 | 18x130/200 |     |     | 20x85 |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ - ] |    |    |       |    |     |        |            |     |     | 2     |     |     |

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### Performance

Light-weight concrete hollow block Hbl, dimensions, installation parameters

Annex C 89

## Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C90.1:** Characteristic resistance under tension loading

| Anchor rod   | M6            | M8    | M6 | M8 | -     | M8 | M10    | M8         | M10 | M10 | M12   | -     | M12 | M16 |
|--|---------------|-------|----|----|-------|----|--------|------------|-----|-----|-------|-------|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |    |    | M6    | M8 |        |            |     |     |       | M10   | M12 |     |
|  |               |       |    |    | 11x85 |    |        |            |     |     |       | 15x85 |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |    |    | 16x85 |    | 16x130 | 18x130/200 |     |     | 20x85 |       |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |    |    |       |    |        |            |     |     |       |       |     |     |
| compressive strength $f_b$   | use condition |       |    |    |       |    |        |            |     |     |       |       |     |     |
| 2 N/mm <sup>2</sup>  | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 0,4   |     |     |
|  | d/d           |       |    |    |       |    |        |            |     |     |       | 0,5   |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 0,9   |     |     |
|  | d/d           |       |    |    |       |    |        |            |     |     |       | 0,9   |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 1,2   |     |     |
|  | d/d           |       |    |    |       |    |        |            |     |     |       | 1,5   |     |     |

Factor for temperature range 72/120°C: 0,83

**Table C90.2:** Characteristic resistance under shear loading

| Anchor rod  | M6            | M8    | M6 | M8 | -     | M8 | M10    | M8         | M10 | M10 | M12   | -     | M12 | M16 |
|---|---------------|-------|----|----|-------|----|--------|------------|-----|-----|-------|-------|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |    |    | M6    | M8 |        |            |     |     |       | M10   | M12 |     |
|   |               |       |    |    | 11x85 |    |        |            |     |     |       | 15x85 |     |     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |    |    | 16x85 |    | 16x130 | 18x130/200 |     |     | 20x85 |       |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |    |    |       |    |        |            |     |     |       |       |     |     |
| compressive strength $f_b$  | use condition |       |    |    |       |    |        |            |     |     |       |       |     |     |
| 2 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 0,9   |     |     |
|   | d/d           |       |    |    |       |    |        |            |     |     |       |       |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 1,5   |     |     |
|   | d/d           |       |    |    |       |    |        |            |     |     |       |       |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   |    |    |       |    |        |            |     |     |       | 2,5   |     |     |
|   | d/d           |       |    |    |       |    |        |            |     |     |       |       |     |     |

Factor for job site tests and displacements see annex C110

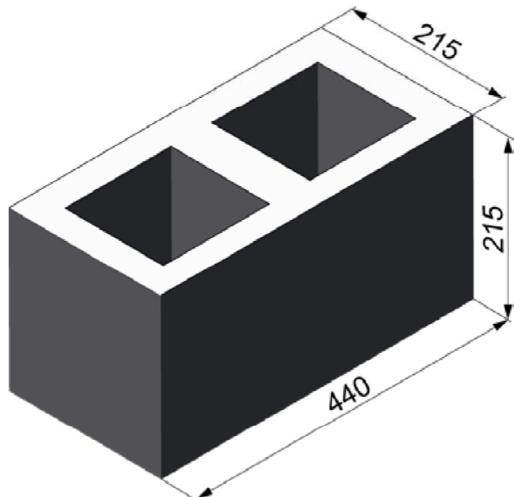
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**Performance**

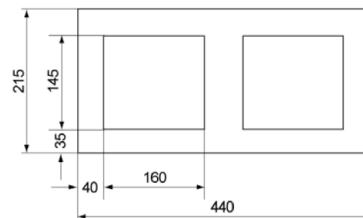
Light-weight concrete hollow block Hbl,  
Characteristic resistance under tension and shear loading

**Annex C 90**

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015



| Light-weight concrete hollow block Hbl,<br>EN 771-3:2011+A1:2015 |                       |         |
|--|-----------------------|---------|
| Producer   | e.g. Roadstone wood   |         |
| Nominal dimensions [mm]  | length L              | width W |
|  | 440                   | 215     |
| height H   | 215                   |         |
| Density $\rho$ [kg/dm <sup>3</sup> ]                             | $\geq 1,2$            |         |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                  | 4 / 6 / 8 / 10        |         |
| Standard   | EN 771-3:2011+A1:2015 |         |



Dimension see also  
Annex B 19

**Table C91.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -   | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6    | M8 |        |    |       | M10 | M12    |     |     |     |
|                                    |       |       |    |    | 11x85 |    |        |    |       |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |     | 20x130 |     |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|                          |                 |   |
|--------------------------|-----------------|---|
| Max. installation torque | $T_{inst}$ [Nm] | 2 |
|--------------------------|-----------------|---|

#### General installation parameters

|               |                     |      |     |
|---------------|---------------------|------|-----|
| Edge distance | $c_{min}$           | [mm] | 110 |
| Spacing       | $s_{min \parallel}$ |      | 100 |
|               | $s_{cr \parallel}$  |      | 440 |
|               | $s_{min \perp}$     |      | 100 |
|               | $s_{cr \perp}$      |      | 215 |

#### Drilling method

Hammer drilling with hard metal hammer drill

**Table C91.2:** Group factors

| Anchor rod                         | M6                       | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -   | M12    | M16 | M12 | M16 |
|------------------------------------|--------------------------|-------|----|----|-------|----|--------|----|-------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -                        | -     |    |    | M6    | M8 |        |    |       | M10 | M12    |     |     |     |
|                                    |                          |       |    |    | 11x85 |    |        |    |       |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50                    | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |     | 20x130 |     |     |     |
| Group factors                      | $\alpha_{q,N \parallel}$ | [-]   |    |    |       |    |        |    |       | 1,4 |        |     |     |     |
|                                    | $\alpha_{q,V \parallel}$ |       |    |    |       |    |        |    |       | 2,0 |        |     |     |     |
|                                    | $\alpha_{q,N \perp}$     |       |    |    |       |    |        |    |       | 1,4 |        |     |     |     |
|                                    | $\alpha_{q,V \perp}$     |       |    |    |       |    |        |    |       | 1,2 |        |     |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Light-weight concrete hollow block Hbl, dimensions, installation parameters

Annex C 91

## Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C92.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10                 | M12  | M16        |  |
|--|---------------------|------|------------|--|
| Perforated sleeve<br>UVT Top H                     | 18x130/200          |      | 22x130/200 |  |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |                     |      |            |  |
| Max. installation torque                           | $T_{inst}$<br>[Nm]  |      | 2          |  |
| <b>General installation parameters</b>             |                     |      |            |  |
| Edge distance                                      | $c_{min}$           | [mm] | 110        |  |
|  | $s_{min \parallel}$ |      | 100        |  |
| Spacing  | $s_{cr \parallel}$  |      | 440        |  |
|  | $s_{min \perp}$     |      | 100        |  |
|  | $s_{cr \perp}$      |      | 215        |  |
| <b>Drilling method</b>                             |                     |      |            |  |
| Hammer drilling with hard metal hammer drill       |                     |      |            |  |

**Table C92.2:** Group factors

| Anchor rod                     | M10                      | M12 | M16        |
|--------------------------------|--------------------------|-----|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200               |     | 22x130/200 |
| Group factors                  | $\alpha_{g,N} \parallel$ | [-] | 1,4        |
|                                | $\alpha_{g,v} \parallel$ |     | 2,0        |
|                                | $\alpha_{g,N} \perp$     |     | 1,4        |
|                                | $\alpha_{g,v} \perp$     |     | 1,2        |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Light-weight concrete hollow block Hbl, dimensions, installation parameters

