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for Construction Prague**

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## European Technical Assessment

## ETA 18/1101 of 07/02/2019

(English language translation, the original version in Czech language)

**Technical Assessment Body issuing the  
ETA**

Technical and Test Institute  
for Construction Prague

**Trade name of the construction product**

SPIT PTH-SX

**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**

SPIT SAS  
150 ROUTE DE LYON  
26501 BOURG LES VALENCE CEDEX  
FRANCE

**Manufacturing plant(s)**

SPIT SAS  
150 ROUTE DE LYON  
26501 BOURG LES VALENCE CEDEX  
FRANCE

**This European Technical Assessment  
contains**

15 pages including 13 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

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## 1. Technical description of the product

The anchors SPIT PTH-SX consist of a plastic sleeve with a plate and an accompanying specific expansion plastic screw for fixing for thermal insulation system (ETICS).

The plastic sleeve of anchor SPIT PTH-SX is made of polypropylene and an accompanying specific expansion screw is made of reinforced polyamide.

The anchors SPIT PTH-SX for a surface assembly may additionally be combined with assembling tools MPS and with the additive anchor plates Ø90, IT PTH 100 and IT PTH 140, which are shown in Annex A 6.

The countersunk assembly is carried out with countersunk tools ZP and or with assembling tools MPS, ZPR with Insulation covers IZ which are shown in Annex A 5.

The installed anchor SPIT PTH-SX is shown 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 07.02.2019

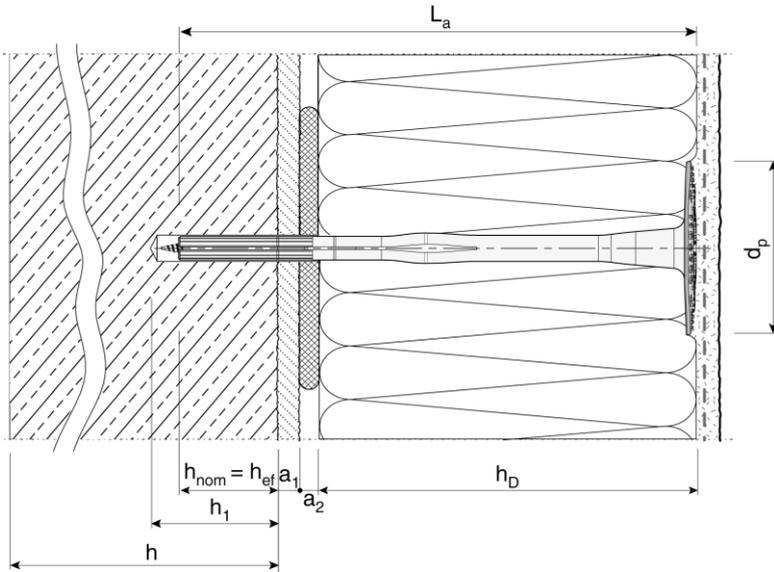
By

**Ing. Mária Schaan**

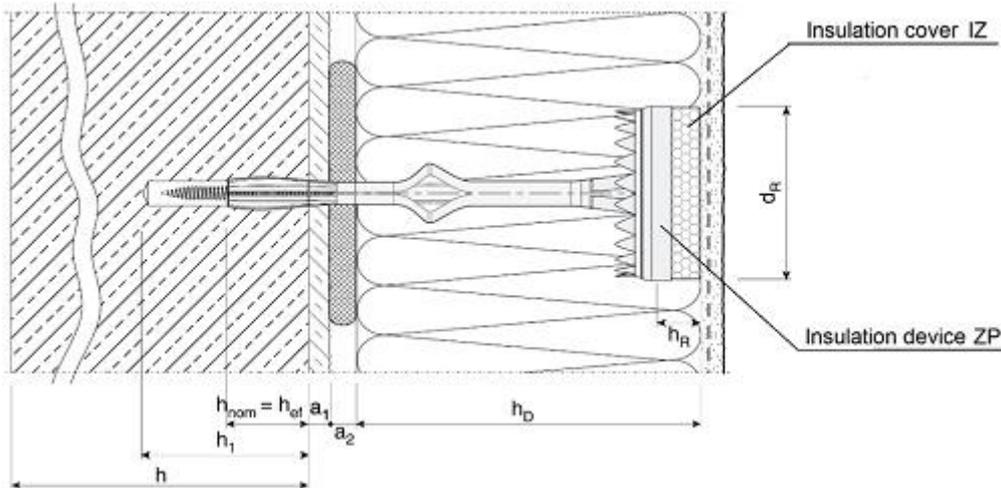
Head of the Technical Assessment Body

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

### Surface assembly for fixing of ETICS in categories A, B, C and D



### Countersunk assembly for fixing of ETICS with ZP and MPS in categories A, B, C and D



- $h_{nom}$  = overall plastic anchor embedment depth in the base material
- $h_{ef}$  = effective anchorage depth
- $h_{1p}$  = drill hole depth – surface assembly
- $h_{1Z}$  = drill hole depth – countersunk assembly
- $h$  = thickness of base material
- $h_D$  = thickness of insulation material

