



Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments



European Technical Assessment

ETA-12/0544 of 15 December 2016

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

Deutsches Institut für Bautechnik

Mungo Injection system MIT-SE Plus or MIT-COOL Plus for masonry

Injection system for use in masonry

Mungo Befestigungstechnik AG Bornfeldstrasse 2 4603 OLTEN SCHWEIZ

Werk 13 / Plant 13

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

Guideline for European technical approval of "Metal Injection Anchors for Use in Masonry", ETAG 029, April 2013,

used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.



European Technical Assessment ETA-12/0544 English translation prepared by DIBt

Page 2 of 61 | 15 December 2016

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Page 3 of 61 | 15 December 2016

Specific Part

1 Technical description of the product

The Mungo Injection system MIT-SE Plus or MIT-COOL Plus is a bonded anchor (injection type) consisting of a mortar cartridge with injection mortar MIT-SE Plus or MIT-COOL Plus, a perforated sleeve and an anchor rod with hexagon nut and washer. The steel elements are made of zinc coated steel or stainless steel.

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

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

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

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

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

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

3.1 Mechanical resistance and stability (BWR 1)

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

3.2 Safety in case of fire (BWR 2)

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

3.3 Hygiene, health and the environment (BWR 3)

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



European Technical Assessment ETA-12/0544

Page 4 of 61 | 15 December 2016

English translation prepared by DIBt

3.4 Safety in use (BWR 4)

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

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

In accordance with guideline for European technical approval ETAG 029, April 2013 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 the applicable European legal act is: [97/177/EC]. The system to be applied is: 1

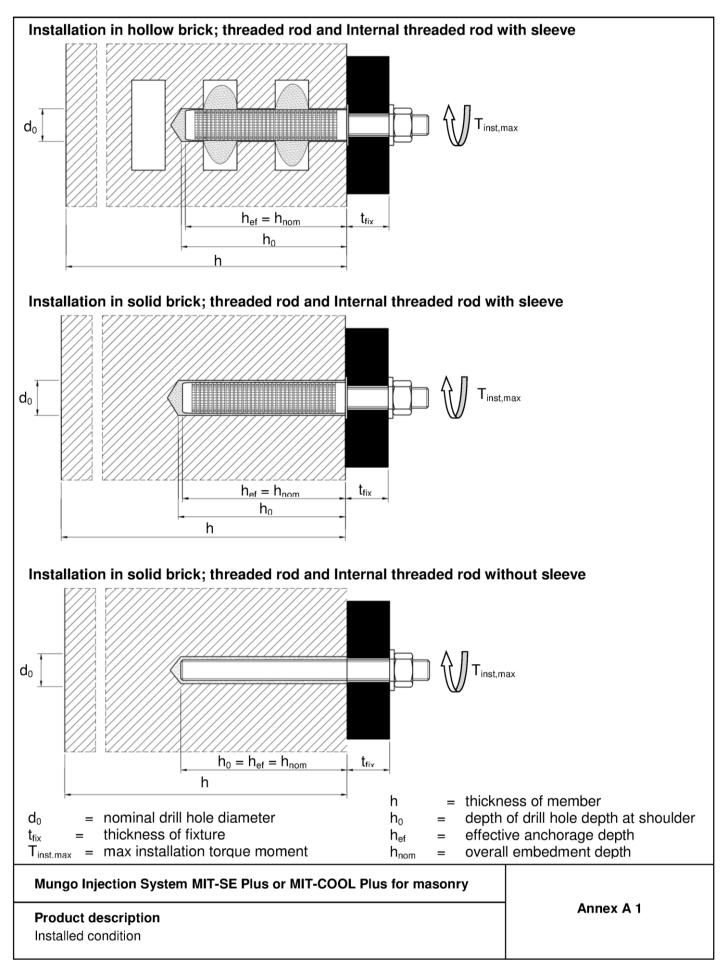
5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

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

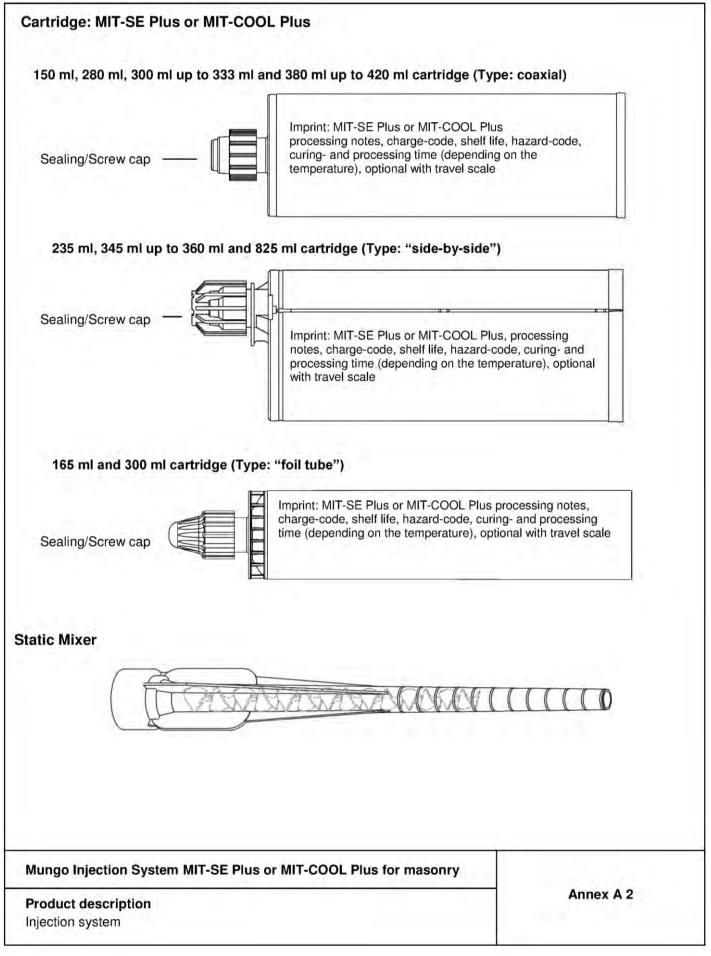
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Uwe Bender Head of Department *beglaubigt:* Baderschneider









Page 7 of European Technical Assessment ETA-12/0544 of 15 December 2016



| Threaded rod M8, M10, M12, M16 | |
|---|-----------|
| | |
| Mark of the embedment depth | |
| \ I _{ges} | |
| | |
| | |
| | |
| $h_{ef} = h_{nom}$ | D D |
| nut washer | d. = |
| | 5 |
| | |
| | |
| | |
| | |
| Materials, dimensions and mechanical properties acc. to Table A1 Inspection certificate 3.1 acc. to EN 10204:2004. The document shall be store Marking of embedment depth | ed. |
| | |
| Internal threaded rod IG-M6, IG-M8, IG-M10 | |
| Mark the producer | |
| N | |
| | |
| | 5 |
| P | = dnom |
| | Ū Ū |
| - her | |
| | |
| Marking: e.g. <>> M8 | |
| Ť | |
| | |
| | |
| | |
| Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry | 4000 |
| Product description | Annex A 3 |
| Anchor rods | |



| | Material | | | | | |
|---|---|--|--|--|--|--|
| Steel, zinc plated ≥ 5 μm acc. to EN ISO 4042: hot-dip galvanised ≥ 40 μm acc. to EN ISO 146 | | | | | | |
| Anchor rod | Steel, EN 10087:1998 or EN 10263:2001 Property class 4.6, 4.8, 5.6, 5.8, 8.8 acc. EN 1993-1-8:2005+AC:2009 A _s > 8% fracture elongation | | | | | |
| Hexagon nut, EN ISO 4032:2012 | Steel acc. EN 10087:1998 or EN 10263:2001 Property class 4 (for class 4.6, 4.8 rod) EN ISO 898-2:2012 Property class 5 (for class 5.6, 5.8 rod) EN ISO 898-2:2012 Property class 8 (for class 8.8 rod) EN ISO 898-2:2012 | | | | | |
| Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000 | Steel, zinc plated or hot-dip galvanised | | | | | |
| Internal threaded rod | Steel, zinc plated Property class 5.6, 5.8 and 8.8 EN ISO 898-1:2013 | | | | | |
| Stainless steel | | | | | | |
| Anchor rod | Material 1.4401 / 1.4404 / 1.4571, EN 10088-1:2014, Property class 70 EN ISO 3506-1:2009 Property class 80 EN ISO 3506-1:2009 Material 1.4401 / 1.4404 / 1.4571 EN 10088-1:2014, | | | | | |
| Hexagon nut, EN ISO 4032:2012 | Property class 70 (for class 70 rod) EN ISO 3506-2:2009 Property class 80 (for class 80 rod) EN ISO 3506-2:2009 | | | | | |
| Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000 | Material 1.4401, 1.4404 or 1.4571, EN 10088-1:2014 | | | | | |
| Internal threaded rod | Stainless steel: 1.4401 / 1.4404 / 1.4571, EN 10088-1:2014 Property class 70 (for class 70 rod) EN ISO 3506-1:2009 | | | | | |
| High corrosion resistant steel (HCR) | | | | | | |
| Anchor rod | Material 1.4529 / 1.4565, EN 10088-1:2014, Property class 70 EN ISO 3506-1:2009 Property class 80 EN ISO 3506-1:2009 | | | | | |
| Hexagon nut, EN ISO 4032:2012 | Material 1.4529 / 1.4565, EN 10088-1:2014, Property class 70 (for class 70 rod) EN ISO 3506-2:2009 Property class 80 (for class 80 rod) EN ISO 3506-2:2009 | | | | | |
| Washer, EN ISO 887:2006, EN ISO 7089:2000, EN ISO 7093:2000, or EN ISO 7094:2000 | Material 1.4529 / 1.4565, EN 10088-1:2014 | | | | | |
| Internal threaded rod | Stainless steel: 1.4529 / 1.4565, EN 10088-1:2014 Property class 70 (for class 70 rod) EN ISO 3506-1:2009 | | | | | |
| Plastic sleeve | | | | | | |
| Perforated sleeve | Material: Polypropylene | | | | | |



| Table A2: Sleeve (Plastic) | | | | | | | | | |
|---|--------------------------------------|-----------|------------------------------------|------------------------------------|------------------|---------------------------------|----------------------------------|----------------------------------|--------------------------------|
| SH 12x80 SH 16x85 SH 20x85 d | 3 | | L _s = | h _{ef} = h _{nom} | | | | | |
| SH 16x130 SH 20x130 SH 20x200 d _s | | | L _s = h _{ef} = | = h _{nom} | | | | | |
| Table A3: Sizes sleeve | | | | | | - | | - | |
| | | S | leeve | 12x80 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |
| Diameter of sleeve | d _s = d _{nor} | | [mm] | 12 | 16 | 16 | 20 | 20 | 20 |
| Length of sleeve | Ls | | [mm] | 80 | 85 | 130 | 85 | 130 | 200 |
| Effective anchorage depth | h _{et} | | [mm] | 80 | 85 | 130 | 85 | 130 | 200 |
| Overall anchor embedment | h _{no} | n [| [mm] | 80 | 85 | 130 | 85 | 130 | 200 |
| Table A4: Steel | | | | | | | | | |
| | Anchor | rod | IG-M6 | IG-M8 | IG-M10 | M8 | M10 | M12 | M16 |
| Outside diameter of anchor | $d_1 = d_{nom}$ | [mm] | 10 ¹⁾ | 12 ¹⁾ | 16 ¹⁾ | 8 | 10 | 12 | 16 |
| Diameter of internal thread | d ₂ | [mm] | 6 | 8 | 10 | - | - | - | - |
| Thread engagement length Min/max | I _{IG} | [mm] | 8/20 | 8/20 | 10/25 | - | - | - | - |
| Total length of steel element | I _{ges} | [mm] | | sleeve: hef | | hef + t _{fix} + 9,5 | hef + t _{fix} + 11,5 | hef + t _{fix} + 17,5 | hef + t _f + 20,0 |
| ¹⁾ Internal threaded rod with me | etric exte | ernal thr | | | | | ,. | , . | , . |
| Mungo Injection System M | IIT-SE | Plus o | r MIT-CO | OL Plus fo | or masonr | v | | | |
| Product description Sleeves | | | | | | | Ar | nnex A 5 | |



Specifications of intended use

Anchorages subject to:

Static and quasi-static loads

Base materials:

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

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

Temperature Range:

- $T_a: -40^{\circ}C$ to $+40^{\circ}C$ (max. short term temperature $+40^{\circ}C$ and max. long term temperature $+24^{\circ}C$)
- _ T_b : - 40°C to +80°C (max. short term temperature +80°C and max. long term temperature +50°C)
- T_c : 40°C to +120°C (max. short term temperature +120°C and max. long term temperature +72°C)

Use conditions (Environmental conditions):

- Dry and wet structure (regarding injection mortar).
- Structures subject to dry internal conditions (zinc coated steel, stainless steel or high corrosion resistant steel).
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel or high corrosion resistant steel).
- Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant steel).

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Use categories in respect of installation and use:

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

Design:

- Verifiable calculation notes and drawings are prepared taking account the relevant masonry in the region of the anchorage, the loads to be transmitted and their transmission to the supports of the structure. The position of the anchor is indicated on the design drawings.
- The anchorages are designed in accordance with the ETAG 029, Annex C, Design method A under the responsibility of an engineer experienced in anchorages and masonry work.
- N_{Rk,p} = N_{Rk,b} see Annex C4 to C45; N_{Rk,s} see Annex C3; N_{Rk,pb} see ETAG 029, Annex C
- $V_{Rk,b}$ and $V_{Rk,c}$ see Annex C4 to C45; $V_{Rk,s}$ see Annex C3; $V_{Rk,pb}$ see ETAG 029, Annex C
- For application with sleeve with drill bit size ≤ 15mm installed in joints not filled with mortar:
 - 0
 - $\begin{array}{l} N_{\text{Rk},p,j} = 0,18 \ ^* \ N_{\text{Rk},p} \ \text{and} \ N_{\text{Rk},b,j} = 0,18 \ ^* \ N_{\text{Rk},b} \\ V_{\text{Rk},c,j} = 0,15 \ ^* \ V_{\text{Rk},c} \ \text{and} \ V_{\text{Rk},b,j} = 0,15 \ ^* \ V_{\text{Rk},b} \end{array} \begin{array}{l} (N_{\text{Rk},p} = N_{\text{Rk},b} \ \text{see Annex C4 to C45}) \\ (V_{\text{Rk},b} \ \text{and} \ V_{\text{Rk},c} \ \text{see Annex C4 to C45}) \end{array}$ 0

Application without sleeve installed in joints not filled with mortar is not allowed.

Installation:

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Intended Use

Specifications

Annex B 1



| Brick-No. | Brick type | Picture | Brick size length width height | Compressive strength | Bulk density | Sleeve - Anchor ty | pe | Annex |
|-----------|--|-------------------|---|-------------------------|-----------------------|---|---------------|--------------|
| | | | [mm] | [N/mm ²] | [kg/dm ³] | | | |
| Auto | claved aerated co | ncrete units acco | ording EN 771 | -4 | | | | |
| 1 | Autoclaved Aerated Concrete AAC6 | 15. | 499 240 249 | 6 | 0,6 | M8/M10/M12/M16/IG-M6/IG-M8/ | IG-M10 | C4 - C5 |
| Calc | ium silicate masor | nry units accordi | ng EN 771-2 | | | and and an internet of the second | | |
| 2 | Calcium silicate solid brick KS-NF | | 240 115 71 | 10 20 27 | 2,0 | M8/M10/M12/M16/IG-M6/IG-M8/ SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG- SH 20x130 – M12/M16/IG-M8/IG SH 20x200 – M12/M16/IG-M8/IG | M10 M10 | C6 - C8 |
| 3 | Calcium silicate hollow brick KSL-3DF | | 240 175 113 | 8 12 14 | 1,4 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG- SH 20x130 – M12/M16/IG-M8/IG SH 20x200 – M12/M16/IG-M8/IG | i-M10 | C9 - C11 |
| 4 | Calcium silicate hollow brick KSL-12DF | · terey | 498 175 238 | 10 12 16 | 1,4 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG SH 20x130 – M12/M16/IG-M8/IG | | C12 C14 |
| Clay | masonry units ac | cording EN 771- | 1 | | | Contraction Constraints | | |
| 5 | Clay solid brick Mz – DF | | 240 115 55 | 10 20 28 | 1,6 | M8/M10/M12/M16/IG-M6/IG-M8/ SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG- SH 20x130 – M12/M16/IG-M8/IG SH 20x200 – M12/M16/IG-M8/IG | -M10 i-M10 | C15 C17 |
| 6 | Clay hollow brick Hlz-16DF | | 497 240 238 | 6 8 12 14 | 0,8 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG- SH 20x130 – M12/M16/IG-M8/IG SH 20x200 – M12/M16/IG-M8/IG | i-M10 | C18 C20 |
| 7 | Clay hollow brick Porotherm Homebric | | 500 200 299 | 4 6 10 | 0,7 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG SH 20x130 – M12/M16/IG-M8/IG | | C21 - C23 |
| Ir | Nungo Injection S Itended Use rick types and pro | | | | | | ex B 2 | |



| Brick-No. | Brick type | Picture | Brick size length width height | Compressive strength | Bulk density | Sleeve - Anchor type | Annex |
|-----------|---|--|---|-------------------------|---|--|------------|
| • | | | [mm] | [N/mm ²] | [kg/dm ³] | | |
| Clay | masonry units a | according EN 7 | 71-1 | | | | |
| 8 | Clay hollow brick BGV Thermo | | 500 200 314 | 4 6 10 | 0,6 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 | C24 C26 |
| 9 | Clay hollow brick Calibric R+ | | 500 6 SH 16x85 – M8/M10/IG-M6 200 9 0,6 SH 16x130 – M8/M10/IG-M6 314 12 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 | | SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 | C27 C29 | |
| 10 | Clay hollow brick Urbanbric | 560 6 NH SH 12x80 - M8 SH 16x85 - M8/M10/IG-M6 SH 16x85 - M8/M10/IG-M6 SH 16x130 - M8/M10/IG-M6 SH 12x80 - M8 SH | | C30 C32 | | | |
| 11 | Clay hollow brick Brique creuse C40 | | 500 200 200 | 4 8 12 | 0,7 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 | C33 C35 |
| 12 | Clay hollow brick Blocchi Leggeri | | 250 120 250 | 4 6 8 12 | 0,6 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10 | C36 C38 |
| 13 | Clay hollow brick Doppio Uni | | 250 120 120 | 10 16 20 28 | 0,9 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10 | C39 C41 |
| Ligh | nt weight concre | te according EN | 771-3 | | | | _ |
| 14 | Hollow light weight concrete Bloc creux B40 | | 494 200 190 | 4 | 0,8 | SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 | C42 C43 |
| 15 | Solid light weight concrete | | 300 123 248 | 2 | 0,6 | M8/M10/M12/M16/IG-M6/IG-M8/IG-M10 SH 12x80 – M8 SH 16x85 – M8/M10/IG-M6 SH 16x130 – M8/M10/IG-M6 SH 20x85 – M12/M16/IG-M8/IG-M10 SH 20x130 – M12/M16/IG-M8/IG-M10 SH 20x200 – M12/M16/IG-M8/IG-M10 | C44 C45 |
| h | Mungo Injection ntended Use Brick types and p | | | | | nry Annex B 3 | |



Installation: Steel Brush



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

| Anchor size | | | M8 | M10 | IG-M6 | M12 | IG-M8 | M16 | IG-M10 |
|---|-----------------------|------|----------------------|-----|-------|----------|-------|-----|--------|
| | | | | | | | | | |
| Nominal drill hole diameter | do | [mm] | 10 12 14 18 | | | | | | 18 |
| Drill hole depth | h _o | [mm] | 80 90 100 100 | | | | | | 00 |
| Effective anchorage depth | h _{ef} | [mm] | 80 90 100 100 | | | | | | 00 |
| Minimum wall thickness | h _{min} | [mm] | h _{ef} + 30 | | | | | | |
| Diameter of clearance hole in the fixture | d _f ≤ | [mm] | 9 | 12 | 7 | 14 | 9 | 18 | 12 |
| Diameter of steel brush | d _b | [mm] | 12 | 1 | 4 | 1 | 6 | 2 | 20 |
| Minimum diameter of steel brush | d _{b,min} | [mm] | 10,5 | 12 | 2,5 | 14 | 1,5 | 18 | 8,5 |
| Max installation torque moment | T _{inst,max} | [Nm] | | | 2 (1 | 4 for Mz | DF) | | |

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

| Anchor size | | | M8 | M8 / M1 | 0 / IG-M6 | M12 / M | 16 / IG-M8 | / IG-M10 |
|---|-----------------------|--------|-------|---------|--------------------|---------|--------------------------------|----------|
| | \$ | Sleeve | 12x80 | 16x85 | 16x130 | 20x85 | 20x130 | 20x200 |
| Nominal drill hole diameter | d ₀ | [mm] | 12 | 16 | 16 | 20 | 20 | 20 |
| Drill hole depth | h ₀ | [mm] | 85 | 90 | 135 | 90 | 135 | 205 |
| Effective anchorage depth | h _{ef} | [mm] | 80 | 85 | 130 | 85 | 130 | 200 |
| Minimum wall thickness | h _{min} | [mm] | 115 | 115 | 175 | 115 | 175 | 240 |
| Diameter of clearance hole in the fixture | d _f ≤ | [mm] | 9 | | -M6) / 12 (M10) | | //8) / 12 (IG //12) / 18 (I | |
| Diameter of steel brush | d _b | [mm] | 14 | 1 | 8 | | 22 | |
| Minimum diameter of steel brush | d _{b,min} | [mm] | 12,5 | 16 | 3,5 | | 20,5 | |
| Max installation torque moment | T _{inst,max} | [Nm] | | | 2 | 2 | | |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

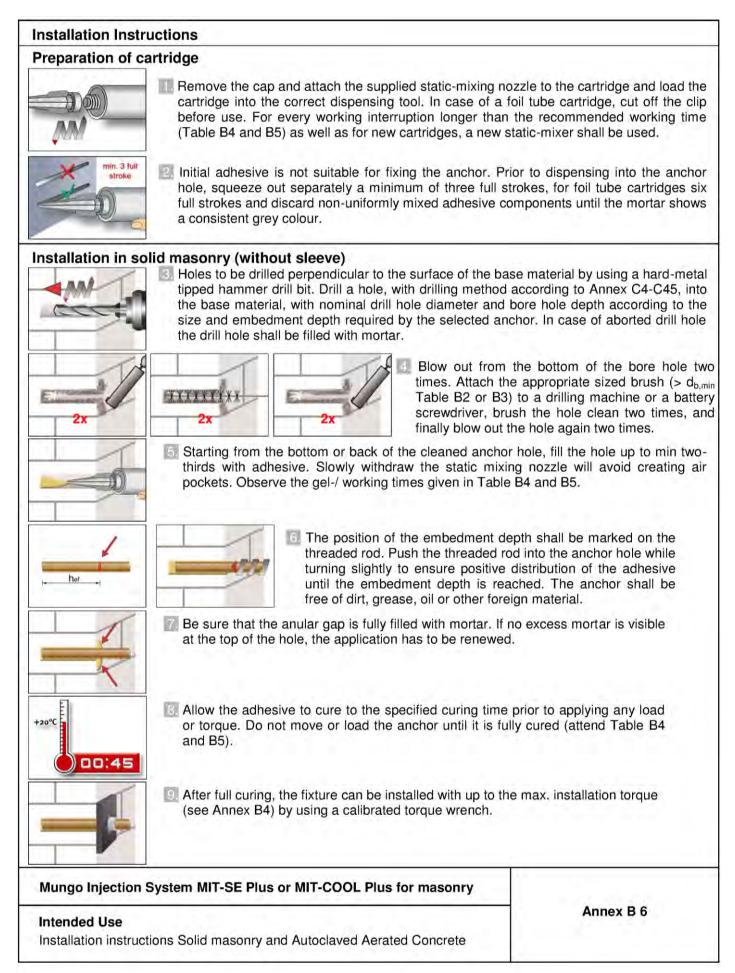
Intended Use

Installation parameters and cleaning brush



| Temperature in the base material TTemperature cartridge10°Cto- 6°C+15°C to +40° | | Gelling- / working time | Minimum curing time in dry base material ¹⁾ |
|---|-------------------------------------|---|---|
| - 10°C to - 6°C | +15°C to +40°C | 90 min | 24 h |
| - 5°C to - 1°C | | 90 min | 14 h |
| 0°C to +4 °C | | 45 min | 7 h |
| + 5 °C to + 9 °C | | 25 min | 2 h |
| 10 °C to + 19 °C | +5°C to +40°C | 15 min | 80 min |
| 20 °C to + 29 °C | +5°C 10 +40°C | 6 min | 45 min |
| 30 °C to + 34 °C | | 4 min | 25 min |
| 35 °C to + 39 °C | | 2 min | 20 min |
| + 40°C | | 1,5 min | 15 min |
| Temperature in the base material T 20 °C to - 16 °C | Temperature of cartridge | Gelling- / working time 75 min | Minimum curing time in dry base material ¹⁾ 24 h |
| | | 55 min | 24 h 16 h |
| 15 °C to - 11 °C 10 °C to - 6 °C | | 35 min | 10 h |
| - 5 °C to - 1 °C | -20°C to +10°C | 20 min | 5 h |
| $\frac{1}{0}$ °C to $+4$ °C | -20° C 10 + 10° C | 10 min | 2,5 h |
| + 5 °C to + 9 °C | | 6 min | 80 min |
| + 10°C | | 6 min | 60 min |
| | | | |
| | | | |

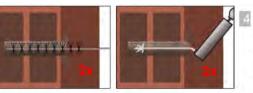




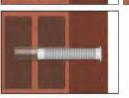


Installation in solid and hollow masonry (with sleeve)

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



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

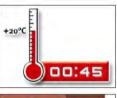


5. Insert the perforated sleeve flush with the surface of the masonry or plaster. Only use sleeves that have the right length. Never cut the sleeve.

