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Designated

European Technical Assessment

ETA 14/0467 of 20/11/2020

English translation prepared by IETcc. Original version in Spanish language

General Part

Technical Assessment Body issuing the ETA designated according to Art. 29 of Regulation (EU) 305/2011:

Trade name of the construction product:

Product family to which the construction product belongs: Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

TNUX-n frame anchor

Plastic anchor of diameter 8 and 10 for multiple use in concrete and masonry for non-structural applications in redundant systems

Manufacturer:

Index - Técnicas Expansivas S.L.

Segador 13

26006 Logroño (La Rioja) Spain. website: www.indexfix.com

Manufacturing plants:

Index plant 4

This European Technical Assessment contains:

integral part of this assessment.

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

Guideline for European Technical Approval ETAG 020 "Plastic anchors for multiple use in concrete and masonry for non-structural applications", ed. March 2012, parts 1 to 5, used as European Assessment Document (EAD)

29 pages including 3 annexes which form an

This version replaces:

ETA 14/0467 version 3 issued 14/10/2020

Page 2 of European Technical Assessment ETA 14/0467 of 20th November 2019

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

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to article 25 (3) of Regulation (EU) No 305/2011.

SPECIFIC PART

1. Technical description of the product

The frame anchor Index TNUX-n is a plastic anchor in diameter 8 and 10 mm consisting of a plastic sleeve made of polyamide and an accompanying specific screw of electro galvanised or zinc-nickel coated steel, or stainless steel.

The plastic plug is expanded by screwing in the specific screw, which presses the sleeve against the wall of the drilled hole. The product is shown in annex A. For the installation process, see figures given in annexes C1 and C2.

The performance of the anchor, including installation data, characteristic anchor values and displacements for the design of anchorages, is given in annex C.

The anchor shall only be packaged and supplied as a complete unit.

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 mean to 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 | under | static | or | quasi | static | See annex C |
| loading | | | | | | | |

3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance | | |
|--------------------------|---|--|--|
| | Anchorages satisfy requirements for class A1 according to EN13501-1 | | |
| Resistance to fire | See annex B | | |

4. Assessment and Verification of Constancy of Performances (hereinafter AVCP) system applied, with reference to its legal base

The applicable European legal act for the system of Assessment and Verification of Constancy of Performances (see annex V to Regulation (EU) No 305/2011) is 97/463/EC.

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The system to be applied is 2+.

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

The technical details necessary for the implementation of the AVCP system are laid down in the quality plan deposited at Instituto de Ciencias de la Construcción Eduardo Torroja.



Instituto de Ciencias de la Construcción Eduardo Torroja CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja Madrid, 20th of November 2020

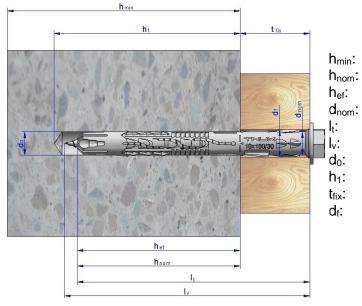
Director

Product Side A TNUX-n 8 Cylinder edge version Side B Side A 8x100/30 TNUX-n 8 Countersunk edge version Side B Side A 10x100/30 TNUX-n 10 Cylinder edge version Side B 10x100/30 Side A TNUX-n 10 Countersunk edge version Side B Plug marking: type, outer diameter x overall length / thickness to be fixed. Special screw: Hexagonal washer Countersunk Hexagonal **Truss** Threaded Pan **TNUX-n** anchor **Product description** Annex A1 Versions

Table A1: materials

| Item | Designation | Material |
|------|-----------------------|--|
| 1 | Plastic anchor | Polyamide 6 light grey colour |
| 2 | Zinc plated screw | Carbon steel C1022; f _{uk} = 600 N/mm²; f _{yk} = 440 N/mm², galvanized ≥ 5 μm ISO 4042 Zn5/An/T0nL Zinc-nickel, sealed ≥ 8 μm ISO 4042 ZnNi8/Cn/T2nL |
| 3 | Stainless steel screw | Stainless steel A2-70 (AISI 304) according to ISO 3506-1 Stainless steel A4-70 (AISI 316) according to ISO 3506-1 |

Drawing of anchor during utilization



Minimum thickness of concrete minimum embedment depth Effective embedment depth

d_{nom}: Nominal diameter
 l_t: Anchor length
 l_v: Screw length
 d₀: Drill bit diameter
 h₁: minimum hole depth

Maximum thickness to be fixed Drill bit diameter on the base plaque

| TNUX-n anchor | |
|---------------------|----------|
| Product description | Annex A2 |
| Materials | |

Specifications of intended use

Anchorages subjected to:

- Non-structural redundant systems (e.g. ventilated façades, cladding stone façades)
- Static or quasi static loads
- According to the EOTA Technical Report TR 020 "Evaluation of anchorages in concrete concerning resistance to fire", it can be assumed that for fastening of façade systems the load bearing behaviour of the Index frame anchor TNUX-n Ø10 has a sufficient resistance to fire at least 90 minutes (R90) if the admissible load [F_{Rk} / (γ_M · γ_F)] (no permanent centric tension load) is ≤ 0,8 kN.

Base materials:

| Dase Illater | |
|--------------|--|
| Use category | Material |
| a | Reinforced or unreinforced normal weight concrete Concrete Strength class C12/15 at minimum and C50/60 at maximum according to EN 206-1 Cracked or non-cracked concrete The anchor TNUX-n 10 may also be used with requirements related to resistance to fire according 3.2 |
| b | Solid masonry walls according to annex C Mortar strength class ≥ M 5 according to EN 998-2 |
| С | Hollow or perforated masonry walls according to annex C Mortar strength class ≥ M 5 according to EN 998-2 |
| d | Prefabricated reinforced autoclaved aerated concrete (AAC2 and AAC6 blocks) according to annex C. |

Use conditions (environmental conditions):

- Zinc plated, and A2 stainless steel: Anchorages subjected to dry internal conditions. The specific screw made of galvanized steel and A2 stainless steel may also be used in structures subject to external atmospheric exposure, if the area of head of screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rain screen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e.g. undercoating or body cavity protection for cars)
- A4 stainless steel: The specific screw made of A4 stainless steel may be used in structures subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist. Such 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).
- Temperature:

| Range | Max. long term temperature | Max. short term temperature | | |
|----------------|----------------------------|-----------------------------|--|--|
| -40°C to +40°C | +24°C | +40°C | | |
| -40°C to +80°C | +50°C | +80°C | | |

| TNUX-n anchor | |
|---------------------|----------|
| Product description | Annex B1 |
| Versions | |

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Design:

- The anchorages are designed in accordance with the ETAG 020, Annex C edition March 2012 under the responsibility of an engineer experienced in anchorages and masonry works.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimension of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural applications, according to ETAG 020 edition March 2012.

Installation:

- Hole drilling by the drill modes according to annex C.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation temperature ≥ 0 °C
- Exposure to UV due to solar radiation of the anchor not protected ≤ 6 weeks

| NUX-n anchor | |
|---------------------|----------|
| Product description | Annex B2 |
| | |

Table C1: Installation parameters

| Installation parameters | | | Perforr | nance |
|-------------------------|--|------|-----------|------------|
| instail | lation parameters | | TNUX-n Ø8 | TNUX-n Ø10 |
| d _{nom} | Outside diameter of anchor: | [mm] | 8 | 10 |
| d ₀ | Nominal diameter of drill bit: | [mm] | 8 | 10 |
| df | Fixture clearance hole diameter: | [mm] | 8 ÷ 8,5 | 10 ÷ 11.0 |
| df | Fixture clearance hole diameter AAC: | [mm] | 8 ÷ 8,2 | 10 ÷ 10,2 |
| $L_{,min}$ | Minimum anchor length: | [mm] | 80 | 80 |
| L _{,max} | Maximum anchor length: | [mm] | 250 | 300 |
| h ₁ | Depth of drilled hole: | [mm] | 90 | 90 |
| h _{nom} | Overall anchor embedment. depth in the concrete: | [mm] | 70 | 70 |
| h _{ef} | Effective anchorage depth: | [mm] | 70 | 70 |
| t_{fix} | Fixture thickness: | [mm] | L - 70 | L – 70 |
| ds | Screw diameter: | [mm] | 6 | 7 |
| Is | Length of screw: | [mm] | L + 6 | L + 6 |
| It | Length of screw thread: | [mm] | 80 | 80 |
| Т | Hexalobular socket number (ISO 10664): | [-] | 30 | 40 |
| SW | Wrench size (for hexagonal head only): | [mm] | 10 | 13 |
| T _{ins} | Installation temperature: | [°C] | 0 ÷ - | +40 |
| T _{ser} | Service temperature: | [°C] | -40 ÷ +80 | |
| T _{max,L} | Maximum long term temperature: | [°C] | +5 | 60 |
| T _{max,S} | Maximum short term temperature: | [°C] | +8 | 80 |

Table C2: Screws characteristic resistance

| | | | Performance | | | |
|----------------------------------|------------------------------|-------------|-------------|-------------|-----------|-------|
| Screws characteristic resistance | | TNUX-n Ø8 | | TNUX-n Ø10 | | |
| | | Zinc Plated | Stainless | Zinc Plated | Stainless | |
| | | | Steel | steel | Steel | steel |
| $N_{Rk,s}$ | Characteristic tension load: | [kN] | 11,3 | 13,2 | 15,3 | 7,9 |
| | Partial security factor: *) | [-] | 1,64 | 1,87 | 1,64 | 1,87 |
| $V_{Rk,s}$ | Characteristic shear load: | [kN] | 6,5 | 7,6 | 9,0 | 10,5 |
| | Partial security factor: *) | [-] | 1,36 | 1,55 | 1,36 | 1,55 |
| $M_{Rk,s}$ | Characteristic moment | [Nm] | 10,2 | 11,9 | 16,8 | 19,6 |
| | Partial security factor: *) | [-] | 1,36 | 1,55 | 1,36 | 1,55 |

^{*)} In absence of national regulations

It could be assumed that shear loads are acting without a lever arm on an anchor if the following 2 conditions are meet:

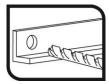
- The anchor plate is made of metal and in the fixing area. It is fixed directly to the base material without an intermediate layer or with a layer of levelling mortar with a thickness ≤ 3 mm.
- The anchor plate is in contact along its entire thickness with the anchor (therefore the drill bit diameter in the plate d_f must be equal to or less than the value indicated in the table of installation parameters).

