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DE LA CONSTRUCCIÓN  
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## 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:**

Instituto de Ciencias de la Construcción Eduardo Torroja (IETcc)

**Trade name of the construction product:**

**TNUX-n frame anchor**

**Product family to which the construction product belongs:**

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](http://www.indexfix.com)

**Manufacturing plants:**

Index plant 4

**This European Technical Assessment contains:**

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

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

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)

**This version replaces:**

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

*English translation prepared by IETcc*

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This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission according to article 25 (3) of Regulation (EU) No 305/2011.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

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

Essential characteristic	Performance
Reaction to fire	Anchorage 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

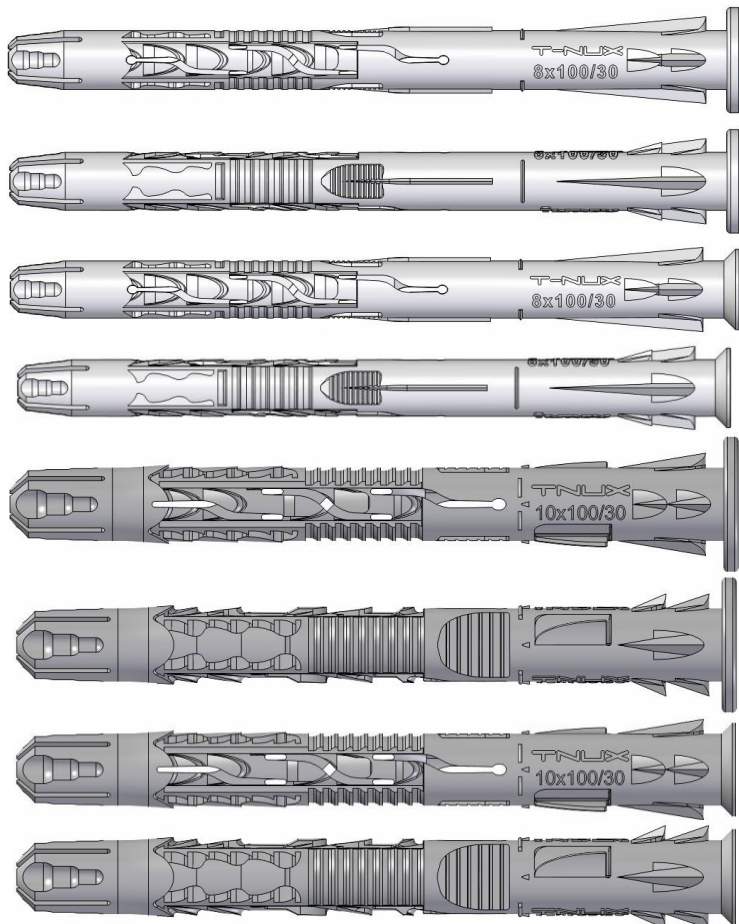
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On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja  
Madrid, 20<sup>th</sup> of November 2020

Director

## Product



Side A

**TNUX-n 8  
Cylinder edge  
version**

Side B

Side A

**TNUX-n 8  
Countersunk  
edge version**

Side B

Side A

**TNUX-n 10  
Cylinder edge  
version**

Side B

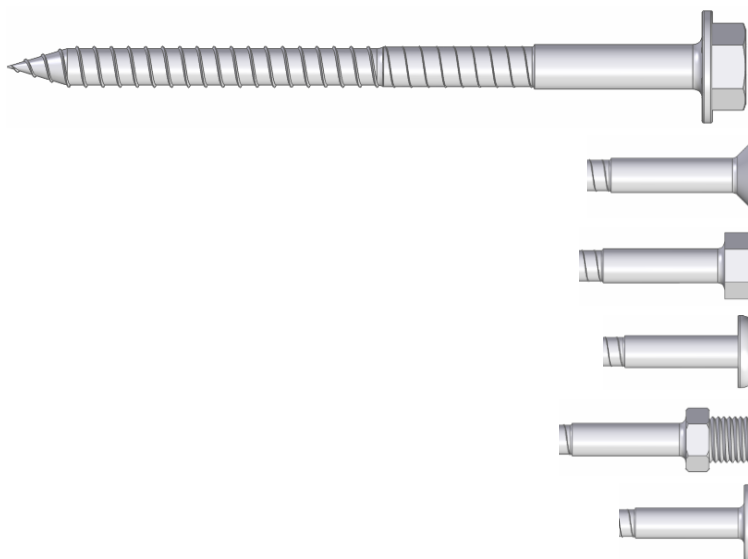
Side A

**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**

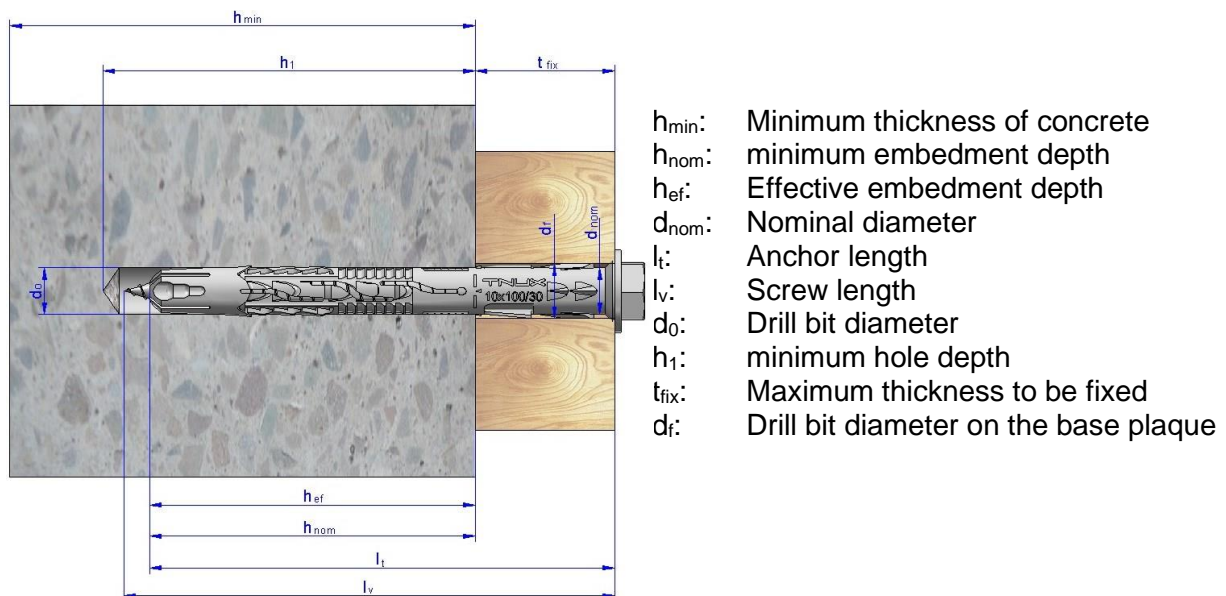
Versions

**Annex A1**

**Table A1: materials**

Item	Designation	Material
1	Plastic anchor	Polyamide 6 light grey colour
2	Zinc plated screw	Carbon steel C1022; $f_{uk} = 600 \text{ N/mm}^2$ ; $f_{yk} = 440 \text{ N/mm}^2$ , galvanized $\geq 5 \text{ } \mu\text{m}$ ISO 4042 Zn5/An/T0nL Zinc-nickel, sealed $\geq 8 \text{ } \mu\text{m}$ 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**



**TNUX-n anchor**

**Product description**

Materials

**Annex A2**

### **Specifications of intended use**

#### **Anchorage 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  $[F_{Rk} / (\gamma_M \cdot \gamma_F)]$  (no permanent centric tension load) is  $\leq 0,8$  kN.