**Annex C 92**

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C93.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod   | M6            | M8    | M6  | M8             | - | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|--|---------------|-------|-----|----------------|---|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E   | -             | -     |     | M6 M8<br>11x85 |   | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|  |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H  | 12x50         | 12x85 |     | 16x85          |   | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$   | use condition |       |     |                |   |        |     |       |     |                  |     |     |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | w/d   | 0,9 |                |   | 1,2    |     |       | 2,0 |                  |     |     |     |     |
|  | d/d           |       | 1,2 |                |   | 1,5    |     |       | 2,0 |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | w/d   | 1,5 |                |   | 2,0    |     |       | 3,0 |                  |     |     |     |     |
|  | d/d           |       | 1,5 |                |   | 2,0    |     |       | 3,0 |                  |     |     |     |     |
| 8 N/mm <sup>2</sup>  | w/w           | w/d   | 2,0 |                |   | 2,5    |     |       | 3,5 |                  |     |     |     |     |
|  | d/d           |       | 2,0 |                |   | 3,0    |     |       | 4,0 |                  |     |     |     |     |
| 10 N/mm <sup>2</sup>   | w/w           | w/d   | 2,5 |                |   | 3,0    |     |       | 4,5 |                  |     |     |     |     |
|  | d/d           |       | 3,0 |                |   | 3,5    |     |       | 5,0 |                  |     |     |     |     |

**Table C93.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           | M12 | M16        |  |  |     |  |  |     |  |  |  |  |  |
|--|---------------|-----|------------|--|--|-----|--|--|-----|--|--|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     | 22x130/200 |  |  |     |  |  |     |  |  |  |  |  |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |            |  |  |     |  |  |     |  |  |  |  |  |
| compressive strength $f_b$   | use condition |     |            |  |  |     |  |  |     |  |  |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d | 1,2        |  |  | 2,0 |  |  | 2,0 |  |  |  |  |  |
|  | d/d           |     | 1,5        |  |  | 2,0 |  |  | 2,0 |  |  |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 2,0        |  |  | 3,0 |  |  | 3,0 |  |  |  |  |  |
|  | d/d           |     | 2,0        |  |  | 3,0 |  |  | 3,0 |  |  |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d | 2,5        |  |  | 3,5 |  |  | 3,5 |  |  |  |  |  |
|  | d/d           |     | 3,0        |  |  | 4,0 |  |  | 4,0 |  |  |  |  |  |
| 10 N/mm <sup>2</sup>   | w/w           | w/d | 3,0        |  |  | 4,5 |  |  | 4,5 |  |  |  |  |  |
|  | d/d           |     | 3,5        |  |  | 5,0 |  |  | 5,0 |  |  |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

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**Performance**

Light-weight concrete hollow block Hbl, Characteristic resistance under tension loading

**Annex C 93**

### Light-weight concrete hollow block Hbl, EN 771-3:2011+A1:2015

**Table C94.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod  | M6            | M8    | M6 | M8             | -   | M8     | M10 | M8    | M10 | -                | M12 | M16 | M12 | M16 |
|---|---------------|-------|----|----------------|-----|--------|-----|-------|-----|------------------|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  | -             | -     |    | M6 M8<br>11x85 |     | -      | -   | -     | -   | M10 M12<br>15x85 | -   | -   | -   |     |
|   |               |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| Perforated sleeve UVT Top H   | 12x50         | 12x85 |    | 16x85          |     | 16x130 |     | 20x85 |     | 20x130           |     |     |     |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| compressive strength $f_b$  | use condition |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d   |    | 0,75           | 1,2 | 0,75   | 1,2 | 0,75  |     |                  |     |     |     | 1,2 |
|   | d/d           |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d   |    | 1,2            | 2,0 | 1,2    | 2,0 | 1,2   |     |                  |     |     |     | 2,0 |
|   | d/d           |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d   |    | 1,5            | 2,5 | 1,5    | 2,5 | 1,5   |     |                  |     |     |     | 2,5 |
|   | d/d           |       |    |                |     |        |     |       |     |                  |     |     |     |     |
| 10 N/mm <sup>2</sup>  | w/w           | w/d   |    | 2,0            | 3,0 | 2,0    | 3,0 | 2,0   |     |                  |     |     |     | 3,0 |
|   | d/d           |       |    |                |     |        |     |       |     |                  |     |     |     |     |

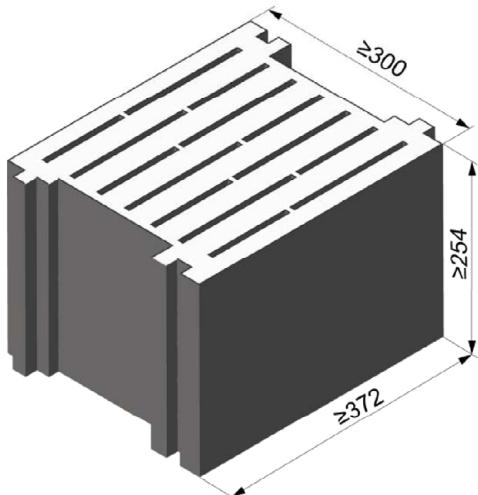
**Table C94.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod  | M10           | M12 | M16        |  |  |  |  |  |  |  |  |  |  |     |
|---|---------------|-----|------------|--|--|--|--|--|--|--|--|--|--|-----|
| Perforated sleeve UVT Top H   | 18x130/200    |     | 22x130/200 |  |  |  |  |  |  |  |  |  |  |     |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |            |  |  |  |  |  |  |  |  |  |  |     |
| compressive strength $f_b$  | use condition |     |            |  |  |  |  |  |  |  |  |  |  |     |
| 4 N/mm <sup>2</sup>   | w/w           | w/d |            |  |  |  |  |  |  |  |  |  |  | 1,2 |
|   | d/d           |     |            |  |  |  |  |  |  |  |  |  |  |     |
| 6 N/mm <sup>2</sup>   | w/w           | w/d |            |  |  |  |  |  |  |  |  |  |  | 2,0 |
|   | d/d           |     |            |  |  |  |  |  |  |  |  |  |  |     |
| 8 N/mm <sup>2</sup>   | w/w           | w/d |            |  |  |  |  |  |  |  |  |  |  | 2,5 |
|   | d/d           |     |            |  |  |  |  |  |  |  |  |  |  |     |
| 10 N/mm <sup>2</sup>  | w/w           | w/d |            |  |  |  |  |  |  |  |  |  |  | 3,0 |
|   | d/d           |     |            |  |  |  |  |  |  |  |  |  |  |     |

Factor for job site tests and displacements see annex C110

|  |            |
|--|------------|
| BTI Universal Component Compound UVT Top for masonry   | Annex C 94 |
| Performance<br>Light-weight concrete hollow block Hbl, Characteristic resistance under shear loading |            |

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015



| Light-weight concrete solid block Vbl,<br>EN 771-3:2011+A1:2015 |                       |         |
|---|-----------------------|---------|
| Producer  | e.g. Sepa             |         |
| Nominal dimensions [mm]   | length L              | width W |
|   | ≥ 372                 | ≥ 300   |
| Density ρ [kg/dm³]  | ≥ 0,6                 |         |
| Compressive strength f <sub>b</sub> [N/mm²]                     | 2                     |         |
| Standard  | EN 771-3:2011+A1:2015 |         |