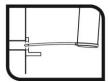
If these two conditions are not meet simultaneously, de lever arm it's calculated according to ETAG 020 Annex C. The characteristic moment is given in the table above.

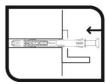
| TNUX-n anchor | |
|---|----------|
| Performance | Annex C1 |
| Installation parameters and screws resistance | |

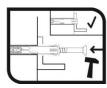
Installation process

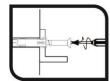
Installation in concrete and solid bricks

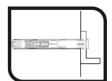




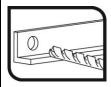


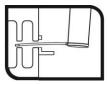


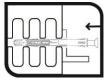


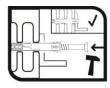


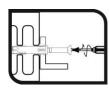
Installation in hollow bricks

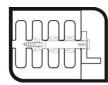


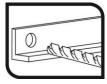


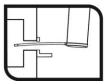


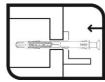


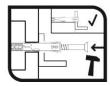


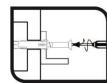


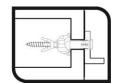




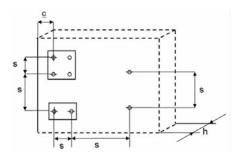








Drawing of distance edge and distance between anchor in concrete:



TNUX-n anchor

Performances Installation procedure Annex C2

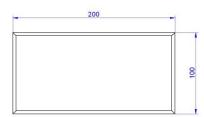
| Charac | acteristic resistance in cracked and non-cra | | acked | | Perfo | Performance | | |
|----------------------|--|---------------|---------------|---|--------------------|--|--------------------|--|
| | ete (category of use "a") | | uonou | TNUX- | n Ø8 | TNUX-n Ø10 | | |
| Pull-ou | ut characteristic resistance in | plastic sleev | ve for utiliz | ation in con | crete | | | |
| | Range of temperatures | | | 24/40°C | 50/80°C | 24/40°C | 50/80°C | |
| | Pull-out characteristic | C12/15 | [kN] | 2,5 | 2,5 | 3,5 | 3,0 | |
| $N_{Rk,p}$ | resistance: | ≥ C16/20 | [kN] | 3,5 | 3,5 | 5,0 | 4,5 | |
| γМр | Partial safety factor:*) | | [-] | | | 1.8 | <u> </u> | |
| Pryout | and edge fail in concrete for | an isolated a | anchor and | a group of a | anchors | | | |
| $N_{Rk,c}$ | Resistance in tension:**) | | [kN] | | , | $ \frac{\int f_{ck,cubo}}{f_{ck,cubo}} \cdot h_{ef}^{1.5} \cdot \frac{c}{c_{cr,N}} $ $ \frac{N_{Rk,p}}{2 \cdot \sqrt{f_{ck,cubo}}}; \frac{c}{c_{cr,N}} \le 1 $ | | |
| VRk,c | Resistance in shear:**) | | [kN] | $\begin{aligned} \text{with:} h_{\text{ef}}^{1.5} &= \frac{N_{\text{Rk,p}}}{7.2 \cdot \sqrt{f_{\text{ck,cubo}}}}; \frac{c}{c_{\text{cr,N}}} \leq 1 \\ \\ V_{\text{Rk,c}} &= 0.45 \sqrt{d_{\text{nom}}} \left(\frac{h_{\text{nom}}}{d_{\text{nom}}}\right)^{0.2} \cdot \sqrt{f_{\text{ck,cubo}}} \cdot c_1^{1.5} \cdot \left(\frac{c_2}{1.5c_1}\right)^{0.5} \cdot \left(\frac{h}{1.5c_1}\right)^{0.5} \\ \text{with:} \left(\frac{c_2}{1.5c_1}\right)^{0.5} &\leq 1; \left(\frac{h}{1.5c_1}\right)^{0.5} \leq 1 \\ \\ c_1: \text{ closest distance to edge in the load direction.} \\ c_2: \text{ Edge distance in perpendicular direction to 1.} \\ f_{\text{ck,cube}}: \text{ Nominal characteristic resistance in concrete compression (based on cube)} \end{aligned}$ | | | l | |
| γМс | Partial safety factor:*) | | [-] | | | 1.8 | | |
| Displac | ement under tension loads | | | | | | | |
| N | Service load of concrete in tension: [kN] 1.19 1.79 | | | | '9 | | | |
| δ_{N0} | Displacements: | | [mm] | 0.77 | | 0.8 | 0.81 | |
| δ_{N^∞} | | | [mm] | 1.5 | 54 | 1.6 | 62 | |
| Displac | ements under shear loads | | | Carbon steel | Stainless Steel | Carbon steel | Stainless Steel | |
| V | Service load of concrete in shea | ır: | [kN] | 1.19 | | 1.79 | | |
| δ_{V0} | Disales and and | | [mm] | 0.70 | 0.12 | 0,83 | 0,34 | |
| δ _{V∞} | Displacements: | | [mm] | 1.05 | 0.18 | 1,24 | 0,51 | |
| Minimu | ım concrete thickness, distance b | etween anch | ors and dis | tance to edge | in concrete | | | |
| Type of | concrete | | | C12/15 | ≥ C16/20 | C12/15 | ≥ C16/20 | |
| h _{min} | Minimum concrete thickness: | | [mm] | 100 | | 100 | | |
| Ccr,N | Characteristic edge distance:*) | | [mm] | 140 | 100 | 140 | 100 | |
| Smin | Minimum distance between and | nors::***) | [mm] | 85 | 60 | 100 | 70 | |
| Cmin | Minimum edge distance:***) | | [mm] | 85 | 60 | 100 | 70 | |
| **) Calc | ence of other national regulations ulation method according to ETAG 020, mediates values by lineal interpolation | annex C | | | | | | |
| TNUX | -n Anchor | | | | | | | |
| Perfor | rmance | | | | | Anne | c C3 | |
| Chara | cteristic values in concrete | | | | | | | |
| Julaia | otoriotio values in concrete | | | | | <u> </u> | | |

| Chara | haracteristic resistance in solid masonry (use | | Performance | | |
|---------------------|--|------------------------|----------------------|-----------|------------|
| | ategory "b") | | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick | no 1: Adoquín 200 x 100 x | 50 mm. Ladrill | lería Técnica. | | |
| | ategory | b | | | |
| Size: | | 200 x 100 x 50 n | nm | | |
| Type: | | EN 771-1 | | | |
| | acturer: | Ladrillería Técnio | ca S.A. | | |
| Comm | ercial name: | Adoquin | | | |
| Bulk d | ensity class ρ: | 2060 kg/m ³ | | | |
| Minin | num compressive strength f _B | 30 N/mm ² | | | |
| Drill me | ethod | Rotary + hammer | | | |
| Plastic | c sleeve pull out failure | | | <u> </u> | |
| Frk | F _{rk} | | F _{rk} | 1,5 | 1,5 |
| γМс | /Мс УМс | | γмс | 2,0 | |
| Displa | cements under tension load | 5 | · | | , |
| N | Service tension load in solid | masonry: | N | 0,26 | 0,26 |
| δνο | Diantagamenta | | δ_{N0} | 0,46 | 0,19 |
| δ _{N∞} | - Displacements: | | δ _{N∞} | 0,92 | 0,38 |
| Displa | cements under shear loads | | | · | |
| V | Service shear load in solid m | asonry: | V | 0,26 | 0,26 |
| δ_{V0} | D: 1 | | δ_{V0} | 0,22 | 0,22 |
| δγ∞ | - Displacements: | | δ∨∞ | 0,33 | 0,33 |
| Minim | um spacing, edge distance a | nd member thick | ness | - 1 | |
| h _{min} | Minimum thickness of the me | mber: | h_{min} | 100 | 100 |
| Single | anchor | | | | |
| Smin | Minimum spacing | | Smin | 250 | 250 |
| Cmin | Minimum edge distance: | | Cmin | 100 | 100 |
| Ancho | or group | | • | | |
| S1,min | Spacing perpendicular to free | e edge: | S1,min | 200 | 200 |
| S ₂ ,min | Spacing parallel to free edge | | S _{2,min} | 400 | 400 |
| Cmin | Minimum edge distance: | | Cmin | 100 | 100 |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} .

^{**)} In absence of other national regulations.

