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## European Technical Assessment

**ETA 17/0161  
of 29/07/2022**

**Technical Assessment Body issuing the ETA:** Technical and Test Institute  
for Construction Prague

**Trade name of the construction product**

RAWLPLUG Insulation System  
R-TFIX-8S  
R-TFIX-8S-X

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

Product area code: 33  
Plastic anchors for fixing of external  
thermal insulation composite systems with  
rendering in concrete and masonry

**Manufacturer**

Rawplug S.A.  
Ul. Kwidzyńska 6  
51-416 Wrocław  
Poland

**Manufacturing plant(s)**

Manufacturing Plant no.3

**This European Technical Assessment  
contains**

17 pages including 15 Annexes which form  
an integral part of this assessment.

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

EAD 330196-01-0604 Plastic anchors made  
of virgin or non-virgin material for fixing of  
external thermal insulation composite systems  
with rendering

**This version replaces**

ETA 17/0161 issued on 25/04/2020

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## 1. Technical description of the product

The screwed-in anchor R-TFIX-8S and R-TFIX-8S-X consists of an anchor sleeve with enlarged shaft, an insulation plate made of polypropylene and special screw (R-TFIX-8S-X) or overmolded screw (R-TFIX-8S) made of galvanized steel or stainless steel as expansion element. The expanding part of the anchor sleeve is slotted.

For the surface mounting the anchor may in addition be combined with the anchor plates KWL-90PP, R-KWL-90, KWL-110PP and R-KWL-140.

For the countersunk mounting the anchor may in addition be combined with the anchor plates KWX 110 or KWX 63.

The anchor is installed in drilled hole by screwing the expansion element into the anchor sleeve.

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

## 2. Specification of the intended use in accordance with the applicable EAD

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

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the products in relation to the expected economically reasonable working life of the works.

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

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

Not assessed based on EAD 330196-01-0604.

### 3.2 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance under tension loads	See Annex C 1
Displacement	See Annex C 1
Plate stiffness	See Annex C 2

### 3.3 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 2

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

According to the Decision 97/463/EC of the European Commission<sup>1</sup>, the system 2+ of assessment verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) apply.

## 5. Technical details necessary for the implementation of the AVCP system, as provided in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Technical and Test Institute for Construction Prague.

Issued in Prague on 29.07.2022

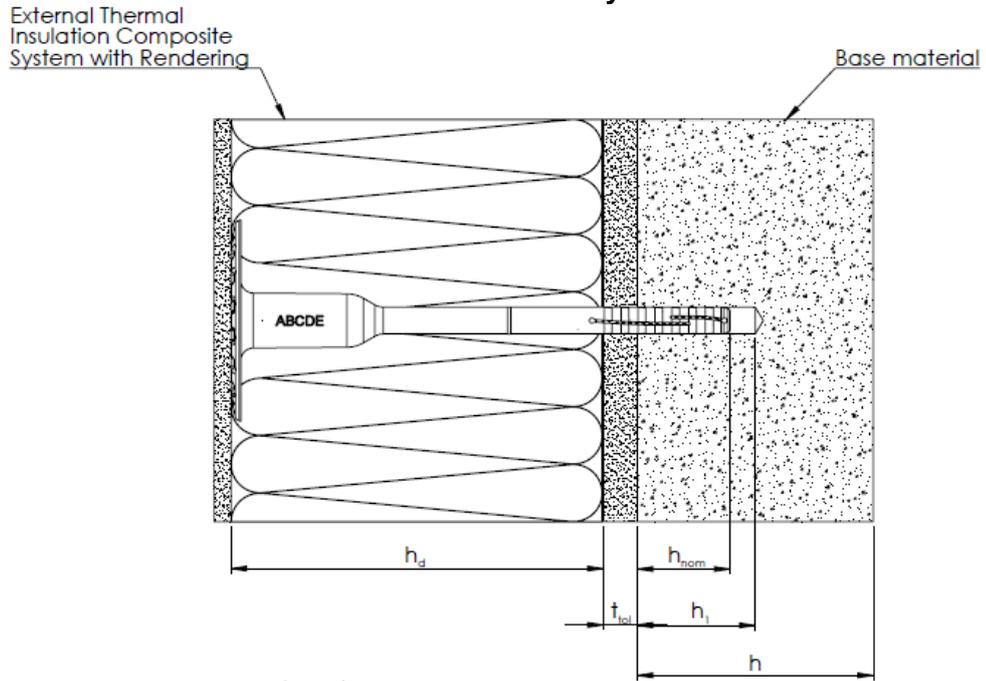
By

**Ing. Jiří Studnička, Ph.D.**  
Head of the Technical Assessment Body

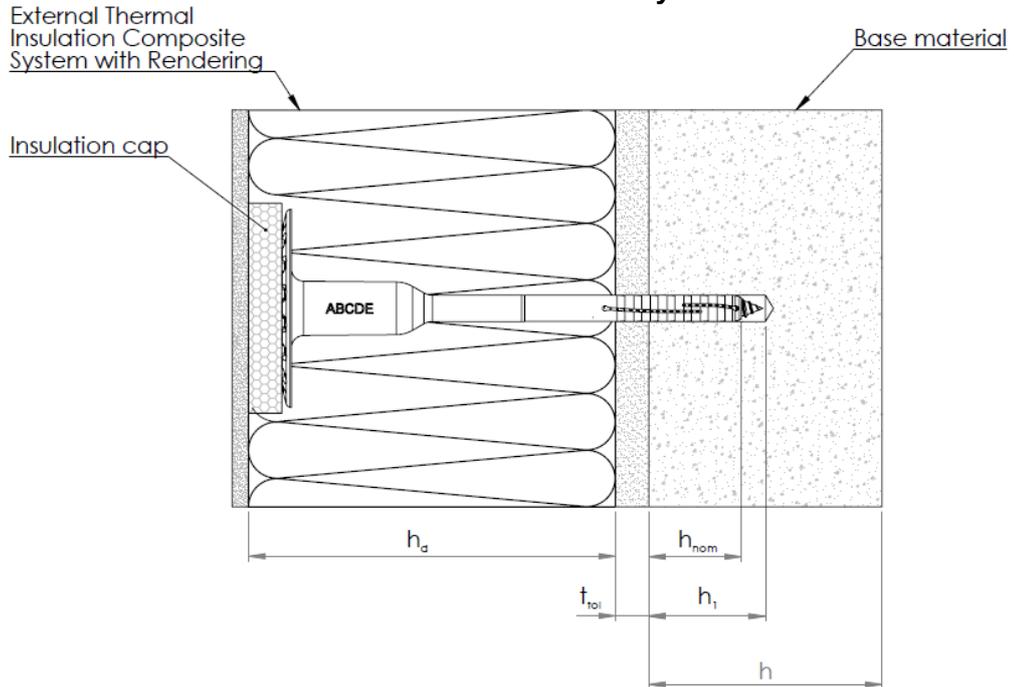
<sup>1</sup> Official Journal of the European Communities L 198/31 25.7.1997