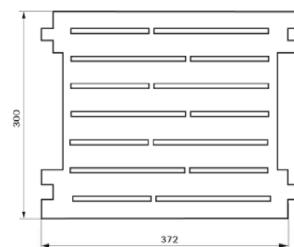


Table C95.1: Installation parameters

|   |        |     |            |     |        |     |            |     |        |
|---|--------|-----|------------|-----|--------|-----|------------|-----|--------|
| Anchor rod  | M8     | M10 | M10        | M12 | M12    | M16 | M16        | M12 | M16    |
| Perforated sleeve<br>UVT Top H                        | 16x130 |     | 18x130/200 |     | 20x130 |     | 22x130/200 |     | 20x200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b>    |        |     |            |     |        |     |            |     |        |
| Max. installation torque T <sub>inst</sub> [Nm]       |        |     |            |     |        |     | 4          |     |        |
| Edge distance C <sub>min</sub>                        |        |     |            |     |        |     | 130        |     |        |
| Spacing S <sub>min</sub> II = S <sub>cr</sub> II [mm] |        |     |            |     |        |     | 370        |     |        |
|   |        |     |            |     |        |     | 250        |     |        |
| <b>Drilling method</b>                                |        |     |            |     |        |     |            |     |        |
| Hammer drilling with hard metal hammer drill          |        |     |            |     |        |     |            |     |        |

Table C95.2: Group factors

|  |  |             |            |     |        |     |            |                   |        |
|--|--|-------------|------------|-----|--------|-----|------------|-------------------|--------|
| Anchor rod   | M8   | M10         | M10        | M12 | M12    | M16 | M16        | M12               | M16    |
| Perforated sleeve<br>UVT Top H   | 16x130   |             | 18x130/200 |     | 20x130 |     | 22x130/200 |                   | 20x200 |
| Group factors  | $\alpha_{g,N} \parallel$<br>$\alpha_{g,V} \parallel$<br>$\alpha_{g,N} \perp$<br>$\alpha_{g,V} \perp$ | [ $\cdot$ ] |            |     |        |     | 2          |                   |        |
| <b>BTI Universal Component Compound UVT Top for masonry</b>                                      |  |             |            |     |        |     |            |                   |        |
| <b>Performance</b><br>Light-weight concrete solid block Vbl, dimensions, installation parameters |  |             |            |     |        |     |            | <b>Annex C 95</b> |        |

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015

**Table C96.1:** Characteristic resistance under tension loading

| Anchor rod  |               | M8     | M10 | M10        | M12 | M12    | M16 | M16        | M12 | M16    |
|---|---------------|--------|-----|------------|-----|--------|-----|------------|-----|--------|
| Perforated sleeve<br>UVT Top H  |               | 16x130 |     | 18x130/200 |     | 20x130 |     | 22x130/200 |     | 20x200 |
| $N_{Rk} = N_{Rk,p} = N_{Rk,b}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C) |               |        |     |            |     |        |     |            |     |        |
| compressive strength $f_b$  | use condition |        |     |            |     |        |     |            |     |        |
| 2 N/mm <sup>2</sup>   | w/w           | w/d    |     | 2,0        |     |        | 2,5 |            | 3,0 |        |
|   | d/d           |        |     | 2,0        |     |        | 3,0 |            | 4,0 |        |

Factor for temperature range 72/120°C: 0,83

**Table C96.2:** Characteristic resistance under shear loading

| Anchor rod   |               | M8     | M10 | M10        | M12 | M12    | M16 | M16        | M12 | M16    |
|--|---------------|--------|-----|------------|-----|--------|-----|------------|-----|--------|
| Perforated sleeve<br>UVT Top H   |               | 16x130 |     | 18x130/200 |     | 20x130 |     | 22x130/200 |     | 20x200 |
| $V_{Rk} = V_{Rk,b} = V_{Rk,c}$ [kN] depending on the compressive strength $f_b$ (temperature range 50/80°C and 72/120°C) |               |        |     |            |     |        |     |            |     |        |
| compressive strength $f_b$   | use condition |        |     |            |     |        |     |            |     |        |
| 2 N/mm <sup>2</sup>  | w/w           | w/d    |     |            | 4,5 |        |     |            | 6,5 |        |
|  | d/d           |        |     |            |     |        |     |            |     |        |

Factor for job site tests and displacements see annex C110

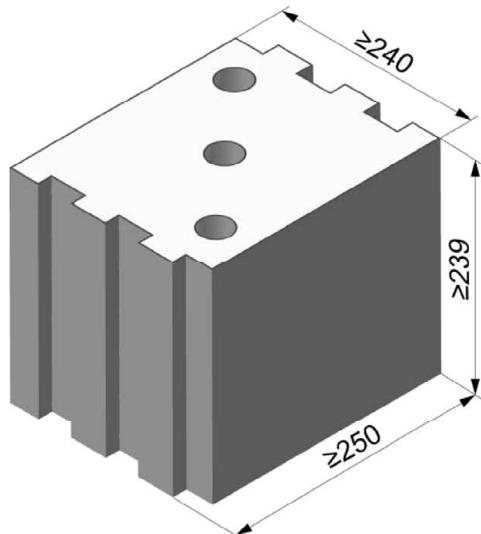
BTI Universal Component Compound UVT Top for masonry

**Performance**

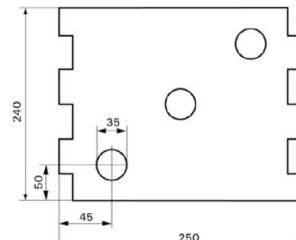
Light-weight concrete solid block Vbl,  
Characteristic resistance under tension and shear loading

**Annex C 96**

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015



| Light-weight concrete solid block Vbl,<br>EN 771-3:2011+A1:2015 |                       |                  |                   |
|---|-----------------------|------------------|-------------------|
| Producer  | KLB                   |                  |                   |
| Nominal dimensions [mm]   | length L<br>≥ 250     | width W<br>≥ 240 | height H<br>≥ 239 |
| Density $\rho$ [kg/dm <sup>3</sup> ]                            | ≥ 1,6                 |                  |                   |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                 | 4 / 6 / 8             |                  |                   |
| Standard  | EN 771-3:2011+A1:2015 |                  |                   |



Dimension see also  
Annex B 19

**Table C97.1:** Installation parameters  
(Pre-positioned anchorage with perforated sleeve UVT Top H)

|                                    |       |       |    |    |       |    |       |        |     |       |     |        |     |        |     |     |
|------------------------------------|-------|-------|----|----|-------|----|-------|--------|-----|-------|-----|--------|-----|--------|-----|-----|
| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10   | M8     | M10 | -     | M12 | M16    | M12 | M16    | M12 | M16 |
| Internal threaded anchor UVT Top E | -     | -     | -  | -  | M6    | M8 | -     | -      | -   | M10   | M12 | -      | -   | -      | -   |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 11x85 |    | 16x85 | 16x130 |     | 20x85 |     | 20x130 |     | 20x200 |     |     |

#### Anchor rod and internal threaded anchor UVT Top E with perforated sleeve UVT Top H

|   |     |
|---|-----|
| Max. installation torque $T_{inst}$ [Nm]            | 4   |
| <b>General installation parameters</b>              |     |
| Edge distance $c_{min}$ [mm]                        | 130 |
| Spacing $s_{min \parallel} = s_{cr \parallel}$ [mm] | 250 |
| $s_{min \perp} = s_{cr \perp}$                      | 250 |