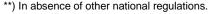


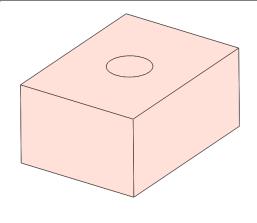


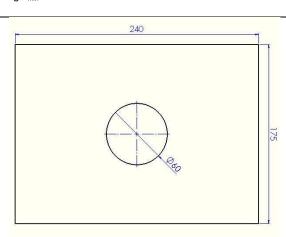
| TNUX-n Anchor Prestaciones Characteristic values for loads in masonry | | Annex C4 |
|---|--------|----------|
| Characteristic values for loads in massing | | |
| | Perfor | mance |

| Characteristic resistance in solid masonry (use category "c") | | | TNUX-n Ø8 | TNUX-n Ø10 |
|--|---|--------------------|--|-------------------|
| Brick no 2: KS12-1.8-3DF, 240 x 175 x 113 mm. Wemdinger Kalksa | | | ı andstein Calcium sili | icate brick KS 12 |
| Use category | C | i. Wemaniger Raiks | | iodic briok NO 12 |
| Size: | 240 x 175 x | 113 mm | | |
| Type: | EN 771-2 | | | |
| Manufacturer: | Kalksandste GmbH | einwerk Wemding | | |
| Commercial name: | Calcium silio | cate blick KS 12 | | |
| Bulk density class ρ: | 1790 kg/m ³ | | | |
| Minimum compressi | ve strength f _B 12 N/mm ² | | | |
| Drill method | Rotary + ham | nmer | | |
| Plastic sleeve pull o | out failure | | • | |
| | c resistance*) | [kN] | 2,0 | 2,5 |
| γ _{Mc} Partial safety | r factor:**) | [-] | | 2,5 |
| Displacements und | er tension loads | | • | • |
| N Service tensi | on load in hollow masonry: | [kN] | 0,57 | 0,71 |
| διο | 4 | [mm] | 0,48 | 0,19 |
| - Displacemen | its: | [mm] | 0,72 | 1,12 |
| Displacements unde | er shear loads | • | | |
| V Service shea | r load in hollow masonry: | [kN] | 0,57 | 0,71 |
| δ _{V0} Displacemen | to | [mm] | 0,48 | 0,59 |
| - δ _{V∞} Displacemen | us. | [mm] | 0,72 | 0,89 |
| Minimum spacing, e | edge distance and member | thickness | | |
| | kness of the member: | [mm] | 175 | 175 |
| Single anchor | | | | |
| S _{min} Minimum spa | acing | [mm] | 250 | 250 |
| C _{min} Minimum edg | ge distance: | [mm] | 100 | 100 |
| Anchor group | | | | |
| , , , | endicular to free edge: | [mm] | 200 | 200 |
| s _{2,min} Spacing para | allel to free edge: | [mm] | 400 | 400 |
| c _{min} Minimum edg | ge distance: | [mm] | 100 | 100 |
| ` | as E fortonsian about ar somi | | a dia anti-anti-anti-anti-anti-anti-anti-anti- | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



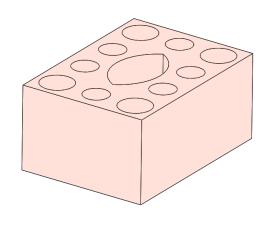


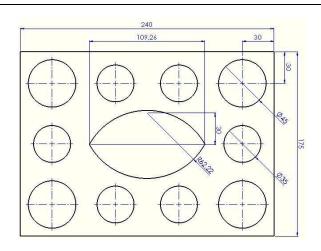


| TNUX-n Anchor | |
|---|----------|
| Performance | Annex C5 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | | Perfor | mance | |
|--|---|-----------------------------|------------|------------------------|-------------------|
| categ | category "c"). | | | TNUX-n Ø8 | TNUX-n Ø10 |
| | no 3: KS12-1.4-3DF, 240 x 17 | '5 x 113 mm. Wemdi | nger Kalks | andstein. Calcium sili | cate brick KSL 12 |
| | ategory | С | | | |
| Size: | | 240 x 175 x 113 mm | | | |
| Type: | | EN 771-2 | | = | |
| Manufa | acturer: | Kalksandsteinwerk W GmbH | | | |
| Comm | ercial name: | Calcium silicate blick | KSL 12 |] | |
| Bulk de | ensity class ρ: | 1390 kg/m ³ | | | |
| Minimu | um compressive strength f _{B:} | 12 N/mm ² | | | |
| Drill m | ethod: | Rotary + hammer | | | |
| | sleeve pull out failure | | | • | |
| Frk | Characteristic resistance:*) | | [kN] | 0.6 | 0.75 |
| γМс | γ _{Mc} Partial safety factor:**) | | [-] | 2.5 | |
| Displa | cements under tension loads | | | • | |
| N | Service tension load in hollow | blocks: | [kN] | 0.17 | 0.21 |
| δ_{N0} | Dianlacements | | [mm] | 0.41 | 0.35 |
| $\delta_{N^{\infty}}$ | - Displacements: | | [mm] | 0.82 | 0.7 |
| Displa | cements under shear loads | | | | |
| V | Service shear load in hollow b | olocks: | [kN] | 0.17 | 0.21 |
| δ_{V0} | Diantagananta | | [mm] | 0.14 | 0.18 |
| δ∨∞ | - Displacements: | | [mm] | 0.21 | 0.27 |
| Minim | um spacing, edge distance ar | nd member thickness | ; | | |
| h _{min} | Minimum thickness of the me | mber: | [mm] | 113 | 113 |
| Single | anchor | | | • | • |
| Smin | | | [mm] | 250 | 250 |
| C _{min} Minimum edge distance: | | | [mm] | 100 | 100 |
| Single | anchor | | _ | | · |
| S1,min | Spacing perpendicular to free | edge: | [mm] | 200 | 200 |
| S _{2,min} | Spacing parallel between ancors to free edge: | | [mm] | 400 | 400 |
| Cmin | Minimum thickness of the me | mber: | [mm] | 100 | 100 |
| * 01 | | | | | • |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



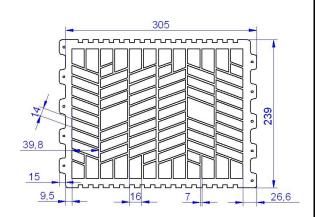


| TNUX-n Anchor | |
|---|----------|
| Performance | Annex C6 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | Performance | | |
|---|--------------|------------|------|
| category "c"). | TNUX-n Ø8 | TNUX-n Ø10 | |
| Brick no 4: Termoarcilla de 24: 237 x 305 x 191 mm | n. Cerabrick | | |
| Use category c | | | |
| Size: 237 x 305 x 191 mm | | | |
| Type: EN 771-1 | | | |
| Manufacturer: Cerabrick Grupo Cera | ámico | | |
| Commercial name: Termoarcilla de 24 | | | |
| Bulk density class ρ: 855 kg/m³ | | | |
| Minimum compressive strength f _{B:} 12.5 N/mm ² | | | |
| Drill method: Rotary | | | |
| Plastic sleeve pull out failure | | | |
| F _{rk} Characteristic resistance:*) | [kN] | 0,75 | 0.5 |
| γ _{Mc} Partial safety factor:**) | | 2.5 | |
| Displacements under tension loads | | | |
| N Service tension load in hollow masonry: | [kN] | 0,21 | 0,14 |
| δ _{N0} Displacements: | [mm] | 0,80 | 0,30 |
| δ _{N∞} Displacements. | [mm] | 1,60 | 0,60 |
| Displacements under shear loads | | | |
| V Service shear load in hollow masonry: | [kN] | 0,21 | 0,14 |
| δ _{V0} Diaplesements | [mm] | 0,18 | 0,12 |
| δ _{V∞} Displacements: | [mm] | 0,27 | 0,18 |
| Minimum spacing, edge distance and member thickness | 3 | · | |
| h _{min} Minimum thickness of the member: | [mm] | 237 | 237 |
| Single anchor | | | |
| S _{min} Minimum spacing between anchors | [mm] | 250 | 250 |
| C _{min} Minimum edge distance: | [mm] | 100 | 100 |
| Single anchor | | | |
| s _{1,min} Spacing perpendicular to free edge: | [mm] | 200 | 200 |
| s _{2,min} Spacing parallel between anchors to free edge: | [mm] | 400 | 400 |
| C _{min} Minimum edge distance: | [mm] | 100 | 100 |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.