#### **Base materials:**

Use category	Material
a	<ul style="list-style-type: none"> <li>• Reinforced or unreinforced normal weight concrete</li> <li>• Concrete Strength class C12/15 at minimum and C50/60 at maximum according to EN 206-1</li> <li>• Cracked or non-cracked concrete</li> <li>• The anchor TNUX-n 10 may also be used with requirements related to resistance to fire according 3.2</li> </ul>
b	<ul style="list-style-type: none"> <li>• Solid masonry walls according to annex C</li> <li>• Mortar strength class <math>\geq</math> M 5 according to EN 998-2</li> </ul>
c	<ul style="list-style-type: none"> <li>• Hollow or perforated masonry walls according to annex C</li> <li>• Mortar strength class <math>\geq</math> M 5 according to EN 998-2</li> </ul>
d	<ul style="list-style-type: none"> <li>• Prefabricated reinforced autoclaved aerated concrete (AAC2 and AAC6 blocks) according to annex C.</li> </ul>

#### **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

<b>TNUX-n anchor</b>	<b>Annex B1</b>
<b>Product description</b>	
Versions	

**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  $\geq 0\text{ }^{\circ}\text{C}$
- Exposure to UV due to solar radiation of the anchor not protected  $\leq 6$  weeks

TNUX-n anchor	Annex B2
Product description	
Materials	



**Table C1: Installation parameters**

Installation parameters			Performance	
			TNUX-n Ø8	TNUX-n Ø10
d <sub>nom</sub>	Outside diameter of anchor:	[mm]	8	10
d <sub>0</sub>	Nominal diameter of drill bit:	[mm]	8	10
d <sub>f</sub>	Fixture clearance hole diameter:	[mm]	8 ÷ 8,5	10 ÷ 11,0
d <sub>f</sub>	Fixture clearance hole diameter AAC:	[mm]	8 ÷ 8,2	10 ÷ 10,2
L <sub>min</sub>	Minimum anchor length:	[mm]	80	80
L <sub>max</sub>	Maximum anchor length:	[mm]	250	300
h <sub>1</sub>	Depth of drilled hole:	[mm]	90	90
h <sub>nom</sub>	Overall anchor embedment. depth in the concrete:	[mm]	70	70
h <sub>ef</sub>	Effective anchorage depth:	[mm]	70	70
t <sub>fix</sub>	Fixture thickness:	[mm]	L - 70	L - 70
d <sub>s</sub>	Screw diameter:	[mm]	6	7
l <sub>s</sub>	Length of screw:	[mm]	L + 6	L + 6
l <sub>t</sub>	Length of screw thread:	[mm]	80	80
T	Hexalobular socket number (ISO 10664):	[-]	30	40
SW	Wrench size (for hexagonal head only):	[mm]	10	13
T <sub>ins</sub>	Installation temperature:	[°C]	0 ÷ +40	
T <sub>ser</sub>	Service temperature:	[°C]	-40 ÷ +80	
T <sub>max,L</sub>	Maximum long term temperature:	[°C]	+50	
T <sub>max,S</sub>	Maximum short term temperature:	[°C]	+80	

**Table C2: Screws characteristic resistance**

Screws characteristic resistance			Performance			
			TNUX-n Ø8		TNUX-n Ø10	
			Zinc Plated Steel	Stainless steel	Zinc Plated Steel	Stainless steel
N <sub>Rk,s</sub>	Characteristic tension load:	[kN]	11,3	13,2	15,3	7,9
	Partial security factor: *)	[-]	1,64	1,87	1,64	1,87
V <sub>Rk,s</sub>	Characteristic shear load:	[kN]	6,5	7,6	9,0	10,5
	Partial security factor: *)	[-]	1,36	1,55	1,36	1,55
M <sub>Rk,s</sub>	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 met:

- 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<sub>f</sub> must be equal to or less than the value indicated in the table of installation parameters).

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

**TNUX-n anchor**

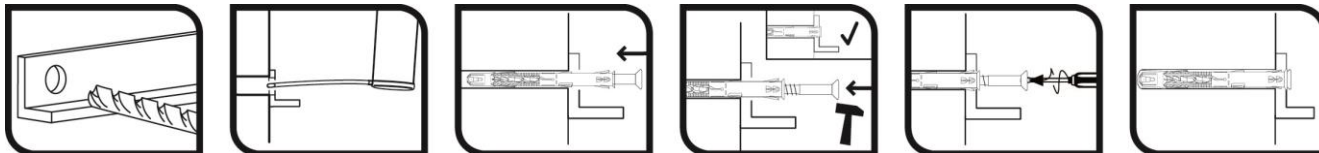
**Performance**

Installation parameters and screws resistance

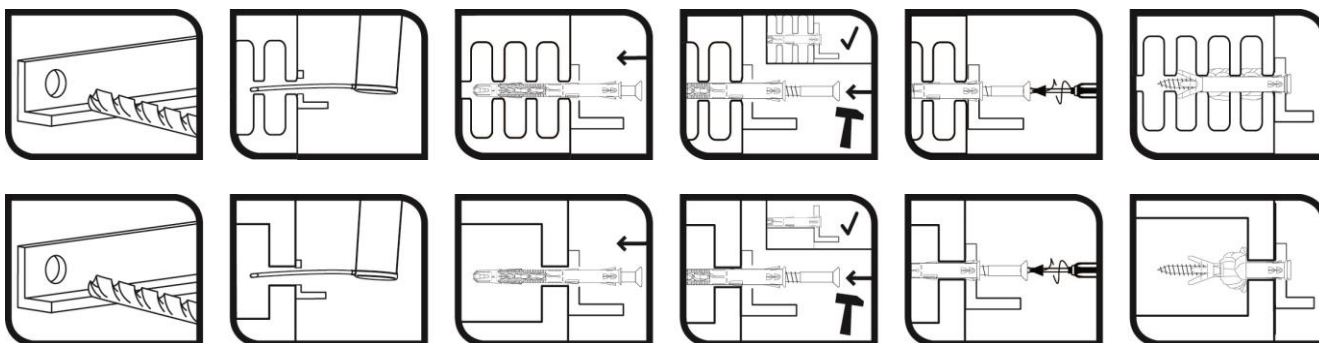
**Annex C1**

## **Installation process**

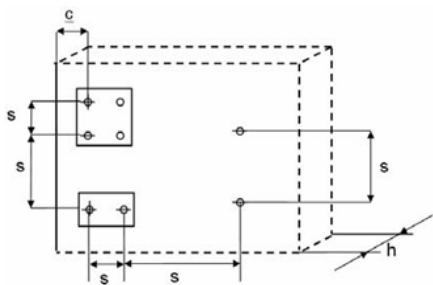
Installation in concrete and solid bricks