#### Drilling method

Hammer drilling with hard metal hammer drill

### Table C97.2: Group factors

|                                    |  |             |    |    |       |    |       |        |     |       |     |        |     |        |     |     |
|------------------------------------|--|-------------|----|----|-------|----|-------|--------|-----|-------|-----|--------|-----|--------|-----|-----|
| Anchor rod                         | M6   | M8          | M6 | M8 | -     | M8 | M10   | M8     | M10 | -     | M12 | M16    | M12 | M16    | M12 | M16 |
| Internal threaded anchor UVT Top E | -  | -           | -  | -  | M6    | M8 | -     | -      | -   | M10   | M12 | -      | -   | -      | -   |     |
| Perforated sleeve UVT Top H        | 12x50  | 12x85       |    |    | 11x85 |    | 16x85 | 16x130 |     | 20x85 |     | 20x130 |     | 20x200 |     |     |
| Group factors                      | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ $\cdot$ ] |    |    |       |    |       |        |     | 2,0   |     |        |     |        |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Light-weight concrete solid block Vbl, dimensions, installation parameters

Annex C 97

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015

**Table C98.1:** Installation parameters  
(Push through anchorage with perforated sleeve UVT Top H)

| Anchor rod   | M10  | M12  | M16        |
|--|--|------|------------|
| Perforated sleeve<br>UVT Top H                     | 18x130/200   |      | 22x130/200 |
| <b>Anchor rod with perforated sleeve UVT Top H</b> |  |      |            |
| Max. installation torque                           | $T_{inst}$<br>[Nm]   |      | 2          |
| <b>General installation parameters</b>             |  |      |            |
| Edge distance                                      | $c_{min}$  | 130  |            |
| Spacing  | $s_{min \parallel} = s_{cr \parallel}$<br>$s_{min \perp} = s_{cr \perp}$ | [mm] | 250        |
|  |  |      | 250        |
| <b>Drilling method</b>                             |  |      |            |
| Hammer drilling with hard metal hammer drill       |  |      |            |

**Table C98.2:** Group factors

| Anchor rod                     | M10  | M12     | M16        |
|--------------------------------|--|---------|------------|
| Perforated sleeve<br>UVT Top H | 18x130/200   |         | 22x130/200 |
| Group factors                  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,V \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,V \perp}$ | [ $-$ ] | 2,0        |

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015

**Table C99.1:** Characteristic resistance under tension loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10 | -       | M12 | M16    | M12 | M16    | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-----|---------|-----|--------|-----|--------|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 | -  | -      |    |     | M10 M12 | -   | -      | -   | -      | -   | -   |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    |     | 20x85   |     | 20x130 |     | 20x200 |     |     |

**N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)**

| compressive strength f <sub>b</sub> | use condition |     |             |  |  |  |     |  |  |  |  |  |
|-------------------------------------|---------------|-----|-------------|--|--|--|-----|--|--|--|--|--|
| 4 N/mm <sup>2</sup>                 | w/w           | w/d | 1,2 2,0 2,5 |  |  |  | 3,0 |  |  |  |  |  |
|                                     | d/d           |     | 2,0 3,5 4,0 |  |  |  | 5,0 |  |  |  |  |  |
| 6 N/mm <sup>2</sup>                 | w/w           | w/d | 1,5 3,0 4,0 |  |  |  | 5,0 |  |  |  |  |  |
|                                     | d/d           |     | 3,0 5,0 6,5 |  |  |  | 7,5 |  |  |  |  |  |
| 8 N/mm <sup>2</sup>                 | w/w           | w/d | 2,0 4,0 5,0 |  |  |  | 6,5 |  |  |  |  |  |
|                                     | d/d           |     | 4,0 7,0 8,5 |  |  |  | 9,0 |  |  |  |  |  |

**Table C99.2:** Characteristic resistance under tension loading (Push through anchorage)

| Anchor rod   | M10           |     | M12 |            | M16 |  |  |  |
|--|---------------|-----|-----|------------|-----|--|--|--|
| Perforated sleeve UVT Top H  | 18x130/200    |     |     | 22x130/200 |     |  |  |  |
| <b>N<sub>Rk</sub> = N<sub>Rk,p</sub> = N<sub>Rk,b</sub> [kN] depending on the compressive strength f<sub>b</sub> (temperature range 50/80°C)</b> |               |     |     |            |     |  |  |  |
| compressive strength f <sub>b</sub>  | use condition |     |     |            |     |  |  |  |
| 4 N/mm <sup>2</sup>  | w/w           | w/d | 2,5 |            | 3,0 |  |  |  |
|  | d/d           |     | 4,0 |            | 5,0 |  |  |  |
| 6 N/mm <sup>2</sup>  | w/w           | w/d | 4,0 |            | 5,0 |  |  |  |
|  | d/d           |     | 6,5 |            | 7,5 |  |  |  |
| 8 N/mm <sup>2</sup>  | w/w           | w/d | 5,0 |            | 6,5 |  |  |  |
|  | d/d           |     | 8,5 |            | 9,0 |  |  |  |

Factor for job site tests and displacements see annex C110

Factor for temperature range 72/120°C: 0,83

BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete solid block Vbl, Characteristic resistance under tension loading

**Annex C 99**

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015

**Table C100.1:** Characteristic resistance under shear loading (Pre-positioned anchorage)

| Anchor rod                         | M6    | M8    | M6 | M8 | -     | M8 | M10    | M8 | M10   | -       | M12    | M16 | M12    | M16 | M12 | M16 |
|------------------------------------|-------|-------|----|----|-------|----|--------|----|-------|---------|--------|-----|--------|-----|-----|-----|
| Internal threaded anchor UVT Top E | -     | -     |    |    | M6 M8 |    |        |    |       | M10 M12 |        |     |        |     |     |     |
| Perforated sleeve UVT Top H        | 12x50 | 12x85 |    |    | 16x85 |    | 16x130 |    | 20x85 |         | 20x130 |     | 20x200 |     |     |     |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |                         |  |  |  |  |  |  |  |  |  |
|----------------------------|---------------|-----|-------------------------|--|--|--|--|--|--|--|--|--|
| $4 \text{ N/mm}^2$         | w/w           | w/d | 2,0 3,0 2,0 3,0 2,0 3,5 |  |  |  |  |  |  |  |  |  |
|                            | d/d           |     |                         |  |  |  |  |  |  |  |  |  |
| $6 \text{ N/mm}^2$         | w/w           | w/d | 3,0 4,5 3,0 4,5 3,0 5,5 |  |  |  |  |  |  |  |  |  |
|                            | d/d           |     |                         |  |  |  |  |  |  |  |  |  |
| $8 \text{ N/mm}^2$         | w/w           | w/d | 4,0 6,0 4,0 6,0 4,0 7,0 |  |  |  |  |  |  |  |  |  |
|                            | d/d           |     |                         |  |  |  |  |  |  |  |  |  |

**Table C100.2:** Characteristic resistance under shear loading (Push through anchorage)

| Anchor rod                  | M10        |  | M12 |            | M16 |  |
|-----------------------------|------------|--|-----|------------|-----|--|
| Perforated sleeve UVT Top H | 18x130/200 |  |     | 22x130/200 |     |  |

$V_{Rk} = V_{Rk,b} = V_{Rk,c}$  [kN] depending on the compressive strength  $f_b$  (temperature range 50/80°C and 72/120°C)

| compressive strength $f_b$ | use condition |     |     |  |     |  |
|----------------------------|---------------|-----|-----|--|-----|--|
| $4 \text{ N/mm}^2$         | w/w           | w/d | 3,5 |  | 4,5 |  |
|                            | d/d           |     |     |  |     |  |
| $6 \text{ N/mm}^2$         | w/w           | w/d | 5,5 |  | 6,5 |  |
|                            | d/d           |     |     |  |     |  |
| $8 \text{ N/mm}^2$         | w/w           | w/d | 7,0 |  | 8,5 |  |
|                            | d/d           |     |     |  |     |  |