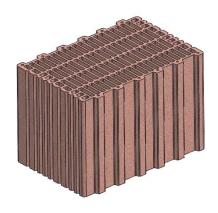


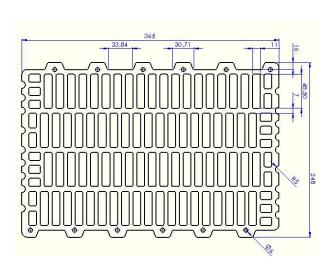


| TNUX-n Anchor | |
|---|----------|
| Performance | Annex C7 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | Perfori | nance | |
|--|---|------------|--------------|------------|
| category "c"). | | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick no 5: P | lanziegel-T16-365, 248 x 365 x 249 mm. Ho | llow brick | POROTON®-T16 | |
| Use category | С | | | |
| Size: | 248 x 365 x 249 mm | | _ | |
| Type: | EN 771-1 | | | |
| Manufacturer: | Schlagmann Poroton | | | |
| Commercial na | <u> </u> | | | |
| Bulk density cla | | | | |
| Minimum comp | ressive strength f _{B:} 10 N/mm ² | | | |
| Drill method: | Rotary | | | |
| Plastic sleeve | pull out failure | | | |
| F _{rk} Charac | teristic resistance:*) | [kN] | - | 0.5 |
| γ _{Mc} Partial | γ _{Mc} Partial safety factor:**) [-] | | 2.5 | |
| Displacements | under tension loads | | | |
| N Service | tension load in hollow blocks: | [kN] | - | 0.14 |
| δ _{N0} Diaples | amonto. | [mm] | - | 0.32 |
| _{δN∞} Displace | ements: | [mm] | - | 0.64 |
| Displacements | under shear loads | | | |
| V Service | shear load in hollow blocks: | [kN] | - | 0.14 |
| δ_{V0} Diamles | | [mm] | - | 0.12 |
| δ _{V∞} Displace | ements: | [mm] | - | 0.18 |
| Minimum space | ing, edge distance and member thickness | | | |
| h _{min} Minimu | m thickness of the member: | [mm] | - | 249 |
| Single anchor | | | | |
| S _{min} Minimu | m spacing | [mm] | - | 250 |
| C _{min} Minimum edge distance: [mm] | | - | 100 | |
| Anchor group | | | | |
| | g perpendicular to free edge: | [mm] | - | 200 |
| s _{2,min} Spacing | g parallel to free edge: | [mm] | - | 400 |
| c _{min} Minimu | m thickness of the member: | [mm] | - | 100 |
| | | | | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



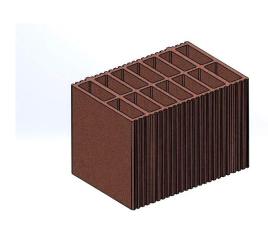


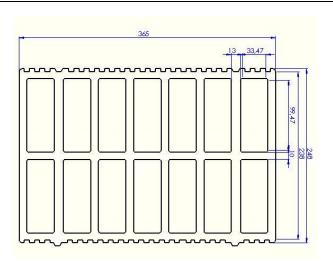
| TNUX-n Anchor | |
|---|----------|
| Performance | Annex C8 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | Performance | | | |
|--|---|---------------------------|--------------|-----------------------------------|------------------------------|
| | category "c"). | | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick | no 6: Poroton S8-365, 248 | 365 x 249 mm. Hollow | brick PC | ROTON®-S8 | |
| | ategory | С | | | |
| Size: | | 248 x 365 x 249 mm | | | |
| Type: | | EN 771-1 | | | |
| | acturer: | Schlagmann Poroton | | | |
| Comm | ercial name: | Poroton S8-365 | | | |
| Bulk de | ensity class ρ: | 720 kg/m ³ | | | |
| Minimu | um compressive strength f _{B:} | 10 N/mm ² | | | |
| Drill me | ethod: | Rotary | | | |
| Plastic | sleeve pull out failure | | | • | |
| F _{rk} | Characteristic resistance:*) | | [kN] | 1.5 | 1.5 |
| γМс | γ _{Mc} Partial safety factor:**) | | [-] | 2.5 | |
| Displa | cements under tension load | S | | • | |
| N | Service tension load in hollo | w blocks: | [kN] | 0,43 | 0,43 |
| δνο | Displacements | | [mm] | 0.66 | 0.35 |
| δ _{N∞} | - Displacements: | - | [mm] | 1.32 | 0.70 |
| Displa | cements under shear loads | | | | |
| V | Service shear load in hollow | blocks: | [kN] | 0,43 | 0,43 |
| δ_{V0} | B: 1 | | [mm] | 0,36 | 0,36 |
| δγ∞ | - Displacements: | - | [mm] | 0,54 | 0,54 |
| Minim | um spacing, edge distance a | and member thickness | | | |
| h _{min} | Minimum thickness of the m | ember: | [mm] | 249 | 249 |
| Single | anchor | | | | |
| Smin | Minimum spacing | | [mm] | 250 | 250 |
| C _{min} | Minimum edge distance: | | [mm] | 100 | 100 |
| Ancho | or group | | | | |
| S1,min | Spacing perpendicular to fre | e edge: | [mm] | 200 | 200 |
| S _{2,min} | Spacing parallel to free edge |): | [mm] | 400 | 400 |
| Cmin | Minimum thickness of the ma | ember: | [mm] | 100 | 100 |
| | acteristic resistance Fek for tension | shear or combined tension | and shear lo | ading is valid for single plastic | c anchor, for a group of two |

*) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



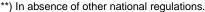


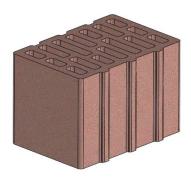


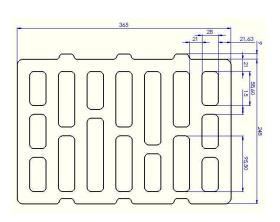
| TNUX-n Anchor | |
|---|----------|
| Performance | Annex C9 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | Perfor | mance | |
|--|--|--------------|------------------|------------|
| category"c"). | | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick no7: Poroton-FZ9-36 | 5 Objekt, 248 x 365 x 249 | mm. Hollow b | rick POROTON®-FZ |) |
| Use category | С | | | |
| Size: | 248 x 365 x 249 mr | n | | |
| Type: | EN 771-1 | | | |
| Manufacturer: | Schlagmann Poroto | on | | |
| Commercial name: | Poroton-FZ9-365 O |)bjekt | - | |
| Bulk density class ρ: | 830 kg/m ³ | | | |
| Minimum compressive strengtl | n f _{B:} 10 N/mm ² | | | |
| Drill method: | Rotary | | | |
| Plastic sleeve pull out failure | • | | | |
| F _{rk} Characteristic resistan | ce:*) | [kN] | 2.0 | 2.0 |
| γ _{Mc} Partial safety factor:**) | | [-] | 2 | 2.5 |
| Displacements under tension | n loads | | | |
| N Service tension load in | n hollow masonry: | [kN] | 0.57 | 0.57 |
| δ _{N0} Diaple coments: | | [mm] | 0.95 | 0.42 |
| SN∞ Displacements: | | [mm] | 1.90 | 0.84 |
| Displacements under shear | loads | | | • |
| V Service shear load in I | nollow masonry: | [kN] | 0.57 | 0.57 |
| δ_{V0} Displacements: | - | [mm] | 0.48 | 0.48 |
| | | [mm] | 0.72 | 0.72 |
| Minimum spacing, edge dist | ance and member thickne | ess | • | • |
| h _{min} Minimum thickness of | the member: | [mm] | 249 | 249 |
| Single anchor | | | • | • |
| S _{min} Minimum spacing | | [mm] | 250 | 250 |
| C _{min} Minimum edge distant | ce: | [mm] | 100 | 100 |
| Anchor group | | | | |
| S _{1,min} Spacing perpendicular | to free edge: | [mm] | 200 | 200 |
| s _{2,min} Spacing parallel to free | e edge: | [mm] | 400 | 400 |
| C _{min} Minimum thickness of | the member: | [mm] | 100 | 100 |
| *) Characteristic resistance F | | | | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



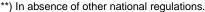


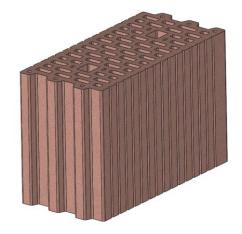


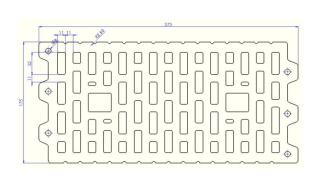
| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C10 |
| Characteristic values for loads in hollow masonry | 7 |

| Characteristic resistance in hollow masonry (use | | Perfor | mance |
|---|----------------------------|--------------|------------|
| category"c"). | category"c"). | | TNUX-n Ø10 |
| Brick no 8: Schallschutzziegel 373 x | 175 x 249 mm. Poroton Clay | brick HLz 20 | |
| Use category c | | | |
| | '3 x 175 x 249 mm | | |
| - 7 1 | 17.1-1090 | | |
| | ienerberger | | |
| | challschutzziegel | | |
| J | 00 kg/m ³ | | |
| Minimum compressive strength f _{B:} 20 |) N/mm ² | | |
| Drill method: | otary | | |
| Plastic sleeve pull out failure | | | |
| F _{rk} Characteristic resistance:*) | [kN] | 0.9 | 0.6 |
| γ _{Mc} Partial safety factor:**) | [-] | 2 | .5 |
| Displacements under tension loads | | | |
| N Service tension load in hollow m | asonry: [kN] | 0.26 | 0.17 |
| δ _{N0} Diaple coments: | [mm] | 0.37 | 0.22 |
| Displacements: | [mm] | 0.74 | 0.44 |
| Displacements under shear loads | | | |
| V Service shear load in hollow ma | sonry: [kN] | 0.26 | 0.17 |
| δ _{V0} | [mm] | 0.22 | 0.14 |
| δ _{V∞} Displacements: | [mm] | 0.33 | 0.21 |
| Minimum spacing, edge distance and | member thickness | • | • |
| h _{min} Minimum thickness of the memb | er: [mm] | 175 | 175 |
| Single anchor | | • | |
| S _{min} Minimum spacing | [mm] | 250 | 250 |
| C _{min} Minimum edge distance: | [mm] | 100 | 100 |
| Anchor group | <u> </u> | • | |
| S _{1,min} Spacing perpendicular to free ed | dge: [mm] | 200 | 200 |
| S _{2,min} Spacing parallel to free edge: | [mm] | 400 | 400 |
| c _{min} Minimum thickness of the memb | per: [mm] | 100 | 100 |
| | | • | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.







| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C11 |
| Characteristic values for loads in hollow masonry | |