Installation in hollow bricks



Drawing of distance edge and distance between anchor in concrete:



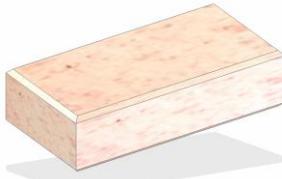
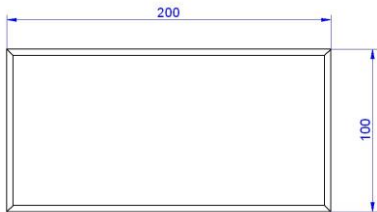
**TNUX-n anchor**

**Performances**  
Installation procedure

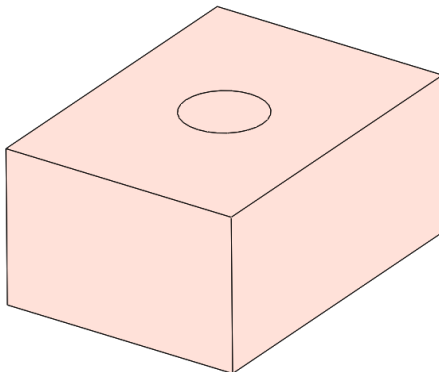
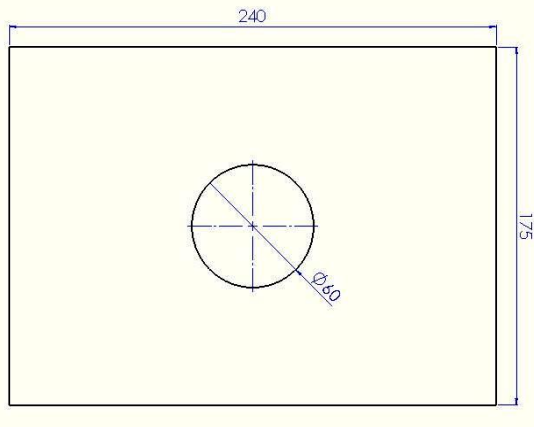
**Annex C2**

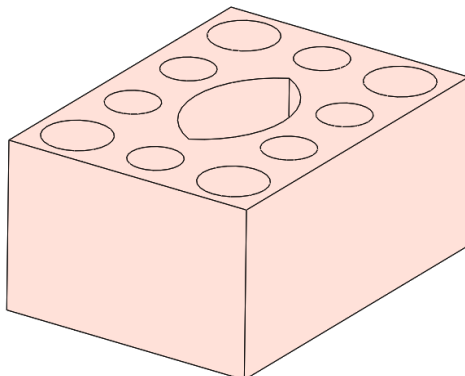
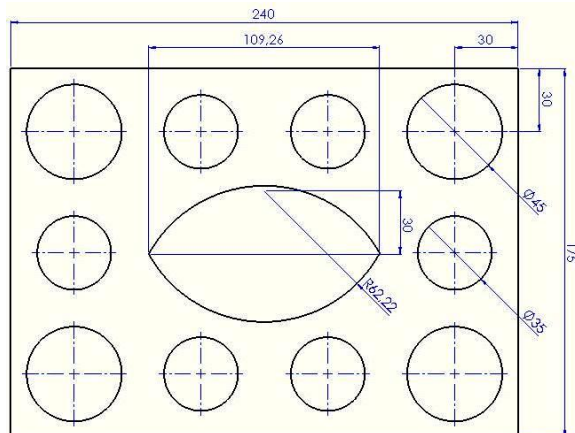
Characteristic resistance in cracked and non-cracked concrete (category of use “a”)			Performance			
			TNUX-n Ø8		TNUX-n Ø10	
Pull-out characteristic resistance in plastic sleeve for utilization in concrete						
Range of temperatures			24/40°C	50/80°C	24/40°C	50/80°C
N <sub>Rk,p</sub>	Pull-out characteristic resistance:	C12/15 [kN]	2,5	2,5	3,5	3,0
		≥ C16/20 [kN]	3,5	3,5	5,0	4,5
γ <sub>Mp</sub>	Partial safety factor:*)		1.8			
Pryout and edge fail in concrete for an isolated anchor and a group of anchors						
N <sub>Rk,c</sub>	Resistance in tension:**) [kN]	$N_{Rk,c} = 7.2 \sqrt{f_{ck,cubo}} \cdot h_{ef}^{1.5} \cdot \frac{c}{c_{cr,N}}$ <p>with: <math>h_{ef}^{1.5} = \frac{N_{Rk,p}}{7.2 \cdot \sqrt{f_{ck,cubo}}}; \frac{c}{c_{cr,N}} \leq 1</math></p>				
V <sub>Rk,c</sub>	Resistance in shear:**) [kN]	$V_{Rk,c} = 0.45 \sqrt{d_{nom}} \cdot \left( \frac{h_{nom}}{d_{nom}} \right)^{0.2} \cdot \sqrt{f_{ck,cubo}} \cdot c_1^{1.5} \cdot \left( \frac{c_2}{1.5c_1} \right)^{0.5} \cdot \left( \frac{h}{1.5c_1} \right)^{0.5}$ <p>with: <math>\left( \frac{c_2}{1.5c_1} \right)^{0.5} \leq 1; \left( \frac{h}{1.5c_1} \right)^{0.5} \leq 1</math></p> <p>c<sub>1</sub>: closest distance to edge in the load direction.  c<sub>2</sub>: Edge distance in perpendicular direction to 1.  f<sub>ck,cubo</sub>: Nominal characteristic resistance in concrete compression (based on cube)</p>				
γ <sub>Mc</sub>	Partial safety factor:*)		1.8			
Displacement under tension loads						
N	Service load of concrete in tension: [kN]	1.19		1.79		
δ <sub>N0</sub>	Displacements: [mm]	0.77		0.81		
δ <sub>N∞</sub>	[mm]	1.54		1.62		
Displacements under shear loads			Carbon steel	Stainless Steel	Carbon steel	Stainless Steel
V	Service load of concrete in shear: [kN]	1.19		1.79		
δ <sub>V0</sub>	[mm]	0.70	0.12	0,83	0,34	
δ <sub>V∞</sub>	[mm]	1.05	0.18	1,24	0,51	
Minimum concrete thickness, distance between anchors and distance to edge in concrete						
Type of concrete			C12/15	≥ C16/20	C12/15	≥ C16/20
h <sub>min</sub>	Minimum concrete thickness: [mm]	100		100		
c <sub>cr,N</sub>	Characteristic edge distance:*) [mm]	140	100	140	100	
s <sub>min</sub>	Minimum distance between anchors:**) [mm]	85	60	100	70	
c <sub>min</sub>	Minimum edge distance:**) [mm]	85	60	100	70	
*) In absence of other national regulations **) Calculation method according to ETAG 020, annex C ***) Intermediates values by lineal interpolation						
TNUX-n Anchor				Annex C3		
Performance						
Characteristic values in concrete						