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



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



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



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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Intended Use

Installation instructions hollow brick

Annex B 7



| Driek Ne | Installation & Use | | | β-fa | ctor | | | | |
|-----------------------------|---------------------|-----------------------|------------|-----------------------|------------|----------|------------|--|--|
| Brick-No. and | category | T _a : 40°(| C / 24°C | Т _ь : 80°0 | C / 50°C | T₀: 120° | C / 72°C | | |
| abbreviation | | d/d | w/d w/w | d/d | w/d w/w | d/d | w/d w/w | | |
| 1 AAC6 | For all sizes | 0,95 | 0,86 | 0,81 | 0,73 | 0,81 | 0,73 | | |
| 2 | d₀ ≤ 14 mm | 0,93 | 0,80 | 0,87 | 0,74 | 0,65 | 0,56 | | |
| KS-NF | d₀ ≥ 16 mm | 0,93 | 0,93 | 0,87 | 0,87 | 0,65 | 0,65 | | |
| 3 | d₀ ≤ 12 mm | 0,93 | 0,80 | 0,87 | 0,74 | 0,65 | 0,56 | | |
| KSL-3DF | d₀ ≥ 16 mm | 0,93 | 0,93 | 0,87 | 0,87 | 0,65 | 0,65 | | |
| 4 | d₀ ≤ 12 mm | 0,93 | 0,80 | 0,87 | 0,74 | 0,65 | 0,56 | | |
| KSL-12DF | d₀ ≥ 16 mm | 0,93 | 0,93 | 0,87 | 0,87 | 0,65 | 0,65 | | |
| 5 MZ-DF | | | | | | | | | |
| 6 Hlz-16DF | | | | | | | | | |
| 7 Porotherm Homebric | | | | | | | | | |
| 8 BGV-Thermo | | | | | | | | | |
| 9 Calibric R+ | For all sizes | 0,86 | 0,86 | 0,86 | 0,86 | 0,73 | 0,73 | | |
| 10 Urbanbric | | | | | | | | | |
| 11 Brique creuse C40 | | | | | | | | | |
| 12 Blocchi Leggeri | | | | | | | | | |
| 13 Doppio Uni | | | | | | | | | |
| 14 | d₀ ≤ 12 mm | 0,93 | 0,80 | 0,87 | 0,74 | 0,65 | 0,56 | | |
| Bloc creux B40 | d₀ ≥ 16 mm | 0,93 | 0,93 | 0,87 | 0,87 | 0,65 | 0,65 | | |
| 15 | d₀ ≤ 12 mm | 0,93 | 0,80 | 0,87 | 0,74 | 0,65 | 0,56 | | |
| Solid light weight concrete | d₀≥ 16 mm | 0,93 | 0,93 | 0,87 | 0,87 | 0,65 | 0,6 | | |
| Mungo Injection System | MIT-SE Plus or MIT- | COOL Plu | s for maso | nry | | | | | |

 β -factors for job site testing under tension load



| Size | | | IG-M6 | IG-M8 | IG-M10 | M8 | M10 | M12 | M16 |
|---|-------------------|------|-------|-------|--------|----|-------|-----|-----|
| Characteristic tension resistance | | | | | I | | | | |
| steel, property class 4.6 | N _{Rk,s} | [kN] | - | - | - | 15 | 23 | 34 | 63 |
| steel, property class 4.0 | γ́Ms | [-] | | - | | | 2, | 0 | |
| steel, property class 4.8 | $N_{Rk,s}$ | [kN] | - | - | - | 15 | 23 | 34 | 63 |
| steel, property class 4.0 | γMs | [-] | | - | | | 1, | | |
| steel, property class 5.6 | $N_{Rk,s}$ | [kN] | 10 | 18 | 29 | 18 | 29 | 42 | 79 |
| | γMs | [-] | | 2,0 | | | 2, | | |
| steel, property class 5.8 | $N_{Rk,s}$ | [kN] | 10 | 17 | 29 | 18 | 29 | 42 | 79 |
| | γMs | [-] | | 1,5 | | | 1, | | |
| steel, property class 8.8 | $N_{Rk,s}$ | [kN] | 16 | 27 | 46 | 29 | 46 | 67 | 126 |
| | γMs | [-] | | 1,5 | | | 1, | | |
| Stainless steel A4 / HCR, property class 70 | $N_{Rk,s}$ | [kN] | 14 | 26 | 41 | 26 | 41 | 59 | 110 |
| | γMs | [-] | | 1,87 | | | 1,8 | | |
| Stainless steel A4 / HCR, property class 80 | $N_{Rk,s}$ | [kN] | 16 | 29 | 46 | 29 | 46 | 67 | 126 |
| , p | γ̈́Ms | [-] | | 1,6 | | | 1, | 6 | |
| Characteristic shear resistance | | _ | | | | | _ | | _ |
| steel, property class 4.6 | $V_{Rk,s}$ | [kN] | - | - | - | 7 | 12 | 17 | 31 |
| steel, property class 4.6 | γ́Ms | [-] | | - | | | 1,6 | 67 | |
| steel, property class 4.8 | $V_{Rk,s}$ | [kN] | - | - | - | 7 | 12 17 | | 31 |
| steel, property class 4.0 | γ́Ms | [-] | | - | | | 1,2 | 25 | |
| steel, property class 5.6 | $V_{Rk,s}$ | [kN] | 5 | 9 | 15 | 9 | 15 21 | | 39 |
| steel, property class 5.6 | γMs | [-] | | 1,67 | | | 1,6 | 67 | |
| steel, property class 5.8 | $V_{Rk,s}$ | [kN] | 5 | 9 | 15 | 9 | 15 | 21 | 39 |
| steel, property class 5.0 | γMs | [-] | | 1,25 | | | 1,2 | 25 | |
| steel, property class 8.8 | $V_{Rk,s}$ | [kN] | 8 | 14 | 23 | 15 | 23 | 34 | 63 |
| | γMs | [-] | | 1,25 | | | 1,2 | | |
| Stainless steel A4 / HCR, property class 70 | $V_{Rk,s}$ | [kN] | 7 | 13 | 20 | 13 | 20 | 30 | 55 |
| | γMs | [-] | | 1,56 | | | 1, | 56 | |
| Stainless steel A4 / HCR, property class 80 | $V_{Rk,s}$ | [kN] | 8 | 15 | 23 | 15 | 23 | 34 | 63 |
| | γMs | [-] | | 1,33 | | | 1,: | 33 | |
| Characteristic bending moment | | | | | | | | | |
| | $M_{Rk,s}$ | [Nm] | - | - | - | 15 | 30 | 52 | 133 |
| steel, property class 4.6 | γMs | [-] | | - | | | 1,6 | 57 | |
| | M _{Rk,s} | [Nm] | - | - | - | 15 | 30 | 52 | 133 |
| steel, property class 4.8 | γMs | [-] | | - | | | 1,2 | | |
| ataol, arabartu alaas 5 0 | M _{Rk,s} | [Nm] | 8 | 19 | 37 | 19 | 37 | 66 | 167 |
| steel, property class 5.6 | γMs | [-] | | 1,67 | · | | 1,6 | | |
| ateal preparty along 5.0 | M _{Rk,s} | [Nm] | 8 | 19 | 37 | 19 | 37 | 66 | 167 |
| steel, property class 5.8 | γMs | [-] | | 1,25 | | | 1,2 | 25 | |
| | M _{Rk,s} | [Nm] | 12 | 30 | 60 | 30 | 60 | 105 | 266 |
| steel, property class 8.8 | γMs | [-] | | 1,25 | | | 1,2 | 25 | |
| | M _{Rk,s} | [Nm] | 11 | 26 | 52 | 26 | 52 | 92 | 233 |
| Stainless steel A4 / HCR, property class 70 | γMs | [-] | | 1,56 | | | 1, | | |
| | M _{Rk,s} | [Nm] | 12 | 30 | 60 | 30 | 60 | 105 | 266 |
| Stainless steel A4 / HCR, property class 80 | γMs | [-] | 1 | 1,33 | • | | 1,: | | |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances

Z78775.16

Characteristic resistance under tension and shear load - steel failure



| Cer | | Cm | in |
|---|--|--|------------------------|
| | Scr II | 1 | |
| | | Sort Samo | |
| | | Smin II | |
| | | | |
| | | J. J | |
| | Ň | s s | |
| | Scr 11 | | |
| | | Not the second s | |
| | T at | S | |
| | 798 | Scr II | |
| | | Scr II | |
| h- | | | |
| - Character | istic odgo diotopoo | | |
| | stic edge distance Edge distance | | |
| | istic spacing | | |
| min = Minimum : | spacing | | |
| _{cr,II} ; (S _{min,II}) = Character | istic (minimum) spacing | for anchors placed parallel to | bed joint |
| $s_{cr,\perp}$; $(S_{min,\perp}) = Character$ | stic (minimum) spacing | for anchors placed perpendicu | ular to bed joint |
| | | | 1 |
| Load direction | Tension load | Shear load parallel to free | Shear load perpendicul |
| nchor | Tension load | edge | to free edge |
| ing in additionation to be a set of the | | | |
| nchors places parallel to bed pint s _{cr.II} ; (s _{min.II}) | | V | V |
| | | | |
| nchors places perpendicular | | V 🛔 | V |
| b bed joint s _{cr,⊥;} (s _{min,⊥}) | | | |
| g,N,II = Group factor in | case of tension load fo | r anchors placed parallel to the | bed joint |
| | | anchors placed parallel to the b | |
| J. I. | | r anchors placed perpendicula | |
| | | anchors placed perpendicular t | |
| | | | |
| | $ _{k} = \alpha_{g,N} * N_{RK} $ $ _{k} = \alpha_{g,N,II} * \alpha_{g,N,\perp} * N_{RK} $ | and $V_{Rk}^{g} = \alpha_{g,V} * V_{Rk}$ and $V_{Rk}^{g} = \alpha_{g,V,II} * \alpha_{g,V}$ | * V |
| | $k = \alpha_{g,N,II} \alpha_{g,N,\perp} n_{RK}$ k: N _{Rk,b} or N _{Rk,b,j} for c _{cr}) | and $\mathbf{v}_{Rk} = \alpha_{g,V,II} \alpha_{g,V,II}$ | v,∸ V HK |
| | K: V _{Rk,c} ; V _{Rk,c,j} ; V _{Rk,b} or V _F | _{ak,b,j} for c _{cr}) | |
| | h the relevant α_{g}) | | |
| | | | |
| | | | |
| ъ. | | | |
| Mungo Injection System MIT-S | E Plus or MIT-COOL I | Plus for masonry | |
| Mungo Injection System MIT-S | E Plus or MIT-COOL I | Plus for masonry | Annex C 3 |



| | Brick type | | | Autoclaved Aerated Concrete | | | | | | |
|---|---------------------------------------|---|------|-----------------------------|--|---|------------|-------------------|--|--|
| Bulk density p [k | kg/dm ³] | 0,6 | | | | In. | | | | |
| | N/mm ²] | 6 | | | | | in the | - | | |
| Code | winni j | EN 771-4 | | | | | 10.7 | | | |
| Producer (country code) | e.g. Porit (DE) | | | | | | | | | |
| | ick dimensions [mm] 499 x 240 x 249 | | | | | - | | | | |
| Drilling method | fuuul | 499 x 240 x 249 Rotary | | | | | - | 1.0 | | |
| Table C4: Installation paran | neter | Trotaly | | | | | | | | |
| Anchor size | | E | M8 | M10/IG-M6 | M12/IG | -M8 | M16/IG-M10 | | | |
| Effective anchorage depth | | [mm] | 80 | 90 | 100 | | 100 | | | |
| Edge distance | Ccr | | [mm] | | | 1,5*hef | | | | |
| | Cmi | | [mm] | | | 75 | | | | |
| Minimum edge distance | | n,∨,II (Cmin,v,⊥) ¹⁾ | [mm] | | 1.0 | 75 (1,5*h _{ef} |) | | | |
| Spacing | Scr | | [mm] | | | 3*hef | _ | | | |
| Minimum spacing | Smi | n | [mm] | | | 100 | | | | |
| Configuration II: anchors placed parallel to horizontal joint | enchor g | roup in case of te with c ≥ 125 (M8:120 1,5*hef | | | with s ≥ 100 3*hef | α _{g,N,II} | | 1,8 | | |
| Configuration II: anchors placed parallel to horizontal | e e e e e e e e e e e e e e e e e e e | with c ≥ 125 (M8:120 | | | 100 | $\alpha_{g,N,II}$ $\alpha_{g,N,\perp}$ | F | 1.2.2.2 | | |
| Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint Table C6: Group factor for a | | with c ≥ 125 (M8:120 1,5*hef 75 1,5*hef |) | ng par | 100 3*hef 100 3*hef rallel to free e | αg,N,⊥ | (-) | 2,0 1,4 | | |
| II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint Table C6: Group factor for a Configuration | | with c ≥ 125 (M8:120 1,5*hef 75 1,5*hef roup in case of sh with c ≥ |) | ng par | 100 3*hef 100 3*hef rallel to free e | αg,N,⊥ | [-] | 2,0 1,4 2,0 | | |
| Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint Table C6: Group factor for a | | with c ≥ 125 (M8:120 1,5*hef 75 1,5*hef |) | ng par | 100 3*hef 100 3*hef rallel to free e | αg,N,⊥ | (-) | 2,0 1,4 | | |



| aced zontal | | | with c ≥ | | A | with | S≥ | | | | |
|--|---|--|--|--|--|---|--|---|---|--|---|
| zontai |)(V | | 1,5*hef | | | 3,0' | hef | α _{g,V,ii} | | 2,0 | |
| ors placed dicular to ntal joint | | | 1,5*hef | | | 3,0 | hef | | α _{g,v,⊥} [-] | | 2,0 |
| haracteristi | c values | s of resistan | ce under ter | sion | and sh | ear | oads | | | | |
| | | | (| Chara | acteristic | resi | stance | | | | |
| | | | | | Use cat | egor | У | | | | |
| Effective | | d/d | | | | | w/w w/d | 1 | | | d/d w/d w/w |
| anchorage depth | 40°C/2 | 4°C 80°C/5 | 0°C 120°C/7 | 2°C | 40°C/24 | 4°C | 80°C/50°C | | 120°C | 72°C | For all temperatu range |
| h.e | | Nous = N | $N_{Rk,b} = N_{Rk,p}^{(1)}$ | | N _{Bk,b} = N | | 1) Pk p ¹ | | V _{Rk,b} ²⁾³⁾ | | |
| | - | INHK,D - I | чнк,р | | [kN | | RK,D - T | нк,р | | | * HK,D |
| | - | Compre | essive stren | ath f | | | | - | | | |
| 80 | 2,5 (2 | | | | | | 2,0 (1, | 5) | 1,5 (| 1,2) | 6,0 |
| 90 | | | ,0) 2,5 (1, | ,5) | 3,5 (2, | ,5) | 3,0 (2, | 0) | | | 10,0 |
| 100 | 5,0 (3 | ,5) 4,0 (3 | ,0) 3,0 (2, | ,5) | 4,5 (3, | ,0) |) 3,5 (2 | | 3,0 (| 2,5) | 10,0 |
| 100 | 6,5 (4 | ,5) 5,5 (3 | ,5) 4,0 (3, | ,0) | 5,5 (4, | ,0) | 5,0 (3, | 5) | 4,0 (| 3,0) | 10,0 |
| | | or greater, Fo | i steel 4.6 and | 4.8 m | iuiupiy V _f | RK,6 D | 7 0,8 | | | | |
| h _{ef} | N | δ _N / N | δΝΟ | č | õN∞ | | V | | δνο | | δγ∞ |
| [mm] | [kN] | [mm/kN] | [mm] | D | nm] | [} | (N] | | [mm] | | [mm] |
| | 00 | | 0.40 | |),32 | 1. 11 | ,3 | | 0,8 | | 1 1 1 1 2 2 2 2 |
| 80 | 0,9 | 0.10 | 0,16 | C | 1,52 | | | _ | 0,0 | | 1,20 |
| 80 90 | 1,4 | 0,18 | 0,16 | |),52),51 | - | ,8 | | 1,2 | | 1,20 |
| - | | 0,18 | | C | | 1 | | | | | |
| | Effective anchorage depth [mm] 80 90 100 100 e valid for c _{cr} , ation of V _{Rk,c} s s are valid for | Effective anchorage depth 40°C/2 h _{ef} [mm] 80 2,5 (2 90 4,0 (2 100 5,0 (3 100 6,5 (4 e valid for c _{cr} , values in ation of V _{Rk,c} see ETAG s are valid for steel 5.6 bisplacements | Effective anchorage depth d/d $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}$ h _{ef} N _{Rk,b} = N [mm] Compression 80 2,5 (2,0) 2,5 (1, 90) 90 4,0 (2,5) 3,0 (2, 100) 100 5,0 (3,5) 4,0 (3, 100) e valid for c _{cr} , values in brackets are v ation of V _{Rk,c} see ETAG029, Annex C s are valid for steel 5.6 or greater. For | Effective anchorage depth d/d $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ $120^{\circ}C/7$ h_{ef} $N_{Rk,b} = N_{Rk,p}^{1/3}$ $I_{20^{\circ}C/7}$ M_{ef} $N_{Rk,c} = N_{Rk,p}^{1/3}$ $I_{20^{\circ}C/7}$ M_{ef} $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ M_{ef} $N_{Rk,c} = N_{Rk,p}^{1/3}$ $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ M_{ef} $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ M_{ef} $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ $I_{20^{\circ}C/7}$ | Effective anchorage depth d/d $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ $120^{\circ}C/72^{\circ}C$ h_{ef} $N_{Rk,b} = N_{Rk,p}^{1/}$ $I_{ef}^{1/}$ [mm] Compressive strength find 80 $2,5$ ($2,0$) $2,5$ ($1,5$) $2,0$ ($1,2$) 90 $4,0$ ($2,5$) $3,0$ ($2,0$) $2,5$ ($1,5$) 100 $5,0$ ($3,5$) $4,0$ ($3,0$) $3,0$ ($2,5$) 100 $6,5$ ($4,5$) $5,5$ ($3,5$) $4,0$ ($3,0$) e valid for c_{cr} , values in brackets are valid for single anchoration of $V_{Rk,c}$ see ETAG029, Annex C; s are valid for steel 5.6 or greater. For steel 4.6 and 4.8 m | Effective anchorage depth d/d Use cat $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ $120^{\circ}C/72^{\circ}C$ $40^{\circ}C/24^{\circ}C$ h_{ef} $N_{Rk,b} = N_{Rk,p}^{1/3}$ [kN [mm] [kN 2,5 (2,0) 2,5 (1,5) 2,0 (1,2) 2,5 (1,5) 90 4,0 (2,5) 3,0 (2,0) 2,5 (1,5) 3,5 (2,1) 100 5,0 (3,5) 4,0 (3,0) 3,0 (2,5) 4,5 (3,1) 100 6,5 (4,5) 5,5 (3,5) 4,0 (3,0) 5,5 (4,5) e valid for c _{cr} , values in brackets are valid for single anchors with c ation of V _{Rk,c} see ETAG029, Annex C; s are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply Values | Characteristic resi Use categorEffective anchorage depth d/d $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ $120^{\circ}C/72^{\circ}C$ $40^{\circ}C/24^{\circ}C$ h_{ef} $N_{Rk,b} = N_{Rk,p}^{1/}$ [kN][mm][kN]Compressive strength $f_b \ge 6$ N/mm² 80 $2,5$ (2,0) $2,5$ (1,5) $2,0$ (1,2) $2,5$ (1,5) 90 $4,0$ (2,5) $3,0$ (2,0) $2,5$ (1,5) $3,5$ (2,5) 100 $5,0$ (3,5) $4,0$ (3,0) $3,0$ (2,5) $4,5$ (3,0) 100 $6,5$ (4,5) $5,5$ (3,5) $4,0$ (3,0) $5,5$ (4,0)e valid for c _{cr} , values in brackets are valid for single anchors with c _{min} ation of V _{Rk,c} see ETAG029, Annex C; s are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply V _{Rk,b} bybisplacements | Effective anchorage depth d/d w/d $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ $120^{\circ}C/72^{\circ}C$ $40^{\circ}C/24^{\circ}C$ $80^{\circ}C/50^{\circ}C$ h_{ef} $N_{Bk,b} = N_{Bk,p}^{-1}$ $N_{Bk,b} = N_{Bk,p} = N_{$ | $\begin{tabular}{ c c c c c c } \hline Characteristic resistance & Use category & W/W & $ | Characteristic resistance Use category W/W M/W M/W | $\begin{tabular}{ c c c c c } \hline Characteristic resistance & Use category & Use category & W/W &$ |



| Brick type | Calcium silicate solid brick KS-NF | |
|---|---------------------------------------|--|
| Bulk density ρ [kg/dm ³] | 2,0 | |
| Compressive strength $f_b \ge [N/mm^2]$ | 10, 20 or 27 | |
| Code | EN 771-2 | |
| Producer (country code) | e.g. Wemding (DE) | |
| Brick dimensions [mm] | 240 x 115 x 71 | |
| Drilling method | Hammer | |

| Edge distance | Ccr | [mm] | 1,5*h _{ef} | |
|-----------------------|------|------|---------------------|--|
| Minimum edge distance | Cmin | [mm] | 60 | |
| Spacing | Scr | [mm] | 3*her | |
| Minimum spacing | Smin | [mm] | 120 | |
| | | | | |