TNUX-n Anchor Performance

Characteristic values for loads in hollow masonry

| Characteristic resistance in hollow masonry (use category "c"). | | | Performance | |
|--|-------------------------------|------------------|-------------------------------|---------------------------|
| | | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick no 9: Poroton-Kleinfor | mate 2DF-0.9 240 x 115 | x 113 mm. Poroto | on Clay brick HLz 1 | 2 |
| Use category | С | | | |
| Size: | 240 x 115 x 113 m | nm | | |
| Type: Manufacturer: | DIN 105-100 Wienerberger | | | |
| Commercial name: | Poroton-Kleinform | ate 2DF-0 9 | | |
| Bulk density class ρ: | 855 kg/m ³ | late 2D1 0.5 | | |
| Minimum compressive strength | | | | |
| Orill method: | Rotary | | | |
| Plastic sleeve pull out failure | riolary | | | |
| rk Characteristic resistance | :e:*) | [kN] | - | 0.4 |
| Mc Partial safety factor:**) | <u></u> | [-] | 2 | .5 |
| Displacements under tension | loads | L J | | |
| Service tension load in | | [kN] | - | 0.11 |
| SNO | | [mm] | - | 0.19 |
| Displacements: | | [mm] | - | 0.38 |
| Displacements under shear lo | pads | [] | | 0.00 |
| Service shear load in h | | [kN] | - | 0.11 |
| δvo | | [mm] | - | 0.09 |
| Displacements: | | [mm] | - | 0.14 |
| Minimum spacing, edge dista | nce and member thickn | | | |
| n _{min} Minimum thickness of t | | [mm] | - | 115 |
| Single anchor | - | • • | | |
| S _{min} Minimum spacing | | [mm] | - | 250 |
| Cmin Minimum edge distance |) : | [mm] | - | 100 |
| Anchor group | | L **J | | |
| S _{1,min} Spacing perpendicular | to free edge: | [mm] | - | 200 |
| S _{2,min} Spacing parallel to free | | [mm] | - | 400 |
| c _{min} Minimum thickness of t | | [mm] | - | 100 |
| Characteristic resistance F _{Rk} for to refour plastic anchors with spacing Number 1 to 1 t | equal or larger than the mini | | ng, is valid for single plast | ic anchor, for a group of |
| | | 25 10 15 | | |

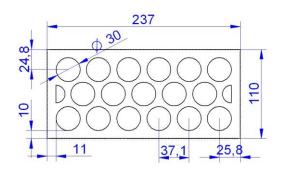
Annex C12

| category | 10: Cerámica de 10. 23 | | | | |
|---|--------------------------------------|------------------------|----------------|------|------|
| Use category | | | category "c"). | | |
| Size: | | 7 x 110 x 100 mm. J | umisa | | |
| | ory | С | | | |
| Type: | | 237 x 110 x 100 mm | | | |
| | | EN 771-1 | | | |
| Manufactu | | Juarez y Millas S.A. | | | |
| Commercia | al name: | Cerámica de 10 | | | |
| Bulk densit | ty class ρ: | 1025 kg/m ³ | | | |
| Minimum c | compressive strength f _{B:} | 20 N/mm ² | | | |
| Drill metho | | Rotary + hammer | | | |
| Plastic sle | eeve pull out failure | | | | |
| F _{rk} Ch | naracteristic resistance:*) | | [kN] | 0.3 | 0.5 |
| γ _{Mc} Partial safety factor:**) | | [-] | 2.5 | | |
| Displacen | nents under tension loads | | | | |
| N Se | ervice tension load in hollow | blocks: | [kN] | 0,09 | 0,14 |
| δνο Βία | anla comenta: | | [mm] | 0,38 | 0,27 |
| δ _{N∞} | splacements: | | [mm] | 0,76 | 0,54 |
| Displacem | nents under shear loads | | | | |
| V Se | ervice shear load in hollow b | locks: | [kN] | 0,09 | 0,14 |
| δνο Β: | | | [mm] | 0,08 | 0,12 |
| δ _{V∞} Dis | splacements: | | [mm] | 0,12 | 0,18 |
| Minimum | spacing, edge distance ar | d member thickness | | | |
| h _{min} Mi | inimum thickness of the mer | nber: | [mm] | 110 | 110 |
| Single and | chor | | | | |
| Smin Mi | inimum spacing | | [mm] | 250 | 250 |
| Cmin Mi | inimum edge distance: | | [mm] | 100 | 100 |
| Anchor gr | | | | | |
| | pacing perpendicular to free | edge: | [mm] | 200 | 200 |
| | pacing parallel to free edge: | | [mm] | 400 | 400 |
| C _{min} Mi | inimum thickness of the mer | nber: | [mm] | 100 | 100 |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.





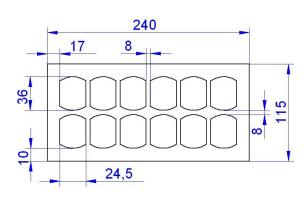


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C13 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | Perfo | rmance | |
|--|---|-----------------------|------------|------------|
| categ | category "c"). | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick | no 11: Ladrillo caravista hidrofug | ado 240 x 115 x 50 mm | . Ladritec | |
| | ategory c | | | |
| Size: | | 15 x 50 mm | | |
| Type: | EN 771 | | | |
| | | ría Técnica S.A | | |
| Comm | ercial name: Hidrofu | | _ | |
| Bulk d | ensity class ρ: 1065 kg | | | |
| Minim | um compressive strength f _{B:} 20 N/mi | m ² | | |
| Drill m | ethod: Rotary | | | |
| Plastic | c sleeve pull out failure | | | |
| F _{rk} | Characteristic resistance:*) | [kN] | 0.5 | 0,9 |
| γмс | Partial safety factor:**) | [-] | 2 | 2.5 |
| Displa | cements under tension loads | | | |
| N | Service tension load in hollow masonr | y: [kN] | 0,14 | 0,26 |
| δ_{N0} | Dioplecements | [mm] | 0,53 | 0,48 |
| δ_{N^∞} | - Displacements: | [mm] | 1,06 | 0,96 |
| Displa | cements under shear loads | | | • |
| V | Service shear load in hollow masonry: | [kN] | 0,14 | 0,26 |
| δ_{V0} | Diamlacamenta | [mm] | 0,12 | 0,22 |
| δ∨∞ | - Displacements: | [mm] | 0,18 | 0,33 |
| Minim | um spacing, edge distance and mem | ber thickness | | |
| h_{min} | Minimum thickness of the member: | [mm] | 115 | 115 |
| Single | anchor | | | |
| Smin | Minimum spacing | [mm] | 250 | 250 |
| Cmin | Minimum edge distance: | [mm] | 100 | 100 |
| Ancho | or group | <u> </u> | | |
| S1,min | Spacing perpendicular to free edge: | [mm] | 200 | 200 |
| S _{2,min} | Spacing parallel to free edge: | [mm] | 400 | 400 |
| Cmin | Minimum edge distance: | [mm] | 100 | 100 |
| | | | | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



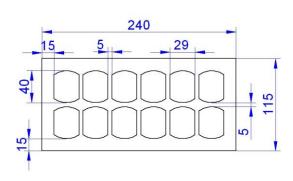


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C14 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use category "c"). | | Perfor | mance | |
|---|-------------------------|-------------|------------|------|
| | | TNUX-n Ø8 | TNUX-n Ø10 | |
| Brick no 12: Clinker Mediterrán | eo 240 x 115 x 90. La | drillería T | écnica | |
| Use category | С | | | |
| Size: | 240 x 115 x 90 mm | | | |
| Type: | EN 771-1 | | | ļ |
| Manufacturer: | Ladrillería Técnica S.A | | | |
| Commercial name: | Clinker Mediterráneo | | | |
| Bulk density class ρ: | 1310 kg/m ³ | | | |
| Minimum compressive strength f _{B:} | 40 N/mm ² | | | |
| Drill method: | Rotary + hammer | | | |
| Plastic sleeve pull out failure | | | | |
| F _{rk} Characteristic resistance:*) | | [kN] | 0,75 | 1,5 |
| γ _{Mc} Partial safety factor:**) | | [-] | 2 | .5 |
| Displacements under tension loads | 3 | | | |
| N Service tension load in hollow | / masonry: | [kN] | 0,21 | 0,43 |
| δ _{N0} Displacements: | _ | [mm] | 0,43 | 0,65 |
| S _{N∞} Displacements: | · | [mm] | 0,86 | 1,30 |
| Displacements under shear loads | | | | |
| V Service shear load in hollow | masonry: | [kN] | 0,21 | 0,43 |
| δ _{V0} Diaple coments: | | [mm] | 0,18 | 0,36 |
| δ _{V∞} Displacements: | | [mm] | 0,27 | 0,54 |
| Minimum spacing, edge distance a | nd member thickness | | | |
| h _{min} Minimum thickness of the me | mber: | [mm] | 115 | 115 |
| Single anchor | | | | |
| S _{min} Minimum spacing | | [mm] | 250 | 250 |
| C _{min} Minimum edge distance: | | [mm] | 100 | 100 |
| Anchor group | | | | |
| S _{1,min} Spacing perpendicular to free | edge: | [mm] | 200 | 200 |
| s _{2,min} Spacing parallel to free edge. | - | [mm] | 400 | 400 |
| c _{min} Minimum edge distance: | | [mm] | 100 | 100 |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