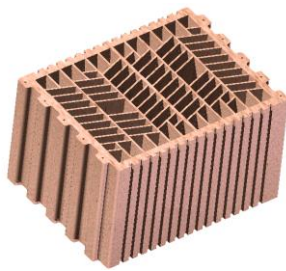
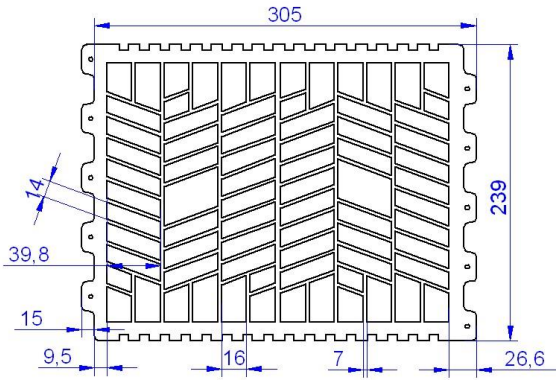
English translation prepared by IETcc

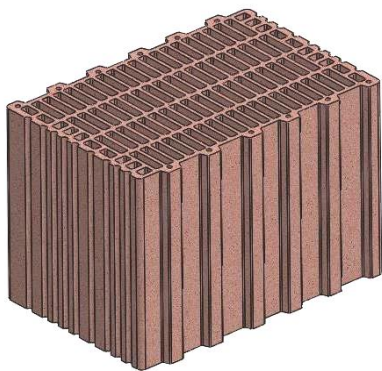
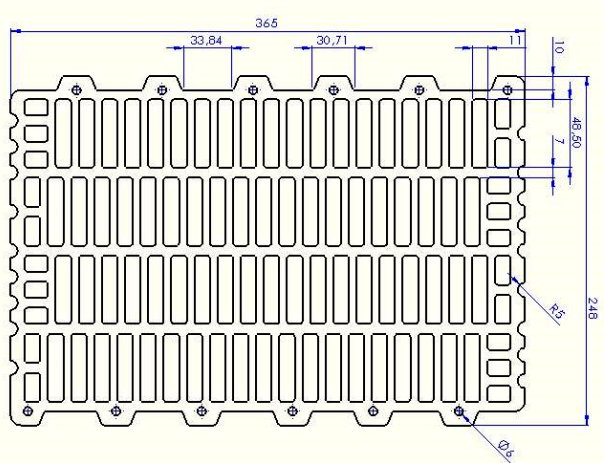
Characteristic resistance in solid masonry (use category "b")			Performance	
			TNUX-n Ø8	TNUX-n Ø10
Brick no 1: Adoquín 200 x 100 x 50 mm. Ladrillería Técnica.				
Use category	b			
Size:	200 x 100 x 50 mm			
Type:	EN 771-1			
Manufacturer:	Ladrillería Técnica S.A.			
Commercial name:	Adoquin			
Bulk density class ρ:	2060 kg/m³			
Minimum compressive strength f <sub>B</sub>	30 N/mm²			
Drill method	Rotary + hammer			
Plastic sleeve pull out failure				
F <sub>rk</sub>	F <sub>rk</sub>	F <sub>rk</sub>	1,5	1,5
γ <sub>Mc</sub>	γ <sub>Mc</sub>	γ <sub>Mc</sub>	2,0	
Displacements under tension loads				
N	Service tension load in solid masonry:	N	0,26	0,26
δ <sub>N0</sub>	Displacements:	δ <sub>N0</sub>	0,46	0,19
δ <sub>N∞</sub>		δ <sub>N∞</sub>	0,92	0,38
Displacements under shear loads				
V	Service shear load in solid masonry:	V	0,26	0,26
δ <sub>V0</sub>	Displacements:	δ <sub>V0</sub>	0,22	0,22
δ <sub>V∞</sub>		δ <sub>V∞</sub>	0,33	0,33
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	h <sub>min</sub>	100	100
Single anchor				
s <sub>min</sub>	Minimum spacing	s <sub>min</sub>	250	250
c <sub>min</sub>	Minimum edge distance:	c <sub>min</sub>	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	s <sub>1,min</sub>	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	s <sub>2,min</sub>	400	400
c <sub>min</sub>	Minimum edge distance:	c <sub>min</sub>	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C4
Prestaciones				
Characteristic values for loads in masonry				
			Performance	

English translation prepared by IETcc

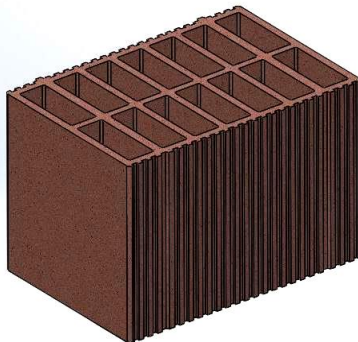
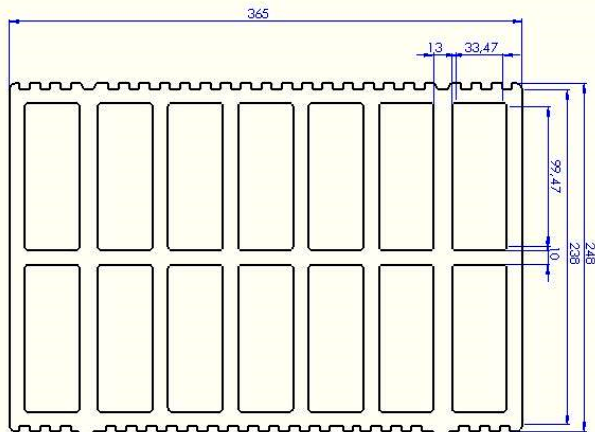
Characteristic resistance in solid masonry (use category "c")		TNUX-n Ø8	TNUX-n Ø10	
Brick no 2: KS12-1.8-3DF, 240 x 175 x 113 mm. Wemdinger Kalksandstein. Calcium silicate brick KS 12				
Use category	c			
Size:	240 x 175 x 113 mm			
Type:	EN 771-2			
Manufacturer:	Kalksandsteinwerk Wemding GmbH			
Commercial name:	Calcium silicate brick KS 12			
Bulk density class p:	1790 kg/m³			
Minimum compressive strength f <sub>B</sub>	12 N/mm²			
Drill method	Rotary + hammer			
Plastic sleeve pull out failure				
F <sub>Rk</sub>	Characteristic resistance <sup>*)</sup>	[kN]	2,0	2,5
γ <sub>Mc</sub>	Partial safety factor: <sup>**) </sup>	[-]	2,5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,57	0,71
δ <sub>N0</sub>	Displacements:	[mm]	0,48	0,19
δ <sub>N∞</sub>		[mm]	0,72	1,12
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,57	0,71
δ <sub>V0</sub>	Displacements:	[mm]	0,48	0,59
δ <sub>V∞</sub>		[mm]	0,72	0,89
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	175	175
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
				