Factor for job site tests and displacements see annex C110

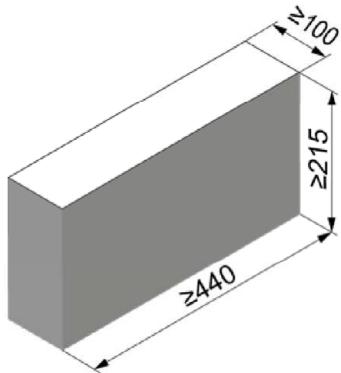
BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete solid block Vbl, Characteristic resistance under shear loading

**Annex C 100**

### Light-weight concrete solid block Vbl, EN 771-3:2011+A1:2015



| Light-weight concrete solid block Vbl,<br>EN 771-3:2011+A1:2015 |                       |                  |
|---|-----------------------|------------------|
| Producer  | Roadstone wood        |                  |
| Nominal dimensions [mm]   | length L<br>≥ 440     | width W<br>≥ 100 |
| Density ρ [kg/dm³]  | ≥ 2,0                 |                  |
| Compressive strength f <sub>b</sub> [N/mm²]                     | 4 / 6 / 8 / 10        |                  |
| Standard  | EN 771-3:2011+A1:2015 |                  |

Table C101.1: Installation parameters

| Anchor rod                                      | M6                | M8                 | M10                | M12 | M16 |
|---|-------------------|--------------------|--------------------|-----|-----|
| <b>Anchor rod without perforated sleeve</b>     |                   |                    |                    |     |     |
| Effective anchorage depth h <sub>ef</sub> [mm]  | 50                | 70                 | 50                 | 70  | 50  |
| Max. installation torque T <sub>inst</sub> [Nm] | 4                 |                    |                    | 10  |     |
| <b>General installation parameters</b>          |                   |                    |                    |     |     |
| Edge distance C <sub>min</sub>                  |                   |                    | 100                |     |     |
| Spacing S <sub>min</sub> II                     |                   |                    | 75                 |     |     |
|   | [mm]              | S <sub>cr</sub> II | 3x h <sub>ef</sub> |     |     |
| Spacing S <sub>min</sub> ⊥                      |                   |                    | 75                 |     |     |
|   | S <sub>cr</sub> ⊥ |                    | 3x h <sub>ef</sub> |     |     |
| Drilling method                                 |                   |                    |                    |     |     |
| Hammer drilling with hard metal hammer drill    |                   |                    |                    |     |     |

Table C101.2: Group factors

| Anchor rod    | M6 | M8 | M10 | M12 | M16 |
|---------------|----|----|-----|-----|-----|
| Group factors |    |    | 1,6 |     |     |
|               |    |    | 1,3 |     |     |
|               |    |    | 1,4 |     |     |
|               |    |    | 1,3 |     |     |

BTI Universal Component Compound UVT Top for masonry

#### Performance

Light-weight concrete solid block Vbl, dimensions, installation parameters

#### Annex C 101

### Light-weight concrete solid block Vbl, EN 771-3:2015

**Table C102.1:** Characteristic resistance under tension loading

| Anchor rod   |               | M6   | M8 | M10 | M12 | M16 |
|--|---------------|--|----|-----|-----|-----|
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |  |    |     |     |     |
| compressive strength $f_b$   | use condition | Effective anchorage depth $h_{ef}$ [mm]<br>$\geq 50$ |    |     |     |     |
| 4 N/mm <sup>2</sup>  | w/w           | 1,2  |    |     | 1,2 |     |
|  | d/d           | 2,0  |    |     | 2,0 |     |
| 6 N/mm <sup>2</sup>  | w/w           | 1,5  |    |     | 2,0 |     |
|  | d/d           | 3,0  |    |     | 3,5 |     |
| 8 N/mm <sup>2</sup>  | w/w           | 2,0  |    |     | 2,5 |     |
|  | d/d           | 4,0  |    |     | 4,5 |     |
| 10N/mm <sup>2</sup>  | w/w           | 3,0  |    |     | 3,5 |     |
|  | d/d           | 5,0  |    |     | 5,5 |     |

Factor for temperature range 72/120°C: 0,83

**Table C102.2:** Characteristic resistance under shear loading

| Anchor rod  |               | M6   | M8  | M10 | M12 | M16 |
|---|---------------|--|-----|-----|-----|-----|
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |  |     |     |     |     |
| compressive strength $f_b$  | use condition | Effective anchorage depth $h_{ef}$ [mm]<br>$\geq 50$ |     |     |     |     |
| 4 N/mm <sup>2</sup>   | w/w           | 1,2  | 1,5 | 1,5 | 1,5 | 1,5 |
|   | d/d           |  |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | 2,0  | 2,0 | 2,5 | 2,5 | 2,5 |
|   | d/d           |  |     |     |     |     |
| 8 N/mm <sup>2</sup>   | w/w           | 2,5  | 2,5 | 3,0 | 3,0 | 3,5 |
|   | d/d           |  |     |     |     |     |
| 10N/mm <sup>2</sup>   | w/w           | 3,0  | 3,5 | 4,0 | 4,0 | 4,5 |
|   | d/d           |  |     |     |     |     |

Factor for job site tests and displacements see annex C110

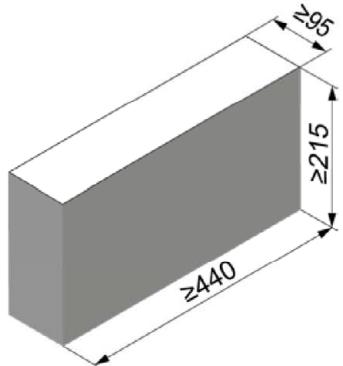
BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete solid block Vbl,  
Characteristic resistance under tension and shear loading

**Annex C 102**

### Light-weight concrete solid block Vbl, EN 771-3:2015



| Light-weight concrete solid block Vbl,<br>EN 771-3:2011+A1:2015 |                       |                 |
|---|-----------------------|-----------------|
| Producer  | Tramac                |                 |
| Nominal dimensions [mm]   | length L<br>≥ 440     | width W<br>≥ 95 |
| Density $\rho$ [kg/dm <sup>3</sup> ]                            | ≥ 2,0                 |                 |
| Compressive strength $f_b$ [N/mm <sup>2</sup> ]                 | 6 / 8 / 10 / 12       |                 |
| Standard  | EN 771-3:2011+A1:2015 |                 |

Table C103.1: Installation parameters

| Anchor rod                                      | M6                        | M8   | M10                | M12 | M16 |
|---|---------------------------|------|--------------------|-----|-----|
| <b>Anchor rod without perforated sleeve</b>     |                           |      |                    |     |     |
| Effective anchorage depth $h_{\text{ef}}$ [mm]  | 50                        | 70   | 50                 | 70  | 50  |
| Max. installation torque $T_{\text{inst}}$ [Nm] | 4                         |      |                    | 10  |     |
| <b>General installation parameters</b>          |                           |      |                    |     |     |
| Edge distance $c_{\min}$                        |                           |      | 60                 |     |     |
| Spacing   | $s_{\min \parallel}$      |      | 75                 |     |     |
|   | $s_{\text{cr} \parallel}$ | [mm] | 3x $h_{\text{ef}}$ |     |     |
|   | $s_{\min \perp}$          |      | 75                 |     |     |
|   | $s_{\text{cr} \perp}$     |      | 3x $h_{\text{ef}}$ |     |     |
|   |                           |      |                    |     |     |
| <b>Drilling method</b>                          |                           |      |                    |     |     |
| Hammer drilling with hard metal hammer drill    |                           |      |                    |     |     |