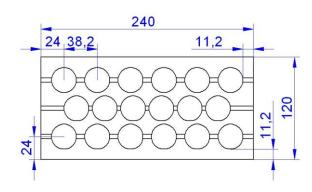


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C15 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | | Perfor | mance |
|--|---|------|-----------|------------|
| catego | category "c"). | | TNUX-n Ø8 | TNUX-n Ø10 |
| Brick n | o 13: Bloque gero 240 x 120 x 100 mm. Gilva | | | |
| Use cate | | | | |
| Size: | 240 x 120 x 100 mm | | | |
| Type: | EN 771-3 | | | |
| Manufac | | | | |
| | rcial name: Bloque Gero | | _ | |
| | nsity class ρ: 1180 kg/m³ | | | |
| Minimun | n compressive strength f _{B:} 10 N/mm ² | | | |
| Drill met | hod: Rotary + hammer | | | |
| Plastic | sleeve pull out failure | | | |
| F _{rk} | Characteristic resistance:*) | [kN] | 0,75 | 1,5 |
| γМс | Partial safety factor:**) | [-] | 2 | .5 |
| Displace | ements under tension loads | | • | |
| N | Service tension load in hollow masonry: | [kN] | 0,21 | 0,47 |
| δ_{N0} | Dianlacemento | [mm] | 1,00 | 0,54 |
| δ _{N∞} | Displacements: | [mm] | 2,00 | 1,08 |
| Displac | ements under shear loads | | | |
| V | Service shear load in hollow masonry: | [kN] | 0,21 | 0,47 |
| δ_{V0} | Dianlacemento | [mm] | 0,18 | 0,36 |
| δ _{V∞} | Displacements: | [mm] | 0,27 | 0,54 |
| Minimu | m spacing, edge distance and member thickness | | | |
| h _{min} | Minimum thickness of the member: | [mm] | 120 | 120 |
| Single a | anchor | | | |
| Smin | Minimum spacing | [mm] | 250 | 250 |
| C _{min} | Minimum edge distance: | [mm] | 100 | 100 |
| Anchor | | | | |
| | Spacing perpendicular to free edge: | [mm] | 200 | 200 |
| | Spacing parallel to free edge: | [mm] | 400 | 400 |
| | Minimum edge distance: | [mm] | 100 | 100 |
| | - | | • | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.

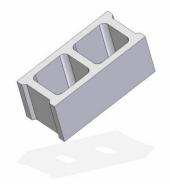


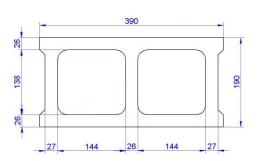


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C16 |
| Characteristic values for loads in hollow masonry | |

| TNUX-n Ø8 TNUX-n Ø10 | Characteristic resistance in hollow masonry (use | | Performance | | | |
|--|--|-------------|-------------|------|--|--|
| Use category c Size: 390 x 190 x 190 mm Type: EN 771-3 Manufacturer: José María Gallizo S.L. Commercial name: Bloque cara vista Bulk density class ρ: 870 kg/m³ Minimum compressive strength f _B : 5 N/mm² Drill method: Rotary Plastic seleve pull out failure F _{fk} Characteristic resistance:¹) [kN] 1.5 1.5 ½ Partial safety factor:¹') [-] 2.5 5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{No} Displacements: [mm] 0,51 1,00 δ _{No} Displacements under shear loads [mm] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness Immin Minimum spacing [mm] | category "c"). | TNUX-n Ø8 | TNUX-n Ø10 | | | |
| Size: 390 x 190 x 190 mm Type: EN 771-3 Manufacturer: José María Gallizo S.L. Commercial name: Bloque cara vista Bulk density class ρ: 870 kg/m³ Minimum compressive strength f _B : 5 N/mm² Drill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance:¹) [kN] 1.5 1.5 7µmc Partial safety factor:¹¹ [-] 2.5 Displacements under tension load N Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{No} Displacements [mm] 0,51 1,00 δ _{No} Displacements under shear loads [mm] 0,43 0,43 δ _{Vo} Service shear load in hollow masonry: [kN] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,36 0,36 δ _{Vo} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness <tr< th=""><th>Brick no 14: Bloque caravista 390 x 190 x 190</th><th>mm. Gallizo</th><th></th><th></th></tr<> | Brick no 14: Bloque caravista 390 x 190 x 190 | mm. Gallizo | | | | |
| Type: | | | | | | |
| Manufacturer: José María Gallizo S.L. Commercial name: Bloque cara vista Bulk density class p: 870 kg/m³ Minimum compressive strength f _B : 5 N/mm² Drill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance: '') [kN] 1.5 1.5 γ _{Mc} Partial safety factor: '') [-] 2.5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{NO} Displacements: [mm] 0,51 1,00 δ _{NO} Displacements under shear loads [mm] 1,02 2,00 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δ _{Vo} Oisplacements: [mm] 0,36 0,36 δ _{Vo} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness h _{min} Minimum spacing, edge distance and member th | | mm | | | | |
| Commercial name: Bloque cara vista Bulk density class ρ: 870 kg/m³ Minimum compressive strength f _B : 5 N/mm² Drill method: Rotary Plastic sleeve pull out failure F _{rk} Characteristic resistance:¹¹ [kN] 1.5 1.5 γ _{Mc} Partial safety factor:¹² [-] 2.5 Displacements under tension loads V Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{No} Displacements: [mm] 0,51 1,00 δ _{No} Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,36 0,36 δ _{V∞} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness [mm] 0,54 0,54 Minimum spacing, edge distance and member: [mm] 190 190 Sinjle archor [mm] 250 250 Cmin Minimum spac | | | | | | |
| Bulk density class ρ: 870 kg/m³ Minimum compressive strength f _B : 5 N/mm² | | | | | | |
| Minimum compressive strength f ₈ : 5 N/mm² Prill method: Rotary Plastic sleeve pull out failure Frik Characteristic resistance: To sistance: To fire e edge: [kN] 1.5 1.5 7μωc Partial safety factor: To fire edge: [-] 2.5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{No} Displacements: [mm] 0,51 1,00 δ _{No} Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,36 0,36 δ _{Vo} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness [mm] 0,54 0,54 Minimum spacing, edge distance and member: [mm] 190 190 Single anchor [mm] 250 250 Cmin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 200 <td></td> <td>a</td> <td></td> <td></td> | | a | | | | |
| Prill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance: ') [kN] 1.5 1.5 γ _{Mc} Partial safety factor: '') [-] 2.5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,43 0,43 δ _{NO} Displacements: [mm] 0,51 1,00 δ _{No} Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δ _{Vo} Displacements: [mm] 0,36 0,36 δ _{V∞} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness [mm] 190 190 Single anchor [mm] 190 190 Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group [mm] 200 200 200 S2,min | , , | | | | | |
| Plastic sleeve pull out failure F_{rk} Characteristic resistance: $^{\circ}$ [kN] 1.5 1.5 γ_{Mc} Partial safety factor: $^{\circ}$ [-] 2.5 Displacements under tension load in hollow masonry: [kN] 0,43 0,43 δ_{NO} Displacements: [mm] 0,51 1,00 δ_{NO} Displacements: [mm] 1,02 2,00 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δ_{VO} Displacements: [mm] 0,36 0,36 δ_{Vo} Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness hmin Minimum thickness of the member: [mm] 190 190 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor S _{1,min} Spacing perpendicular to free edge: [mm] 400< | Minimum compressive strength f _{B:} 5 N/mm ² | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | Drill method: Rotary | | | | | |
| YMc Partial safety factor: ") [-] 2.5 Displacements under tension load in hollow masonry: [kN] 0,43 0,43 δNO Displacements: [mm] 0,51 1,00 δNO Displacements: [mm] 1,02 2,00 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δνο Displacements: [mm] 0,36 0,36 δνω Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness hmin Minimum thickness of the member: [mm] 190 190 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | | | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | F _{rk} Characteristic resistance:*) | [kN] | 1.5 | 1.5 | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | γ _{Mc} Partial safety factor:**) [-] | | 2.5 | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | Displacements under tension loads | | | | | |
| | N Service tension load in hollow masonry: | [kN] | 0,43 | 0,43 | | |
| ON∞ [mm] 1,02 2,00 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,43 0,43 δν₀ Displacements: [mm] 0,36 0,36 Minimum spacing, edge distance and member thickness [mm] 190 190 Single anchor [mm] 250 250 Cmin Minimum spacing [mm] 100 100 Anchor group [mm] 200 200 S1,min Spacing perpendicular to free edge: [mm] 400 400 | δ _{N0} Displacements: | [mm] | 0,51 | 1,00 | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | δ _{N∞} Displacements. | [mm] | 1,02 | 2,00 | | |
| | Displacements under shear loads | | | | | |
| δ√∞ Displacements: [mm] 0,54 0,54 Minimum spacing, edge distance and member thickness hmin Minimum thickness of the member: [mm] 190 190 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | V Service shear load in hollow masonry: | [kN] | 0,43 | 0,43 | | |
| Minimum spacing, edge distance and member thickness Imm 0,54 0,54 hmin Minimum thickness of the member: [mm] 190 190 Single anchor [mm] 250 250 Cmin Minimum spacing [mm] 100 100 Anchor group [mm] 200 200 S1,min Spacing perpendicular to free edge: [mm] 400 400 | δ _{V0} Diaple coments | [mm] | 0,36 | 0,36 | | |
| h _{min} Minimum thickness of the member: [mm] 190 190 Single anchor S _{min} Minimum spacing [mm] 250 250 C _{min} Minimum edge distance: [mm] 100 100 Anchor group Spacing perpendicular to free edge: [mm] 200 200 S _{2,min} Spacing parallel to free edge: [mm] 400 400 | δ _{V∞} Displacements. | [mm] | 0,54 | 0,54 | | |
| Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | Minimum spacing, edge distance and member thic | kness | | | | |
| Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | | [mm] | 190 | 190 | | |
| Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | Single anchor | | | _ | | |
| Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | S _{min} Minimum spacing | [mm] | 250 | 250 | | |
| S1,minSpacing perpendicular to free edge:[mm]200200S2,minSpacing parallel to free edge:[mm]400400 | C _{min} Minimum edge distance: | [mm] | 100 | 100 | | |
| S _{2,min} Spacing parallel to free edge: [mm] 400 400 | Anchor group | | | | | |
| S _{2,min} Spacing parallel to free edge: [mm] 400 400 | s _{1,min} Spacing perpendicular to free edge: | [mm] | 200 | 200 | | |
| C _{min} Minimum edge distance: [mm] 100 100 | | [mm] | 400 | 400 | | |
| | C _{min} Minimum edge distance: | [mm] | 100 | 100 | | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.