TNUX-n Anchor			Annex C5	
Performance				
Characteristic values for loads in hollow masonry				

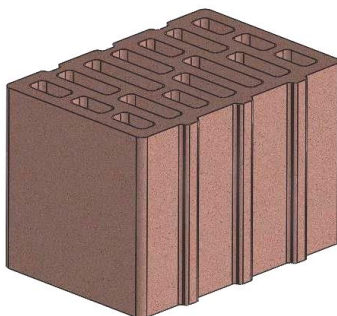
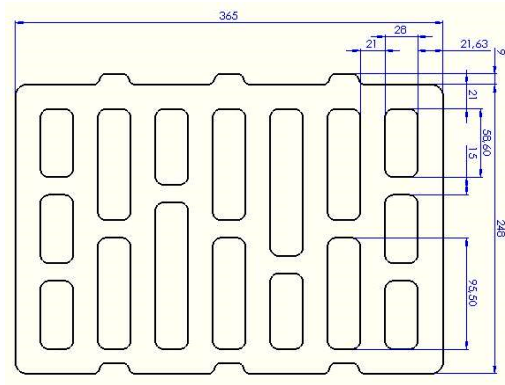
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 3: KS12-1.4-3DF, 240 x 175 x 113 mm. Wemding Kalksandstein. Calcium silicate brick KSL 12				
Use category	c			
Size:	240 x 175 x 113 mm			
Type:	EN 771-2			
Manufacturer:	Kalksandsteinwerk Wemding GmbH			
Commercial name:	Calcium silicate blick KSL 12			
Bulk density class ρ:	1390 kg/m³			
Minimum compressive strength f <sub>B</sub> :	12 N/mm²			
Drill method:	Rotary + hammer			
Plastic sleeve pull out failure				
F <sub>Rk</sub>	Characteristic resistance:*)	[kN]	0.6	0.75
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow blocks:	[kN]	0.17	0.21
δ <sub>N0</sub>	Displacements:	[mm]	0.41	0.35
δ <sub>N∞</sub>		[mm]	0.82	0.7
Displacements under shear loads				
V	Service shear load in hollow blocks:	[kN]	0.17	0.21
δ <sub>V0</sub>	Displacements:	[mm]	0.14	0.18
δ <sub>V∞</sub>		[mm]	0.21	0.27
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	113	113
Single anchor				
s <sub>min</sub>	Minimum spacing between anchors	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Single anchor				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel between ancors to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C6
Performance				
Characteristic values for loads in hollow masonry				

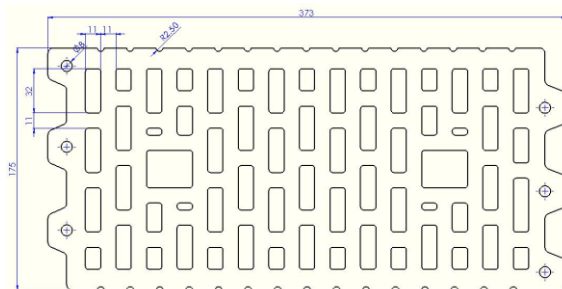
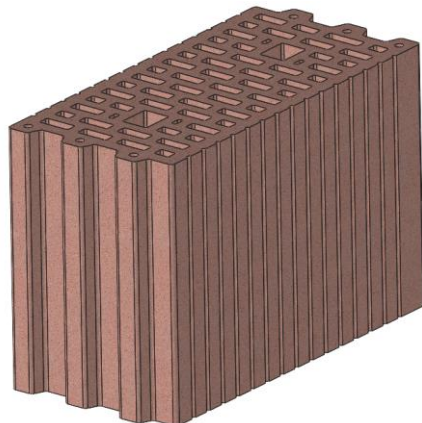
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 4: Termoarcilla de 24: 237 x 305 x 191 mm. Cerabrick				
Use category	c			
Size:	237 x 305 x 191 mm			
Type:	EN 771-1			
Manufacturer:	Cerabrick Grupo Cerámico			
Commercial name:	Termoarcilla de 24			
Bulk density class ρ:	855 kg/m³			
Minimum compressive strength f <sub>B</sub> :	12.5 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0,75	0.5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,21	0,14
δ <sub>N0</sub>	Displacements:	[mm]	0,80	0,30
δ <sub>N∞</sub>		[mm]	1,60	0,60
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,21	0,14
δ <sub>V0</sub>	Displacements:	[mm]	0,18	0,12
δ <sub>V∞</sub>		[mm]	0,27	0,18
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	237	237
Single anchor				
s <sub>min</sub>	Minimum spacing between anchors	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Single anchor				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel between anchors to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C7
Performance				
Characteristic values for loads in hollow masonry				

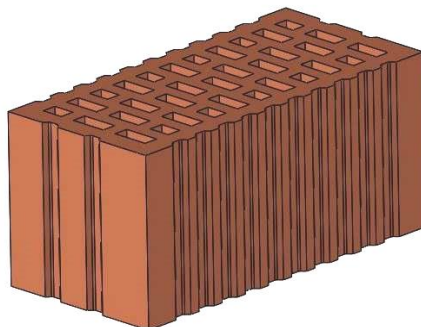
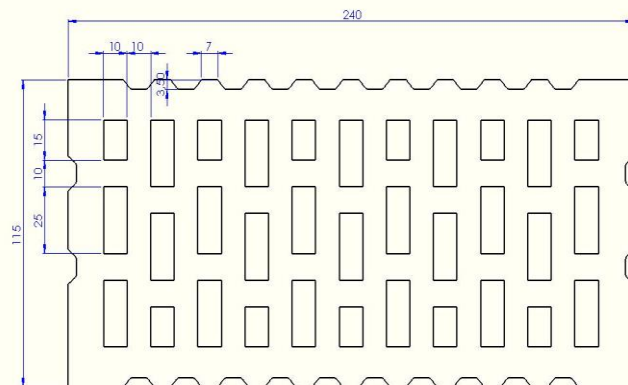
Characteristic resistance in hollow masonry (use category "c").			Performance	
			TNUX-n Ø8	TNUX-n Ø10
Brick no 5: Planziegel-T16-365, 248 x 365 x 249 mm. Hollow brick POROTON®-T16				
Use category	c			
Size:	248 x 365 x 249 mm			
Type:	EN 771-1			
Manufacturer:	Schlagmann Poroton			
Commercial name:	Planziegel-T16-365			
Bulk density class ρ:	735 kg/m³			
Minimum compressive strength f <sub>B</sub> :	10 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	-	0.5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow blocks:	[kN]	-	0.14
δ <sub>N0</sub>	Displacements:	[mm]	-	0.32
δ <sub>N∞</sub>		[mm]	-	0.64
Displacements under shear loads				
V	Service shear load in hollow blocks:	[kN]	-	0.14
δ <sub>V0</sub>	Displacements:	[mm]	-	0.12
δ <sub>V∞</sub>		[mm]	-	0.18
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	-	249
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	-	250
c <sub>min</sub>	Minimum edge distance:	[mm]	-	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	-	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	-	400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	-	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
				