Table C103.2: Group factors

| Anchor rod               | M6 | M8 | M10 | M12 | M16 |
|--------------------------|----|----|-----|-----|-----|
| $\alpha_{g,N \parallel}$ |    |    | 1,9 |     |     |
| $\alpha_{g,v \parallel}$ |    |    | 1,4 |     |     |
| $\alpha_{g,N \perp}$     |    |    | 1,9 |     |     |
| $\alpha_{g,v \perp}$     |    |    | 1,4 |     |     |

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Light-weight concrete solid block Vbl, dimensions, installation parameters

**Annex C 103**

### Light-weight concrete solid block Vbl, EN 771-3:2015

**Table C104.1:** Characteristic resistance under tension loading

| Anchor rod   |               | M6  |     | M8  |     | M10 |     | M12 |     | M16 |     |
|--|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |     |     |     |     |     |     |     |     |     |
| compressive strength $f_b$   | use condition |     |     |     |     |     |     |     |     |     |     |
| 6 N/mm <sup>2</sup>  | w/w           | 50  | 70  | 50  | 70  | 50  | 70  | 50  | 70  | 50  | 70  |
|  | w/d           | 1,5 | 2,0 | 1,5 | 2,0 | 1,5 | 2,0 | 1,5 | 2,0 | 1,5 | 2,0 |
| 8 N/mm <sup>2</sup>  | d/d           | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 |
|  | w/w           | 2,0 | 2,5 | 2,0 | 2,5 | 2,0 | 3,0 | 2,0 | 3,0 | 2,0 | 3,0 |
| 10 N/mm <sup>2</sup>   | d/d           | 3,5 | 4,5 | 3,5 | 4,5 | 3,5 | 5,0 | 3,5 | 5,0 | 3,5 | 5,0 |
|  | w/w           | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 | 2,5 | 3,5 |
| 12 N/mm <sup>2</sup>   | d/d           | 4,5 | 6,0 | 4,5 | 6,0 | 4,5 | 6,0 | 4,5 | 6,0 | 4,5 | 6,0 |
|  | w/w           | 3,0 | 4,0 | 3,0 | 4,0 | 3,0 | 4,5 | 3,0 | 4,5 | 3,0 | 4,5 |
|  |               | 5,0 | 7,0 | 5,0 | 7,0 | 5,0 | 7,5 | 5,0 | 7,5 | 5,0 | 7,5 |

Factor for temperature range 72/120°C: 0,83

**Table C104.2:** Characteristic resistance under shear loading

| Anchor rod  |               | M6  |     | M8  |     | M10 |     | M12 |     | M16 |     |
|---|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |     |     |     |     |     |     |     |     |     |
| compressive strength $f_b$  | use condition |     |     |     |     |     |     |     |     |     |     |
| 6 N/mm <sup>2</sup>   | w/w           | 2,0 | 2,0 | 2,0 | 2,0 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 | 1,5 |
|   | w/d           |     |     |     |     |     |     |     |     |     |     |
| 8 N/mm <sup>2</sup>   | d/d           | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 | 2,5 |
|   | w/w           |     |     |     |     |     |     |     |     |     |     |
| 10 N/mm <sup>2</sup>  | w/d           | 3,5 | 3,5 | 3,5 | 3,5 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 | 3,0 |
|   | d/d           |     |     |     |     |     |     |     |     |     |     |
| 12 N/mm <sup>2</sup>  | w/w           | 4,0 | 4,0 | 4,0 | 4,0 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 | 4,5 |
|   | w/d           |     |     |     |     |     |     |     |     |     |     |

Factor for job site tests and displacements see annex C110

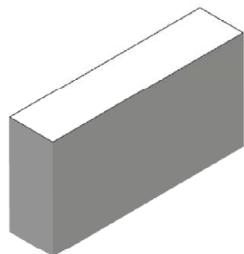
BTI Universal Component Compound UVT Top for masonry

**Performance**

Light-weight concrete solid block Vbl,  
Characteristic resistance under tension and shear loading

**Annex C 104**

## Autoclaved aerated concrete (cylindrical drill hole), EN 771-4:2011+A1:2015



| Autoclaved aerated concrete, EN 771-4:2011+A1:2015 |                       |      |                       |
|--|-----------------------|------|-----------------------|
| Producer   |                       |      | e.g. Ytong            |
| Density $\rho$                                     | [kg/dm <sup>3</sup> ] | 0,35 | 0,5                   |
| Compressive strength $f_b$                         | [N/mm <sup>2</sup> ]  | 2    | 4                     |
| Standard   |                       |      | EN 771-4:2011+A1:2015 |

Table C105.1: Installation parameters

| Anchor rod                            | M6 | M8 | M10 | M12 | M16 | -     | -     |
|---------------------------------------|----|----|-----|-----|-----|-------|-------|
| Internal threaded anchor<br>UVT Top E | -  | -  | -   | -   | -   | M6    | M8    |
|                                       |    |    |     |     |     | 11x85 | 15x85 |

### Anchor rod and internal threaded anchor UVT Top E without perforated sleeve

|                                    |            |      |     |     |     |     |     |     |     |    |
|------------------------------------|------------|------|-----|-----|-----|-----|-----|-----|-----|----|
| Effective anchorage depth $h_{ef}$ | [mm]       | 100  | 200 | 100 | 200 | 100 | 200 | 100 | 200 | 85 |
| Max. installation torque           | $T_{inst}$ | [Nm] | 1   | 4   | 1   | 8   | 2   | 12  | 2   | 16 |

### General installation parameters

|               |  |      |             |
|---------------|--|------|-------------|
| Edge distance | $C_{min}$                              | [mm] | 100         |
|               | $S_{cr \parallel} = S_{min \parallel}$ |      | 250         |
|               | $h_{ef}=200\text{mm}$                  |      | 80          |
|               | $S_{min \parallel}$                    |      | 3x $h_{ef}$ |
|               | $h_{ef}=200\text{mm}$                  |      | 250         |
| Spacing       | $S_{cr \perp} = S_{min \perp}$         |      | 80          |
|               | $h_{ef}=200\text{mm}$                  |      | 3x $h_{ef}$ |

### Drilling method

Hammer drilling with hard metal hammer drill

BTI Universal Component Compound UVT Top for masonry

### Performance

Autoclaved aerated concrete (cylindrical drill hole), dimensions, installation parameters

### Annex C 105

English translation prepared by DIBt

**Table C106.1:** Group factors for autoclaved aerated concrete  
(Compressive strength  $f_b = 2 \text{ N/mm}^2$ )

| Anchor rod                            | M6   | M8  | M10 | M12 | M16 | -     | -             |
|---------------------------------------|--|-----|-----|-----|-----|-------|---------------|
| Internal threaded anchor UVT<br>Top E | -  | -   | -   | -   | -   | M6    | M8            |
|                                       |  |     |     |     |     | 11x85 | 15x85         |
| Group factors                         | $h_{ef}=200 \alpha_{g,N} \parallel$              | [-] | 1,6 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \parallel$              |     | 1,1 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \parallel, \alpha_{g,v} \parallel$ |     | 2   |     |     |       |               |
|                                       | $h_{ef}=200 \alpha_{g,N} \perp$                  |     | 1,6 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \perp$                  |     | 0,8 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \perp, \alpha_{g,v} \perp$         |     | 2   |     |     |       |               |