**R-TFIX-8S, R-TFIX-8S-X**

**Surface assembly**



**Countersunk assembly**



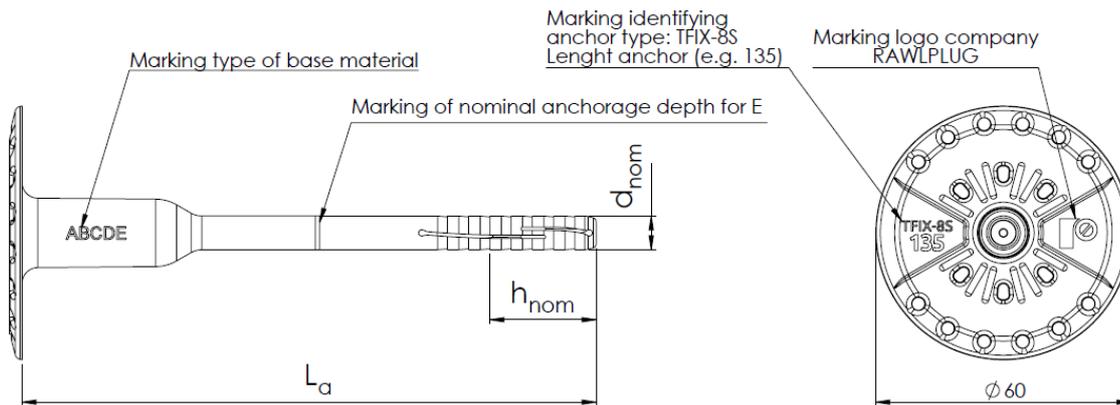
- $h_{nom}$  = overall plastic anchor embedment depth in the base material
- $h$  = thickness of member (wall)
- $h_1$  = depth of drilled hole to deepest point
- $h_d$  = thickness of insulation material
- $t_{tol}$  = thickness of equalizing layer or non-load-bearing coating

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

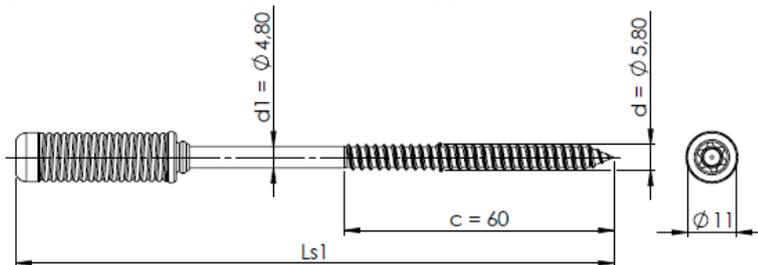
**Product description**  
Installed conditions

**Annex A 1**

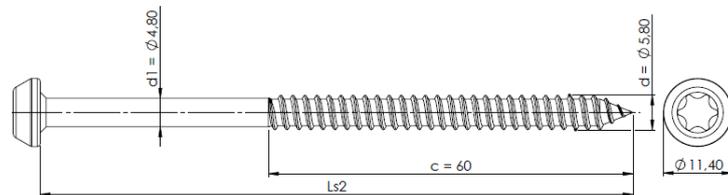
**R-TFIX-8S, R-TFIX-8S-X – surface assembly  
Anchor sleeve**



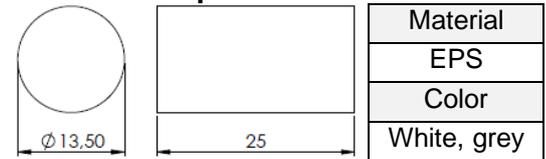
**Overmolded screw for R-TFIX-8S**



**Screw for R-TFIX-8S-X**



**Insulation cap**



For proper assembly you can use setting tool (Annex B 5) or standard Bit.

**Table A1: Dimensions**

Anchor type	Anchor sleeve			Screw		
	$h_{nom} = h_{ef}$ [mm]		$\varnothing d_{nom}$ [mm]	$L_a$ [mm]	$L_{s1}$ [mm]	$L_{s2}$ [mm]
Use category	A, B, C, D	E				
R-TFIX-8S, R-TFIX-8S-X	25	45	8	135 - 455	115 - 455	80 - 420

Determination of max. thickness of insulation:

$$h_d = L_a - t_{tol} - h_{nom}$$

e.g.  $L_a = 135$  mm,  $t_{tol} = 10$  mm,  $h_{nom} = 25$  mm,  $h_d = 135 - 10 - 25 = 100$  mm