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

| Configuration | | with c ≥ | with s ≥ | | | |
|------------------------|---------|----------|----------|---------------------|-----|-----|
| II: anchors placed | | 60 | 120 | | | 1,0 |
| parallel to horizontal | | 140 | 120 | α _{g,N,II} | | 1,5 |
| joint | <u></u> | 1,5*hef | 3*het | | 1.1 | 2,0 |
| ⊥: anchors placed | | 60 | 120 | | [-] | 0,5 |
| perpendicular to | : | 1,5*hef | 120 | α _{g,N,L} | | 1,0 |
| horizontal joint | 1 | 1,5*hef | 3*her | | | 2,0 |

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

| Configuration | | with c ≥ | with s ≥ | 1.1 | | |
|------------------------|--|----------|-------------------|----------------------|-----|-----|
| II: anchors placed | H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H-H- | 60 | 120 | | | 1,0 |
| parallel to horizontal | V III | 115 | 120 | α _{g,V,II} | | 1,7 |
| joint | | 1,5*hef | 3*h _{ef} | | | 2,0 |
| ⊥: anchors placed | | 60 | 120 | | [-] | 1,0 |
| perpendicular to | V 🚦 | 1,5*hef | 120 | $\alpha_{g,V,\perp}$ | | 1,0 |
| horizontal joint | | 1,5*hef | 3*h _{ef} | | | 2,0 |

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

| Configuration | with c ≥ | with s ≥ | | 1.5 | |
|--------------------------------------|----------|-------------------|----------------------|-----|-----|
| II: anchors placed | 60 | 120 | | | 1,0 |
| parallel to horizontal joint | 1,5*hef | 3*h _{ef} | α _{g,V,II} | | 2,0 |
| L: anchors placed | 60 | 120 | 1. | E. | 1,0 |
| perpendicular to horizontal joint | 1,5*hef | 3*h _{et} | $\alpha_{g,V,\perp}$ | | 2,0 |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances calcium solid brick KS-NF Installation parameters



| Brick | type: Cal | cium silicat | e solid br | ick KS-NF | | | | | | | | |
|-------------------|-----------|---------------------------------|-------------|-----------------------|---------------------------|------------------------|-----------------------|-------------------|---------------------------------|--|--|--|
| Table (| C15: Cł | naracteristic | values of r | esistance u | under tensio | on and she | ar loads | | | | | |
| | | | | | Cha | racteristic r | | | | | | |
| | | | | Use category | | | | | | | | |
| Anchor Sleeve | | Effective anchorage depth | | d/d | | | | d/d w/d w/w | | | | |
| size | Sieeve | h _{ef} [mm] | 40°C/24°C | 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | For All temperature range | | | |
| | - | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ | 1) | | $N_{Rk,b} = N_{Rk,p}$ | 1) | $V_{Rk,b}^{2)3)}$ | | | |
| | | [mm] | | | | [kN] | | / | THE | | | |
| | | | Con | npressive s | strength f _b ≥ | : 10 N/mm ² | | | | | | |
| M8 | - | 80 | 4,5 (2,0) | 4,5 (2,0) | 3,0 (1,5) | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 2,5 (1,5) | | | |
| M10 / IG-M6 | - | 90 | 4,5 (2,0) | 4,5 (2,0) | 3,0 (1,5) | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 3,0 (2,0) | | | |
| M12 / IG-M8 | - | 100 | 4,5 (2,0) | 4,5 (2,0) | 3,0 (1,5) | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 2,5 (1,5) | | | |
| M16 / IG-M10 | - | 100 | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 3,0 (1,5) | 3,5 (1,5) | 2,0 (0,9) | 2,5 (1,5) | | | |
| M8 | 12x80 | 80 | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 3,5 (1,5) | 3,0 (1,5) | 2,5 (1,2) | 2,5 (1,5) | | | |
| M8 / | 16x85 | 85 | 3,5 (1,5) | 3,0 (1,5) | 2,0 (0,9) | 3,5 (1,5) | 3,0 (1,5) | 2,5 (1,2) | 2,5 (1,5) | | | |
| M10/ IG-M6 | 16x130 | 130 | 3,5 (1,5) | 3,0 (1,5) | 2,0 (0,9) | 3,5 (1,5) | 3,0 (1,5) | 2,5 (1,2) | 2,5 (1,5) | | | |
| M12/ | 20x85 | 85 | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 2,5 (1,5) | | | |
| M16 / | 20x130 | 130 | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 2,5 (1,5) | | | |
| IG-M8 / IG-M10 | 20x200 | 200 | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 3,0 (1,5) | 2,5 (1,2) | 2,0 (0,9) | 2,5 (1,5) | | | |
| | | 1 | | | strength f _b ≥ | | | | | | | |
| M8 | - | 80 | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 5,0 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,0 (2,5) | | | |
| M10 / IG-M6 | - | 90 | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 5,0 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,5 (2,5) | | | |
| M12/ IG- M8 | • | 100 | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 5,0 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,0 (2,5) | | | |
| M16/ IG- M10 | - | 100 | 5,0 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 5,0 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,0 (2,5) | | | |
| M8 | 12x80 | 80 | 5,5 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,5 (2,0) | 4,5 (2,0) | 3,0 (1,5) | 4,0 (2,5) | | | |
| M8 / | 16x85 | 85 | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 4,0 (2,5) | | | |
| M10/ IG- M6 | 16x130 | 130 | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 4,0 (2,5) | | | |
| M12 / | 20x85 | 85 | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,5) | | | |
| M16 / | 20x130 | 130 | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,5) | | | |
| IG-M8 / IG-M10 | 20x200 | 200 | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,0) | 4,0 (2,0) | 3,0 (1,5) | 4,0 (2,5) | | | |

1)

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

3)

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances calcium solid brick KS-NF

Characteristic values of resistance under tension and shear load



| | :16: Ch | | | | | | • | | |
|-------------------|---------|---------------------------------------|-----------|-----------------------|--------------------------|---------------------------|-------------------|------------|---------------------------------|
| | | | | | Cha | racteristic re | | | |
| Anchor | | Effective anchorage depth | | d/d | | Use categ | d/d w/d w/w | | |
| size | Sleeve | h _{ef} [mm] | 40°C/24°C | 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | For All temperature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,k}$ | 1) | $N_{Rk,b} = N_{Rk,p}^{1}$ | | | $V_{Rk,b}^{(2)3)}$ |
| | | [mm] | | [kN] | | | | | |
| | | | Com | pressive s | trength f _b ≥ | 27 N/mm ² | | | |
| M8 | - | 80 | 7,0 (3,5) | 6,5 (3,0) | 5,0 (2,5) | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 4,5 (2,5) |
| M10 / IG-M6 | - | 90 | 7,0 (3,5) | 6,5 (3,0) | 5,0 (2,5) | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 5,5 (3,0) |
| M12 / IG-M8 | - | 100 | 7,0 (3,5) | 6,5 (3,0) | 5,0 (2,5) | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 4,5 (2,5) |
| M16 / IG-M10 | - | 100 | 6,0 (3,0) | 5,5 (2,5) | 4,5 (2,0) | 6,0 (3,0) | 5,5 (2,5) | 4,0 (2,0) | 4,5 (2,5) |
| M8 | 12x80 | 80 | 6,5 (3,0) | 6,0 (3,0) | 4,5 (2,0) | 5,5 (2,5) | 5,0 (2,5) | 3,5 (1,5) | 4,5 (2,5) |
| M8 / | 16x85 | 85 | 5,5 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,5 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 4,5 (2,5) |
| M10/ IG- M6 | 16x130 | 130 | 5,5 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,5 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 4,5 (2,5) |
| M12 / | 20x85 | 85 | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 4,5 (2,5) |
| M16 / | 20x130 | 130 | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 4,5 (2,5) |
| IG-M8 / IG-M10 | 20x200 | 200 d for c _{or} , values | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 5,0 (2,5) | 4,5 (2,0) | 3,5 (1,5) | 4,5 (2,5) |

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

3)

Table C17: Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | N | δ _N / N | δ_{N0} | δ _{N∞} | V | δ_{V0} | δγ∞ |
|-----------------|--------|---|----------|--------------------|---------------|-----------------|------|---------------|------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | - | 80 | | | | 1,7 | 0,90 | 1,35 | |
| M10 / IG-M6 | - | 90 | 2,0 | | 0,30 | 0,60 | 2,0 | 1,10 | 1,65 |
| M12 / IG-M8 | - | 100 | | | | | | | |
| M16 / IG-M10 | - | 100 | 1,7 0,15 | 0,26 | 0,51 | | | | |
| M8 | 12x80 | 80 | | 0,10 | -, | , | 1,7 | | 1,35 |
| M8 / M10/ | 16x85 | 85 | 1.4 | | 0.01 | 0.40 | | 0,90 | |
| IG-M6 | 16x130 | 130 | 1,4 | | 0,21 | 0,43 | | | |
| M12/M16/ | 20x85 | 85 | | | | | 1 | | |
| IG-M8 / | 20x130 | 130 | 1,3 | | 0,19 | 0,39 | | | |
| IG-M10 | 20x200 | 200 | | | | | | | |

| Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry | |
|---|---------|
| Performances calcium solid brick KS-NF | Annex C |

Characteristic values of resistance under tension and shear load (continue) Displacements

C 8



| Brick type | | Calcium silicate hollow | w brick | | | |
|---|-------------------------|---|---|--|---|------------|
| Bulk density | ρ [kg/dm ³] | 1,4 | | 14 | P | |
| | $p [N/mm^2]$ | 8, 12 or 14 | 1 | 100 | 10°0 | 1 |
| Code | P = [iwittin] | EN 771-2 | | | 2.0 | (|
| Producer (country code) | | e.g. Wemding (DE) | | | ~ | |
| Brick dimensions | [mm] | 240 x 175 x 113 | | | | |
| Drilling method | [iiiii] | Rotary | | | | |
| | 175 | | | 14 44 14 32 14 | | |
| | | 5, 44 , 14, 38 , 17, 3 | 1 1 | 44 14 | | |
| | n parameters | 5 | 18 14, 44 16 | 14 | | |
| Anchor size | n parameters | s | 18 14 44 16 | 14 All size | and the second se | |
| Anchor size Edge distance | n parameters | s [r | [-] mm] | 14 | and the second se | |
| Anchor size Edge distance Minimum edge distance | n parameters | s [r | 18 14 44 16 | All size 100 (12 | and the second se | |
| Table C19: Installation Anchor size | n parameters | s [r [r [r | [-] mm] | All size 100 (12 60 | and the second se | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing | n parameters | 5 [r [r [r [r [r [r [r | [-] mm] mm] | All size 100 (12 60 240 | and the second se | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH | n parameters | s [r [r [r [r [r 130 and SH20x200 or group in case of tens | [-] mm] mm] mm] mm] mm] mm] | All size 100 (12 60 240 120 | and the second se | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH | n parameters | s [r [r [r [r [r] [r]]]]]]]]]] | [-] mm] mm] mm] mm] mm] mm] | 14 All size 100 (12 60 240 120 120 | and the second se | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH Table C20: Group fac | n parameters | s [r [r [r [r [r 130 and SH20x200 or group in case of tens | [-] [-] [mm] [mm] [mm] [mm] [mm] [mm] [m | All size 100 (12 60 240 120 120 120 | and the second se | 1,5 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH Table C20: Group fac Configuration II: anchors placed parallel to horizontal | n parameters | s [r [r [r [r [r [r [r [r [r] 130 and SH20x200 or group in case of ten: with c ≥ | [-] mm] mm] mm] sion loading with s | 14 All size 100 (12 60 240 120 120 | and the second se | 1,5 |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH Table C20: Group fac Configuration | n parameters | s [r [r [r [r 130 and SH20x200 or group in case of tens with c ≥ 60 | [-] mm] mm] mm] sion loading with s 120 | All size 100 (12 60 240 120 120 120 120 | and the second se | 1 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing 1) Value in brackets for SH Table C20: Group fac Configuration II: anchors placed parallel to horizontal joint ⊥: anchors placed | n parameters | s [r [r [r [r [r 130 and SH20x200 or group in case of ten: with c ≥ 60 c _{cr} | [-] mm] mm] mm] sion loading with s 120 240 | All size 100 (12 60 240 120 120 ≥ α _{g,N,II} | D) ¹⁾ | 2,0 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH Table C20: Group fac Configuration II: anchors placed parallel to horizontal joint | n parameters | s [r [r [r [r [r 130 and SH20x200 or group in case of tens with c ≥ 60 c _{cr} 160 | [-] mm] mm] mm] sion loading with s 120 240 120 | 14 All size 100 (12 60 240 120 120 120 120 120 120 120 120 120 120 2 α _{g,N,ll} α _{g,N,ll} | D) ¹⁾ | 2,0 2,0 |



| | Configur | ation | | with c ≥ | | with s | 2 | | | |
|--------------------------------------|--|--|-----------------|-----------------------|--------------------|---------------------|-----------------------|------------|-------|---------------------------------|
| II: ancho | rs placed | 1 | T | 60 | | 120 | | | | 1,0 |
| | horizontal | V •• | | 160 | | 120 | α | g,V,IL | Ī | 1,6 |
| jo | int | | 1 | Ccr | | 240 | | [| i I | 2,0 |
| ⊥: ancho | rs placed | The state | 1 | 60 | | 120 | | 1 | 1 | 1,0 |
| perpend horizon | licular to tal joint | V | | Ccr | | 120 | α | g,V,⊥ | | 2,0 |
| Table C2 | 2: Grou | p factor for a | inchor grou | up in case o | of shear loa | ading perpe | endicular t | o free edg | e | |
| 7 | Configur | ation | | with c ≥ | | with s | 2 | | - | |
| II: ancho | | | | 60 | | 120 | | | | 1,0 |
| | horizontal int | V | | Ccr | | 240 | α | g,V,II | | 2,0 |
| | rs placed | | T | 60 | | 120 | | 1 | -1 | 1,0 |
| perpend | licular to | V | | | | 120 | α | g,V,⊥ | - | 2,0 |
| horizon | tal joint | 10,20 | 1. | Ccr | | 120 | | | | 2,0 |
| Table C2 | 3: Char | acteristic va | lues of res | istance und | | | 1000 | | | _ |
| | | | | | Char | acteristic re | | | | |
| | | Effective | 1 | | | Use catego | ory | | | d/d; w/d; |
| 1.11.12 | | anchorage | d/d w/d; w/w | | | | w/w | | | |
| Anchor size | Sleeve | depth | 40°C/24°C | 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72° | C tei | For all mperature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ | 1) | | $N_{Rk,b} = N_{Rk,j}$ | 1) | | V _{Rk,b} ⁴⁾ |
| | - | [mm] | | - Thinks - Thinks | | [kN] | | | | 11110 |
| 100 | | | Comp | pressive str | rength $f_b \ge 8$ | 3 N/mm ² | | | | |
| M8 | 12x80 | 80 | 1,5 | 1,5 | 1,2 | 1,5 | 1,2 | 0,9 | 2, | $(5^{2})(0,9)^{3}$ |
| M8 / M10 | 16x85 | 85 | 1,5 | 1,5 | 1,2 | 1,5 | 1,5 | 1,2 | 4, | $0^{2}(1,5)^{3}$ |
| / IG-M6 | 16x130 | 130 | 1,5 | 1,5 | 1,2 | 1,5 | 1,5 | 1,2 | | $0^{2}(1,5)^{3}$ |
| M12 / M16 / | 20x85 | 85 | 4,5 | 4,0 | 3,0 | 4,5 | 4,0 | 3,0 | | $(1,5)^3$ |
| IG-M8 / | 20x130 | 130 | 4,5 | 4,0 | 3,0 | 4,5 | 4,0 | 3,0 | | 0^{2} (1,5) ³ |
| IG-M10 | 20x200 | 200 | 4,5 | 4,0 | 3,0 | 4,5 | 4,0 | 3,0 | 4, | 0^{2} (1,5) ³ |
| | - | | Comp | ressive str | ength $f_b \ge 1$ | 2 N/mm ² | | | | |
| M8 | 12x80 | 80 | 2,0 | 2,0 | 1,5 | 2,0 | 1,5 | 1,2 | | $(1,2)^3$ |
| M8 / M10 | 16x85 | 85 | 2,0 | 2,0 | 1,5 | 2,0 | 2,0 | 1,5 | 4, | $(5^{2})(1,5)^{3}$ |
| / IG-M6 | 16x130 | 130 | 2,5 | 2,5 | 1,5 | 2,5 | 2,5 | 1,5 | | $(5^{2})(1,5)^{3}$ |
| M12 / | 20x85 | 85 | 6,0 | 5,5 | 4,0 | 6,0 | 5,5 | 4,0 | | $(5^{2})(1,5)^{3}$ |
| M16 / IG-M8 / | 20x130 | 130 | 6,0 | 5,5 | 4,0 | 6,0 | 5,5 | 4,0 | 4, | $(5^{2})(1,5)^{3}$ |
| IG-M10 | 20x200 | 200 | 6,0 | 5,5 | 4,0 | 6,0 | 5,5 | 4,0 | | $(5^{2})(1,5)^{3}$ |
| 1) Values 2) V _{Rk,c,II} | = V _{Rk,b} valic = V _{Rk,b} (valu | or c _{cr} and c _{min} I for shear load Jes in brackets Ilid for steel 5.6 |) valid for she | ear load in di | | | ,8 | | | |
| VRk,C,1 | alues ale va | | an granterri | | | | | | | |



| | | | | | Char | acteristic re | sistance | | |
|--|--|---------------------|--|--------------------------------|---------------------------|-----------------------------|-----------------------|-----------------|---------------------------------------|
| | | | | | Ona | Use catego | | | |
| Arreleev | | Effective anchorage | | d/d | | | w/d w/w | | d/d; w/d; w/w |
| Anchor size | Sleeve | depth | 40°C/24°C | 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all temperature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk}$ | 1) ,p | | $N_{Rk,b} = N_{Rk,p}$ | 1) | V _{Rk,b} ⁴⁾ |
| | | [mm] | | | | [kN] | | | |
| | | 1 | | | rength f _b ≥ 1 | | | | |
| M8 | 12x80 | 80 | 2,5 | 2,5 | 1,5 | 2,0 | 2,0 | 1,5 | $3,5^{2}(1,5)^{3}$ |
| M8 / M10 | 16x85 | 85 | 2,5 | 2,5 | 1,5 | 2,5 | 2,5 | 1,5 | $6,0^{2}$ (2,0) ³⁾ |
| / IG-M6 | 16x130 | 130 | 2,5 | 2,5 | 2,0 | 2,5 | 2,5 | 2,0 | $6,0^{2}(2,0)^{3}$ |
| M12 / | 20x85 | 85 | 6,5 | 6,0 | 4,5 | 6,5 | 6,0 | 4,5 | $6,0^{2}$ (2,0) ³⁾ |
| M16 / IG-M8 / | 20x130 | 130 | 6,5 | 6,0 | 4,5 | 6,5 | 6,0 | 4,5 | 6,0 ²⁾ (2,0) ³⁾ |
| IG-M10 | 20x200 | 200 | 6,5 | 6,0 | 4,5 | 6,5 | 6,0 | 4,5 | $6,0^{2}$ (2,0) ³⁾ |
| $V_{\rm Rk,c,II}$ $V_{\rm Rk,c,II}$ $V_{\rm Rk,c,\perp}$ | = V _{Rk,b} valic = V _{Rk,b} (vali alues are va | |) valid for sh 5 or greater. fective | ear load in c For steel 4.6 | and 4.8 multi | oly V _{Rk,b} by 0, | | | |
| Anchor siz | ze Sle | | horage pth h _{ef} | | / Ν δ _Ν |) δ _{N∞} | V | δ _{νο} | δ _{V∞} |
| | | | [mm] | [kN] [mm | /kN] [mn | 1] [mm | i] [kN] | [mm] | [mm] |
| M8 | 12 | x80 | 80 | | | | 1,0 | 1,0 | 1,50 |
| M8 / M10 |) / 16 | x85 | 85 | 0,71 | 0,6 | 4 1,29 |) | | |
| IG-M6 | 16> | (130 | 130 | | 90 | | | | |
| M12 / M16 | 6 / 20 | x85 | 85 | 0, | 50 | | 1,7 | 1,9 | 2,85 |
| IG-M8 / | 20> | (130 | 130 | 1,86 | 1,6 | 7 3,34 | 4 | | |
| | | | | | | | | | |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

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

200

Annex C 11

IG-M10

20x200



| Brick type | Calcium silicate hollow brick | | | | |
|---|---|---------------------------------|--|--------|-----|
| Bulk density ρ [kg/dm | KSL-12DF 1 ³] 1,4 | | | | |
| Compressive strength $f_b \ge [N/mm]$ | | | | | |
| Code | EN 771-2 | | | | 5 |
| Producer (country code) | e.g. Wemding (DE) | | | -1 | 1 |
| Brick dimensions [mr | | | | P | |
| Drilling method | Rotary | | | | |
| | 040 | $) \cup ($ | \bigcirc | 17 | |
| 35, 59, 64 | 7 ⁵⁹ 7 ⁶⁴ 7 ⁵⁹ | 1 64 1 | 59 _/ 35 | | |
| Table C27: Installation parame | 1 1 1 | 1 64 1 | All sizes | 1 | |
| Table C27: Installation parame Anchor size Ccr Edge distance Ccr | ters | / 64 / | All sizes 100 (120) ¹ | ۹) | |
| Table C27: Installation parame Anchor size Ccr Edge distance Ccr Minimum edge distance Cmin ² | ters [-] [mm] [mm] | / 64 / | All sizes 100 (120) ¹ 100 (120) ¹ | ۹) | |
| Table C27: Installation parame Anchor size Edge distance Ccrr Edge distance Ccrr Cmin ² Minimum edge distance Spacing Scr.(II | ters [-] [mm] [mm] [mm] [mm] [mm] [mm] [mm] | / 64 / | All sizes 100 (120) ¹ 100 (120) ¹ 498 | ۹) | |
| Table C27: Installation parame Anchor size Ccr Edge distance Ccr Minimum edge distance Cmin ² | ters [-] [mm] [mm] | / 64 / | All sizes 100 (120) ¹ 100 (120) ¹ | ۹) | |
| Table C27: Installation parame Anchor size Edge distance Ccr Edge distance cmin ² Minimum edge distance cmin ² Spacing Scr.II Minimum spacing Smin ¹⁾ Value in brackets for SH20x85 and C ² For V _{Rk,c} : cmin according to ETAG C Table C28: Group factor for an | ters [-] [mm] [mm] [mm] [mm] [mm] [mm] [mm] | ading | All sizes 100 (120) ¹ 100 (120) ¹ 498 238 | ۹) | |
| Table C27: Installation parame Anchor size Edge distance Ccr Edge distance cmin ² Minimum edge distance Scr.II Spacing Scr.II Minimum spacing Smin ¹⁾ Value in brackets for SH20x85 and C ²⁾ For V _{Rk,c} : cmin according to ETAG (C Table C28: Group factor for an Configuration | eters [-] [mm] [mm] [mm] [mm] [mm] [mm] [sH20x130 029, Annex C [chor group in case of tension log with c ≥ | ading with s ≥ | All sizes 100 (120) ¹ 100 (120) ¹ 498 238 | ۹) | |
| Table C27: Installation parame Anchor size Edge distance Ccr Edge distance cmin ² Minimum edge distance cr,11 Spacing Scr,11 Minimum spacing Smin ¹⁾ Value in brackets for SH20x85 and C ²⁾ For V _{Rk,c} : cmin according to ETAG C Table C28: Group factor for an | ters [-] [mm] [mm] [mm] [mm] [mm] [mm] [mm] | ading | All sizes 100 (120) ¹ 100 (120) ¹ 498 238 |) | |
| Table C27: Installation parame Anchor size Edge distance Ccr Edge distance cmin ² Minimum edge distance cr.11 Spacing Scr.11 Minimum spacing Smin ¹⁾ Value in brackets for SH20x85 and C ²⁾ For V _{Rk,c} : cmin according to ETAG C Table C28: Group factor for an Configuration II: anchors placed parallel to horizontal joint Image: Configuration 1: anchors placed Image: Configuration | eters | ading with s ≥ 120 | All sizes 100 (120) ¹ 100 (120) ¹ 498 238 120 | ۹) | 1,0 |
| Table C27: Installation parame Anchor size Edge distance Corr Edge distance Corr Cmin ² Spacing Scr.II Scr.II Minimum edge distance Scr.II Scr.II Minimum spacing Smin Smin ¹⁾ Value in brackets for SH20x85 and Correct SH20x85 and Correct SH20x85 and Configuration Scr.II ²⁾ For V _{Rk,c} : Cmin according to ETAG Configuration Table C28: Group factor for an Configuration II: anchors placed parallel to horizontal joint III: anchors placed III: anchors placed | ters [-] [mm] [mm] [mm] [mm] [mm] [mm] [c] GSH20x130 029, Annex C chor group in case of tension loc with c ≥ 100 c _{cr} | ading with s ≥ 120 498 | All sizes 100 (120) ¹ 100 (120) ¹ 498 238 120 |) | 2,0 |