$\text{-}^1)$  No performance assessed

**Table C106.2:** Group factors for autoclaved aerated concrete  
(Compressive strength  $f_b = 4 \text{ N/mm}^2$ )

| Anchor rod                            | M6   | M8  | M10 | M12 | M16 | -     | -             |
|---------------------------------------|--|-----|-----|-----|-----|-------|---------------|
| Internal threaded anchor UVT<br>Top E | -  | -   | -   | -   | -   | M6    | M8            |
|                                       |  |     |     |     |     | 11x85 | 15x85         |
| Group factors                         | $h_{ef}=200 \alpha_{g,N} \parallel$              | [-] | 0,7 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \parallel$              |     | 2,0 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \parallel, \alpha_{g,v} \parallel$ |     | 2   |     |     |       |               |
|                                       | $h_{ef}=200 \alpha_{g,N} \perp$                  |     | 0,7 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \perp$                  |     | 1,2 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \perp, \alpha_{g,v} \perp$         |     | 2   |     |     |       |               |

$\text{-}^1)$  No performance assessed

**Table C106.3:** Group factors for autoclaved aerated concrete  
(Compressive strength  $f_b = 6 \text{ N/mm}^2$ )

| Anchor rod                            | M6   | M8  | M10 | M12 | M16 | -     | -             |
|---------------------------------------|--|-----|-----|-----|-----|-------|---------------|
| Internal threaded anchor UVT<br>Top E | -  | -   | -   | -   | -   | M6    | M8            |
|                                       |  |     |     |     |     | 11x85 | 15x85         |
| Group factors                         | $h_{ef}=200 \alpha_{g,N} \parallel$              | [-] | 0,7 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \parallel$              |     | 2,0 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \parallel, \alpha_{g,v} \parallel$ |     | 2   |     |     |       |               |
|                                       | $h_{ef}=200 \alpha_{g,N} \perp$                  |     | 0,7 |     |     |       | $\text{-}^1)$ |
|                                       | $h_{ef}=200 \alpha_{g,v} \perp$                  |     | 1,2 |     |     |       | $\text{-}^1)$ |
|                                       | $\alpha_{g,N} \perp, \alpha_{g,v} \perp$         |     | 2   |     |     |       |               |

$\text{-}^1)$  No performance assessed

BTI Universal Component Compound UVT Top for masonry

**Performance**  
Autoclaved aerated concrete (cylindrical drill hole), Group factors

**Annex C 106**

## Autoclaved aerated concrete (cylindrical drill hole), EN 771-4:2011+A1:2015

**Table C107.1:** Characteristic resistance under tension loading

| Anchor rod                          |               | M6  | M8              | M10 | M12 | M16 | -   | -   |
|-------------------------------------|---------------|---|-----------------|-----|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  |               | -   | -               | -   | -   | -   | M6  | M8  |
|                                     |               | N <sub>Rk</sub> = N <sub>Rk,p</sub> = N <sub>Rk,b</sub> [kN] depending on the compressive strength f <sub>b</sub> (temperature range 50/80°C) |                 |     |     |     |     |     |
| compressive strength f <sub>b</sub> | use condition | 100   | 200             | 100 | 200 | 100 | 200 | 100 |
| 2 N/mm <sup>2</sup>                 | w/w           | 1,2   | 1,2             | 1,5 | 2,0 | 1,5 | 3,0 | 1,5 |
|                                     | d/d           | 1,5   | 3,0             | 1,5 | 3,0 | 1,5 | 3,5 | 2,0 |
| 4 N/mm <sup>2</sup>                 | w/w           | 1,2   | - <sup>1)</sup> | 2,0 | 1,5 | 2,5 | 3,5 | 2,5 |
|                                     | d/d           | 1,5   | - <sup>1)</sup> | 2,0 | 3,0 | 3,0 | 5,0 | 2,5 |
| 6 N/mm <sup>2</sup>                 | w/w           | 1,5   | - <sup>1)</sup> | 3,0 | 2,5 | 4,5 | 5,0 | 4,5 |
|                                     | d/d           | 1,5   | - <sup>1)</sup> | 3,5 | 4,0 | 5,0 | 7,0 | 5,0 |
|                                     |               | 100   | 200             | 100 | 200 | 100 | 200 | 85  |

<sup>1)</sup> No performance assessed

Factor for temperature range 72/120°C: 0,83

**Table C107.2:** Characteristic resistance under shear loading

| Anchor rod                          |               | M6   | M8              | M10 | M12 | M16 | -   | -   |
|-------------------------------------|---------------|--|-----------------|-----|-----|-----|-----|-----|
| Internal threaded anchor UVT Top E  |               | -  | -               | -   | -   | -   | M6  | M8  |
|                                     |               | V <sub>Rk</sub> = V <sub>Rk,b</sub> = V <sub>Rk,c</sub> [kN] depending on the compressive strength f <sub>b</sub> (temperature range 50/80°C and 72/120°C) |                 |     |     |     |     |     |
| compressive strength f <sub>b</sub> | use condition | 100  | 200             | 100 | 200 | 100 | 200 | 100 |
| 2 N/mm <sup>2</sup>                 | w/w           | 1,2  | 1,2             | 1,2 | 1,2 | 1,2 | 1,5 | 1,2 |
|                                     | d/d           |  |                 |     |     |     |     | 1,2 |
| 4 N/mm <sup>2</sup>                 | w/w           | 2,0  | - <sup>1)</sup> | 2,5 | 2,0 | 2,0 | 2,5 | 2,0 |
|                                     | d/d           |  |                 |     |     |     |     | 2,0 |
| 6 N/mm <sup>2</sup>                 | w/w           | 2,5  | - <sup>1)</sup> | 3,0 | 2,5 | 3,0 | 3,5 | 4,0 |
|                                     | d/d           |  |                 |     |     |     |     | 4,5 |
|                                     |               | 100  | 200             | 100 | 200 | 100 | 200 | 85  |

<sup>1)</sup> No performance assessed

Factor for job site tests and displacements see annex C110

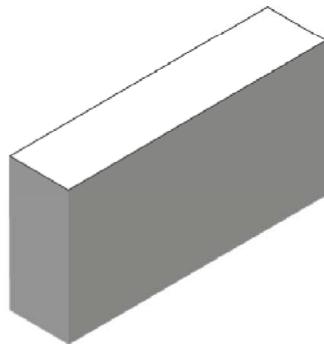
BTI Universal Component Compound UVT Top for masonry

**Performance**

Autoclaved aerated concrete (cylindrical drill hole),  
Characteristic resistance under tension and shear loading

**Annex C 107**

**Autoclaved aerated concrete (conical drill hole with special drill bit PBB),  
EN 771-4:2011+A1:2015**



| Autoclaved aerated concrete, EN 771-4:2011+A1:2015 |                       |            |     |                       |  |
|--|-----------------------|------------|-----|-----------------------|--|
| Producer   |                       | e.g. Ytong |     |                       |  |
| Density $\rho$                                     | [kg/dm <sup>3</sup> ] | 0,35       | 0,5 | 0,65                  |  |
| Compressive strength $f_b$                         | [N/mm <sup>2</sup> ]  | 2          | 4   | 6                     |  |
| Standard   |                       |            |     | EN 771-4:2011+A1:2015 |  |