**Table A2: Materials of anchor R-TFIX-8S, R-TFIX-8S-X**

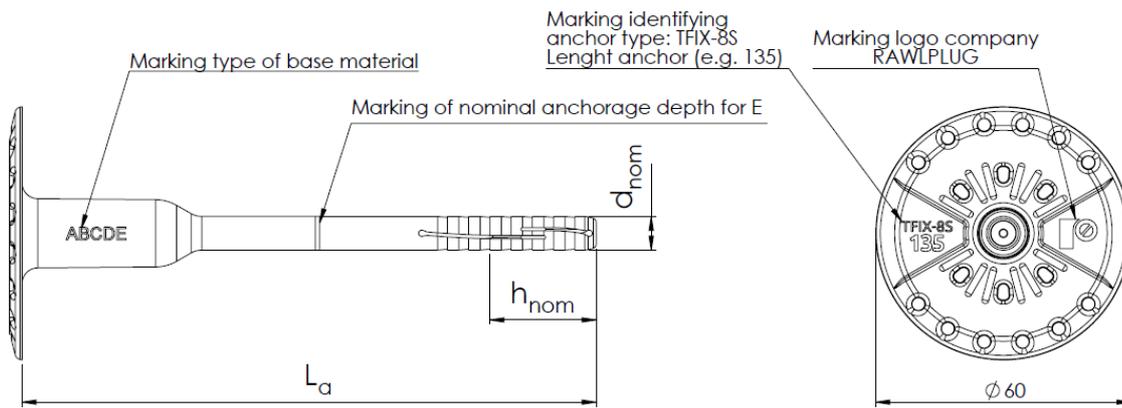
Designation	Color	Material
Anchor sleeve	Natural, white, red, grey, yellow, black, blue, green, orange	Virgin plastic - Polypropylene
Expansion screw for R-TFIX-8S-X	Natural	Galvanized steel or stainless steel
Overmolded expansion screw for R-TFIX-8S	Natural - screw Natural, black, grey - overmolding	Galvanized steel or stainless steel with glass fibre reinforced polyamide overmolding

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

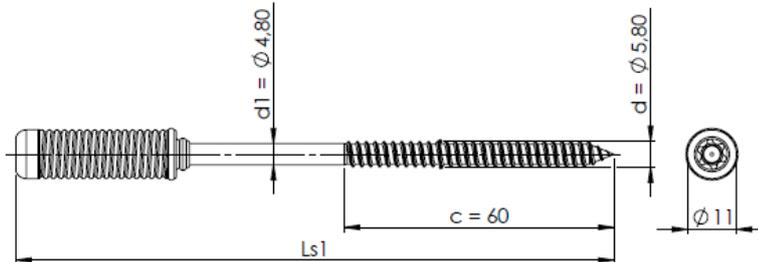
**Product description**  
Dimensions  
Materials

**Annex A 2**

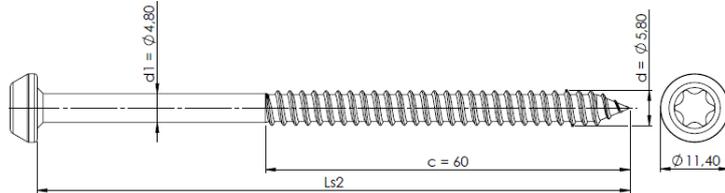
**R-TFIX-8S, R-TFIX-8S-X – countersunk assembly  
Anchor sleeve**



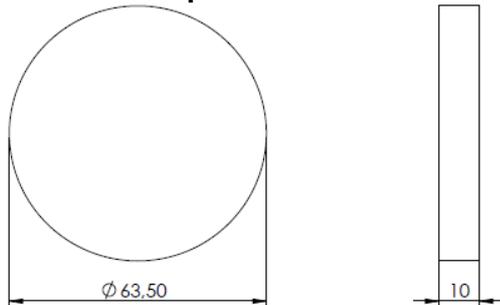
**Overmolded screw for R-TFIX-8S**



**Screw for R-TFIX-8S-X**



**Insulation cap**



Material	Color
EPS	White, grey
Mineral	Natural

For proper assembly use setting tool (Annex B 5).