Installation parameters



| | Configuration | P I | | with c ≥ | | with s ≥ | | | - 1 1 |
|---|---------------|--|-----------|-----------------------|--|-------------------|--------------------------------------|-------------------------|--|
| II: anchors p parallel to hor joint | laced | | | Ccr | | 498 | α | 'g,V,II | 2,0 |
| ⊥: anchors p perpendicul horizontal j | ar to | V | | Ccr | | 238 | α | [-] | 2,0 |
| Table C30: | Group fac | ctor for anch | or group | in case of | shear load | ing perpe | ndicular t | o free edge | |
| (| Configuration | 0 | 1 | with c ≥ | | with s ≥ | | | |
| II: anchors p parallel to hor joint | laced | V | | Ccr | | 498 | α | (g,V,II | 2,0 |
| ⊥: anchors p perpendicul horizontal j | ar to | V | | Ccr | | 238 | α | [-] | 2,0 |
| Table C31: | Characte | eristic values | of resist | ance unde | 1. | nd shear I | 5 W 1591 | | |
| | | | | | Char | | | | |
| | | Effective anchorage | | d/d | | Use categ | w/d w/w | | d/d w/d w/w |
| Anchor size | Sleeve | depth | 40°C/24°(| C 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all temperature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,c}$ | 1) | N | I _{Rk,b} = N _{Rk,} | 1) p | V _{Rk,b} ²⁾³⁾ |
| | | [mm] | | | | [kN] | | | |
| | | | Compre | ssive stren | gth $f_b \ge 10$ | N/mm ² | | | |
| M8 | 12x80 | 80 | 0,6 | 0,6 | 0,4 | 0,5 | 0,5 | 0,4 | 2,5 |
| M8/M10/ | 16x85 | 85 | 0,6 | 0,6 | 0,4 | 0,6 | 0,6 | 0,4 | 5,5 |
| IG-M6 | 16x130 | 130 | 2,5 | 2,5 | 2,0 | 2,5 | 2,5 | 2,0 | 5,5 |
| M12 / M16 / IG-M8 / | 20x85 | 85 | 1,5 | 1,5 | 0,9 | 1,5 | 1,5 | 0,9 | 5,5 |
| IG-M10 | 20x130 | 130 | 2,5 | 2,5 | 2,0 | 2,5 | 2,5 | 2,0 | 5,5 |
| | | | Compre | ssive stren | gth $f_b \ge 12$ | N/mm ² | | | |
| M8 | 12x80 | 80 | 0,75 | 0,6 | 0,5 | 0,6 | 0,6 | 0,4 | 3,0 |
| M8/M10/ | 16x85 | 85 | 0,75 | 0,6 | 0,5 | 0,75 | 0,6 | 0,5 | 6,5 |
| IG-M6 | 16x130 | 130 | 3,0 | 3,0 | 2,0 | 3,0 | 3,0 | 2,0 | 6,5 |
| M12/M16/ | 20x85 | 85 | 1,5 | 1,5 | 1,2 | 1,5 | 1,5 | 1,2 | 6,5 |
| IG-M8 / IG-M10 | 20x130 | 130 | 3,0 | 3,0 | 2,0 | 3,0 | 3,0 | 2,0 | 6,5 |
| 2) Calculatio | | and c _{min} e ETAG 029, A or steel 5.6 or g | | | | | | 120 mm: V _{Rk} | $\mathbf{v}_{\mathrm{R}\mathbf{k},\mathrm{b}}$ |
| Mundo Ini | ection Syst | tem MIT-SE F | Plus or M | IT-COOL P | lus for ma | sonry | 11 | | |



| Brick type: | Calcium s | ilicate holl | ow brick | KS L-120 |)F | | | | |
|-------------------|-----------|---------------------------------|------------|-----------------------|-------------------------|-----------------------------|-----------------------|------------|-----------------------------------|
| Table C32: | Characte | ristic values | of resista | ance unde | r tension a | nd shear l | oads (cor | ntinue) | |
| | | | | | Char | acteristic r | esistance | | |
| | | | | | | Use categ | gory | | |
| Anchereize | Sleeve | Effective anchorage depth | d/d | | | | w/d w/w | | d/d w/d w/w |
| Anchor size | Sleeve | depth | 40°C/24°C | 80°C/50°C | 120°C/72°C | C 40°C/24°C 80°C/50°C 120°0 | | 120°C/72°C | For all temperature range |
| | | h _{ef} | 1 | $N_{Rk,b} = N_{Rk,j}$ | 1) p | 1 | $V_{Rk,b} = N_{Rk,b}$ | 1) p | V _{Rk,b} ²⁾³⁾ |
| | | [mm] | | | | [kN] | | P | |
| | | · · · | Compres | sive stren | gth f _b ≥ 16 | N/mm ² | | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,6 | 0,75 | 0,75 | 0,5 | 3,5 |
| M8 / M10 / | 16x85 | 85 | 0,9 | 0,9 | 0,6 | 0,9 | 0,9 | 0,6 | 8,0 |
| IG-M6 | 16x130 | 130 | 4,0 | 3,5 | 2,5 | 4,0 | 3,5 | 2,5 | 8,0 |
| M12 / M16 / | 20x85 | 85 | 2,0 | 2,0 | 1,5 | 2,0 | 2,0 | 1,5 | 8,0 |
| IG-M8 / IG-M10 | 20x130 | 130 | 4,0 | 3,5 | 2,5 | 4,0 | 3,5 | 2,5 | 8,0 |

¹⁾ Values are valid for c_{cr} and c_{min}

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

Table C33:Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | Ν | δ _N / N | δ _{N0} | δ _{N∞} | V | δ_{V0} | δγ∞ |
|---------------------|--------|---|------|--------------------|-----------------|-----------------|------|---------------|------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 0,26 | | 0,23 | 0.46 | 1,0 | 1,3 | 1,95 |
| M8 / M10 / | 16x85 | 85 | 0,20 | | 0,23 | 0,46 | | | |
| IG-M6 | 16x130 | 130 | 1,14 | 0.90 | 1,03 | 2,06 | | | |
| M12 / M16 | 20x85 | 85 | 0,57 | | 0,51 | 1,03 | 2,3 | 2,5 | 3,75 |
| / IG-M8 / IG-M10 | 20x130 | 130 | 1,14 | | 1,03 | 2,06 | | | |

| | • | | | | | |
|-----------------|----------|--------|---------|------------|---------|-----------|
| Mungo Injection | ו Svstem | MIT-SE | Plus or | ' MIT-COOL | Plus fo | r masonrv |

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



| Brick type | | Clay solid brick Mz-DF | | | - | | |
|--|-------------------------------------|---------------------------------|--------------|--------------------------------------|---|-----|-------------------|
| Bulk density | ρ [kg/dm ³] | 1,6 | | | 100 | | |
| Compressive strength | $f_b \ge [N/mm^2]$ | 10, 20 or 28 | | | and the second se | | |
| Code | | EN 771-1 | | | 1 | | |
| Producer (country code) | | e.g. Unipor (DE) | | | | | |
| Brick dimensions | [mm] | 240 x 115 x 55 | | - | 1.1 | | |
| Drilling method | | Hammer | | | | | |
| A 49 14 | Cmin | | [mm] | | 60 | | |
| S 40 10 10 10 10 10 10 10 10 10 10 10 10 10 | Castle | | [mm] | | | | |
| ě. | | | | | | | |
| Spacing | S _{cr} | | [mm] [mm] | | 3*h _{ef} 120 | | |
| Spacing Minimum spacing | S _{Cr} S _{min} | or group in case of | [mm] | ading | | | |
| Spacing Minimum spacing | S _{Cr} S _{min} | or group in case of with c ≥ | [mm] | ading with s ≥ | | | |
| Spacing Minimum spacing Table C36: Group fac Configuration II: anchors placed | S _{Cr} S _{min} | | [mm] | | | | 0,7 |
| Spacing Minimum spacing Table C36: Group fac Configuration | S _{Cr} S _{min} | with c ≥ | [mm] | with s ≥ | | | |
| Configuration II: anchors placed parallel to horizontal joint L: anchors placed | S _{Cr} S _{min} | with c ≥ 60 | [mm] | with s ≥ 120 | 120 | [-] | 0,7 2,0 0,5 |
| Spacing Minimum spacing Table C36: Group fac Configuration II: anchors placed parallel to horizontal joint | S _{Cr} S _{min} | with c ≥ 60 1,5*hef | [mm] | with s ≥ 120 3*h _{ef} | 120 | [-] | 2,0 |

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

| Configurati | on | with c ≥ | with s ≥ | | | |
|------------------------|-----|----------|----------|-----------------------|---------|-----|
| II: anchors placed | | 60 | 120 | | 1.1.1.1 | 0,5 |
| parallel to horizontal | V | 90 | 120 | α _{g,V,II} | | 1,1 |
| joint | | 1,5*hef | 3*her | 11 6.3 | 71 | 2,0 |
| ⊥: anchors placed | È | 60 | 120 | | 1-1 | 0,5 |
| perpendicular to | V 3 | 1,5*hef | 120 | α _{g,V,L} | | 1,0 |
| horizontal joint | | 1,5*hef | 3*hef | and the second second | | 2,0 |

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

| Configurat | ion | with c ≥ | with s ≥ | | 10.000 | |
|------------------------|------|----------|----------|----------------------|--------|-----|
| II: anchors placed | | 60 | 120 | | | 0,5 |
| parallel to horizontal | V | 1,5*hef | 120 | α _g ,v,ii | | 1,0 |
| joint | | 1,5*hef | 3*her | +- 1 1km | 1.1 | 2,0 |
| ⊥: anchors placed | | 60 | 120 | | [-] | 0,5 |
| perpendicular to | V | 1,5*hef | 120 | $\alpha_{g,V,\perp}$ | | 1,0 |
| horizontal joint | Fiel | 1,5*hef | 3*het | | | 2,0 |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances clay solid brick Mz-DF

Description of the brick

Installation parameters



| | | | | Characte | ristic resistance | |
|--------------|--------|-----------------|-----------------------------|---------------------------|-------------------|-----------------------------------|
| | | | | Use | e category | |
| | | Effective | | d/d | | |
| | | anchorage | | w/d | | w/d |
| Anchor size | Sleeve | depth | | w/w | | w/w |
| | | · | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all temperature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | V _{Rk,b} ²⁾³⁾ |
| | | [mm] | | | [kN] | |
| | | Compressive s | trength f _b ≥ 10 | N/mm ² | | |
| M8 | - | 80 | 3,5 (1,5) | 3,5 (1,5) | 2,5 (1,2) | 3,5 (1,2) |
| M10 / IG-M6 | - | 90 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| M12 / IG-M8 | - | 100 | 4,0 (2,0) | 4,0 (2,0) | 3,5 (1,5) | 3,5 (1,2) |
| M16 / IG-M10 | - | 100 | 4,0 (2,0) | 4,0 (2,0) | 3,5 (1,5) | 5,5 (1,5) |
| M8 | 12x80 | 80 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,2) | 3,5 (1,2) |
| M8 / M10 / | 16x85 | 85 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| IG-M6 | 16x130 | 130 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| M12 / M16 / | 20x85 | 85 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| IG-M8 / | 20x130 | 130 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| IG-M10 | 20x200 | 200 | 3,5 (1,5) | 3,5 (1,5) | 3,0 (1,5) | 3,5 (1,2) |
| I | | Compressive s | | | | |
| M8 | - | 80 | 4,5 (2,5) | 4,5 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| M10 / IG-M6 | - | 90 | 5,5 (2,5) | 5,5 (2,5) | 4,5 (2,0) | 5,0 (1,5) |
| M12 / IG-M8 | - | 100 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,0 (1,5) |
| M16 / IG-M10 | - | 100 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 8,0 (2,5) |
| M8 | 12x80 | 80 | 4,5 (2,5) | 4,5 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| M8 / M10 / | 16x85 | 85 | 5,0 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| IG-M6 | 16x130 | 130 | 5,0 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| M12/M16/ | 20x85 | 85 | 5,0 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| IG-M8 / | 20x130 | 130 | 5,0 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| IG-M10 | 20x200 | 200 | 5,0 (2,5) | 5,0 (2,5) | 4,0 (2,0) | 5,0 (1,5) |
| I | | Compressive s | | | .,. (_,., | 0,0 (1,0) |
| M8 | - | 80 | 5,5 (2,5) | 5,5 (2,5) | 4,5 (2,5) | 5,5 (2,0) |
| M10 / IG-M6 | - | 90 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |
| M12 / IG-M8 | - | 100 | 7,0 (3,5) | 7,0 (3,5) | 6,0 (3,0) | 5,5 (2,0) |
| M16 / IG-M10 | - | 100 | 7,0 (3,5) | 7,0 (3,5) | 6,0 (3,0) | 9,0 (3,0) |
| M8 | 12x80 | 80 | 5,5 (2,5) | 5,5 (2,5) | 4,5 (2,5) | 5,5 (2,0) |
| M8 / M10 / | 16x85 | 85 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |
| IG-M6 | 16x130 | 130 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |
| M12 / M16 / | 20x85 | 85 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |
| IG-M8 / | 20x130 | 130 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |
| IG-M10 | 20x200 | 200 | 6,0 (3,0) | 6,0 (3,0) | 5,0 (2,5) | 5,5 (2,0) |

For c_{cr} calculation of $V_{Rk,c}$ see ETAG 029, Annex C; for c_{min} values in brackets $V_{Rk,b} = V_{Rk,c}$ The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b} = V_{Rk,c}$

³⁾ The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances clay solid brick Mz-DF

Characteristic values of resistance under tension and shear load



| Brick type: Clay solid brick Mz-DF | | | | | | | | | | |
|------------------------------------|----------|---|-------|--------------------|-----------------|-----------------|------|---------------|------|--|
| Table C40: Di | splaceme | nts | | | | | | | | |
| Anchor size | Sleeve | Effective anchorage depth h _{ef} | N | δ _N / N | δ _{N0} | δ _{N∞} | V | δ_{V0} | δγ∞ | |
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] | |
| M8 | - | 80 | 1,3 | | 0,19 | 0,39 | | _ | | |
| M10 / IG-M6 | - | 90 | 1,6 | | 0,24 | 0,47 | 1,9 | | | |
| M12 / IG-M8 | - | 100 | 17 | | 0.06 | 0.51 | 2,9 | | | |
| M16 / IG-M10 | - | 100 | 1,7 | | 0,26 | 0,51 | | | | |
| M8 | 12x80 | 80 | | 0.15 | | | | 1.00 | 1 50 | |
| M8 / M10 / | 16x85 | 85 | | 0,15 | | | | 1,00 | 1,50 | |
| IG-M6 | 16x130 | 130 | 1.0 | | 0.10 | 0.00 | 10 | | | |
| M12 / M16 / IG-M8 / | 20x85 | 85 | - 1,3 | | 0,19 | 0,39 | 1,9 | | | |
| | 20x130 | 130 | | | | | | | | |
| IG-M10 | 20x200 | 200 | 1 | | | | | | | |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances clay solid brick Mz-DF Displacements



| Bulk density Compressive strength f _b Code | $\rho [kg/dm^3]$ | HLz-16-DF | | | | | |
|--|--|---|------------------------------|---|--|--|-----|
| Compressive strength fb | | 0,8 | | | 100 | Contra Co | |
| | Compressive strength $f_b \ge [N/mm^2]$ | | | | | | |
| | | 6, 8, 12, 14 EN 771-1 | | | | 1 | |
| Producer (country code) | | e.g. Unipor DE) | | | | | |
| Brick dimensions | [mm] | 497 x 240 x 238 | | | | | - |
| Drilling method | | Rotary | | 0.0 | | | |
| | 8 [H | | 100 7 | | 10 | | |
| | | | | 6-# 000000000000000000000000000000000000 | ++13 #- | | |
| Table C42: Installation | | | | 6-# | # E1++ | | |
| Table C42: Installation Anchor size | | S | | | All sizes |) | |
| Table C42: Installation Anchor size Edge distance | parameters | s | [·] [mm] | 6-# | # E1++ | | |
| Table C42: Installation Anchor size Edge distance Winimum edge distance Minimum edge distance | parameters | S | [mm] | | All sizes 100 (120) ¹ | | |
| Table C42: Installation Anchor size Edge distance Minimum edge distance Spacing | parameters | S | [mm] [mm] | 6-# | All sizes 100 (120) ¹ 100 (120) ¹ | | |
| Table C42: Installation Anchor size | cor Cor Cor Cor Cor Cor Cor Cor C | s <pre> x130 and SH20x200 Annex C pr group in case of ter </pre> | [mm] [mm] [mm] [mm] | ling | All sizes 100 (120) ¹ 100 (120) ¹ 497 238 | | |
| Table C42: Installation Anchor size Edge distance Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : cmin according Table C43: Group factor Configuration Installation | cor Cor Cor Cor Cor Cor Cor Cor C | s (130 and SH20x200 Annex C or group in case of ter with c ≥ | [mm] [mm] [mm] [mm] | ling with s ≥ | All sizes 100 (120) ¹ 100 (120) ¹ 497 238 | | |
| Table C42: Installation Anchor size | cor Cor Cor Cor Cor Sor,II Sor,II Sor,I So | s <pre> x130 and SH20x200 Annex C pr group in case of ter </pre> | [mm] [mm] [mm] [mm] | ling with s ≥ 100 | All sizes 100 (120) ¹ 100 (120) ¹ 497 238 | | 1,3 |
| Table C42: Installation Anchor size Edge distance Edge distance Minimum edge distance Spacing Minimum spacing ¹¹ Value in brackets for SH ²² For V _{Rk,c} : cmin according Table C43: Group factor II: anchors placed parallel to horizontal joint Initian factor | cor Cor Cmin Scr.II Scr.II Sor | s (130 and SH20x200 Annex C or group in case of ter with c ≥ | [mm] [mm] [mm] [mm] | ling with s ≥ | All sizes 100 (120) ¹ 100 (120) ¹ 497 238 100 | | 1,3 |
| Table C42: Installation Anchor size Edge distance Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : cmin according Table C43: Group factor II: anchors placed parallel to horizontal Initial In | cor Cor Cmin Scr.II Scr.II Sor | s (130 and SH20x200 Annex C or group in case of ter with c ≥ C _{cr} | [mm] [mm] [mm] [mm] | ling with s ≥ 100 | All sizes 100 (120) ¹ 100 (120) ¹ 497 238 100 | | |



| Config | guration | with c | 2 | with s ≥ | | | | |
|--|--------------------|---|----------------------------|--------------------------------|----------------------|--|--------------------------|--|
| II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint | | Ccr | | 497 | α _{g,V,II} | r.i | 2,0 | |
| | | Ccr | C _{cr} | | α _{g,V,⊥} | [-] | 2,0 | |
| Table C45: Gro | oup factor for and | chor group in case | e of shear load | ding perpend | cular to free e | dge | | |
| Config | guration | with c | 2 | with s ≥ | | | | |
| II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint | | Ccr | | 497 | α _{g,v,l} | [-] | 2,0 | |
| | | C _{cr} | 7 | 238 | $\alpha_{g,v,\perp}$ | | 2,0 | |
| Table C46: Ch | aracteristic value | es of resistance u | nder tension a | 20 A 21 - 1962 - 1 - 1 - 2 - 1 | 55 | | | |
| | | | | | ristic resistance | ce | | |
| | | | | | e category | r | | |
| | | Effective anchorage | | d/d w/d | | 10 | d/d w/d | |
| Anchor size | Sleeve | depth | | w/w | | w/w | | |
| | 0.0010 | | 40°C/24°C | 80°C/50°C | 120°C/72°C | tem | For all perature | |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ |) | range V _{Rk,b} ²⁾³⁾ | | |
| | | [mm] | | [kN] | | | HK,D | |
| | | Compressive s | strength $f_{\rm h} \ge 6$ | | | | _ | |
| M8 | 12x80 | 80 | 2,5 | 2,5 | 2,0 | | 2,5 | |
| M8 / M10/ IG- | 16x85 | 85 | 2,5 | 2,5 | 2,0 | 1 | 4,5 | |
| M6 | 16x130 | 130 | 3,5 | 3,5 | 3,0 | | 4,5 | |
| | 20x85 | 85 | 2,5 | 2,5 | 2,0 | | 5,0 | |
| M12 / M16 / IG- | 20x130 | 130 | 3,5 | 3,5 | 3,0 | 1 | 6,0 | |
| M8 / IG-M10 | 20x200 | 200 | 3,5 | 3,5 | 3,0 | | 6,0 | |
| | | Compressive s | | | | | | |
| M8 | 12x80 | 80 | 3,0 | 3,0 | 2,5 | | 3,0 | |
| M8 / M10/ IG- | 16x85 | 85 | 3,0 | 3,0 | 2,5 | | 5,5 | |
| M6 | 16x130 | 130 | 4,5 | 4,5 | 3,5 | | 5,5 | |
| | 20x85 | 85 | 3,0 | 3,0 | 2,5 | | 6,0 | |
| M12 / M16 / IG- M8 / IG-M10 | 20x130 | 130 | 4,5 | 4,5 | 3,5 | | 7,0 | |
| | 20x200 | 200 | 4,5 | 4,5 | 3,5 | - | 7,0 | |
| ²⁾ Calculation | | 29, Annex C, except 6 or greater. For stee | | | | nm: V _{Rk} | c,ii = V _{Rk,b} | |
| | | | | | | | | |



| Brick type: Cla | ay hollow brick Hl | _z-16-DF | | | | | | | |
|--|-----------------------|---------------------------------|-----------------------------|-------------------|---------------|-----------------------------------|--|--|--|
| Table C47: C | characteristic values | s of resistance u | nder tension a | and shear loa | ds (continue) | | | | |
| | | | Characteristic resistance | | | | | | |
| | | | | | | | | | |
| | | Effective anchorage depth | | d/d | | | | | |
| | Sleeve | | | w/d | | | | | |
| Anchor size | | | | w/w | | | | | |
| Anchor Size | | o optit | | 80°C/50°C | | For all | | | |
| | | | 40°C/24°C | | 120°C/72°C | temperature | | | |
| | | | | | | range | | | |
| | | h _{ef} | $N_{Rk,b} = N_{Rk,p}^{1)}$ | | | V _{Rk,b} ²⁾³⁾ | | | |
| | | [mm] | | | | | | | |
| Compressive strength f _b ≥ 12 N/mm ² | | | | | | | | | |
| M8 | 12x80 | 80 | 3,5 | 3,5 | 3,0 | 4,0 | | | |
| M8 / M10/ IG- M6 | 16x85 | 85 | 3,5 | 3,5 | 3,0 | 6,5 | | | |
| | 16x130 | 130 | 5,0 | 5,0 | 4,5 | 6,5 | | | |
| M12 / M16 / IG- M8 / IG-M10 | 20x85 | 85 | 3,5 | 3,5 | 3,0 | 7,0 | | | |
| | 20x130 | 130 | 5,0 | 5,0 | 4,5 | 9,0 | | | |
| | 20x200 | 200 | 5,0 | 5,0 | 4,5 | 9,0 | | | |
| | | Compressive s | trength f _b ≥ 14 | N/mm ² | | | | | |
| M8 | 12x80 | 80 | 4,0 | 4,0 | 3,0 | 4,0 | | | |
| M8 / M10/ IG- M6 | 16x85 | 85 | 4,0 | 4,0 | 3,0 | 6,5 | | | |
| | 16x130 | 130 | 5,5 | 5,5 | 4,5 | 6,5 | | | |
| | 20x85 | 85 | 4,0 | 4,0 | 3,0 | 7,0 | | | |
| M12 / M16 / IG- M8 / IG-M10 | 20x130 | 130 | 5,5 | 5,5 | 4,5 | 9,0 | | | |
| | 20x200 | 200 | 5,5 | 5,5 | 4,5 | 9,0 | | | |