**Table C108.1:** Installation parameters

| Anchor rod  | M8  | M10 | M12 | -   | M6  | M8    |
|---|-----|-----|-----|-----|-----|-------|
| Internal threaded anchor UVT Top E  | -   | -   | -   | -   | -   | 11x85 |
| Anchor rod and internal threaded anchor UVT Top E without perforated sleeve |     |     |     |     |     |       |
| Effective anchorage depth $h_{ef}$ [mm]                                     | 75  | 95  | 75  | 95  | 75  | 95    |
| Max. installation torque $T_{inst}$ [Nm]                                    |     |     |     | 2   |     |       |
| General installation parameters   |     |     |     |     |     |       |
| Edge distance $C_{min}$   | 120 | 150 | 120 | 150 | 120 | 150   |
| Spacing $S_{cr \parallel} = S_{min \parallel}$ [mm]                         | 240 | 300 | 240 | 300 | 240 | 300   |
| $S_{cr \perp} = S_{min \perp}$  | 240 | 250 | 240 | 250 | 240 | 250   |
| Drilling method   |     |     |     |     |     |       |
| Hammer drilling with hard metal hammer drill                                |     |     |     |     |     |       |

**Table C108.2:** Group factors

| Anchor rod   | M8   | M10         | M12 | - | M6 | M8    |
|--|--|-------------|-----|---|----|-------|
| Internal threaded anchor UVT Top E                   | -  | -           | -   | - | -  | 11x85 |
| Group factors  | $\alpha_{g,N \parallel}$<br>$\alpha_{g,v \parallel}$<br>$\alpha_{g,N \perp}$<br>$\alpha_{g,v \perp}$ | [ $\cdot$ ] | 2   |   |    |       |
| BTI Universal Component Compound UVT Top for masonry |  |             |     |   |    |       |

**Performance**

Autoclaved aerated concrete (conical drill hole with special drill bit PBB), dimensions, installation parameters

**Annex C 108**

**Autoclaved aerated concrete (conical drill hole with special drill bit PBB),**

**EN 771-4:2011+A1:2015**

**Table C109.1:** Characteristic resistance under tension loading

| Anchor rod   |               | M8  |     | M10 |     | M12 |     | -              |
|--|---------------|-----|-----|-----|-----|-----|-----|----------------|
| Internal threaded anchor UVT Top E   |               | -   | -   | -   | -   | -   | -   | M6 M8<br>11x85 |
| <b><math>N_{Rk} = N_{Rk,p} = N_{Rk,b}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C)</b> |               |     |     |     |     |     |     |                |
| compressive strength $f_b$   | use condition | 75  | 95  | 75  | 95  | 75  | 95  | 85             |
| 2 N/mm <sup>2</sup>  | w/w w/d       | 2,0 | 2,5 | 2,0 | 2,5 | 2,0 | 2,5 | 2,0            |
|  | d/d           | 2,0 | 2,5 | 2,0 | 2,5 | 2,0 | 2,5 | 2,0            |
| 4 N/mm <sup>2</sup>  | w/w w/d       | 3,0 | 3,5 | 3,0 | 3,5 | 3,0 | 3,5 | 3,0            |
|  | d/d           | 3,0 | 3,5 | 3,0 | 3,5 | 3,0 | 3,5 | 3,0            |
| 6 N/mm <sup>2</sup>  | w/w w/d       | 3,5 | 4,0 | 3,5 | 4,0 | 3,5 | 4,0 | 3,5            |
|  | d/d           | 4,0 | 4,5 | 4,0 | 4,5 | 4,0 | 4,5 | 4,0            |

Factor for temperature range 72/120°C: 0,83

**Table C109.2:** Characteristic resistance under shear loading

| Anchor rod  |               | M8  |    | M10 |    | M12 |    | -              |
|---|---------------|-----|----|-----|----|-----|----|----------------|
| Internal threaded anchor UVT Top E  |               | -   | -  | -   | -  | -   | -  | M6 M8<br>11x85 |
| <b><math>V_{Rk} = V_{Rk,b} = V_{Rk,c}</math> [kN] depending on the compressive strength <math>f_b</math> (temperature range 50/80°C and 72/120°C)</b> |               |     |    |     |    |     |    |                |
| compressive strength $f_b$  | use condition | 75  | 95 | 75  | 95 | 75  | 95 | 85             |
| 2 N/mm <sup>2</sup>   | w/w w/d       | 2,5 |    |     |    |     |    |                |
|   | d/d           | 4,5 |    |     |    |     |    |                |
| 4 N/mm <sup>2</sup>   | w/w w/d       | 6,0 |    |     |    |     |    |                |
|   | d/d           | 6,0 |    |     |    |     |    |                |

Factor for job site tests and displacements see annex C110

BTI Universal Component Compound UVT Top for masonry

**Performance**

Autoclaved aerated concrete (conical drill hole with special drill bit PBB),  
Characteristic resistance under tension and shear loading

**Annex C 109**

### β-factors for job site tests; displacements

**Table C110.1:** β-factors for job site tests

| use condition   |                        | w/w and w/d |        | d/d   |        |
|---|------------------------|-------------|--------|-------|--------|
| temperature range                                     |                        | 50/80       | 72/120 | 50/80 | 72/120 |
| Material  | Size                   |             |        |       |        |
| solid units   | M6                     | 0,55        | 0,46   | 0,96  | 0,80   |
|   | M8                     | 0,57        | 0,51   |       |        |
|   | M10                    | 0,59        | 0,52   |       |        |
|   | M12<br>UVT Top E 11x85 | 0,6         | 0,54   |       |        |
|   | M16<br>UVT Top E 15x85 | 0,62        | 0,52   |       |        |
|   | UVT Top H 16x85<br>K   | 0,55        | 0,46   |       |        |
| hollow units  | all sizes              | 0,86        | 0,72   | 0,96  | 0,8    |
| Autoclaved aerated concrete<br>cylindrical drill hole | all sizes              | 0,73        | 0,73   | 0,81  | 0,81   |
| Autoclaved aerated concrete<br>conical drill hole     | all sizes              | 0,66        | 0,59   | 0,73  | 0,66   |

**Table C110.2:** Displacements

| Material   | N<br>[kN]                          | $\delta N_0$<br>[mm] | $\delta N_\infty$<br>[mm] | V<br>[kN]                          | $\delta V_0$<br>[mm] | $\delta V_\infty$<br>[mm] |
|--|------------------------------------|----------------------|---------------------------|------------------------------------|----------------------|---------------------------|
| solid units and autoclaved<br>aerated concrete $h_{ef}=100\text{mm}$ | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,03                 | 0,06                      | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,82                 | 0,88                      |
| hollow units   | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,48                 | 0,06                      | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 1,71                 | 2,56                      |
| solid brick Mz NF<br>annex C 4 - C 7                                 | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,74                 | 1,48                      | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 1,23                 | 1,85                      |
| solid brick KS NF<br>annex C 14 / C 15                               | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,2                  | 0,4                       | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,91                 | 1,37                      |
| AAC $h_{ef}=200\text{ mm}$<br>annex C 105 - C 107                    | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 1,03                 | 2,06                      | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 1,25                 | 1,88                      |
| brick<br>Annex C 89 / C 90   | $\frac{N_{Rk}}{1,4 * \gamma_{Mm}}$ | 0,03                 | 0,06                      | $\frac{V_{Rk}}{1,4 * \gamma_{Mm}}$ | 6,44                 | 9,66                      |

For anchorage in autoclaved aerated concrete, the partial factor  $\gamma_{MAAC}$  shall be used instead of  $\gamma_{Mm}$ .

BTI Universal Component Compound UVT Top for masonry

**Performance**  
β-factors for job site tests; displacements

**Annex C 110**