TNUX-n Anchor				Annex C8
Performance				
Characteristic values for loads in hollow masonry				

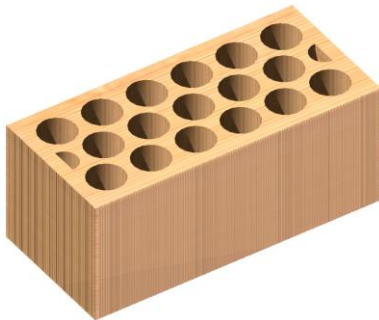
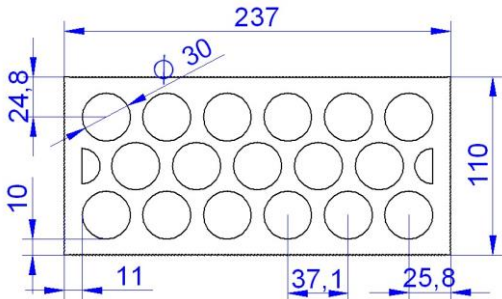



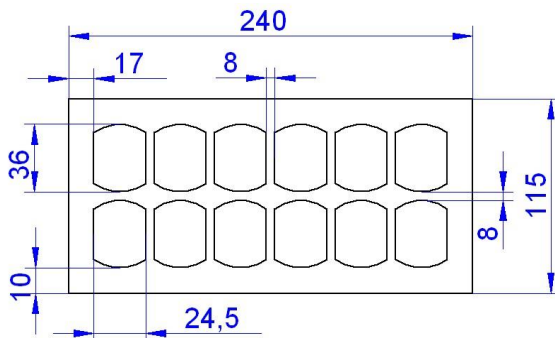
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 6: Poroton S8-365, 248 x 365 x 249 mm. Hollow brick POROTON®-S8				
Use category	c			
Size:	248 x 365 x 249 mm			
Type:	EN 771-1			
Manufacturer:	Schlagmann Poroton			
Commercial name:	Poroton S8-365			
Bulk density class ρ:	720 kg/m³			
Minimum compressive strength f <sub>B</sub> :	10 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	1.5	1.5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow blocks:	[kN]	0,43	0,43
δ <sub>N0</sub>	Displacements:	[mm]	0.66	0.35
δ <sub>N∞</sub>		[mm]	1.32	0.70
Displacements under shear loads				
V	Service shear load in hollow blocks:	[kN]	0,43	0,43
δ <sub>V0</sub>	Displacements:	[mm]	0,36	0,36
δ <sub>V∞</sub>		[mm]	0,54	0,54
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	249	249
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
				
TNUX-n Anchor			Annex C9	
Performance				
Characteristic values for loads in hollow masonry				

Characteristic resistance in hollow masonry (use category "c").		Performance	
		TNUX-n Ø8	TNUX-n Ø10
Brick no7: Poroton-FZ9-365 Objekt, 248 x 365 x 249 mm. Hollow brick POROTON®-FZ9			
Use category	c		
Size:	248 x 365 x 249 mm		
Type:	EN 771-1		
Manufacturer:	Schlagmann Poroton		
Commercial name:	Poroton-FZ9-365 Objekt		
Bulk density class ρ:	830 kg/m³		
Minimum compressive strength f <sub>B</sub> :	10 N/mm²		
Drill method:	Rotary		
Plastic sleeve pull out failure			
F <sub>rk</sub>	Characteristic resistance:*) [kN]	2.0	2.0
γ <sub>Mc</sub>	Partial safety factor:**) [-]	2.5	
Displacements under tension loads			
N	Service tension load in hollow masonry: [kN]	0.57	0.57
δ <sub>N0</sub>	Displacements: [mm]	0.95	0.42
δ <sub>N∞</sub>	[mm]	1.90	0.84
Displacements under shear loads			
V	Service shear load in hollow masonry: [kN]	0.57	0.57
δ <sub>V0</sub>	Displacements: [mm]	0.48	0.48
δ <sub>V∞</sub>	[mm]	0.72	0.72
Minimum spacing, edge distance and member thickness			
h <sub>min</sub>	Minimum thickness of the member: [mm]	249	249
Single anchor			
s <sub>min</sub>	Minimum spacing [mm]	250	250
c <sub>min</sub>	Minimum edge distance: [mm]	100	100
Anchor group			
s <sub>1,min</sub>	Spacing perpendicular to free edge: [mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge: [mm]	400	400
c <sub>min</sub>	Minimum thickness of the member: [mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .			
**) In absence of other national regulations.			
			
TNUX-n Anchor		Annex C10	
Performance			
Characteristic values for loads in hollow masonry			

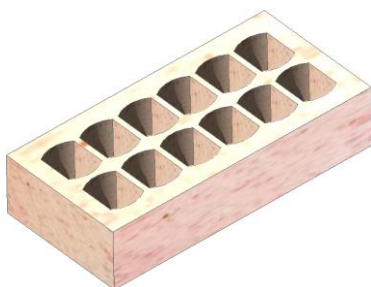
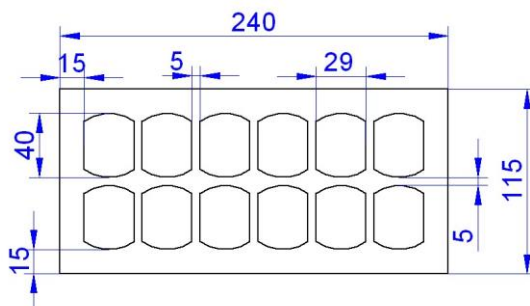
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 8: Schallschutzziegel 373 x 175 x 249 mm. Poroton Clay brick HLz 20				
Use category	c			
Size:	373 x 175 x 249 mm			
Type:	Z-17.1-1090			
Manufacturer:	Wienerberger			
Commercial name:	Schallschutzziegel			
Bulk density class ρ:	1100 kg/m³			
Minimum compressive strength f <sub>B</sub> :	20 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0.9	0.6
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0.26	0.17
δ <sub>N0</sub>	Displacements:	[mm]	0.37	0.22
δ <sub>N∞</sub>		[mm]	0.74	0.44
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0.26	0.17
δ <sub>V0</sub>	Displacements:	[mm]	0.22	0.14
δ <sub>V∞</sub>		[mm]	0.33	0.21
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	175	175
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C11
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-Kleinformate 2DF-0.9 240 x 115 x 113 mm. Poroton Clay brick HLz 12				
Use category	c			
Size:	240 x 115 x 113 mm			
Type:	DIN 105-100			
Manufacturer:	Wienerberger			
Commercial name:	Poroton-Kleinformate 2DF-0.9			
Bulk density class ρ:	855 kg/m³			
Minimum compressive strength f <sub>B</sub> :	12 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	-	0.4
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	-	0.11
δ <sub>N0</sub>	Displacements:	[mm]	-	0.19
δ <sub>N∞</sub>		[mm]	-	0.38
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	-	0.11
δ <sub>V0</sub>	Displacements:	[mm]	-	0.09
δ <sub>V∞</sub>		[mm]	-	0.14
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	-	115
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	-	250
c <sub>min</sub>	Minimum edge distance:	[mm]	-	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	-	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	-	400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	-	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
				