¹⁾ Values are valid for c_{cr} and c_{min}

²⁾ Calculation of V_{Rk,c} see ETAG 029, Annex C, except for shear load parallel to free edge with $c \ge 125$ mm: V_{Rk,c,II} = V_{Rk,b}

³⁾ The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0.8

Table C48: Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | N | δ _N / N | δ _{N0} | δ _{N∞} | V | δ_{V0} | δ _{V∞} |
|-----------------------------------|--------|---|------|--------------------|-----------------|-----------------|------|---------------|-----------------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 1,14 | | 0,11 | 0,23 | 1,10 | 1,20 | 1,80 |
| M8 / M10/ IG- M6 | 16x85 | 85 | | | | | 1.96 | 1,50 | 0.05 |
| | 16x130 | 130 | 1,57 | 0.10 | 0,16 | 0,31 | 1,86 | 1,50 | 2,25 |
| M12 / M16 / IG-M8 / IG- M10 | 20x85 | 85 | 1,14 | 0,10 | 0,11 | 0,23 | 1,86 | 1,50 | 2,25 |
| | 20x130 | 130 | 1 57 | | 0,16 | 0,31 | 2,57 | 2,10 | 0.15 |
| | 20x200 | 200 | 1,57 | | | | | | 3,15 |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

Performances clay hollow brick HLz-16DF

Characteristic values of resistance under tension and shear load (continue) Displacements



| Porotherm Homebric im³] 0,7 im²] 4, 6 or 10 EN 771-1 e.g. Wienerberger (FF nm] 500 x 200 x 299 Rotary 49 - 4,5 49 - 4,5 49 | R) | | | | | |
|--|--------------------------------------|----------------------------------|---|---|--|--|
| 1m²] 4, 6 or 10 EN 771-1 e.g. Wienerberger (FF nm] 500 x 200 x 299 Rotary 49 4,5 49 | | | | | | |
| EN 771-1 e.g. Wienerberger (FF nm] 500 x 200 x 299 Rotary 49 | | | | | | |
| e.g. Wienerberger (FF nm] 500 x 200 x 299 Rotary 49 49 31 25 31 25 | | | | | | |
| nm] 500 x 200 x 299 Rotary 49 4,5 31 25 | | | | | | |
| Rotary 49 | | | 10,5 | | | |
| 49 | | | | | | |
| | | | | | | |
| | | | | | | |
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| neters | | | | | | |
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| | | | | | | |
| | into I | | | | | |
| | mm] | | | | | |
| n [r | | 10 | | | | |
| | mm] | | | | | |
| n [r ind SH20x130 G 029, Annex C anchor group in case of tens | mm] sion loading | S≥ | | 2,0 | | |
| n [r ind SH20x130 G 029, Annex C anchor group in case of tens with c ≥ 200 | mm] sion loading with s | s≥ 00 ((a N | (,)) | | | |
| n [r and SH20x130 G 029, Annex C anchor group in case of tens with c ≥ | mm] sion loading with s 100 | s≥ 00 00 α _{g,N,} | ı,ıı [-] | 2,0 2,0 1,2 | | |
| 2 n |) [] | [-] [mm] | [-] All s [mm] 100 (* [mm] 100 (* [mm] 50 [mm] 29 | [-] All sizes [mm] 100 (120) ¹⁾ [mm] 100 (120) ¹⁾ [mm] 500 [mm] 299 | | |



| Configurati | on | with | 1 C ≥ | with s | 2 | - | |
|---|--------------------------------------|---|---------------------------|----------------------------|----------------------|----------------------------------|----------|
| II: anchors placed parallel to horizontal joint | V | c | cr | 500 | α _{g,V} | | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | c | icr | 299 | α _{g,v} | ц. [-] | 2,0 |
| able C53: Group | factor for and | chor group in ca | ase of shear l | oading perp | endicular to i | iree edge | |
| Configurati | on | with | IC≥ | with s | 2 | | |
| II: anchors placed parallel to horizontal joint | allel to horizontal | | Ccr | | α _{g,V} | " [-] | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | | c | C _{cr} | | 299 α _g , | | 2,0 |
| able C54: Charac | teristic value | es of resistance | under tensio | on and shear | loads | | |
| | 1 | | | Chara | cteristic resist | ance | |
| | | | | | Use category | unoo | |
| | | Effective | | d/d | Ose category | d/c | 4 |
| | | anchorage | | w/d | | w/c | |
| Anchor size | Sleeve | depth | | w/w | | w/w | |
| | | Sleeve depth | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all tem rand | perature |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | V _{Rk,b} | 2)3) |
| | | [mm] | | 2 | [kN] | | |
| | 1 | | e strength f _b | | | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,75 | 2,0 | |
| M8 / M10/ IG-M6 | 16x85 | 85 | 0,9 | 0,9 | 0,75 | 2,0 | |
| Contra de actor de Carrier | 16x130 | 130 | 1,2 | 1,2 | 0,9 | 2,0 | |
| M12 / M16 / | 20x85 | 85 | 0,9 | 0,9 | 0,75 | 2,5 | |
| IG-M8 / IG-M10 | 20x130 | 130 | 1,2 | 1,2 | 0,9 | 2,5 | 5 |
| | 1 | | e strength f _b | | | | _ |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,9 | 2,8 | |
| M8 / M10/ IG-M6 | 16x85 | 85 | 0,9 | 0,9 | 0,9 | 2,5 | |
| | 16x130 | 130 | 1,2 | 1,2 | 1,2 | 2,5 | |
| M12 / M16 / | 20x85 | 85 | 0,9 | 0,9 | 0,9 | 3,0 | |
| | 20x130 | 130 | 1,2 | 1,2 | 1,2 | 3,0 |) |
| ³⁾ The values are v | Rk,c see ETAG 0 alid for steel 5. | 130 29, Annex C, exce 6 or greater. For s | teel 4.6 and 4.8 | multiply V _{RK,b} | | 3,(≥ 200 mm: V _{Rk} | |
| Mundo Injection Sy | stem MIT-SE | Plus or MIT-C | OOL Plus for | masonry | | | |

Г



| | | | | Chara | Characteristic resistance | | | | | |
|-----------------|--------|--------------------------------|---------------------------|---------------------------|-----------------------------------|---------------------------|--|--|--|--|
| | | | | | Use category | ТУ | | | | |
| Anchor size | Sleeve | Effective d/d anchorage w/d | | w/d | | d/d w/d w/w | | | | |
| | | | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all temperature range | | | | |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}^{1}$ | V _{Rk,b} ²⁾³⁾ | | | | | |
| | | [mm] | | | [kN] | | | | | |
| | | Compressive | strength f _b ≥ | 10 N/mm ² | | | | | | |
| M8 | 12x80 | 80 | 1,2 | 1,2 | 1,2 | 3,0 | | | | |
| MO / MIO/ IC MG | 16x85 | 85 | 1,2 | 1,2 | 1,2 | 3,0 | | | | |
| M8 / M10/ IG-M6 | 16x130 | 130 | 1,5 | 1,5 | 1,5 | 3,5 | | | | |
| M12 / M16 / | 20x85 | 85 | 1,2 | 1,2 | 1,2 | 4,0 | | | | |
| IG-M8 / IG-M10 | 20x130 | 130 | 1,5 | 1,5 | 1,5 | 4,0 | | | | |

Values are valid for c_{cr} and c_{min}

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

Table C56: Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | Ν | δ _N / N | δ_{N0} | δ _{N∞} | V | δ_{V0} | δ√∞ |
|-------------------|--------|---|------|--------------------|---------------|-----------------|------|---------------|------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 0,34 | | 0,27 | 0.55 | 0,9 | | |
| M8 / M10/ | 16x85 | 85 | 0,34 | | 0,27 | 0,55 | 0,9 | | |
| IG-M6 | 16x130 | 130 | 0,43 | 0,80 | 0,34 | 0,69 | 1,0 | 1,20 | 1,80 |
| M12 / M16 / | 20x85 | 85 | 0,34 | | 0,27 | 0,55 | | , | |
| IG-M8 / IG-M10 | 20x130 | 130 | 0,43 | | 0,34 | 0,69 | 1,14 | | |

| Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry |
|---|
|---|

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



| | | Clay hollow brick BGV Thermo | | | | | |
|--|---|--|--------------------------------------|--------------------------|---|-----|-----|
| Bulk density | ρ [kg/dm ³] | 0,6 | | 000 | | | |
| | $p[N/mm^2]$ | 4, 6 or 10 | | | | | 1 |
| Code | | EN 771-1 | | | | | |
| Producer (country code) | | e.g. Leroux (FR) | | | | | |
| Brick dimensions | [mm] | 500 x 200 x 314 | | | | | |
| Drilling method | [iiiii] | Rotary | | | | | |
| | | | 500 | | | _ | |
| | | | | | | | |
| 200 | | | 2 | 61 | | \$5 | |
| | | | manner | 5 | | ~~ | |
| | n parameters | 5 | [-1] | 577 | All sizes | | |
| Anchor size | | 5 | [-] [mm] | 577 | All sizes 100 (120) ¹ | () | |
| | c _{cr} | 5 | [-] [mm] [mm] | 5** | All sizes 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance | Ccr | \$ | [mm] [mm] [mm] | 577 | 100 (120) ¹ 100 (120) ¹ 500 | | |
| Anchor size Edge distance Minimum edge distance Spacing | C _{cr} C _{min} ²⁾ S _{cr,II} S _{cr,⊥} | B | [mm] [mm] [mm] [mm] | 5** | 100 (120) ¹ 100 (120) ¹ 500 314 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | l20x130 Annex C or group in case of | [mm] [mm] [mm] [mm] [mm] | ading | 100 (120) ¹ 100 (120) ¹ 500 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact Configuration | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | l20x130 Annex C or group in case of with c ≥ | [mm] [mm] [mm] [mm] [mm] | ading with s ≥ | 100 (120) ¹ 100 (120) ¹ 500 314 | | |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact Configuration II: anchors placed | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | l20x130 Annex C or group in case of | [mm] [mm] [mm] [mm] [mm] | ading | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | 1,7 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact Configuration | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | l20x130 Annex C or group in case of with c ≥ | [mm] [mm] [mm] [mm] [mm] | ading with s ≥ | 100 (120) ¹ 100 (120) ¹ 500 314 | | 1,7 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact Configuration II: anchors placed parallel to horizontal joint ⊥: anchors placed | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | I20x130 Annex C or group in case of with c ≥ 200 | [mm] [mm] [mm] [mm] [mm] | ading with s ≥ 100 | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C59: Group fact Configuration II: anchors placed parallel to horizontal joint | $\begin{array}{c} C_{cr} \\ C_{min}^{2)} \\ S_{cr,II} \\ S_{cr,\bot} \\ S_{min} \\ 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C or group in case of with c ≥ 200 C _{cr} | [mm] [mm] [mm] [mm] [mm] | ading | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | 2,0 |



| Configurat | tion | with c ≥ | with s ≥ | | | |
|---|-------------------|-----------------------|-------------------|----------------------|------|-----|
| II: anchors placed parallel to horizontal joint | | C _{cr} | 500 | α _{g,V,Ⅱ} | 11 | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | Ccr | 314 | $\alpha_{g,V,\perp}$ | [-] | 2,0 |
| able C61: Group | factor for anchor | group in case of shea | loading perpendic | ular to free | edge | |
| Configura | tion | with c ≥ | with s ≥ | 1 | | |
| II: anchors placed barallel to horizontal joint | V | Ccr | 500 | $\alpha_{g,v,ii}$ | [-] | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | C _{cr} | 314 | $\alpha_{g,V,\perp}$ | 1-1 | 2,0 |
| | | | | | | |
| | | | | | | |



| Brick type: | Clay hollow | brick BGV The | rmo | | | | | |
|------------------------|--|-------------------|----------------|---|--------------------|-----------------------------------|--|--|
| Table C62: | Characterist | ic values of resi | stance under t | ension and she | ear loads | | | |
| | | | | | cteristic resistan | се | | |
| | | | | | Jse category | | | |
| | | Effective | | d/d | | d/d | | |
| | | anchorage | | w/d | | w/d | | |
| Anchor size | Sleeve | depth | | w/w | | w/w | | |
| | | | | 80°C/50°C | 120°C/72°C | For all temperature range | | |
| | $h_{ef} \qquad \qquad N_{Rk,b} = N_{Rk,p}^{(1)}$ | | | | | V _{Rk,b} ²⁾³⁾ | | |
| | | [mm] [kN] | | | | | | |
| | | Comp | ressive streng | th f _b ≥ 4 N/mm ² | 2 | | | |
| M8 | 12x80 | 80 | 0,6 | 0,6 | 0,6 | 2,0 | | |
| M8 / M10/ | 16x85 | 85 | 0,6 | 0,6 | 0,6 | 2,0 | | |
| IG-M6 | 16x130 | 130 | 1,2 | 1,2 | 0,9 | 2,5 | | |
| M12 / M16 / IG-M8 / | 20x85 | 85 | 0,6 | 0,6 | 0,6 | 2,5 | | |
| IG-M10 | 20x130 | 130 | 1,2 | 1,2 | 0,9 | 2,5 | | |
| | | Comp | ressive streng | th f _b ≥ 6 N/mm² | 2 | | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,75 | 2,5 | | |
| M8 / M10/ | 16x85 | 85 | 0,9 | 0,9 | 0,75 | 2,5 | | |
| IG-M6 | 16x130 | 130 | 1,5 | 1,5 | 1,2 | 3,0 | | |
| M12 / M16 / IG-M8 / | 20x85 | 85 | 0,9 | 0,9 | 0,75 | 3,0 | | |
| IG-M10 | 20x130 | 130 | 1,5 | 1,5 | 1,2 | 3,0 | | |
| | | Compr | essive strengt | th f _b ≥ 10 N/mm | 2 | | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,9 | 3,5 | | |
| M8 / M10/ | 16x85 | 85 | 0,9 | 0,9 | 0,9 | 3,5 | | |
| IG-M6 | 16x130 | 130 | 2,0 | 2,0 | 1,5 | 4,0 | | |
| M12 / M16 / IG-M8 / | 20×85 | 85 | 0,9 | 0,9 | 0,9 | 4,0 | | |
| IG-M10 | 20x130 | 130 | 2,0 | 2,0 | 1,5 | 4,0 | | |

1) Values are valid for c_{cr} and c_{min}

2) Calculation of V_{Rk,c} see ETAG 029, Annex C, except for shear load parallel to free edge with c ≥ 250 mm: V_{Rk,c,II} = V_{Rk,b} 3)

The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{\textrm{Rk},b}$ by 0,8

Table C63: **Displacements**

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

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

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



| Brick type | | Clay hollow brick | k | | ~ | | |
|--|--|--|--|------------------------|---|------|-------------------|
| Bulk density | ρ [kg/dm ³] | Calibric R+ 0,6 | | | Suller. | | |
| | p [kg/dm] $f_b \ge [N/mm^2]$ | 6, 9 or 12 | | | | | - |
| Code | b ≤ [iw/iiiii] | EN 771-1 | | | | - | 2 |
| Producer (country code) | | e.g. Terreal (FR) | 1 | | | | |
| Brick dimensions | [mm] | 500 x 200 x 314 | | | | < 11 | |
| Drilling method | [] | Rotary | | | | 1 | |
| Drining motilod | | riotary | | 4 | | | |
| | | | 500 —— | | 5 m | | |
| | | | 14 4 | | 5 | | |
| \leq |][| | _ 86 2 | 20 | | | |
| | | | | | 10 | | |
| | - | | T | | | | |
| 200 | | | | | iñ | | |
| | | | | | | | |
| | 1 | | | | | | |
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| | -ninn-nnn | and the second second | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | unumunumunumunu | | | |
| Table C65: Installatio | n parameters | 8 | | | | | |
| Anchor size | | 5 | [-] | | All sizes |) | |
| Anchor size Edge distance | Cor | 3 | [mm] | | 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance | C _{cr} C _{min} ²⁾ | 3 | [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance | C _{cr} C _{min} ²⁾ S _{cr,II} | 3 | [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 500 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing | C _{cr} C _{min} ²⁾ | 5 | [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o | [mm] [mm] [mm] [mm] [mm] | ading | 100 (120) ¹ 100 (120) ¹ 500 314 | | |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C66: Group fac | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o with c ≥ | [mm] [mm] [mm] [mm] [mm] | with s ≥ | 100 (120) ¹ 100 (120) ¹ 500 314 | | |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C66: Group fac Configuration II: anchors placed | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o | [mm] [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | 1,7 |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C66: Group fac Configuration | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o with c ≥ | [mm] [mm] [mm] [mm] [mm] | with s ≥ | 100 (120) ¹ 100 (120) ¹ 500 314 | | 1.0 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing 1) Value in brackets for SI 2) For V _{Rk,c} : cmin according Table C66: Group fac Configuration II: anchors placed parallel to horizontal joint L: anchors placed | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o with c ≥ 175 | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | 1,7 2,0 1,0 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C66: Group fac Configuration II: anchors placed parallel to horizontal joint | C _{cr} C _{min} ²⁾ S _{cr,1} S _{cr,⊥} S _{min} H20x85 and SH g to ETAG 029, | l20x130 Annex C or group in case o with c ≥ 175 c _{cr} | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 500 | 100 (120) ¹ 100 (120) ¹ 500 314 100 | | 2 |



| (| Configuration | | with c ≥ | with s ≥ | | 1.000 | | |
|--|--|---------------------------------|------------------------|---|----------------------|---------------------|-------------------------------|--|
| II: anchors p parallel to hor joint | laced | | C _{cr} | 500 | α _{g,∨,II} | [-] | 2,0 | |
| ⊥: anchors p perpendicul horizontal j | ar to V | | Ccr | 314 | $\alpha_{g,v,\perp}$ | 171 | 2,0 | |
| Table C68: | Group factor fo | or anchor group ir | case of shear | loading perpend | licular to free e | dge | | |
| (| Configuration | | with c ≥ | with s ≥ | | | | |
| | II: anchors placed parallel to horizontal joint | | C _{cr} | 500 | α _g ,v,ii | [-] | 2,0 | |
| ⊥: anchors p perpendicul horizontal j | ar to 🛛 🗌 🗸 🗕 | | C _{cr} | 314 | $\alpha_{g,V,\perp}$ | [¹] | 2,0 | |
| Table C69: | Characteristic | values of resistar | nce under tensio | THE PARTY AND | | | | |
| | | | - | | istic resistance | | | |
| | | | | Use d/d | category | | | |
| Anchor size | Sleeve | Effective anchorage depth | | | | d/d w/d w/w | | |
| Anchor size | Sleeve | depin | 40°C/24°C | 80°C/50°C | 120°C/72°C | te | For all mperature range | |
| | | h _{ef} | | V _{Rk,b} ²⁾³⁾ | | | | |
| | | [mm] | | $N_{Rk,b} = N_{Rk,p}^{(1)}$ | [kN] | | | |
| | | | sive strength fb | | | - | - | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,75 | | 3,0 | |
| M8 / M10/ | 16x85 | 85 | 0,9 | 0,9 | 0,75 | _ | 4,0 | |
| IG-M6 | 16x130 | 130 | 1,2 | 1,2 | 0,9 | - | 4,0 | |
| M12 / M16 / IG-M8 / | 20x85 | 85 | 0,9 | 0,9 | 0,75 | _ | 6,0 | |
| IG-M10 | 20x130 | 130 | 1,2 | 1,2 | 0,9 | | 6,0 | |
| | | Compres | sive strength f | ≥ 9 N/mm ² | | | | |
| M8 | 12x80 | 80 | 1,2 | 1,2 | 0,9 | | 3,5 | |
| M8 / M10/ | 16x85 | 85 | 1,2 | 1,2 | 0,9 | | 5,0 | |
| IG-M6 | 16x130 | 130 | 1,5 | 1,5 | 1,2 | | 5,0 | |
| M12/M16/ | 20x85 | 85 | 1,2 | 1,2 | 0,9 | | 7,5 | |
| IG-M8 / IG-M10 | 20x130 | 130 | 1,5 | 1,5 | 1,2 | | 7,5 | |
| | s are valid for c _{cr} an ation of V _{Rk,c} see E | TAG 029, Annex C, e | | | | nm: V _{Rk} | $_{\rm c,II} = V_{\rm Rk,b}$ | |
| ¹⁾ Values ²⁾ Calcul | alues are valid for s | leer 5.6 of greater. Fo | Charles in Description | | | | | |



| Brick type: | Clay hollow b | rick Calibric R+ | | | | | |
|-------------------|----------------|--------------------|--|-----------------------------------|------------------|-------------|--|
| Table C70: | Characteristic | values of resistan | ce under tensio | on and shear loa | ads (continue) | | |
| | | | | Character | istic resistance | | |
| | | | | | | | |
| | | Effective | | d/d | | | |
| | | anchorage | | w/d | | | |
| Anabar aire | Cleave | 0 | | w/w | | w/w | |
| Anchor size | Sleeve depth | depth | | | | For all | |
| | | | 40°C/24°C | 80°C/50°C | 120°C/72°C | temperature | |
| | | | range | | | | |
| | | h _{ef} | | V _{Rk,b} ²⁾³⁾ | | | |
| | | [mm] | $N_{\text{Rk},b} = N_{\text{Rk},p}^{(1)} V_{\text{Rk},b}$ [kN] | | | | |
| | | Compress | sive strength fb | ≥ 12 N/mm² | | | |
| M8 | 12x80 | 80 | 1,2 | 1,2 | 0,9 | 4,0 | |
| M8 / M10/ | 16x85 | 85 | 1,2 | 1,2 | 0,9 | 5,5 | |
| IG-M6 | 16x130 | 130 | 1,5 | 1,5 | 1,2 | 5,5 | |
| M12 / M16 / | 20x85 | 85 | 1,2 | 1,2 | 0,9 | 8,5 | |
| IG-M8 / IG-M10 | 20x130 | 130 | 1,5 | 1,5 | 1,2 | 8,5 | |