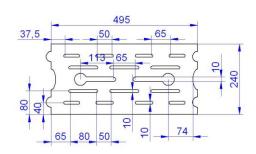


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C17 |
| Characteristic values for loads in hollow masonry | |

| Trick no 15: Airblock. 491 x 241 x 190 mm. Viguetas Navarra. | Characteristic resistance in hollow masonry (use | | Perfor | mance | | |
|--|--|----------------------|--------------|-----------|------------|--|
| Use category c Size: 491 x 241 x 190 mm Type: EN 771-3 Manufacturer: Viguetas Navarra S.L. Commercial name: Airblock 25 Bulk density class ρ: 935 kg/m³ Minimum compressive strength f _B : 4 N/mm² Drill method: Rotary Plastic sleeve pull out failure F _{fk} Characteristic resistance:) [kN] 2,0 1,5 γ _{Mc} Partial safety factor:") [-] 2,5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,57 0,43 δ _{No} Displacements 1,58 1,30 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,57 0,43 δ _{Vo} Displacements: [mm] 0,48 0,36 δ _{Vo} Displacements: [mm] 0,48 0,36 δ _{Vo} [mm] 0,48 | category "c"). | | | TNUX-n Ø8 | TNUX-n Ø10 | |
| Size: | Brick no 15: Airblock. 491 x | 241 x 190 mm. Vigue | tas Navarra. | | | |
| Type: | | | | | | |
| Manufacturer: Viguetas Navarra S.L. Commercial name: Airblock 25 Bulk density class p: 935 kg/m³ Minimum compressive strength f _B : 4 N/mm² Drill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance: ") [kN] 2,0 1,5 ymc Partial safety factor:") [-] 2.5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,57 0,43 δno Displacements: [mm] 0,79 0,65 δno Displacements under shear loads [kN] 0,57 0,43 δno Displacements under shear loads [mm] 0,57 0,43 δvo Service shear load in hollow masonry: [kN] 0,57 0,43 δvo Displacements: [mm] 0,48 0,36 δv-ve Displacements: [mm] 0,72 0,54 Minimum spacing, edge distance and member thickness | | | | | | |
| Commercial name: Airblock 25 Bulk density class ρ: 935 kg/m³ Minimum compressive strength f _B : 4 N/mm² Drill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance: Now Partial safety factor: Characteristic resistance: Characteristic resist | | | | | ļ | |
| Bulk density class ρ: 935 kg/m³ Minimum compressive strength f _B : 4 N/mm² Plastic sleeve pull out failure Frk Characteristic resistance: ') [kN] 2,0 1,5 γ _{Mc} Partial safety factor: '') [kN] 2,0 1,5 γ _{Mc} Partial safety factor: '') [kN] 0,57 0,43 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,57 0,43 δ _{NO} Displacements: [mm] 0,79 0,65 δ _{NO} Displacements under shear loads [mm] 0,57 0,43 V Service shear load in hollow masonry: [kN] 0,57 0,43 δ _{VO} Displacements: [mm] 0,48 0,36 δ _{Vo} Displacements: [mm] 0,48 0,36 δ _{Vo} Displacements: [mm] 241 241 Signal archives are specifically displaced distance and member thickness h _{min} <td></td> <td></td> <td>L.</td> <td></td> <td></td> | | | L. | | | |
| Minimum compressive strength f _B : 4 N/mm² Drill method: Rotary Plastic sleeve pull out failure Frk Characteristic resistance: (°) [kN] 2,0 1,5 y _{Mc} Partial safety factor: (°) [-] 2.5 Displacements under tension loads N Service tension load in hollow masonry: [kN] 0,57 0,43 δ _{NO} Displacements: [mm] 0,79 0,65 δ _{No} Displacements under shear loads (mm] 0,57 0,43 V Service shear load in hollow masonry: [kN] 0,57 0,43 δ _{VO} Displacements: [mm] 0,48 0,36 δ _{VO} Displacements: [mm] 0,72 0,54 Minimum spacing, edge distance and member thickness h _{min} Minimum spacing, edge distance and member: [mm] 241 241 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] | | | | | | |
| Prill method: Rotary Plastic sleeve pull out failure Fr _{fk} Characteristic resistance: | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | Drill method: | Rotary | | | | |
| γMc Partial safety factor: ") [-] 2.5 Displacements under tension load in hollow masonry: [kN] 0,57 0,43 δNO Displacements: [mm] 0,79 0,65 δNO [mm] 1,58 1,30 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,57 0,43 δνο Displacements: [mm] 0,48 0,36 δνν∞ Displacements: [mm] 0,72 0,54 Minimum spacing, edge distance and member thickness hmin Minimum thickness of the member: [mm] 241 241 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | Plastic sleeve pull out failure | | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | F _{rk} Characteristic resistance: | *) | [kN] | 2,0 | 1,5 | |
| $\begin{tabular}{ c c c c c c c }\hline N & Service tension load in hollow masonry: & [kN] & 0,57 & 0,43\\ \hline δ_{No} & Displacements: & [mm] & 0,79 & 0,65\\ \hline $\delta_{N^{\infty}}$ & 1,30\\ \hline \hline $Displacements under shear loads & & & & & \\ \hline V & Service shear load in hollow masonry: & [kN] & 0,57 & 0,43\\ \hline δ_{Vo} & Displacements: & [mm] & 0,48 & 0,36\\ \hline $\delta_{V^{\infty}}$ & Displacements: & [mm] & 0,72 & 0,54\\ \hline \hline $Minimum$ spacing, edge distance and member thickness & & & \\ \hline h_{min} & Minimum thickness of the member: & [mm] & 241 & 241\\ \hline \hline $Single$ anchor & & & \\ \hline $Single$ anchor & & & \\ \hline $Smin$ & Minimum spacing & [mm] & 250 & 250\\ \hline C_{min} & Minimum edge distance: & [mm] & 100 & 100\\ \hline $Anchor$ group & & & \\ \hline $S_{1,min}$ & Spacing perpendicular to free edge: & [mm] & 200 & 200\\ \hline $S_{2,min}$ & Spacing parallel to free edge: & [mm] & 400 & 400\\ \hline \end{tabular}$ | γ _{Mc} Partial safety factor:**) [-] | | [-] | 2.5 | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | Displacements under tension lo | ads | | | | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | N Service tension load in ho | ollow masonry: | [kN] | 0,57 | 0,43 | |
| ON∞ [mm] 1,58 1,30 Displacements under shear loads V Service shear load in hollow masonry: [kN] 0,57 0,43 δv₀ Displacements: [mm] 0,48 0,36 Minimum spacing, edge distance and member thickness [mm] 0,72 0,54 Minimum spacing, edge distance and member thickness [mm] 241 241 Single anchor [mm] 250 250 Cmin Minimum spacing [mm] 100 100 Anchor group [mm] 200 200 S1,min Spacing perpendicular to free edge: [mm] 400 400 | δ _{N0} Displacements: | | [mm] | 0,79 | 0,65 | |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | δ _{N∞} Displacements. | | [mm] | 1,58 | 1,30 | |
| | Displacements under shear loa | ds | | | | |
| δ√∞ Displacements: [mm] 0,72 0,54 Minimum spacing, edge distance and member thickness hmin Minimum thickness of the member: [mm] 241 241 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 \$2,min Spacing parallel to free edge: [mm] 400 400 | V Service shear load in holl | ow masonry: | [kN] | 0,57 | 0,43 | |
| Minimum spacing, edge distance and member thickness [mm] 0,72 0,54 Mmin Minimum thickness of the member: [mm] 241 241 Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | δ _{V0} Displacements: | | [mm] | 0,48 | 0,36 | |
| h _{min} Minimum thickness of the member: [mm] 241 241 Single anchor S _{min} Minimum spacing [mm] 250 250 C _{min} Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | δ _{V∞} Displacements. | | [mm] | 0,72 | 0,54 | |
| Single anchor Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group Spacing perpendicular to free edge: [mm] 200 200 \$2,min Spacing parallel to free edge: [mm] 400 400 | Minimum spacing, edge distand | e and member thickne | ss | | | |
| Smin Minimum spacing [mm] 250 250 Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | h _{min} Minimum thickness of the | member: | [mm] | 241 | 241 | |
| Cmin Minimum edge distance: [mm] 100 100 Anchor group S1,min Spacing perpendicular to free edge: [mm] 200 200 S2,min Spacing parallel to free edge: [mm] 400 400 | Single anchor | | | | | |
| Anchor groupS1,minSpacing perpendicular to free edge:[mm]200200S2,minSpacing parallel to free edge:[mm]400400 | S _{min} Minimum spacing | | [mm] | 250 | 250 | |
| Anchor groupS1,minSpacing perpendicular to free edge:[mm]200200S2,minSpacing parallel to free edge:[mm]400400 | C _{min} Minimum edge distance: | | [mm] | 100 | 100 | |
| S _{2,min} Spacing parallel to free edge: [mm] 400 400 | | | | | | |
| | s _{1,min} Spacing perpendicular to | free edge: | [mm] | 200 | 200 | |
| | Spacing parallel to free e | dge: | [mm] | 400 | 400 | |
| Onimi minimism dago diotanoo. [mini] 100 100 | C _{min} Minimum edge distance: | | [mm] | 100 | 100 | |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.