**Table A3: Dimensions**

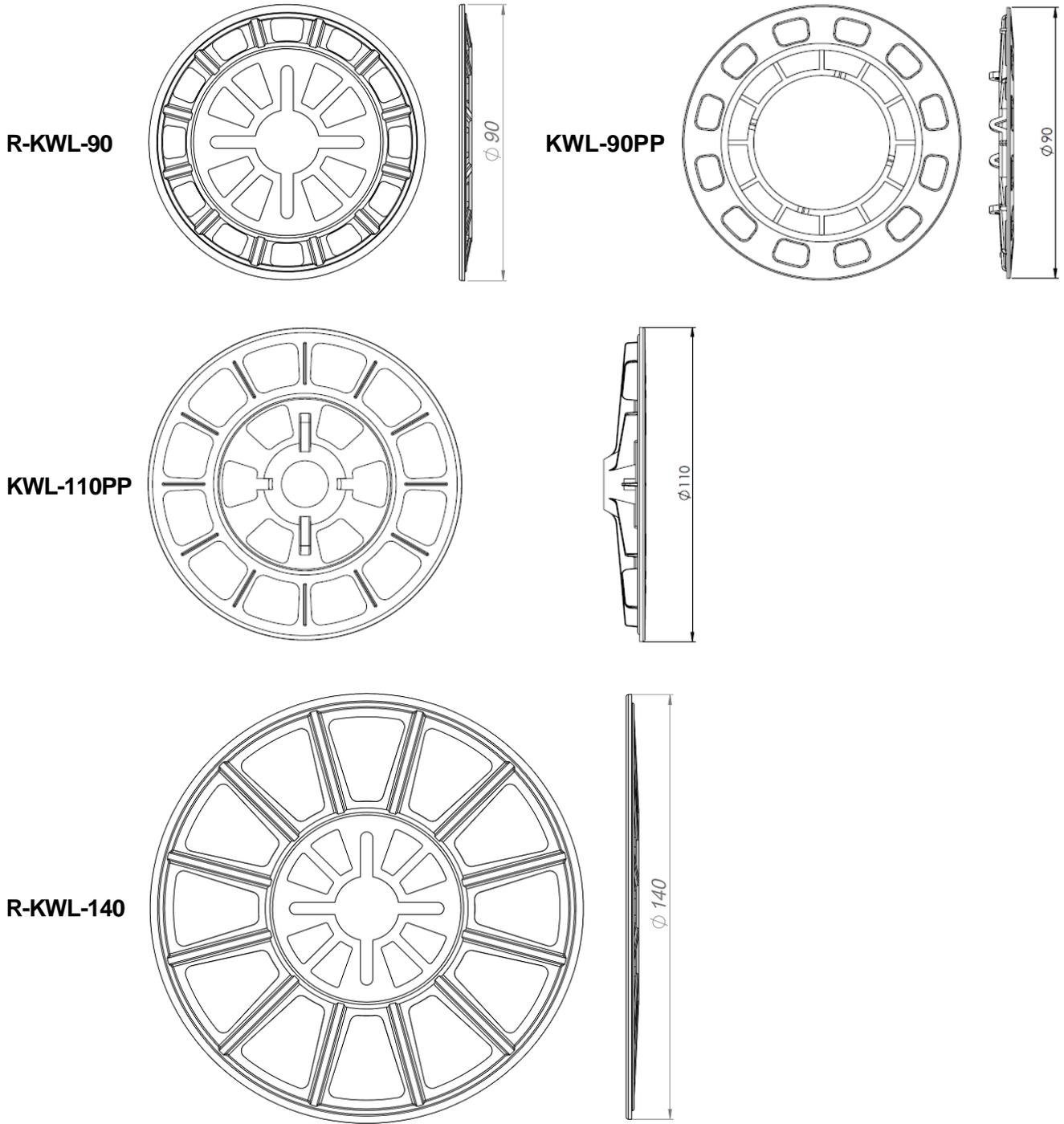
Anchor type	Anchor sleeve			Screw			
	$h_{nom} = h_{ef}$ [mm]		$\phi_{d_{nom}}$ [mm]	$L_a$ [mm]	$L_1$ [mm]	$L_2$ [mm]	$\phi d$ [mm]
Use category	A, B, C, D	E					
R-TFIX-8S, R-TFIX-8S-X	25	45	8	135 - 455	115 - 455	80 - 420	5,8

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Product description**  
Dimensions

**Annex A 3**

**Additional plates**



**Table A4: Materials of additional plates**

Plate	Diameter	Color	Material
R-KWL-90, KWL-90PP	90	Natural, white, red, grey, yellow, black, blue, green, orange	Virgin plastic PA6 + GF, PP
KWL-110PP	110		
R-KWL-140	140		

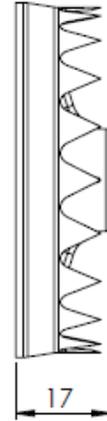
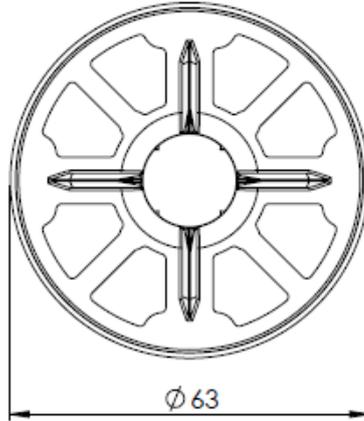
**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Product description**  
Additional plates

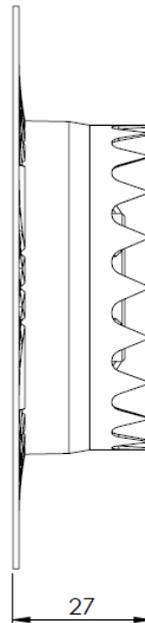
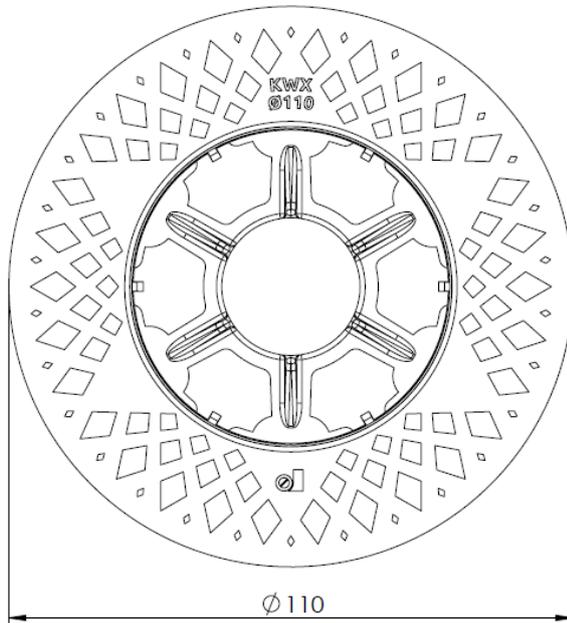
**Annex A 4**

**Additional plates**

**KWX 63**



**KWX 110**



**Table A5: Materials of additional plates**

Plate	Diameter	Color	Material
KWX 63	63	Natural	Virgin plastic PP+GF; PA+GF
KWX 110	110		

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Product description**  
Additional plates

**Annex A 5**

## Specifications of intended use

### Anchorage subject to:

- Multiple fixing for the anchorage of bonded thermal insulation composite systems (ETICS).

### Base materials

- Reinforced or unreinforced normal weight concrete (Use category A), according to Annex B6.
- Solid brick (Use category B), according to Annex B6.
- Perforated or hollow bricks (Use category C), according to Annex B6.
- Lightweight aggregate concrete hollow blocks LAC (Use category D), according to Annex B6.
- Autoclaved aerated concrete AAC 4 (Use category E), according to Annex B6.
- The characteristic tension resistance of the anchor may be determined by means of job site tests according to EOTA TR 051, edition December 2016, carried out on the material actually used, if a characteristic resistance of the base material does not exist (for example masonry made of other solid masonry units or made of perforated clay bricks).