¹⁾ Values are valid for c_{cr} and c_{min}

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

Table C71: Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | Ν | δ _N / N | δ _{N0} | δ _{N∞} | V | δ_{V0} | δ _{V∞} |
|-------------------|--------|---|------|--------------------|-----------------|-----------------|------|---------------|-----------------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 0,34 | | 0,27 | 0,55 | 1,0 | 1,10 | 1,65 |
| M8 / M10/ | 16x85 | 85 | 0,34 | | 0,27 | 0,55 | 1,43 | | |
| IG-M6 | 16x130 | 130 | 0,43 | 0,80 | 0,34 | 0,69 | 1,43 | | |
| M12 / M16 / | 20x85 | 85 | 0,34 | ŕ | 0,27 | 0,55 | | 2,00 | 3,00 |
| IG-M8 / IG-M10 | 20x130 | 130 | 0,43 | | 0,34 | 0,69 | 2,14 | | |

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



| Brick type | | Clay hollow brick | | | | - | |
|--|---|--|--------------------------------------|------------------------|---|-------|-----|
| | - Ilea/dm31 | Urbanbric | | | | | |
| Bulk density | ρ [kg/dm ³] | 0,7 | | | and the | 255 | 1 |
| | ₀ ≥ [N/mm²] | 6, 9 or 12 | | | 59% | Ser . | |
| Code | | EN 771-1 | | | Er | - | |
| Producer (country code) | | e.g. Imerys (FR) | | | | | |
| Brick dimensions | [mm] | 560 x 200 x 274 | | | | | |
| Drilling method | | Rotary | | | _ | | |
|) | | 560 | | | 99,5 | 5 | |
| | | 20 | 6, | | | | |
| | (ø40) | | 5,6 | | = 20 | 00 | |
| 5 | - Cord | | | | | 1 | |
| | | | | | | | |
| | 63 | | | 40 | | | |
| | | | | | | ala. | |
| Table C73: Installation | n parameters | í. | | | | | |
| Anchor size | | | [-] [mm] | | All sizes |) | |
| Anchor size Edge distance | Ccr | | [-] [mm] [mm] | | All sizes 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance | | | [mm] | | 100 (120) ¹ | | |
| Anchor size Edge distance | C _{cr} C _{min} ²⁾ | \$ | [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing | Ccr Cmin ²⁾ Scr,Ⅱ Scr,⊥ Smin | | [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 560 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according | Ccr C _{min} ²⁾ Scr,II Scr,⊥ Smin 120x85 and SH to ETAG 029, | 20x130 Annex C | [mm] [mm] [mm] [mm] [mm] | ading | 100 (120) ¹ 100 (120) ¹ 560 274 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according | Ccr C _{min} ²⁾ Scr,II Scr,⊥ Smin 120x85 and SH to ETAG 029, | 20x130 Annex C | [mm] [mm] [mm] [mm] [mm] | ading with s ≥ | 100 (120) ¹ 100 (120) ¹ 560 274 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C74: Group fact Configuration II: anchors placed | Ccr C _{min} ²⁾ Scr,II Scr,⊥ Smin 120x85 and SH to ETAG 029, | 20x130 Annex C or group in case of t | [mm] [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 560 274 100 | | 1,9 |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C74: Group fact <u>Configuration</u> II: anchors placed parallel to horizontal | C _{cr} C _{min} ²⁾ S _{cr,II} S _{cr,⊥} S _{min} 120x85 and SH to ETAG 029, | 20x130 Annex C or group in case of t with c ≥ | [mm] [mm] [mm] [mm] [mm] | with s ≥ | 100 (120) ¹ 100 (120) ¹ 560 274 | | 1,9 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C74: Group fact <u>Configuration</u> II: anchors placed parallel to horizontal joint | C _{cr} C _{min} ²⁾ S _{cr,II} S _{cr,⊥} S _{min} 120x85 and SH to ETAG 029, | 20x130 Annex C or group in case of t with c ≥ 185 c _{cr} | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 560 | 100 (120) ¹ 100 (120) ¹ 560 274 100 | | 2,0 |
| Anchor size Edge distance Minimum edge distance Spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C74: Group fact <u>Configuration</u> II: anchors placed parallel to horizontal | C _{cr} C _{min} ²⁾ S _{cr,II} S _{cr,⊥} S _{min} 120x85 and SH to ETAG 029, | 20x130 Annex C or group in case of t with c ≥ 185 | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 | 100 (120) ¹ 100 (120) ¹ 560 274 100 | | |



| Confi | guration | with c | > | with s ≥ | | | ľ1 |
|---|---|---------------------------------|-------------------|-----------------------|----------------------|--------------------------|------------------------------|
| II: anchors placed parallel to horizont joint | | C _{cr} | | 560 | α _{g,V,II} | | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | Ccr | | 274 | $\alpha_{g,V,\perp}$ | [-] | 2,0 |
| Table C76: Gr | oup factor for anc | hor group in case | e of shear load | ding perpendi | icular to free e | dge | |
| Confi | guration | with c | 2 | with s ≥ | | | |
| II: anchors placed parallel to horizont joint | | Ccr | | 560 | $\alpha_{g,V,0}$ | Ţ. | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | Ccr | | 274 | $\alpha_{g,V,\perp}$ | [-] | 2,0 |
| Table C77: Cł | naracteristic value | es of resistance u | nder tension a | and shear loa | ds | | |
| | | | | Characte | ristic resistance | 01 | |
| | | | | Use | category | | |
| Anober size | Sleeve | Effective anchorage depth | | d/d w/d w/w | | d/d w/d w/w | |
| Anchor size | Sleeve | depin | 40°C/24°C | 80°C/50°C | 120°C/72°C | tem | For all perature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ |) | V | 2)3) Rk,b |
| | | [mm] | | | [kN] | | |
| | | Compressive s | | | | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,75 | | 3,0 |
| M8 / M10/ | 16x85 | 85 | 0,9 | 0,9 | 0,75 | - | 3,0 |
| IG-M6 | 16x130 | 130 | 2,0 | 2,0 | 1,5 | | 3,0 |
| M12/M16/ | 20x85 | 85 | 0,9 | 0,9 | 0,75 | - | 3,5 |
| G-M8 / IG-M10 | 20x130 | 130 | 2,0 | 2,0 | 1,5 | | 3,5 |
| 140 | 10-00 | Compressive s | | | 0.0 | | 10 |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,9 | | 4,0 |
| M8 / M10/ IG-M6 | 16x85 | 85 | 0,9 | 0,9 | 0,9 | | 4,0 |
| M12/M16/ | 16x130 20x85 | 85 | 2,5 0,9 | 2,5 0,9 | 2,0 0,9 | | 4,0 4,5 |
| IG-M8 / IG-M10 | 20x85 20x130 | 130 | 2,5 | 2,5 | 2,0 | | 4,5 |
| 1) Values are | valid for c_{cr} and c_{min} of $V_{Rk,c}$ see ETAG 0 are valid for steel 5.6 | 29, Annex C, except | for shear load pa | arallel to free ec | lge with c ≥ 190 r | l nm: V _{Rk} | - |
| | | | | | | | |



| Brick type: Cla | y hollow brick U | banbric | | | | |
|-----------------|----------------------|--------------------|----------------------------|---------------------------|-------------------|-----------------------------------|
| Table C78: C | haracteristic values | s of resistance un | der tension a | nd shear loa | ds (continue) | |
| | | | | Characte | ristic resistance | |
| | | | | Use | e category | |
| | | Effective | | d/d | | d/d |
| | | anchorage | | w/d | | w/d |
| Anchor size | Sleeve | depth | | w/w | | w/w |
| Anchor Size | Sieeve | doptil | | | | For all |
| | | | 40°C/24°C | 80°C/50°C | 120°C/72°C | temperature |
| | | | | | | range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | V _{Rk,b} ²⁾³⁾ |
| | | [mm] | | | [kN] | |
| | | Compressive st | rength f _b ≥ 12 | N/mm ² | | |
| M8 | 12x80 | 80 | 1,2 | 1,2 | 0,9 | 4,5 |
| M8 / M10/ | 16x85 | 85 | 1,2 | 1,2 | 0,9 | 4,5 |
| IG-M6 | 16x130 | 130 | 3,0 | 3,0 | 2,5 | 4,5 |
| M12 / M16 / | 20x85 | 85 | 1,2 | 1,2 | 0,9 | 5,0 |
| IG-M8 / IG-M10 | 20x130 | 130 | 3,0 | 3,0 | 2,5 | 5,0 |

¹⁾ Values are valid for c_{cr} and c_{min}

²⁾ Calculation of V_{Rk,c} see ETAG 029, Annex C, except for shear load parallel to free edge with $c \ge 190 \text{ mm}$: V_{Rk,c,II} = V_{Rk,b}

³⁾ The values are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply $V_{Rk,b}$ by 0,8

Table C79: Displacements

| Anchor size | Sleeve | Effective anchorage depth h _{ef} | Ν | δ _N / N | δ_{N0} | δ _{N∞} | V | δ_{V0} | δ∨∞ |
|-------------------|--------|---|------|--------------------|---------------|-----------------|------|---------------|------|
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 0,34 | | 0.27 | 0.55 | | | |
| M8 / M10/ | 16x85 | 85 | 0,34 | | 0,27 | 0,55 | 1,30 | | |
| IG-M6 | 16x130 | 130 | 0,86 | 0,80 | 0,69 | 1,37 | | 1,00 | 1,50 |
| M12 / M16 / | 20x85 | 85 | 0,34 | | 0,27 | 0,55 | | , | , |
| IG-M8 / IG-M10 | 20x130 | 130 | 0,86 | | 0,69 | 1,37 | 1,43 | | |

Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry

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



| Brick type | Clay hollow brick | _ | - T | | _ | |
|--|---|--|-------------------|--|---|-----|
| | Brique creuse C40 |) | | | - | - |
| Bulk density ρ [kg/dm ³] | 0,7 | | | | | |
| Compressive strength $f_b \ge [N/mm^2]$ | 4, 8 or 12 | | | | | |
| Code | EN 771-1 | | | | | |
| Producer (country code) | e.g. Terreal (FR) | _ | | | - | |
| Brick dimensions [mm] | 500 x 200 x 200 | | | | | |
| Drilling method | Rotary | | 0.0 | | | |
| 8 97 | | 8 ** 6 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | 7 | | | |
| | | | | | | |
| Table C81: Installation paramete Anchor size | rs | | | All cizoe | | |
| Anchor size | rs | [-] [mm] | | All sizes 100 (120) ¹ |) | |
| Anchor size Edge distance c _{cr} | rs | [-] [mm] [mm] | | 100 (120) ¹ | | |
| Anchor size Edge distance C _{cr} Minimum edge distance C _{min} ²⁾ | rs | [mm] | | | | |
| Anchor size c_{cr} Edge distance c_{cr} Minimum edge distance $c_{min}^{(2)}$ Spacing $s_{cr,ll}$ | rs | [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 500 200 | | |
| Anchor size Edge distance C _{cr} Minimum edge distance C _{min} ²⁾ Spacing | SH20x130 9, Annex C | [mm] [mm] [mm] [mm] [mm] | ding | 100 (120) ¹ 100 (120) ¹ 500 | | |
| Anchor size c_{cr} Edge distance c_{cr} Minimum edge distance $c_{min}^{(2)}$ Spacing $s_{cr, \perp}$ Minimum spacing s_{min} 1) Value in brackets for SH20x85 and S 2) For V _{Rk,c} : c_{min} according to ETAG 029 Table C82: Group factor for anch | SH20x130 9, Annex C | [mm] [mm] [mm] [mm] [mm] | iding with s ≥ | 100 (120) ¹ 100 (120) ¹ 500 200 | | |
| Anchor size C_{cr} Edge distance C_{cr} Minimum edge distance $C_{min}^{(2)}$ Spacing $S_{cr,ll}$ Minimum spacing S_{min} 1) Value in brackets for SH20x85 and S 2) For V _{Rk,c} : C_{min} according to ETAG 029 | GH20x130 9, Annex C 10r group in case of t | [mm] [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 500 200 | | 2,0 |
| Anchor size Edge distance c _{cr} Minimum edge distance c _{min} ²⁾ Spacing Scr.ll Minimum spacing s _{min} | | [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 500 200 | | |

Installation parameters



| Config | uration | with c | 2 | with s ≥ | | | | |
|---|--|---------------------------------------|-----------------------|---------------------------------|-------------------------------------|-----|----------------------------|--|
| II: anchors placed parallel to horizonta joint | V• | Ccr | | 500 | α _{g,V,II} | r.i | 2,0 | |
| ⊥: anchors placed perpendicular to horizontal joint | V | Ccr | | 200 | $\alpha_{g,V,\perp}$ | [-] | 2,0 | |
| Table C84: Gro | up factor for and | hor group in case | of shear load | ding perpendi | cular to free e | dge | | |
| Config | uration | with c | 2 | with s ≥ | | | | |
| II: anchors placed parallel to horizonta joint | V | Ccr | | 500 | α, _{g,V,ll} | | 2,0 | |
| ⊥: anchors placed perpendicular to horizontal joint | | Ccr | | 200 | $\alpha_{g,V,\bot}$ | [-] | 2,0 | |
| Table C85: Ch | aracteristic value | es of resistance u | nder tension a | Character | ds ristic resistance category | | | |
| | | Effective | | d/d w/d | | | d/d w/d | |
| Anchor size | nchor size Sleeve | | 40°C/24°C | w/w 80°C/50°C | 120°C/72°C | tem | w/w For all perature | |
| | | h _{ef} | - | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | | 2)3) Rk.b | |
| | | [mm] | | NRK,b - NRK,p | [kN] | V | Rk.b | |
| | | Compressive s | trength $f_{L} \ge 4$ | N/mm ² | ford | | | |
| M8 | 12x80 | 80 | 0,6 | 0,6 | 0,6 | | 0,9 | |
| M8 / M10/ | 16x85 | 85 | 0,6 | 0,6 | 0,6 | | 0,9 | |
| IG-M6 | 16x130 | 130 | 0,6 | 0,6 | 0,6 | | 0,9 | |
| M12/M16/ | 20x85 | 85 | 0,6 | 0,6 | 0,6 | | 0,9 | |
| G-M8 / IG-M10 | 20x130 | 130 | 0,6 | 0,6 | 0,6 | | 0,9 | |
| | | Compressive s | trength $f_b \ge 8$ | N/mm ² | | - | | |
| M8 | 12x80 | 80 | 0,9 | 0,9 | 0,75 | | 1,2 | |
| M8 / M10/ | 16x85 | 85 | 0,9 | 0,9 | 0,75 | | 1,2 | |
| IG-M6 | 16x130 | 130 | 0,9 | 0,9 | 0,75 | | 1,2 | |
| M12/M16/ | 20x85 | 85 | 0,9 | 0,9 | 0,75 | _ | 1,2 | |
| G-M8 / IG-M10 | 20x130 | 130 | 0,9 | 0,9 | 0,75 | | 1,2 | |
| ²⁾ Calculation | valid for c _{cr} and c _{min} of V _{Rk,c} see ETAG 0 are valid for steel 5.0 | 29, Annex C 6 or greater. For stee | l 4.6 and 4.8 mu | litiply V _{Rk,b} by 0, | 8 | | | |
| The second second second second | Custom MIT CE | Plus or MIT-COO | Plue for ma | sonry | | | | |



| | | | | | | | ristic resist | ance | |
|----------------------|--------|------------------------------------|-----------------|--------------------|-----------------|---------------------------|---------------|---------------|-----------------------------------|
| | | | | | | | category | | |
| | | | Effective | e | | d/d | | | d/d |
| | | a | nchoraç | ge | | w/d w/w | | | w/d w/w |
| Anchor size | Sleev | ve | depth | | | | | | For all |
| | | | | 40 | °C/24°C | 80°C/50°C | 120°C/72 | 2°C te | emperature |
| | | | | | | | | | range |
| | | | h _{ef} | | | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | | V _{Rk,b} ²⁾³⁾ |
| | | | [mm] | | | | [kN] | | |
| | | | | ve streng | | N/mm ² | | | |
| M8 | 12x8 | | 80 | | 1,2 | 1,2 | 0,9 | | 1,5 |
| M8 / M10/ | 16x8 | | 85 | | 1,2 | 1,2 | 0,9 | | 1,5 |
| IG-M6 | 16x1 | | 130 | | 1,2 | 1,2 | 0,9 | | 1,5 |
| M12/M16/ | 20x8 | | 85 | | 1,2 | 1,2 | 0,9 | | 1,5 |
| G-M8 / IG-M1 | 0 20x1 | | 130 | | 1,2 | 1,2 | 0,9 | | 1,5 |
| | | Effective | N | S / N | 2 | \$ | V | \$ | 5 |
| Anchor size | Sleeve | anchorage depth h _{ef} | N | δ _N / N | δ _{N0} | δ _{N∞} | V | δ_{V0} | δ _{V∞} |
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| M8 | 12x80 | 80 | 0,17 | | 0,14 | 0,27 | | | |
| M8 / M10/ | 16x85 | 85 | | | | | - | | |
| IG-M6 M12 / M16 / | 16x130 | 130 | 0,14 | 0,80 | 0,11 | 0,23 | 0,3 | 0,9 | 1,35 |
| IG-M8 / | 20x85 | 85 | 0,17 | | 0,14 | 0,27 | - | | |
| | 20x130 | 130 | 0,14 | | 0,11 | 0,23 | | | |
| IG-M10 | 20x130 | 130 | 0,14 | | 0,11 | 0,23 | | | |



| g/dm ³] 0 J/mm ²] 4 E e [mm] 2 | 8locchi Legge ,6 , 6, 8 or 12 N 771-1 .g. Wienerbe 50 x 120 x 28 Rotary | erger (IT) | 6-1 | | | | |
|--|---|--------------------------------------|-----------------------------|--|------------------------|-----------------------|---------|
| I/mm ²] 4 E e [mm] 2 | , 6, 8 or 12 N 771-1 .g. Wienerbe 50 x 120 x 25 | | 6-1 | | | | |
| [mm] 2 | N 771-1 .g. Wienerbe 50 x 120 x 25 | | 6 - 1 | t | | | |
| e [mm] 2 | .g. Wienerbe 50 x 120 x 25 | | 6 - 1 | t | | - | |
| [mm] 2 | 50 x 120 x 25 | | 6 - | t | | | |
| | | | 6 - | t | | | |
| | | | 6 - | f | | | |
| | | | | | 7 | | |
| | | | | | 1 | | |
| 1 | | | 2 | - 43 - | ₹6 | | |
| } | | | | | | | |
| | | 250 | ~~~ | | | | |
| ameters | | [-] | - | | All sizes | | |
| Ccr | | | | | 100 (120) ¹ | | |
| Cmin | | [mm] | | | | | |
| | | | | | 60 | | |
| S _{cr,II} | | [mm] | | | 250 | | |
| S _{cr,II} S _{cr,⊥} | | [mm] | | | 250 120 | | |
| s _{cr,II} s _{cr,⊥} s _{min} 5; SH20x130 | and SH20x20 | [mm] [mm] | oading | | 250 | | |
| s _{cr,II} s _{cr,⊥} s _{min} 5; SH20x130 | | [mm] [mm] 00 e of tension I | | th s ≥ | 250 120 | | |
| s _{cr,II} s _{rf,⊥} 5; SH20x130 or anchor g | roup in case | [mm] [mm] 00 e of tension I | wi | | 250 120 100 | | 1,0 |
| s _{cr,II} s _{cr,⊥} s _{min} 5; SH20x130 | roup in case with ca | [mm] [mm] 00 e of tension I | wi | ths≥ | 250 120 | [-] | 1,0 |
| 1 | | Cor | [-] C _{or} [mm] | ameters [-] C _{or} [mm] | ameters | ameters [-] All sizes | ameters |