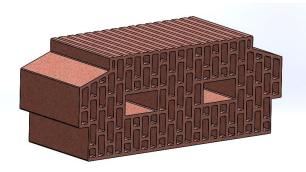


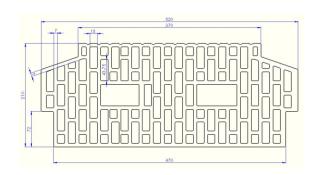


| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C18 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow masonry (use | | Performance | | | |
|--|----------------------------------|--------------------------|-----------------|------------|------|
| category "c"). | | | TNUX-n Ø8 | TNUX-n Ø10 | |
| Brick | no 16: Poroton Deckene | Inhängezlegel h21 | 530 x 210 x 249 | mm. | |
| Use ca | ategory | С | | | |
| Size: | | 530 x 210 x 249 mr | n | | |
| Type: | | EN 771-1 | | | |
| Manufa | acturer: | Weinerbeger | | | |
| Comm | ercial name: | Poroton Deckeneln h21 | hängezlegel | | |
| Bulk de | ensity class ρ: | 680 kg/m ³ | | | |
| Minimu | um compressive strength fB: | 12 N/mm ² | | | |
| Drill me | ethod: | Rotary | | | |
| Plastic | sleeve pull out failure | | | | |
| F _{rk} | Characteristic resistance:*) | | [kN] | 0.3 | 0.6 |
| γМс | Mc Partial safety factor:**) [-] | | [-] | 2.5 | |
| • | cements under tension loa | ds | . . | | - |
| N | Service tension load in holl | ow masonry: | [kN] | 0,08 | 0,17 |
| δνο | Disalessants | • | [mm] | 0.39 | 0,41 |
| δ _{N∞} | - Displacements: | | [mm] | 0.78 | 0,82 |
| Displa | cements under shear loads | 5 | | | |
| V | Service shear load in hollow | v masonry: | [kN] | 0,08 | 0,17 |
| δ_{V0} | | • | [mm] | 0.07 | 0,14 |
| δ∨∞ | - Displacements: | | [mm] | 0.10 | 0,21 |
| Minim | um spacing, edge distance | and member thickne | ess | | 1 |
| h _{min} | Minimum thickness of the r | nember: | [mm] | 210 | 210 |
| Single | anchor | | | | |
| Smin | Minimum spacing | | [mm] | 250 | 250 |
| Cmin | Minimum edge distance: | | [mm] | 100 | 100 |
| Ancho | or group | | | | • |
| S1,min | Spacing perpendicular to fr | ee edge: | [mm] | 200 | 200 |
| S _{2,min} | Spacing parallel to free edg | je: | [mm] | 400 | 400 |
| Cmin | Minimum edge distance: | | [mm] | 100 | 100 |

^{*)} Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading, is valid for single plastic anchor, for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.





| TNUX-n Anchor | |
|---|-----------|
| Performance | Annex C19 |
| Characteristic values for loads in hollow masonry | |

| Characteristic resistance in hollow reinforced concrete in autoclave: AAC2 / AAC6 Bricks (Use category "d") | | Performance | | | | | |
|---|--|---------------|---------------------|-----------------|--------------------|--------------|--|
| | | cto iii | TNUX-n Ø8 | | TNUX- | TNUX-n Ø10 | |
| Rang | e of temperature | | 24/40°C | 50/80°C | 24/40°C | 50/80°C | |
| AAC2 | 2: 625 x 240 x 250 mm | | | | | | |
| Use ca | ategory: d | | | | | | |
| Sizes: | 625 x 240 x 250 mm | | | | | | |
| Type: | EN 771-4 | | | | | | |
| Bulk d | lensity class ρ: 360 kg/m³ | | | | | | |
| Minim | um compressive strength f _{B:} 2 N/mm ² | | | | | | |
| Drill m | nethod: Rotary | | | | | | |
| | c sleeve pull out failure | | 1 | | | | |
| F _{rk} | Characteristic resistance:*) | [kN] | 0,4 | 0,3 | 0,3 | 0,3 | |
| γMc | Partial safety factor:**) | [-] | 2.0 | | .0 | | |
| | acements under tension loads | | l | _ | | | |
| N . | Service tension load in hollow reinforced concrete: | [kN] | 0.14 | | 0.1 | 0.11 | |
| δνο | B: 1 | [mm] | 0.6 | 5 | 0.43 | | |
| δ _{N∞} | - Displacements: - | [mm] | 1.30 | | 0.8 | 0.86 | |
| Displa | acements under shear loads | | 1 | | • | | |
| V | Service shear load in hollow reinforced concrete: | [kN] | 0.1 | 4 | 0.1 | 11 | |
| δνο | B: 1 | [mm] | 0.28 | | 0.2 | 22 | |
| δ∨∞ | - Displacements: - | [mm] | 0.4 | -2 | 0.33 | | |
| Minim | num spacing, edge distance and member thickness | | 1 | | • | | |
| h _{min} | Minimum thickness of the member: | [mm] | 10 | 0 | 10 | 00 | |
| Single | e anchor | | | | | | |
| Smin | Minimum spacing | [mm] | 25 | 0 | 25 | 50 | |
| Cmin | Minimum edge distance: | [mm] | | | 10 | 00 | |
| | or group | <u> </u> | | | | | |
| S1,min | Spacing perpendicular to free edge: | [mm] | 20 | 0 | 20 | 00 | |
| S2,min | Spacing parallel to free edge: | [mm] | 40 | | 40 | | |
| Cmin | Minimum thickness of the member: | [mm] | 10 | | 10 | | |
| | racteristic resistance F_{Rk} for tension, shear or combined tension | | pading, is valid fo | r single plast | 1 | | |
| | plastic anchors with spacing equal or larger than the minimum | | - | i sirigio piast | 10 G.101101, 101 G | g. Jup or tw | |
| | bsence of other national regulations. | opaciniy amin | | | | | |

| TNUX-n Anchor | |
|--|-----------|
| Performance | Annex C20 |
| Characteristic values for loads in hollow reinforced concrete in autoclave | |

| Characteristic resistance in hollow reinforced concrete in | | Performance | | | |
|---|---------------|--------------------|-----------------|-----------------|--------------|
| autoclave: AAC2 / AAC6 Bricks (Use category "d") | | TNUX-n Ø8 TNUX-n | | | -n Ø8 |
| Range of temperature | | 24/40°C | 50/80°C | 24/40°C | 50/80°C |
| AAC6: 625 x 240 x 250 mm | | | | | |
| Use category: d | | | | | |
| Sizes: 625 x 240 x 250 mm | | | | | |
| Type: EN 771-4 | | | | | |
| Bulk density class ρ: 710 kg/m ³ | | | | | |
| Minimum compressive strength f _{B:} 6 N/mm ² | | | | | |
| Drill method: Rotary | | | | | |
| Plastic sleeve pull out failure | | | | | |
| F _{rk} Characteristic resistance:*) | [kN] | 0,9 | 0,9 | 1,5 | 1,2 |
| γ _{Mc} Partial safety factor:**) | [-] | 2.0 | | | |
| Displacements under tension loads | | • | | | |
| N Service tension load in hollow reinforced concrete: | [kN] | 0.3 | 2 | 0.5 | 54 |
| δ_{N0} | [mm] | 1.2 | 8 | 0.7 | 78 |
| δ _{N∞} Displacements: | [mm] | 2.56 | | 1.56 | |
| Displacements under tension loads | | | | | |
| N _{Rk,p} Service shear load in hollow reinforced concrete: | [kN] | 0.3 | 2 | 0.5 | 54 |
| δ_{N0} | [mm] | 0.6 | 4 | 1.0 | 08 |
| δ _{N∞} Displacements: | [mm] | 0.9 | 6 | 1,6 | 62 |
| Minimum spacing, edge distance and member thickness | | | | | |
| h _{min} Minimum thickness of the member: | [mm] | 100 |) | 100 | |
| Single anchor | | | | | |
| S _{min} Minimum spacing | [mm] | n] 250 | | 250 | |
| C _{min} Minimum edge distance: | [mm] | 100 |) | 10 | 00 |
| Anchor group | | | | | |
| S _{1,min} Spacing perpendicular to free edge: | [mm] | 200 |) | 20 | 00 |
| s _{2,min} Spacing parallel to free edge: | [mm] | 400 |) | 40 | 00 |
| c _{min} Minimum thickness of the member: | [mm] | 100 |) | 10 | 00 |
| *) Characteristic resistance F _{Rk} for tension, shear or combined tension | and shear loa | ading, is valid fo | r single plasti | c anchor, for a | group of two |

or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} . **) In absence of other national regulations.

| TNUX-n Anchor | |
|--|-----------|
| Performance | Annex C21 |
| Characteristic values for loads in hollow reinforced concrete in autoclave | |