### Use conditions

- The anchor may only be used for transmission of wind suction loads and shall not be used for the transmission of dead loads of the thermal insulation composite system. The dead loads have to be transmitted by the bonding of the thermal insulation composite system.

### Use categories:

- A, B, C, D and E.

### Design:

- The design of anchorages is carried out in compliance with EAD 330196-01-0604, " Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering" under the responsibility of an engineer experienced in anchorages.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials, the thickness of insulation and the dimensions of the anchorage as well as of the relevant tolerances.
- Proof of direct local application of load on the base material shall be delivered. The anchor shall only be used for the transmission of wind suction loads. All other loads such as dead load and restraints shall be transmitted by the adhesion of the relevant external thermal insulation composite system.

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Specifications

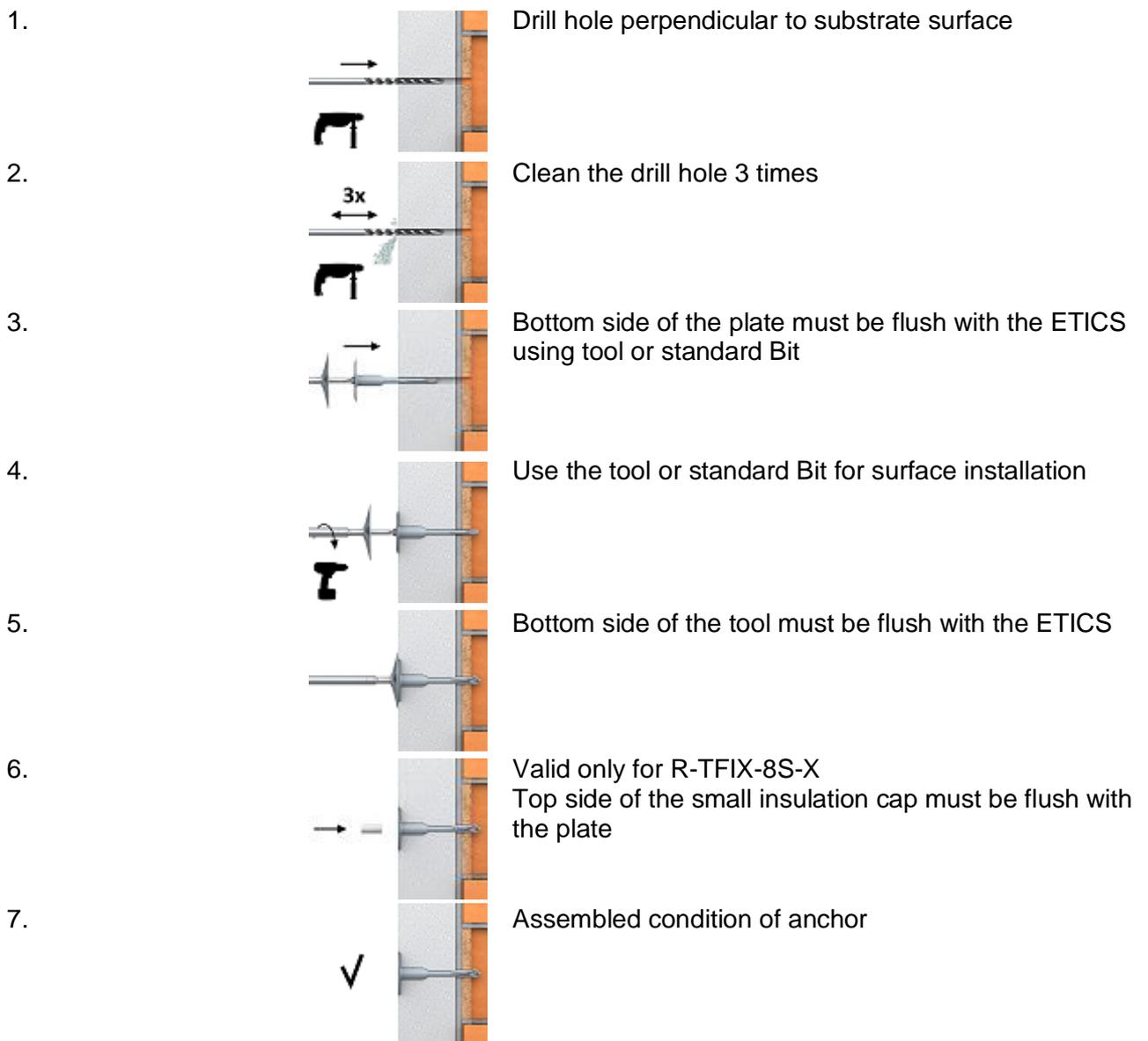
**Annex B 1**

**Installation:**

The fitness for use of the anchor can only be assumed if the following conditions of installation are met:

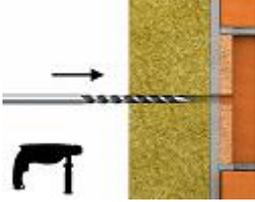
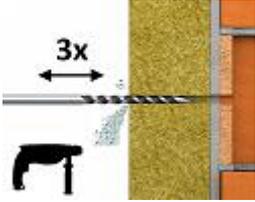
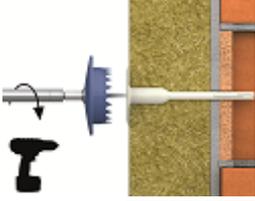
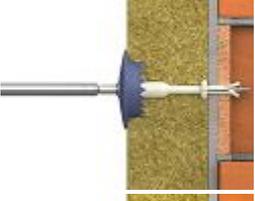
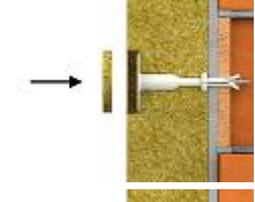
- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Observation of the drill method (Drill holes in masonry made of vertically perforated clay bricks, lightweight aggregate concrete hollow blocks (LAC) and autoclaved aerated concrete may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests evaluate the influence of hammer or impact drilling.)
- Placing drill holes without damaging the reinforcement
- Temperature during installation of the anchor  $\geq 0^{\circ}\text{C}$ .
- Exposure to UV due to solar radiation of the anchor not protected by rendering 6 weeks.