| II: anchors placed parallel to horizontal joint IV IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | hor group in case with c ≥ 60 ¹⁾ C _{cr} 60 ¹⁾ C _{cr} 293 and C94 values in | brackets | with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear load: Characteri Use | α(g,V,II α(g,V,⊥ | [-] | 1,0 2,0 1,6 2,0 1,0 2,0 1,6 2,0 |
|---|---|----------------------|---|---|----------------------|--|
| parallel to horizontal joint V L: anchors placed perpendicular to horizontal joint V 1) Only valid for V _{Rk,b} according to Table C Table C92: Group factor for anc Configuration II: anchors placed parallel to horizontal joint V L: anchors placed perpendicular to horizontal joint V 1) Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | c_{cr} $60^{1)}$ c_{cr} | brackets | 250 100 ¹⁾ 250 ng perpendic with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 100 ¹⁾ 250 100 ¹⁾ 250 100 ¹⁾ 250 | ular to free ed $\alpha_{g,V,\perp}$ $\alpha_{g,V,\parallel}$ $\alpha_{g,V,\parallel}$ s istic resistance category | ge | 2,0 1,6 2,0 1,0 2,0 1,6 |
| L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C92: Group factor for anc Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | $\begin{array}{c c} & 60^{1)} \\ \hline & c_{cr} \\ \hline \\ $ | brackets | 100 ¹⁾ 250 ng perpendic with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear load: Characteric Use | ular to free ed α _{g,v,l} α _{g,v,l} s istic resistance category | ge | 1,6 2,0 1,0 2,0 1,6 |
| perpendicular to horizontal joint V 1) Only valid for V _{Rk,b} according to Table C Table C92: Group factor for and Configuration II: anchors placed parallel to horizontal joint V L: anchors placed perpendicular to horizontal joint V 1) Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | C_{cr} C93 and C94 values in hor group in case with $c \ge$ $60^{1)}$ C_{cr} $60^{1)}$ C_{cr} 293 and C94 values in c_{cr} | brackets | 250 ng perpendic with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear loads Characteri Use | ular to free ed α _{g,v,l} α _{g,v,l} s istic resistance category | ge | 2,0 1,0 2,0 1,6 |
| horizontal joint 1) Only valid for V _{Rk,b} according to Table C Table C92: Group factor for and Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint 1) Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | A provide the second s | brackets | ng perpendic with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear loads Characteri Use | ular to free ed α _{g,v,l} α _{g,v,l} s istic resistance category | | 1,0 2,0 1,6 |
| Table C92: Group factor for and Configuration II: anchors placed parallel to horizontal joint Image: Configuration L: anchors placed perpendicular to horizontal joint Image: Configuration 1) Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | hor group in case with c ≥ 60 ¹⁾ C _{cr} 293 and C94 values in s of resistance und Effective anchorage | brackets | with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear load: Characteri Use | $\alpha_{g,V,II}$ $\alpha_{g,V,\perp}$ s istic resistance category | | 2,0 1,6 |
| Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | with c ≥ $60^{1)}$ c_{cr} $60^{1)}$ c_{cr} 293 and C94 values in s of resistance und Effective anchorage | brackets | with s ≥ 100 ¹⁾ 250 100 ¹⁾ 250 d shear load: Characteri Use | $\alpha_{g,V,II}$ $\alpha_{g,V,\perp}$ s istic resistance category | | 2,0 1,6 |
| II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | 60 ¹⁾ C _{cr} 60 ¹⁾ C _{cr} C93 and C94 values in s of resistance und Effective anchorage | | 100 ¹⁾ 250 100 ¹⁾ 250 ad shear loads Characteri Use | ag,v,⊥ s istic resistance category | [-] | 2,0 1,6 |
| parallel to horizontal joint Verefinition L: anchors placed perpendicular to horizontal joint Verefinition ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | Cor 60 ¹⁾ Cor C93 and C94 values in s of resistance und Effective anchorage | | 250 100 ¹⁾ 250 Ind shear loads Characteri Use | ag,v,⊥ s istic resistance category | [-] | 2,0 1,6 |
| joint L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | 60 ¹⁾ Cor C93 and C94 values in s of resistance und Effective anchorage | | 100 ¹⁾ 250 Ind shear load: Characteri Use | ag,v,⊥ s istic resistance category | [-] | 1,6 |
| L: anchors placed perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | 60 ¹⁾ Cor C93 and C94 values in s of resistance und Effective anchorage | | 100 ¹⁾ 250 Ind shear load: Characteri Use | s istic resistance category | 6 | 1,6 |
| perpendicular to horizontal joint ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | Cor C93 and C94 values in s of resistance und Effective anchorage | | 250 Id shear load: Characteri Use | s istic resistance category | | |
| ¹⁾ Only valid for V _{Rk,b} according to Table C Table C93: Characteristic value | Effective anchorage | | id shear load: Characteri Use | istic resistance category | | |
| Table C93: Characteristic value | s of resistance un Effective anchorage | | Characteri Use | istic resistance category | | |
| Anchor size Sleeve | depth | | | and the second se | F | For all |
| Anchor size Sleeve | depth | The second second | | | | |
| | and the second | 40°C/24°C | 80°C/50°C | 120°C/72°C | tem | iperature range |
| | h _{ef} | | NRK,b = NRK,p |) | | V _{Rk,b} ⁴⁾ |
| | [mm] | 1.1.2.1 | | [kN] | - | |
| | Compressive st | rength $f_b \ge 4 N$ | /mm² | | - | |
| M8 12x80 | 80 | | | | | |
| M8 / M10/ 16x85 | 85 | - | 11 | Contract of | 1.00 | |
| IG-M6 16x130 | 130 | 0,4 | 0,4 | 0,3 | 2,0 | $(0,9)^{3}$ |
| M12 / M16 / 20x85 | 85 | - | | | | |
| G-M8/IG-M10 20x130 | 130 | | | | | |
| 20x200 | 200 Compressive st | rangeth f > 6 N | /mm ² | | | |
| M8 12x80 | 80 | enguite zon | | | T | |
| M8 / M10/ 16x85 | 85 | | | | 1 | |
| IG-M6 16x130 | 130 | | | | 1. | |
| 20x85 | 85 | 0,5 | 0,5 | 0,4 | 2,5 | $(1,2)^{3}$ |
| M12/M16/ 20x130 | 130 | | | 4 × 1 × 1 × 1 | | |
| G-M8 / IG-M10 20x200 | 200 | - | | | | |
| $ \begin{array}{c} 1) \\ 1) \\ 2) \\ Calculation of V_{Rk,c} see ETAG 02 \\ 3) \\ Values in brackets V_{Rk,c} = V_{Rk,b} fe \\ 4) \\ The values are valid for steel 5.6 \\ \end{array} $ | 29, Annex C, except for or anchors with cmin | | | e with c ≥ 125 m | n: V _{Rk,c} | :,ii = V _{Rk,b} |
| Mungo Injection System MIT-SE | Plus or MIT-COOL | Plus for mas | onry | 1.1.1 | | |



| s | | | | | Character | 19110 16919 | | |
|----------|--|---|--|--|---|---|--|--|
| s | | | | | Use | category | | |
| s | | ⊏ff | ective | | | d/d | | |
| S | | | horage | | | w/d | | |
| | Sleeve | | epth - | | | w/w | | |
| 1 | | | | 40°C/24°C | 80°C/50°C | 120°C/ | 72°C te | For all emperature range |
| | | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ | 1) | | V _{Rk,b} ⁴⁾ |
| | | | mm] | | | [kN] | | 11110 |
| | | | • | | | | | |
| | | | | າgth f _b ≥ 8 N | /mm² | 1 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | 0.6 | 0.6 | 0.5 | 5 3 | $3,0^{2}$ (1,2) ³⁾ |
| | | | | -,- | -,- | .,. | | ,- (-,-, |
|] | | | | | | | | |
| 2 | | | | | 2 | | | |
| | | | | $gth f_b \ge 12 F$ | l/mm ⁻ | I | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | 0,6 | 0,6 | 0,6 | 3 3 | $3,5^{2}$ (1,5) ³ |
| | | | | | | | | |
|) | | | | | | | | |
| | | greater. | For steel 4.6 | and 4.8 multi | ply V _{Rk,b} by 0,8 | | | |
| Displace | | | | | | | | |
| Sleeve | Effective anchorage depth h _{ef} | N | δ_{N} / N | δ_{N0} | δ _{N∞} | v | δ_{V0} | δ _{V∞} |
| | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | [mm] |
| | | 0,17 | | | | | | |
| | are valid for tion of V _{Rk,c} in brackets ues are valid | 12x80 16x85 16x130 20x85 20x130 20x200 12x80 16x85 16x85 16x85 16x130 20x200 12x80 16x130 20x85 20x130 20x200 are valid for c _{cr} and c _{min} tion of V _{Rk,c} see ETAG 029, in brackets V _{Rk,c} = V _{Rk,b} for a ues are valid for steel 5.6 or Displacements Effective anchorage | 12x80 16x85 16x130 20x85 20x130 20x200 20x200 20x200 16x85 16x85 16x85 16x85 16x85 16x85 16x85 16x130 20x85 20x130 20x200 are valid for c _{cr} and c _{min} tion of V _{Rk,c} see ETAG 029, Annex C in brackets V _{Rk,c} = V _{Rk,b} for anchors v ues are valid for steel 5.6 or greater. Displacements Effective anchorage N | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | 12x80 80 16x85 85 16x130 130 20x85 85 20x130 130 20x200 200 Compressive strength f _b ≥ 12 N 12x80 80 16x85 85 16x130 130 20x200 200 16x85 85 16x130 130 20x85 85 20x130 130 20x200 200 are valid for c _{cr} and c _{min} tion of V _{Rk,c} see ETAG 029, Annex C, except for shear load para in brackets V _{Rk,c} = V _{Rk,b} for anchors with c _{min} ues are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multi Displacements Effective anchorage N δ_N / N δ_{N0} | 16x858516x13013020x858520x13013020x200200Compressive strength $f_b ≥ 12 \text{ N/mm}^2$ 12x808016x13013016x858516x13013020x20020020x13013020x200200are valid for c _{cr} and c _{min} tion of V _{Rk,c} see ETAG 029, Annex C, except for shear load parallel to free edgin brackets V _{Rk,c} = V _{Rk,b} for anchors with c _{min} ues are valid for steel 5.6 or greater. For steel 4.6 and 4.8 multiply V _{Rk,b} by 0,8DisplacementsEffective anchorageNδ _N / Nδ _{N0} δ _{N∞} | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | $\begin{array}{c c c c c c c c c c c c c c c c c c c $ |



| and the state of the state of the state of the | on of the brid | | | | | |
|--|--|--|-----------------|--|---|------|
| Brick type | | Clay hollow brick Doppio Uni | | | | |
| Bulk density | ρ [kg/dm ³] | 0,9 | | - | - | 1.00 |
| | $p [N/mm^2]$ | 10, 16, 20 or 28 | | - | | |
| Code | <u> </u> | EN 771-1 | | | | |
| Producer (country code) | | e.g. Wienerberger (IT) | | | | |
| Brick dimensions | [mm] | 250 x 120 x 120 | | | - | |
| Drilling method | [] | Rotary | | | | |
| | | | | 0 | | |
| | | | | | | |
| | n parameters | | | All sizes | | |
| Anchor size Edge distance | Cor | s [-] [mm] | | 100 (120) ¹ |) | |
| Anchor size Edge distance | | s [-] [mm] | | 100 (120) ¹ 60 |) | |
| Anchor size Edge distance Minimum edge distance | Ccr Cmin ²⁾ Scr,II | s [-] [mm] [mm] [mm] | | 100 (120) ¹ 60 250 |) | |
| Anchor size Edge distance Minimum edge distance | C _{cr} C _{min} ²⁾ S _{cr,II} S _{cr,⊥} | s [-] [mm] [mm] [mm] [mm] | | 100 (120) ¹ 60 250 120 |) | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing | Ccr Cmin ²⁾ Scr,II | s [-] [mm] [mm] [mm] | | 100 (120) ¹ 60 250 |) | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C98: Group fact | C _{cr} C _{min} ²⁾ S _{cr,1} S _{or,⊥} S _{min,11} S _{min,⊥} H20x85; SH20x t o ETAG 029, | s [-] [mm] [mm] [mm] [mm] [mm] [mm] [mm] | 10007 | 100 (120) ¹ 60 250 120 100 |) | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C98: Group fact Configuration | C _{cr} C _{min} ²⁾ S _{cr,1} S _{or,⊥} S _{min,11} S _{min,⊥} H20x85; SH20x t o ETAG 029, | s [-] [mm] [mm] [mm] [mm] (130 and SH20x200 Annex C or group in case of tension with c ≥ | with s ≥ | 100 (120) ¹ 60 250 120 100 |) | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C98: Group fact | C _{cr} C _{min} ²⁾ S _{cr,1} S _{or,⊥} S _{min,11} S _{min,⊥} H20x85; SH20x t o ETAG 029, | s [-] [mm] [mm] [mm] [mm] [mm] [mm] [mm] | 10007 | 100 (120) ¹ 60 250 120 100 | | 1,0 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C98: Group fact Configuration II: anchors placed parallel to horizontal | Cor Cmin ²⁾ Scr,II Scr,⊥ Smin,II Smin,⊥ H20x85; SH20x to ETAG 029, tor for ancho | s [-] [mm] [mm] [mm] [mm] [mm] [mm] (130 and SH20x200 Annex C or group in case of tension with c ≥ 60 [mithed by the second s | with s ≥ 100 | 100 (120) ¹ 60 250 120 100 120 |) | |



| Config | uration | with c ≥ | | with s ≥ | | | |
|---|--|------------------------|-----------------------------|------------------------------|---------------------------------------|------|------------------------------|
| II: anchors placed parallel to horizonta joint | | C _{cr} | | 250 | α _{g,V,II} | T.I | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | V | C _{cr} | | 120 | $\alpha_{g,v,\perp}$ | [-] | 2,0 |
| Table C100: Gro | up factor for anch | or group in case | of shear loadi | ng perpendic | ular to free ed | ge | |
| Config | uration | with c ≥ | | with s ≥ | | | |
| II: anchors placed parallel to horizonta joint | | C _{cr} | | 250 | α _{g,V,II} | [-] | 2,0 |
| ⊥: anchors placed perpendicular to horizontal joint | | C _{cr} | | 120 | $\alpha_{g,v,\perp}$ | ы | 2,0 |
| Table C101: Ch | aracteristic values | of resistance un | der tension an | and the second second | s stic resistance | | |
| | | in the second second | - | | category | | |
| | | Effective anchorage | | d/d w/d w/w | | | |
| Anchor size | Sleeve | depth | 40°C/24°C | 80°C/50°C | 120°C/72°C | terr | For All perature range |
| | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}^{1}$ |) | 1 | 2)3) |
| | | [mm] | | | [kN] | | |
| | 1 mar 1 mar | Compressive str | ength f _b ≥ 10 N | /mm ² | | - | |
| M8 | 12x80 | 80 | - | | | | |
| M8 / M10/ | 16x85 | 85 | _ | | | | |
| IG-M6 | 16x130 | 130 | 0,6 | 0,6 | 0,5 | | 1,5 |
| M12/M16/ | 20x85 | 85 | - | | 2.4.5 | | 1.10 |
| G-M8 / IG-M10 | 20x130 | 130 | - | | | | |
| | 20x200 | 200 | angth f > 10 h | 1/mm ² | - | | |
| M8 | 12x80 | Compressive stre 80 | | | | 1 | |
| M8 / M10/ | 16x85 | 85 | | | | | |
| IG-M6 | 16x130 | 130 | I Contra a | 10.00 | | | |
| | 20x85 | 85 | 0,75 | 0,75 | 0,6 | | 2,0 |
| M12/M16/ | 20x130 | 130 | | | | | |
| G-M8 / IG-M10 | 20x200 | 200 | | | · · · · · · · · · · · · · · · · · · · | | |
| ²⁾ Calculation | valid for c_{cr} and c_{min} of $V_{Rk,c}$ see ETAG 029 are valid for steel 5.6 of |), Annex C | 4.6 and 4.8 multi | ply V _{Rk,b} by 0,8 | | L | |
| | | Plus or MIT-COOL | Disc (| | | | |



| | | | | | | Characte | ristic resis | stance | | |
|----------------|-----------|---|--------|--------------------|---------------------------|-----------------------|------------------|--------|----------------------------------|--|
| | | | | | | Use | category | / | | |
| | | | Eff | ective | | | d/d | | | |
| | | | | horage | | | w/d w/w | | | |
| Anchor size | 5 | Sleeve | d | epth – | | | <u>vv/ vv</u> | | For All | |
| | | | | | 40°C/24°C | 80°C/50°C | 2 120°C/72°C tem | | temperati range | |
| | | - | | h _{ef} | | $N_{Rk,b} = N_{Rk,p}$ | 1) | | V _{Rk,b} ²⁾³ | |
| | | | [| mm] | | | [kN] | | | |
| | _ | ç | Compre | ssive stren | gth f _b ≥ 20 № | /mm² | | | | |
| M8 | - | 12x80 | | 80 | | | | | | |
| M8 / M10/ | | 16x85 | | 85 | | | | | | |
| IG-M6 | 1 | 6x130 | | 130 | 0,9 | 0,9 | 0.7 | 5 | 2,0 | |
| M12 / M16 / | | 20x85 | | 85 | 0,5 | 0,0 | 0,75 | 2,0 | | |
| G-M8 / IG-M10 |) | 0x130 | | 130 | | | | | | |
| | 2 | 0x200 | | 200 | | | | | | |
| | | | | essive stren | gth f _b ≥ 28 № | l/mm² | | | | |
| M8 | | 12x80 | | 80 | | | | | | |
| M8 / M10/ | | 16x85 | | 85 | | | | | | |
| IG-M6 | - | 6x130 | | 130 | 1,2 | 1,2 | 0,9 | 9 | 2,5 | |
| M12 / M16 / | | 20x85 | | 85 | , | , | , | 0,0 | , - | |
| G-M8 / IG-M10 |) | 0x130 0x200 | | 130 200 | | | | | | |
| Table C103: | Displace | monto | | | | | | | | |
| | Displace | | | | 1 | | | | | |
| Anchor size | Sleeve | Effective anchorage depth h _{ef} | N | δ _N / N | δ _{N0} | δ _{N∞} | V | δνα | δν | |
| 0120 | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mr | n] [mr | |
| All sizes | All sizes | | | | | | | | | |
| All sizes | All sizes | All sizes | 0,26 | 1,20 | 0,31 | 0,62 | 0,6 | 0,3 | | |



| Brick type | | Hollow light weight c Bloc creux B40 | oncrete | | | | |
|---|--|---|--------------------------------------|------------------------|---|-----|------------|
| Bulk density | ρ [kg/dm ³] | 0,8 | 40 | | | | |
| | $p [N/mm^2]$ | 4 | | | | | E C |
| Code | 0 - [| EN 771-3 | | | | | |
| Producer (country code) | | e.g. Sepa (FR) | | | | _1_ | |
| Brick dimensions | [mm] | 494 x 200 x 190 | | 08 | and a local sector | | and a |
| Drilling method | | Rotary | | | | | |
| 200 | | | | | 17 | | |
| | | | | | | | |
| Anchor size | | | [-] [mm] | | All sizes 100 (120) ¹ |) | |
| Anchor size Edge distance | n parameters | | [-] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance | C _{cr} C _{min} ²⁾ S _{cr,II} | | [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 494 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing | C _{cr} C _{min} ²⁾ S _{cr,⊥} S _{cr,⊥} S _{min} | | [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according | $\begin{array}{c} C_{cr} \\ \hline C_{min}^{2)} \\ \hline S_{cr,II} \\ \hline S_{cr,\bot} \\ \hline S_{min} \\ \hline 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C | [mm] [mm] [mm] [mm] [mm] | ding with s ≥ | 100 (120) ¹ 100 (120) ¹ 494 190 | | |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C106: Group fact Configuration II: anchors placed | $\begin{array}{c} C_{cr} \\ \hline C_{min}^{2)} \\ \hline S_{cr,II} \\ \hline S_{cr,\bot} \\ \hline S_{min} \\ \hline 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C r group in case of ter | [mm] [mm] [mm] [mm] [mm] | | 100 (120) ¹ 100 (120) ¹ 494 190 | | 1,5 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C106: Group fact Configuration II: anchors placed parallel to horizontal | $\begin{array}{c} C_{cr} \\ \hline C_{min}^{2)} \\ \hline S_{cr,II} \\ \hline S_{cr,\bot} \\ \hline S_{min} \\ \hline 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C r group in case of ter with c ≥ | [mm] [mm] [mm] [mm] [mm] | with s ≥ | 100 (120) ¹ 100 (120) ¹ 494 190 | 1 | |
| ²⁾ For V_{Rk,c}: c_{min} according Table C106: Group fact Configuration II: anchors placed parallel to horizontal joint | $\begin{array}{c} C_{cr} \\ \hline C_{min}^{2)} \\ \hline S_{cr,II} \\ \hline S_{cr,\bot} \\ \hline S_{min} \\ \hline 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C r group in case of ter with c ≥ 100 c _{or} | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 494 | 100 (120) ¹ 100 (120) ¹ 494 190 100 | | 1,5 2,0 |
| Anchor size Edge distance Minimum edge distance Spacing Minimum spacing ¹⁾ Value in brackets for SH ²⁾ For V _{Rk,c} : c _{min} according Table C106: Group fact Configuration II: anchors placed parallel to horizontal | $\begin{array}{c} C_{cr} \\ \hline C_{min}^{2)} \\ \hline S_{cr,II} \\ \hline S_{cr,\bot} \\ \hline S_{min} \\ \hline 120x85 \text{ and SH} \\ to ETAG 029, \end{array}$ | 20x130 Annex C r group in case of ter with c ≥ 100 | [mm] [mm] [mm] [mm] [mm] | with s ≥ 100 | 100 (120) ¹ 100 (120) ¹ 494 190 100 | 1 | |



| | Configuratio | 202 | | with c ≥ | 1 | with s ≥ | | - | 1 |
|--|--|--|----------------------------|-----------------------|------------------|-----------------------------|-----------------------|-------------------|-----------------------------------|
| II: anchors | Configuration | | | | | 0.351 412 | | | 4.4 |
| parallel to ho | orizontal | V | - | 50 | | 100 | α | ,V,II | 1,1 |
| joint | | <u>F</u> | | Ccr | | 494 | | [-] | 2,0 |
| ⊥: anchors perpendic | | 10 | | 100 | | 100 | | | 1,1 |
| horizonta | | | | Ccr | | 190 | αg | V,⊥ | 2,0 |
| Table C108 | : Group f | actor for anc | hor group | in case of | shear load | ling perper | ndicular to | free edge | |
| | Configuratio | on | | with c ≥ | | with s ≥ | | | 1 |
| II: anchors parallel to ho joint | placed prizontal | [[| | Ccr | | 494 | άg | .V,II | 2,0 |
| ⊥: anchors perpendici horizonta | lar to | V | | Ccr | | 190 | αg | .V | 2,0 |
| . 1 | | | | | Char | acteristic re Use catego | | | a/.a |
| Anchor size | Sleeve | Effective anchorage depth | | d/d | | w/d w/w | I | d/d w/d w/w | |
| | Gleeve | | 40°C/24°C | 80°C/50°C | 120°C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | range |
| | | h _{et} | | $N_{Rk,b} = N_{Rk,c}$ | 1) | 1 | $N_{Rk,b} = N_{Rk,b}$ | 1) | V _{Rk,b} ²⁾³⁾ |
| | | [mm] | | | | [kN] | | | |
| M8 | 12x80 | 90 | | | ngth $f_b \ge 4$ | | 0.0 | 0.75 | 20 |
| M8 / M10/ | 16x85 | 80 85 | 1,2 1,2 | 0,9 0,9 | 0,75 0,75 | 0,9 1,2 | 0,9 0,9 | 0,75 0,75 | 3,0 |
| IG-M6 | 16x130 | 130 | 1,2 | 0,9 | 0,75 | 1,2 | 0,9 | 0,75 | 3,0 |
| M12/M16/ | 20x85 | 85 | 1,2 | 0,9 | 0,75 | 1,2 | 0,9 | 0,75 | 3,0 |
| IG-M8 / | 20x130 | 130 | 1,2 | 0,9 | 0,75 | 1,2 | 0,9 | 0,75 | 3,0 |
| ²⁾ Calc | es are valid f ulation of V _R values are va | for c _{cr} and c _{min} _{k,c} see ETAG 02 alid for steel 5.6 ements | 29, Annex C or greater. | , except for | shear load pa | arallel to free | edge with c | | |
| Anchor size | Sleeve | Effective anchorag depth h _{ef} | e N | δ _N / N | δ _{ΝΟ} | δ _{N∞} | V | δ _{V0} | δ _{∨∞} |
| | | [mm] | [kN] | [mm/kN] | [mm] | [mm] | [kN] | [mm] | |
| All sizes | All sizes | All sizes | 0,34 | 0,90 | 0,31 | 0,62 | 0,86 | 0,9 | 1,35 |
| Mungo Ir | jection Sy | stem MIT-SE | Plus or M | IIT-COOL F | Plus for ma | sonry | | | 5 |
| Performa | nces hollo | w light weigh | nt concret | e brick Blo | c creux B4 | 0 | 0 | Annex C | 43 |