TNUX-n Anchor				Annex C12
Performance				
Characteristic values for loads in hollow masonry				


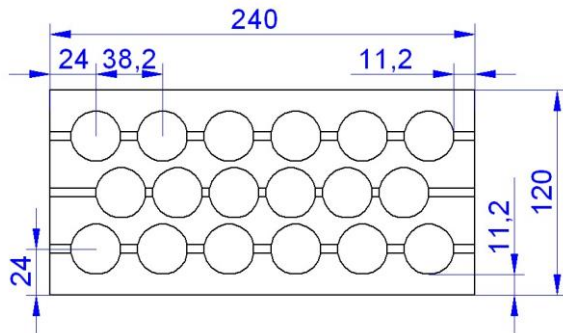
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 10: Cerámica de 10. 237 x 110 x 100 mm. Jumisa				
Use category	c			
Size:	237 x 110 x 100 mm			
Type:	EN 771-1			
Manufacturer:	Juarez y Millas S.A.			
Commercial name:	Cerámica de 10			
Bulk density class $\rho$ :	1025 kg/m <sup>3</sup>			
Minimum compressive strength $f_B$ :	20 N/mm <sup>2</sup>			
Drill method:	Rotary + hammer			
Plastic sleeve pull out failure				
$F_{rk}$	Characteristic resistance:*)	[kN]	0.3	0.5
$\gamma_{Mc}$	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow blocks:	[kN]	0,09	0,14
$\delta_{N0}$	Displacements:	[mm]	0,38	0,27
$\delta_{N\infty}$		[mm]	0,76	0,54
Displacements under shear loads				
V	Service shear load in hollow blocks:	[kN]	0,09	0,14
$\delta_{V0}$	Displacements:	[mm]	0,08	0,12
$\delta_{V\infty}$		[mm]	0,12	0,18
Minimum spacing, edge distance and member thickness				
$h_{min}$	Minimum thickness of the member:	[mm]	110	110
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 thickness of the member:	[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.				
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TNUX-n Anchor				Annex C13
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 11: Ladrillo caravista hidrofugado 240 x 115 x 50 mm. Ladritec				
Use category	c			
Size:	240 x 115 x 50 mm			
Type:	EN 771-1			
Manufacturer:	Ladrillería Técnica S.A			
Commercial name:	Hidrofugado			
Bulk density class p:	1065 kg/m³			
Minimum compressive strength f <sub>B</sub> :	20 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0.5	0,9
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,14	0,26
δ <sub>N0</sub>	Displacements:	[mm]	0,53	0,48
δ <sub>N∞</sub>		[mm]	1,06	0,96
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,14	0,26
δ <sub>V0</sub>	Displacements:	[mm]	0,12	0,22
δ <sub>V∞</sub>		[mm]	0,18	0,33
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	115	115
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C14
Performance				
Characteristic values for loads in hollow masonry				

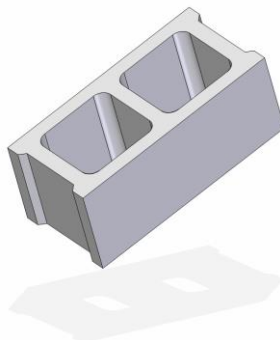
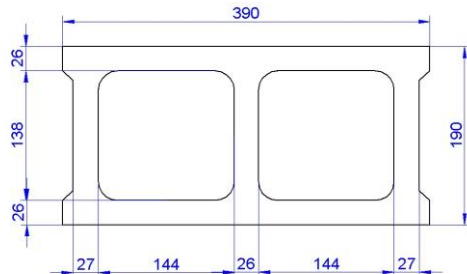


Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 12: Clinker Mediterráneo 240 x 115 x 90. Ladrillería Técnica				
Use category	c			
Size:	240 x 115 x 90 mm			
Type:	EN 771-1			
Manufacturer:	Ladrillería Técnica S.A			
Commercial name:	Clinker Mediterráneo			
Bulk density class ρ:	1310 kg/m³			
Minimum compressive strength f <sub>B</sub> :	40 N/mm²			
Drill method:	Rotary + hammer			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0,75	1,5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,21	0,43
δ <sub>N0</sub>	Displacements:	[mm]	0,43	0,65
δ <sub>N∞</sub>		[mm]	0,86	1,30
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,21	0,43
δ <sub>V0</sub>	Displacements:	[mm]	0,18	0,36
δ <sub>V∞</sub>		[mm]	0,27	0,54
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	115	115
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C15
Performance				
Characteristic values for loads in hollow masonry				


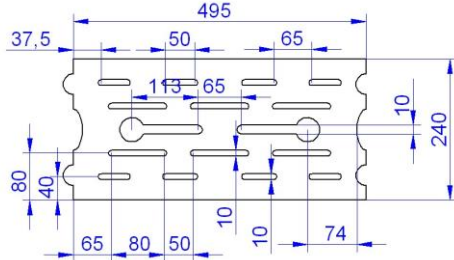
English translation prepared by IETcc

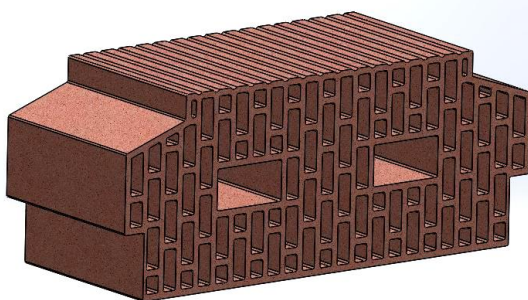
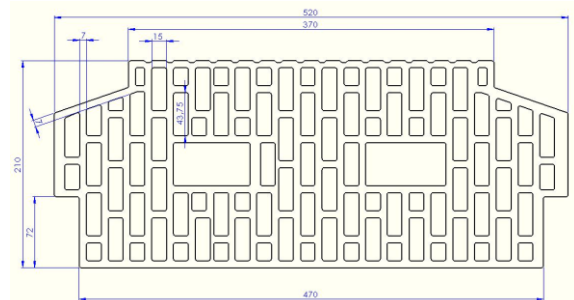
Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 13: Bloque gero 240 x 120 x 100 mm. Gilva				
Use category	c			
Size:	240 x 120 x 100 mm			
Type:	EN 771-3			
Manufacturer:	Gilva S.A.			
Commercial name:	Bloque Gero			
Bulk density class $\rho$ :	1180 kg/m <sup>3</sup>			
Minimum compressive strength $f_B$ :	10 N/mm <sup>2</sup>			
Drill method:	Rotary + hammer			
Plastic sleeve pull out failure				
$F_{rk}$	Characteristic resistance:*)	[kN]	0,75	1,5
$\gamma_{Mc}$	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,21	0,47
$\delta_{N0}$	Displacements:	[mm]	1,00	0,54
$\delta_{N\infty}$		[mm]	2,00	1,08
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,21	0,47
$\delta_{V0}$	Displacements:	[mm]	0,18	0,36
$\delta_{V\infty}$		[mm]	0,27	0,54
Minimum spacing, edge distance and member thickness				
$h_{min}$	Minimum thickness of the member:	[mm]	120	120
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.				
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TNUX-n Anchor				Annex C16
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 14: Bloque caravista 390 x 190 x 190 mm. Gallizo				
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 <sub>B</sub> :	5 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	1.5	1.5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,43	0,43
δ <sub>N0</sub>	Displacements:	[mm]	0,51	1,00
δ <sub>N∞</sub>		[mm]	1,02	2,00
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,43	0,43
δ <sub>V0</sub>	Displacements:	[mm]	0,36	0,36
δ <sub>V∞</sub>		[mm]	0,54	0,54
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	190	190
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C17
Performance				
Characteristic values for loads in hollow masonry				