**Installation instructions – surface assembly**



<b>RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X</b>		<b>Annex B 2</b>
<b>Intended use</b>		
Installation Installation instructions – surface assembly		

## Installation instructions – countersunk assembly with R-TFIX-TOOL-CS

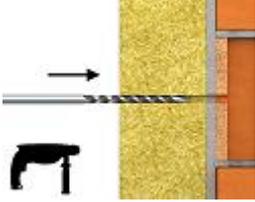
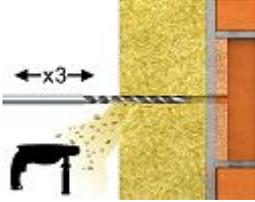
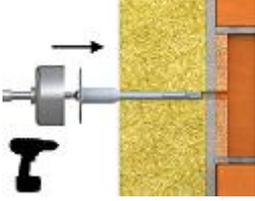
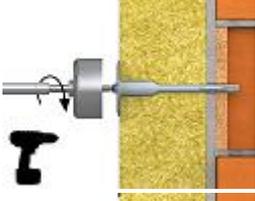
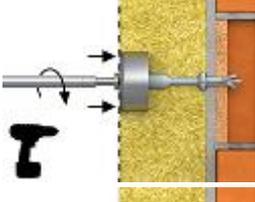
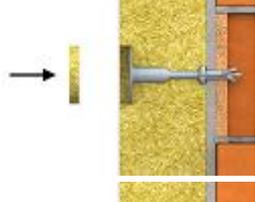
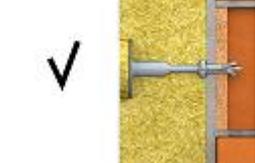
1.  Drill hole perpendicular to substrate surface
2.  Clean the drill hole 3 times
3.  Bottom side of the plate must be flush with the ETICS using tool
4.  Use the tool for countersunk assembly.  
Bottom side of the tool must be flush with the ETICS
5.  Top side of the insulation cap must be flush with the ETICS
6.  Assembled condition of anchor

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Installation instructions – countersunk assembly

**Annex B 3**

**Installation instructions – countersunk assembly R-TFIX-TOOL-CSM and R-TFIX-TOOL-CSMP**

1.  Drill hole perpendicular to substrate surface
2.  Clean the drill hole 3 times
3.  Bottom side of the plate must be flush with the ETICS using tool
4.  Use the tool for countersunk assembly
5.  Bottom side of the tool must be flush with the ETICS
6.  Top side of the insulation cap must be flush with the ETICS
7.  Assembled condition of anchor

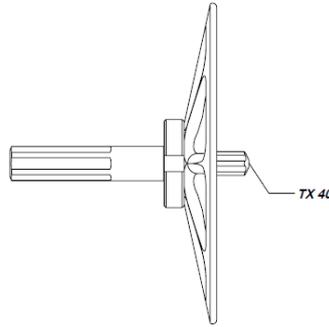
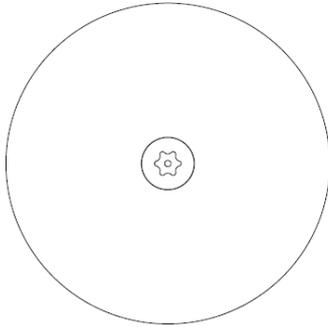
**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Installation instructions – countersunk assembly

**Annex B 4**

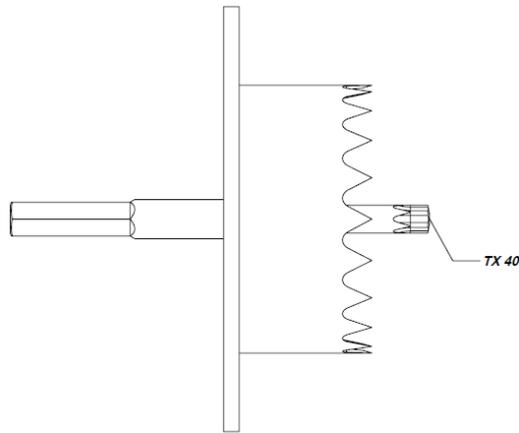
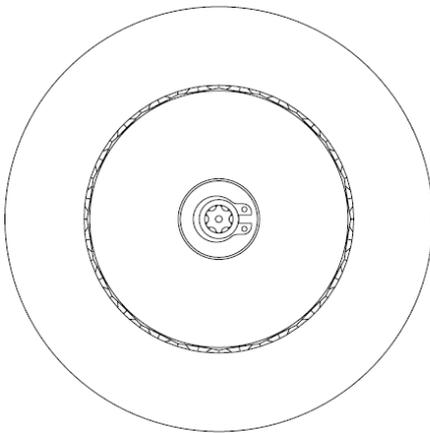
**Setting tool**

**R-TFIX-TOOL** for surface assembly



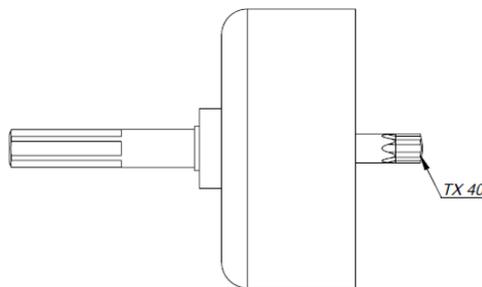
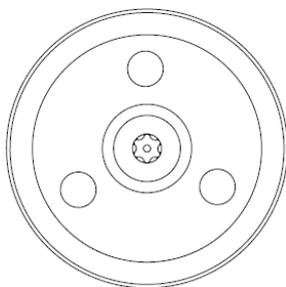
TX 40 = TORX ® 40 Bit