| Code EN 771-3 EN 771-3 Producer (country code) e.g. Bisotherm (DE) Bisotherm (DE) Brick dimensions [mm] 300 x 123 x 248 Drilling method Rotary Table C112: Installation parameter Anchor size (-) All sizes Edge distance 0//// (-) (mm) 1,5 th w/// (-) Minimum edge distance 0//// (-) (mm) 3 th w/// (-) Minimum spacing Sm/m (mm) 3 th w// (-) Table C113: Group factor for anchor group in case of tension loading 1. Configuration with 6 2 with 5 2 1. II: anchors placed perpendicular to free dige 1.5 th ef 3 th m//// (-) 2. Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0. Configuration with 6 2 with 5 2 1. II: anchors placed perpendicular to free dige 60 120 $\alpha_0 v.t.$ [-] II: anchors placed perpendicular to free dige 60 120 $\alpha_0 v.t.$ [-] 0. II: anchors placed perpendicular to free adge 60 | Brick type | Solid light weight | ick | | de | | | |
|---|--|------------------------------|--|-------------|--------------------------|-----------------------|-------------|-----|
| Compressive strength $f_b \ge [N/mn^2]$ 2 Code EN 771-3 Producer (country code) e.g. Bisotherm (DE) Brick dimensions [mm] 300 x 123 x 248 Image: Control of the con | Bulk density | ρ [kg/dm ³] | 0,6 | | | 10 | an Alashara | |
| Code EN 771-3 EN 771-3 En 23 bistherm (DE) Prick dimensions [mm] 300 x 123 x 248 Image: Status of the status of | Compressive strength f | 2 | 1 | CCC 1 | 20 | | | |
| Brick dimensions [mm] 300 x 123 x 248 Image: Constraint of the second se | | 101.01 | EN 771-3 | | | | | |
| Drilling method Rotary Table C112: Installation parameter Anchor size Car Immune dige distance All sizes Edge distance Car Imm 60 Spacing Ser Imm Go Spacing Ser Imm 60 Spacing Ser Imm 3*her Minimum spacing Seren Imm 120 Table C113: Group factor for anchor group in case of tension loading Configuration with c ≥ with s ≥ Imm 120 Table C113: Group factor for anchor group in case of tension loading II: anchors placed perpendicular to for anchor group in case of shear loading parallel to free edge Imm 22 Table C114: Group factor for anchor group in case of shear loading parallel to free edge Imm 22 Imm 22 Table C114: Group factor for anchor group in case of shear loading parallel to free edge Configuration with c ≥ with s ≥ Imm 22 II: anchors placed parallel to free placed parallel to free edge Imm 124 120 20 22 Go | Producer (country code) | | e.g. Bisotherm (D | E) | | | 2.2.2 | |
| Table C112: Installation parameter Anchor size [-] All sizes Edge distance C_{or} [mm] 1,5*h_{eff} Minimum edge distance C_{orin} [mm] 3*h_{eff} Minimum edge distance C_{orin} [mm] 3*h_{eff} Minimum spacing Ser [mm] 3*h_{eff} 10 Table C113: Group factor for anchor group in case of tension loading Configuration with c ≥ with s ≥ 1 11: anchors placed 90 120 q_a, x_{ib} 2, 12: anchors placed 124 120 q_a, x_{ib} 2, 14: anchors placed 15*hef 3*heft q_a, x_{ib} 2, Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0, 0, 0, 16: anchors placed 60 120 q_a, x_{ib} 2, 0, 17: anchors placed 60 120 q_a, x_{ib} 2, 0, 18: anchors placed 60 120 q_a, x_{ib} 2, 0, 0, 0, 0, <t< td=""><td>Brick dimensions</td><td>[mm]</td><td>300 x 123 x 248</td><td></td><td></td><td>and the second second</td><td>SA (2015)</td><td></td></t<> | Brick dimensions | [mm] | 300 x 123 x 248 | | | and the second second | SA (2015) | |
| Anchor size [-] All sizes Edge distance C_{cr} [mm] 1,5 ⁺ her Minimum edge distance C_{mm} [mm] 1,5 ⁺ her Minimum edge distance C_{mm} [mm] 60 Spacing Sw [mm] 3 ⁺ her Minimum spacing Sw [mm] 3 ⁺ her Minimum spacing Sw [mm] 120 Table C113: Group factor for anchor group in case of tension loading Il: anchors placed 90 120 1, parallel to horizontal joint Image for anchor group in case of shear loading parallel to free edge 1, Configuration with c ≥ with s ≥ [-] L: anchors placed parallel to forizontal joint Image for anchor group in case of shear loading parallel to free edge 0, Configuration with c ≥ with s ≥ [-] 0, L: anchors placed parallel to horizontal joint Image for anchor group in case of shear loading parallel to free edge 0, L: anchors placed parallel to horizontal joint Image for anchor group in case of shear loading perpendicular to free edge 0, L: anchors placed parallel to horizon | Drilling method | | Rotary | | | - Araziep | | |
| Edge distance C_{cr} [mm] 1,5'het Minimum edge distance G_{min} [mm] 60 Spacing Set [mm] 3'het Minimum spacing Semin [mm] 120 Table C113: Group factor for anchor group in case of tension loading Configuration with $c \ge$ with $s \ge$ 1 It: anchors placed perpendicular to horizontal joint 90 120 $a_{q,N,i}$ 2, L: anchors placed perpendicular to horizontal joint 1,5'hef 3'het $a_{q,N,i}$ 2, Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0, 120 $a_{q,N,i}$ 2, Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0, 2, 0, I: anchors placed perpendicular to horizontal joint V 90 120 $a_{q,V,i}$ 1, I: anchors placed perpendicular to horizontal joint V 1,24 120 $a_{q,V,i}$ 2, Table C114: Group factor for anchor group in case of shear loading perpendicular to free edge 0, 2, 0, 2, I: anchors placed perpendicular to hor | Table C112: Installatio | on parameter | | | | | | |
| Edge distance C_{cr} [mm] 1,5'her Minimum edge distance G_{min} [mm] 60 Spacing Set [mm] 3'her Minimum spacing Series [mm] 3'her Table C113: Group factor for anchor group in case of tension loading 120 120 Table C113: Group factor for anchor group in case of tension loading 120 1,5'hef It: anchors placed perpendicular to horizontal joint 90 120 1,2,3'her 1.2 anchors placed perpendicular to horizontal joint 1,5'hef 3'her $\alpha_{g,N,i}$ [-] 1.2 anchors placed perpendicular to horizontal joint 1,5'hef 3'her $\alpha_{g,N,i}$ 2, Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0, 2, 2, Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0, 2, 2, L: anchors placed perpendicular to horizontal joint IV 90 120 $\alpha_{g,V,i}$ 1, 12 anchors placed perpendicular to horizontal joint IV 1,2,4 120 2, 2, Table C115: Group factor for anchor group in case of shea | Anchor size | 100 | | [-] | | All sizes | | |
| Spacing scr (mm) 3'her Minimum spacing smin (mm) 120 Table C113: Group factor for anchor group in case of tension loading Configuration with $c \ge$ with $s \ge$ 1 H: anchors placed 90 120 1 parallel to horizontal joint 124 120 1 L: anchors placed 124 120 1 perpendicular to horizontal joint 1.5'hef 3'her $a_{9,N,L}$ 1 Table C114: Group factor for anchor group in case of shear loading parallel to free edge 0 120 $a_{9,N,L}$ 0 It: anchors placed parallel to horizontal joint 90 120 $a_{9,N,L}$ 1 2 It: anchors placed perpendicular to horizontal joint 90 120 $a_{9,V,L}$ 1 0 It: anchors placed perpendicular to free edge 60 120 $a_{9,V,L}$ 1 0 It: anchors placed perpendicular to free edge 60 120 $a_{9,V,L}$ 2 0 It: anchors placed perpendicular to free edge 60 120 $a_{9,V,L}$ 2 0 2 | Edge distance | Cor | | [mm] | | 1,5*h _{ef} | | |
| Minimum spacing s_{min} (mm) 120 Table C113: Group factor for anchor group in case of tension loading Configuration with $c \ge$ with $s \ge$ 1 Bit anchors placed parallel to horizontal joint 90 120 $\alpha_{g,N,0}$ 1. L: anchors placed perpendicular to horizontal joint 1.5"hef 3"hef $\alpha_{g,N,0}$ [-] 1. Table C114: Group factor for anchor group in case of shear loading parallel to free edge Configuration with $c \ge$ with $s \ge$ II: anchors placed parallel to horizontal joint IV 90 120 $\alpha_{g,V,0}$ 2. II: anchors placed perpendicular to introp prove placed parallel to horizontal joint IV 80 120 $\alpha_{g,V,0}$ [-] 0. II: anchors placed parallel to horizontal joint IV 80 120 $\alpha_{g,V,0}$ [-] 0. 2. Is anchors placed parallel to horizontal joint IV 80 IV 2. IV 0. 2. 0. 2. 0. 2. 0. 2. 0. 2. 0. 2. 0. <td>Minimum edge distance</td> <td>Cmin</td> <td></td> <td>[mm]</td> <td></td> <td></td> <td></td> <td></td> | Minimum edge distance | Cmin | | [mm] | | | | |
| Table C113: Group factor for anchor group in case of tension loading Configuration with $c \ge$ with $s \ge$ II: anchors placed perpendicular to horizontal joint 90 120 $a_{q,N,III}$ [-] 1, L: anchors placed perpendicular to horizontal joint 124 120 $a_{q,N,III}$ [-] 1, Table C114: Group factor for anchor group in case of shear loading parallel to free edge Configuration with $c \ge$ with $s \ge$ 0, I: anchors placed perpendicular to incloar group in case of shear loading parallel to free edge Configuration with $c \ge$ with $s \ge$ 0, I: anchors placed perpendicular to incloar group in case of shear loading parallel to free edge 0, Configuration with $c \ge$ with $s \ge$ 0, I: anchors placed perpendicular to incloar group in case of shear loading perpendicular to free edge Configuration with $c \ge$ with $s \ge$ 0, I: anchors placed parallel to horizontal joint 120 $a_{q,$ | | | | | | | | |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | viinimum spacing | Smin | | լաայ | | 120 | | |
| II: anchors placed parallel to horizontal joint 90 120 $\alpha_{g,N,ll}$ 1,5'hef 3'het $\alpha_{g,N,ll}$ [-] 1,2,1'het II: anchors placed perpendicular to horizontal joint 1,5'hef 3'het $\alpha_{g,N,ll}$ [-] 1,2'het Table C114: Group factor for anchor group in case of shear loading parallel to free edge 60 120 $\alpha_{g,V,ll}$ [-] 0,1'het II: anchors placed perpendicular to horizontal joint V 60 120 $\alpha_{g,V,ll}$ [-] 0,1'het II: anchors placed perpendicular to horizontal joint V 60 120 $\alpha_{g,V,ll}$ [-] 0,1'het II: anchors placed perpendicular to horizontal joint V 60 120 $\alpha_{g,V,ll}$ [-] 0,1'het II: anchors placed perpendicular to for anchor group in case of shear loading perpendicular to free edge 0,1'het 2,1'het 0,1'het 2,1'het II: anchors placed perpendicular to for anchor group in case of shear loading perpendicular to free edge 0,1'het 2,2'het 0,1'het 2,1'het 0,1'het 2,1'het 2,1'het 1,1'het 2,1'het 1,1'het 1,1'het 1,1'het 1,1'het 1,1'het 1,1'het | | tor for ancho | | tension loa | | | | |
| parallel to horizontal joint1,5'hef3'hef $\alpha_{g,N,0}$ $\alpha_{g,N,0}$ $2,$ 1: anchors placed perpendicular to horizontal joint124120 $\alpha_{g,N,0}$ $1,$ $1,$ Table C114: Group factor for anchor group in case of shear loading parallel to free edgeConfigurationwith $c \geq$ with $s \geq$ $0,$ II: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet$ 60 120 $\alpha_{g,V,0}$ $2,$ I: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet$ 60 120 $\alpha_{g,V,0}$ $2,$ I: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet \bullet$ 60 120 $\alpha_{g,V,0}$ $2,$ I: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet \bullet \bullet$ 60 120 $\alpha_{g,V,0}$ $2,$ I: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ | + | - I - I | and a state of the | | | | | 4.4 |
| joint1,5°hef3°het11: anchors placed perpendicular to horizontal joint1241201,1: anchors placed parallel to for1,5°hef3°het $\alpha_{0,N,\perp}$ [-]1,Table C114: Group factor for anchor group in case of shear loading parallel to free edge0,Configurationwith $c \ge$ with $s \ge$ 0,II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ [-]II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 0,II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 0,II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 0,II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 1II: anchors placed parallel to horizontal joint0120 $\alpha_{0,V,\parallel}$ 1II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 0,II: anchors placed perpendicular to horizontal joint0120 $\alpha_{0,V,\parallel}$ 1II: anchors placed perpendicular to horizontal joint01200< | | | 90 | | 120 | GaNil | | 4,0 |
| 1241201perpendicular to horizontal joint1,5*hef3*hef $\alpha_{g,N,\perp}$ 1Table C114: Group factor for anchor group in case of shear loading parallel to free edgeConfigurationwith $c \ge$ with $s \ge$ 0II: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 0,12: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 0,12: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 2,Table C115: Group factor for anchor group in case of shear loading perpendicular to free edgeConfigurationwith $c \ge$ with $s \ge$ 0,II: anchors placed perpendicular to horizontal joint $0,$ 2,0,12: anchors placed parallel to horizontal joint $0,$ 120 $\alpha_{g,V,II}$ 2,13: anchors placed perpendicular to free edge $0,$ 120 $\alpha_{g,V,II}$ 2,14: anchors placed perpendicular to horizontal joint $0,$ $1,$ $0,$ 2,15: anchors placed perpendicular to horizontal joint $0,$ $1,$ $0,$ $2,$ 16: $1,$ $0,$ $1,$ $1,$ $0,$ $2,$ 16: $0,$ $120,$ $\alpha_{g,V,II}$ $1,$ $2,$ 16: $1,$ $1,$ $1,$ $1,$ $1,$ $1,$ $1,$ 17: $0,$ $1,$ $1,$ $1,$ $1,$ $1,$ <t< td=""><td></td><td>11</td><td>1,5*hef</td><td></td><td>3*h_{et}</td><td>g,(4,0</td><td>I-1</td><td>2,0</td></t<> | | 11 | 1,5*hef | | 3*h _{et} | g,(4,0 | I-1 | 2,0 |
| horizontal joint1,5*hef3*her4.42,Table C114: Group factor for anchor group in case of shear loading parallel to free edgeConfigurationwith c ≥with s ≥0,II: anchors placed parallel to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors placed perpendicular to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors placed perpendicular to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors placed perpendicular to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,Table C115: Group factor for anchor group in case of shear loading perpendicular to free edgeConfigurationwith c ≥with s ≥0,11: anchors placed parallel to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors placed perpendicular to perpendicular to horizontal joint00120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors placed perpendicular to horizontal joint0,1,5*hef120 $\alpha_{g_i}v_{,il}$ 0,1.: anchors pla | | | 124 | | 120 | | | 1,1 |
| Noncontral joint Table C114: Group factor for anchor group in case of shear loading parallel to free edge Configuration with $c \ge$ with $s \ge$ 0 II: anchors placed parallel to horizontal joint $V \bullet \bullet$ 60 120 $\alpha_{g,V,II}$ 2, I: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60 120 $\alpha_{g,V,II}$ [-] 0, I: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60 120 $\alpha_{g,V,II}$ [-] 0, Table C115: Group factor for anchor group in case of shear loading perpendicular to free edge 0, 2, 0, II: anchors placed parallel to horizontal joint $V \bullet \bullet$ 124 120 $\alpha_{g,V,II}$ 2, Table C115: Group factor for anchor group in case of shear loading perpendicular to free edge 0, 0, 2, 0, II: anchors placed parallel to horizontal joint $V \bullet \bullet$ 60 120 $\alpha_{g,V,II}$ 2, 0, II: anchors placed perpendicular to intrace and perpendicular to horizontal joint $0, 120, \alpha_{g,V,II}$ 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, <td< td=""><td></td><td>•</td><td colspan="2">1,5*hef</td><td>3*hef</td><td>α_{g,N,⊥}</td><td></td><td>2,0</td></td<> | | • | 1,5*hef | | 3*hef | α _{g,N,⊥} | | 2,0 |
| II: anchors placed parallel to horizontal joint60120 $\alpha_{g,V,II}$ 0,1: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 2,1: anchors placed perpendicular to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 2,Table C115: Group factor for anchor group in case of shear loading perpendicular to free edgeConfigurationwith $c \ge$ with $s \ge$ II: anchors placed parallel to horizontal joint $V \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 0,21: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 1: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet$ 60120 $\alpha_{g,V,II}$ 1: anchors placed perpendicular to horizontal joint $V \bullet \bullet \bullet \bullet$ 1,5*hef120 $\alpha_{g,V,II}$ 1112 <th></th> <th>tor for ancho</th> <th></th> <th>snear load</th> <th></th> <th>iree eage</th> <th></th> <th></th> | | tor for ancho | | snear load | | iree eage | | |
| parallel to horizontal jointVImage: second seco | | | 101511 2145 | | | | | 0,6 |
| jointiiii1: anchors placed perpendicular to horizontal jointiiiiii124120 $\alpha_{g,V,L}$ iii <td>parallel to horizontal</td> <td>V ••</td> <td></td> <td></td> <td></td> <td>α_{g,V,II}</td> <td></td> <td>2,0</td> | parallel to horizontal | V •• | | | | α _{g,V,II} | | 2,0 |
| perpendicular to horizontal jointImage: state interval and the state interval and th | | | | | | [-] | | 0,6 |
| Table C115: Group factor for anchor group in case of shear loading perpendicular to free edgeConfigurationwith $c \ge$ with $s \ge$ 0II: anchors placed parallel to horizontal joint $V \rightarrow \bullet$ 60120 $\alpha_{g,V,II}$ 0,1: anchors placed perpendicular to horizontal joint $V \rightarrow \bullet$ 60120 $\alpha_{g,V,II}$ 0,1. anchors placed perpendicular to horizontal joint $V \rightarrow \bullet$ 60120 $\alpha_{g,V,II}$ 1,1,5*hef120 $\alpha_{g,V,II}$ $\alpha_{g,V,II}$ 1,1,1,5*hef3*hef3*hef2, | perpendicular to | V | 124 | | 120 | α _{g,V,J.} | | 2,0 |
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | nonzontal joint | Hold I | | | | | | |
| II: anchors placed parallel to horizontal joint 60 120 $\alpha_{g,v,ll}$ $0,$ $1:$ anchors placed perpendicular to horizontal joint $1,5^*hef$ 120 $\alpha_{g,v,ll}$ $[-]$ $0,$ $1,5^*hef$ 120 $\alpha_{g,v,ll}$ $1,$ $1,$ $1,$ $1,$ $1,$ | Table C115: Group fac | tor for ancho | | shear load | ling perpendic | ular to free | edge | |
| parallel to horizontal jointV90120 $\alpha_{g,V,II}$ 2,L: anchors placed perpendicular to horizontal joint $V \rightarrow \bullet$ 60120 $\alpha_{g,V,II}$ 1,1,5*hef120 $\alpha_{g,V,L}$ 1,1,1,1,5*hef3*hef3*hef2, | | P | | | | | <u></u> 1 | |
| joint901202 \bot : anchors placed perpendicular to horizontal joint $\overbrace{1,5^{*}hef}$ 120 $\alpha_{g,v,\perp}$ [-] $1,5^{*}hef$ 120 $\alpha_{g,v,\perp}$ 1, $1,5^{*}hef$ 3^{*}h_{ef}2, | | ed T | 60 | | 120 | | | 0,6 |
| L: anchors placed perpendicular to horizontal joint Image: second sec | Configuration | V | | | 120 | α _{g,V,II} | | 2,0 |
| perpendicular to horizontal jointV- \bullet 1,5*hef120 $\alpha_{g,V,\perp}$ 1,1,5*hef3*her2, | Configuration II: anchors placed parallel to horizontal |) V | 90 | | 100 | | F | 0,6 |
| horizontal joint 1,5*hef 3*h _{ef} 2, | Configuration II: anchors placed parallel to horizontal joint | | | | 120 | | | 1,0 |
| Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry | Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to | V | 60 | | | $\alpha_{g,V,\perp}$ | | |
| Mungo Injection System MIT-SE Plus or MIT-COOL Plus for masonry | Configuration II: anchors placed parallel to horizontal joint L: anchors placed perpendicular to | | 60 1,5*hef | | 120 | α _{g,V,⊥} | | 2,0 |
| Performances solid light weight concrete brick - LAC Annex C 44 | Configuration | | 60 1,5*hef 1,5*hef | | 120 3*h _{et} | αg,v,⊥ | | 2,0 |

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| | | | | Characteristic resistance | | | | | | | | |
|----------------------|----------------------------|---------------------------|---|---------------------------|--------------------|---------------------|---------------------|-----------------------|---------------|-----------------------------------|--|--|
| Anchor size Sleev | | Effective | d/d | | | | Use catego | d/d w/d w/w | | | | |
| | Sleeve | depth | 40°C/24°C | 80°C/50 | °C 120°(| C/72°C | 40°C/24°C | 80°C/50°C | 120°C/72°C | For all temperature range | | |
| | | h _{ef} | | $N_{Rk,b} = N$ | 1) Rk,p | | | $N_{Rk,b} = N_{Rk,j}$ | 1) p | V _{Rk,b} ²⁾³⁾ | | |
| | | [mm] | | | | | [kN] | | | | | |
| | | | Con | pressiv | e streng | th f _b ≥ | 2 N/mm ² | | | | | |
| M8 | - | 80 | 3,0 | 2,5 | 2 | 2,0 | 2,5 | 2,0 | 1,5 | 3,0 | | |
| M8 / M10/ IG-M6 | - | 90 | 3,0 | 3,0 | 2 | 2,0 | 2,5 | 2,5 | 2,0 | 3,0 | | |
| M10 / IG-M8 | - | 100 | 3,5 | 3,0 | 2 | 2,5 | 3,0 | 2,5 | 2,0 | 3,0 | | |
| M16 / IG-M10 | - | 100 | 3,0 | 3,0 | 2 | 2,0 | 3,0 | 3,0 | 2,0 | 3,0 | | |
| M8 | 12x80 | 80 | 2,5 | 2,5 | | 2,0 | 2,5 | 2,0 | 1,5 | 3,0 | | |
| M8 / M10/ | 16x85 | 85 | 3,0 | 2,5 | | 2,0 | 3,0 | 2,5 | 2,0 | 3,0 | | |
| IG-M6 | 16x130 | 130 | 3,0 | 2,5 | | 2,0 | 3,0 | 2,5 | 2,0 | 3,0 | | |
| M12 / M16 | 20x85 | 85 | 2,5 | 2,5 | | 2,0 | 2,5 | 2,5 | 2,0 | 3,0 | | |
| / IG-M8 / IG-M10 | 20x130 20x200 | 130 200 | 2,5 2,5 | 2,5 2,5 | | 2,0 2,0 | 2,5 2,5 | 2,5 2,5 | 2,0 2,0 | 3,0 3,0 | | |
| ²⁾ For ca | lculation o alues are v | f V _{Rk,c} see E | | ex C | - | | | 0,8 | | | | |
| Anchor | size | Sleeve | Effective anchorage depth h _{ef} | Ν | δ _N / N | δ _{NC} | δ _Ν | » V | δ_{V0} | δ _{V∞} | | |
| | | | [mm] | [kN] [I | mm/kN] | [mn | 1] [mn | n] [kN |] [mm] | [mm] | | |
| M8 | | - | 80 | | | | | | | | | |
| M8 / M IG-M | | - | 90 | 0,86 | 0,50 | 0,4 | 3 0,8 | 6 | | | | |
| M10 / IG | à-M8 | - | 100 | 1,00 | 0,35 | 0,3 | 5 0,7 | 0 | | | | |
| M16 / IG | -M10 | - | 100 | 0,86 | 0,35 | 0,3 | 0 0,6 | 0 | | | | |
| M8 | | 12x80 | 80 | | 0,50 | 0,3 | 6 0,7 | 1 0,9 | 0,25 | 0,38 | | |
| M8 / M | 10/ | 16x85 | 85 | | | | | | | -, | | |
| IG-M | _ | 16x130 | 130 | 0.71 | | | | | | | | |
| | 1.0.1 | 20x85 | 85 | 0,71 | 0,35 | 0,2 | 5 0,5 | 0 | | | | |
| | | 20x130 | 130 | | | | | | | | | |
| IG-M8 / IG | a-iviiu ⊢ | 20x200 | 200 | | | | | | | | | |

| Mungo Injection | System M | MIT-SE I | Plus or | MIT-COOL | Plus for | masonrv |
|-----------------|----------|----------|---------|----------|----------|---------|
| | -, | | | | | |

200

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

20x200