English translation prepared by IETcc

Characteristic resistance in hollow masonry (use category "c").		Performance		
		TNUX-n Ø8	TNUX-n Ø10	
Brick no 15: Airblock. 491 x 241 x 190 mm. Viguetas Navarra.				
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 <sub>B</sub> :	4 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	2,0	1,5
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,57	0,43
δ <sub>N0</sub>	Displacements:	[mm]	0,79	0,65
δ <sub>N∞</sub>		[mm]	1,58	1,30
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,57	0,43
δ <sub>V0</sub>	Displacements:	[mm]	0,48	0,36
δ <sub>V∞</sub>		[mm]	0,72	0,54
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	241	241
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
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TNUX-n Anchor				Annex C18
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 16: Poroton Deckenelhängezegel h21 530 x 210 x 249 mm.				
Use category	c			
Size:	530 x 210 x 249 mm			
Type:	EN 771-1			
Manufacturer:	Weinerbeger			
Commercial name:	Poroton Deckenelhängezegel h21			
Bulk density class ρ:	680 kg/m³			
Minimum compressive strength f <sub>B</sub> :	12 N/mm²			
Drill method:	Rotary			
Plastic sleeve pull out failure				
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0.3	0.6
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.5	
Displacements under tension loads				
N	Service tension load in hollow masonry:	[kN]	0,08	0,17
δ <sub>N0</sub>	Displacements:	[mm]	0.39	0,41
δ <sub>N∞</sub>		[mm]	0.78	0,82
Displacements under shear loads				
V	Service shear load in hollow masonry:	[kN]	0,08	0,17
δ <sub>V0</sub>	Displacements:	[mm]	0.07	0,14
δ <sub>V∞</sub>		[mm]	0.10	0,21
Minimum spacing, edge distance and member thickness				
h <sub>min</sub>	Minimum thickness of the member:	[mm]	210	210
Single anchor				
s <sub>min</sub>	Minimum spacing	[mm]	250	250
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
Anchor group				
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200	200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400	400
c <sub>min</sub>	Minimum edge distance:	[mm]	100	100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .				
**) In absence of other national regulations.				
				
TNUX-n Anchor				Annex C19
Performance				
Characteristic values for loads in hollow masonry				

Characteristic resistance in hollow reinforced concrete in autoclave: AAC2 / AAC6 Bricks (Use category "d")		Performance			
		TNUX-n Ø8		TNUX-n Ø10	
Range of temperature		24/40°C	50/80°C	24/40°C	50/80°C
AAC2: 625 x 240 x 250 mm					
Use category:	d				
Sizes:	625 x 240 x 250 mm				
Type:	EN 771-4				
Bulk density class p:	360 kg/m³				
Minimum compressive strength f <sub>B</sub> :	2 N/mm²				
Drill method:	Rotary				
Plastic sleeve pull out failure					
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0,4	0,3	0,3
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.0		
Displacements under tension loads					
N	Service tension load in hollow reinforced concrete:	[kN]	0.14		0.11
δ <sub>N0</sub>	Displacements:	[mm]	0.65		0.43
δ <sub>N∞</sub>		[mm]	1.30		0.86
Displacements under shear loads					
V	Service shear load in hollow reinforced concrete:	[kN]	0.14		0.11
δ <sub>V0</sub>	Displacements:	[mm]	0.28		0.22
δ <sub>V∞</sub>		[mm]	0.42		0.33
Minimum spacing, edge distance and member thickness					
h <sub>min</sub>	Minimum thickness of the member:	[mm]	100		100
Single anchor					
s <sub>min</sub>	Minimum spacing	[mm]	250		250
c <sub>min</sub>	Minimum edge distance:	[mm]	100		100
Anchor group					
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200		200
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400		400
c <sub>min</sub>	Minimum thickness of the member:	[mm]	100		100
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .					
**) In absence of other national regulations.					
TNUX-n Anchor				Annex C20	
Performance					
Characteristic values for loads in hollow reinforced concrete in autoclave					

English translation prepared by IETcc

Characteristic resistance in hollow reinforced concrete in autoclave: AAC2 / AAC6 Bricks (Use category "d")		Performance				
		TNUX-n Ø8		TNUX-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 p:	710 kg/m³					
Minimum compressive strength f <sub>B</sub> :	6 N/mm²					
Drill method:	Rotary					
Plastic sleeve pull out failure						
F <sub>rk</sub>	Characteristic resistance:*)	[kN]	0,9	0,9	1,5	1,2
γ <sub>Mc</sub>	Partial safety factor:**)	[-]	2.0			
Displacements under tension loads						
N	Service tension load in hollow reinforced concrete:	[kN]	0.32		0.54	
δ <sub>N0</sub>	Displacements:	[mm]	1.28		0.78	
δ <sub>N∞</sub>		[mm]	2.56		1.56	
Displacements under tension loads						
N <sub>Rk,p</sub>	Service shear load in hollow reinforced concrete:	[kN]	0.32		0.54	
δ <sub>N0</sub>	Displacements:	[mm]	0.64		1.08	
δ <sub>N∞</sub>		[mm]	0.96		1,62	
Minimum spacing, edge distance and member thickness						
h <sub>min</sub>	Minimum thickness of the member:	[mm]	100		100	
Single anchor						
s <sub>min</sub>	Minimum spacing	[mm]	250		250	
c <sub>min</sub>	Minimum edge distance:	[mm]	100		100	
Anchor group						
s <sub>1,min</sub>	Spacing perpendicular to free edge:	[mm]	200		200	
s <sub>2,min</sub>	Spacing parallel to free edge:	[mm]	400		400	
c <sub>min</sub>	Minimum thickness of the member:	[mm]	100		100	
*) Characteristic resistance F <sub>Rk</sub> 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 <sub>min</sub> .						
**) In absence of other national regulations.						