**R-TFIX-TOOL-CS** for countersunk assembly



TX 40 = TORX ® 40 Bit

**R-TFIX-TOOL-CSM** for countersunk assembly



TX 40 = TORX ® 40 Bit

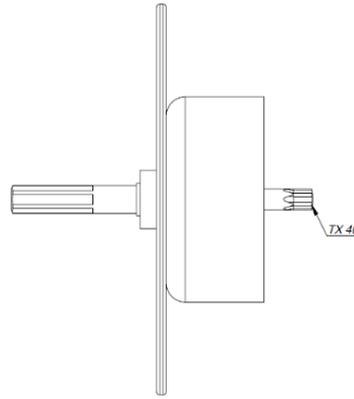
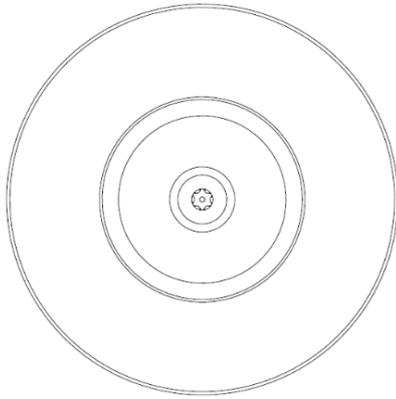
**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Setting tool

**Annex B 5**

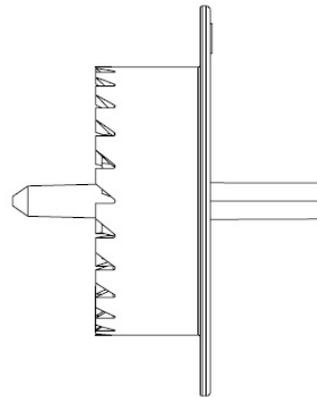
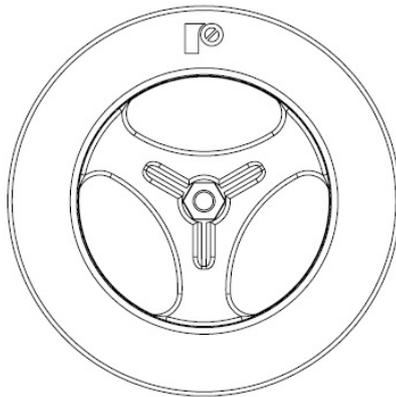
**Setting tool**

**R-TFIX-TOOL-CSMP** for countersunk assembly

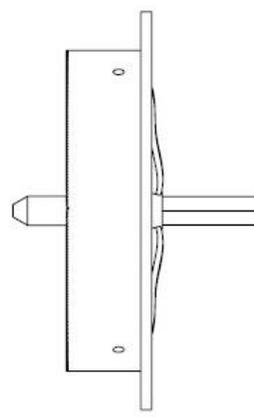
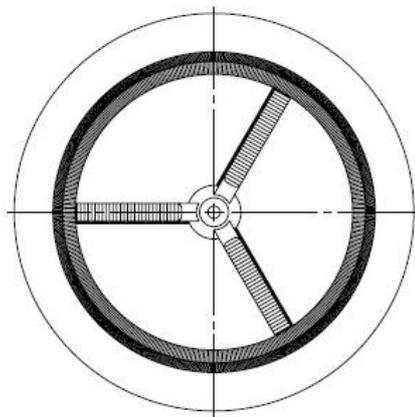


TX 40 = TORX ® 40 Bit

**K-KFS TOOL** for countersunk assembly



**R-KFS TOOL** for countersunk assembly



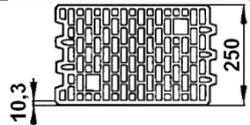
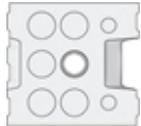
**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Setting tool

**Annex B 6**

## Types of base materials

**Table B1: Base materials**

Base material	Use category	Bulk density [kg/dm <sup>3</sup> ]	Min. compressive strength f <sub>c</sub> [N/mm <sup>2</sup> ]	General remarks	Drilling method
Concrete C 12/15 according to EN 206-1	A				Hammer drilling
Concrete C 16/20 – C 50/60 according to EN 206-1	A				Hammer drilling
External wall panel of concrete C 16/20 – C50/60 according to EN 206-1	A			Minimum thickness ≥ 40 mm	Hammer drilling or rotary drilling
Solid clay bricks according to EN 771-1	B	≥ 1,7	20	Vertically perforation up to 15%	Hammer drilling
Solid sand-lime bricks according to EN 771-2	B	≥ 1,8	30	Vertically perforation up to 15%	Hammer drilling
Vertically perforated clay bricks POROTHERM 17,5 P+D according to EN 771-1	C	≥ 0,9	15		Only rotary drilling
Perforated sand-lime bricks KS 301 U24L 15-1,4 according to EN 771-2	C	≥ 1,4	15		Only rotary drilling
TeknoAmerBlok PK17,8 according to EN 771-3	C	≥ 1,6	12,5		Hammer drilling
Lightweight aggregate concrete hollow blocks LAC according to EN 1520	D	≥ 1,2	4		Only rotary drilling
Autoclaved aerated concrete AAC 4 according to EN 771-4	E	≥ 0,4	4		Only rotary drilling

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X**

**Intended use**  
Base materials

**Annex B 7**

## Installation

**Table B2: Installation characteristics**

Anchor type		R-TFIX-8S, R-TFIX-8S-X	
Use category		A, B, C, D	E
Nominal diameter of drill bit	$d_o$ [mm]	8	8
Min. diameter of drill bit	$d_{cut, min} \geq$ [mm]	8,2	8,2
Max. diameter of drill bit	$d_{cut, max} \leq$ [mm]	8,45	8,45
Depth of drill hole - Surface assembly	$h_1 \geq$ [mm]	35	55
Depth of drill hole - Countersunk assembly	$h_1 \geq$ [mm]	45	65
Effective embedment depth	$h_{ef} \geq$ [mm]	25	45

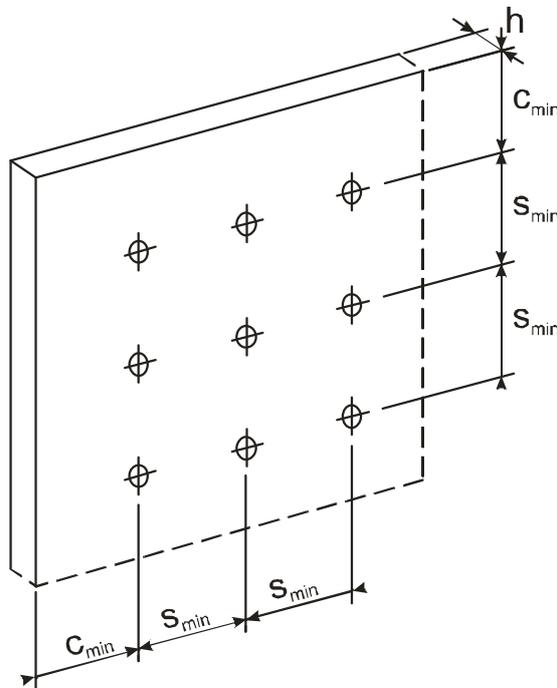
**Table B3.1: Minimum thickness of base material, edge distance and anchor spacing**

Anchor type	Minimum thickness of base material $h$ [mm]	Minimum spacing $s_{min}$ [mm]	Minimum edge distance $c_{min}$ [mm]
R-TFIX-8S, R-TFIX-8S-X	100	100	100

**Table B3.2: Minimum thickness of external wall panel of concrete, edge distance and anchor spacing**

Anchor type	Minimum thickness of base material $h$ [mm]	Minimum spacing $s_{min}$ [mm]	Minimum edge distance $c_{min}$ [mm]
R-TFIX-8S, R-TFIX-8S-X	40	100	100

Scheme of distance and spacing.



### RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X

**Intended use**  
Installation characteristics  
Edge and axial distances

**Annex B 8**

**Table C1: Characteristic resistance to tension loads for single anchor**

Base material	Use category	Bulk density [kg/dm <sup>3</sup> ]	Min. compressive strength $\beta$ [N/mm <sup>2</sup> ]	R-TFIX-8S, R-TFIX-8S-X	
				Surface assembly	Countersunk assembly
				[kN]	
Concrete C 12/15 according to EN 206-1	A			1,2	1,2
Concrete C 16/20 – C 50/60 according to EN 206-1	A			1,5	1,5
External wall panel of concrete C 16/20 – C50/60 according to EN 206-1	A			1,5	1,5
Solid clay bricks according to EN 771-1	B	$\geq 1,7$	20	1,5	1,5
Solid sand-lime bricks according to EN 771-2	B	$\geq 1,8$	30	1,5	1,5
Vertically perforated clay bricks POROTHERM 17,5 P+D according to EN 771-1	C	$\geq 0,9$	15	0,9	0,9
Perforated sand-lime bricks KS 301 U24L 15-1,4 according to EN 771-2	C	$\geq 1,4$	15	1,5	1,5
TeknoAmerBlok PK17,8 according to EN 771-3	C	$\geq 1,6$	12,5	1,4	1,5
Lightweight aggregate concrete hollow blocks LAC according to EN 1520	D	$\geq 1,2$	4	0,9	0,9
Autoclaved aerated concrete AAC 4 according to EN 771-4	E	$\geq 0,4$	4	1,2	1,4
Partial safety factor	$\gamma_M^{1)}$	2,0			

<sup>1)</sup>in the absence of other national regulations

**Table C2: Displacement of anchors R-TFIX-8S, R-TFIX-8S-X under tension loads**

Base material	Tension load $N_{Sk}$ [kN]	Displacement $\Delta\delta_N$ [mm]
Concrete C 12/15 according to EN 206-1	0,5	0,80
Concrete C 16/20 – C 50/60 according to EN 206-1	0,5	0,80
External wall panel of concrete C 16/20 – C50/60 according to EN 206-1	0,5	0,80
Solid clay bricks according to EN 771-1	0,5	0,74
Solid sand-lime bricks according to EN 771-2	0,5	0,67
Vertically perforated clay bricks POROTHERM 17,5 P+D according to EN 771-1	0,3	0,63
Perforated sand-lime bricks KS 301 U24L 15-1,4 according to EN 771-2	0,5	0,76
TeknoAmerBlok PK17,8 according to EN 771-3	0,5	0,84
Lightweight aggregate concrete hollow blocks LAC according to EN 1520	0,3	0,70
Autoclaved aerated concrete AAC 4 according to EN 771-4	0,4	0,58

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X****Performances**

Characteristic tension load  
Displacement under tension load

**Annex C 1**

**Table C3: Plate stiffness**

Anchor type	Diameter of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
R-TFIX-8S, R-TFIX-8S-X	60	2,04	0,6

**Table C4: Point thermal transmittance**

Anchor type	Insulation thickness $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]
R-TFIX-8S, R-TFIX-8S-X Surface assembly	60 – 420	0,002
R-TFIX-8S, R-TFIX-8S-X Countersunk assembly	60 – 100	0,001
R-TFIX-8S, R-TFIX-8S-X Countersunk assembly	120 – 420	0,002

**RAWLPLUG Insulation System R-TFIX-8S, R-TFIX-8S-X****Performances**

Plate stiffness

Point thermal transmittance

**Annex C 2**