- $h_R$  = thickness of insulation cover
- $a_1$  = thickness of equalization layer or non-load bearing coating
- $a_2$  = thickness of compound and toleration of thickness of equalization layer or non-load bearing coating
- $d_p$  = diameter of plate
- $h_R$  = diameter of insulation cover
- $L_a$  = total length of the anchor

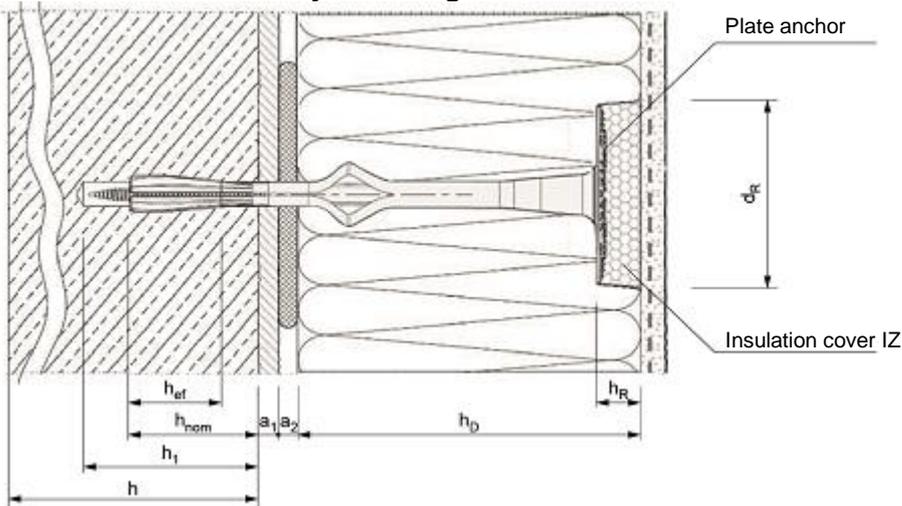
Determination of total length of the anchor  
 $L_a \geq h_D + \min. h_{nom} + \max. a_1 + \max. a_2$

**SPIT PTH-SX**

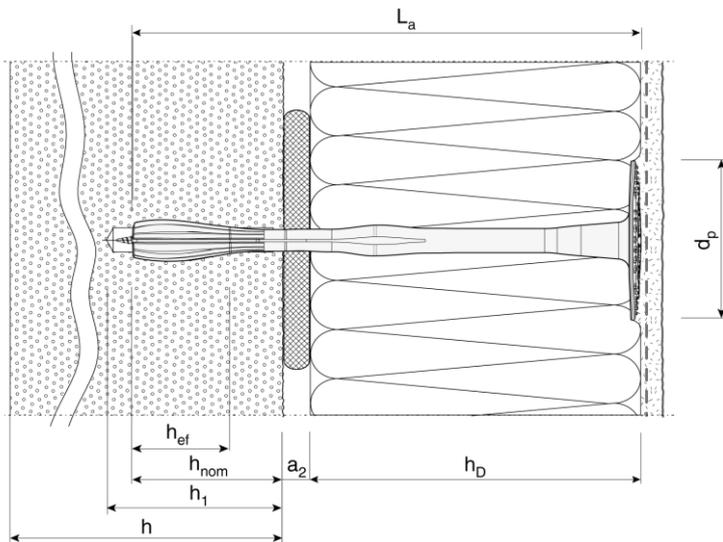
**Product description**  
 Installed conditions

**Annex A 1**

**Countersunk assembly for fixing of ETICS with ZPS and ZPR in categories A, B, C and D**



**Surface assembly for fixing of ETICS in category E**



- $h_{nom}$  = overall plastic anchor embedment depth in the base material
- $h_{ef}$  = effective anchorage depth
- $h_{1p}$  = drill hole depth – surface assembly
- $h_{1Z}$  = drill hole depth – countersunk assembly
- $h$  = thickness of base material
- $h_D$  = thickness of insulation material

- $h_R$  = thickness of insulation cover
- $a_1$  = thickness of equalization layer or non-load bearing coating
- $a_2$  = thickness of compound and toleration of thickness of equalization layer or non-load bearing coating
- $d_p$  = diameter of plate
- $h_R$  = diameter of insulation cover
- $L_a$  = total length of the anchor

Determination of total length of the anchor

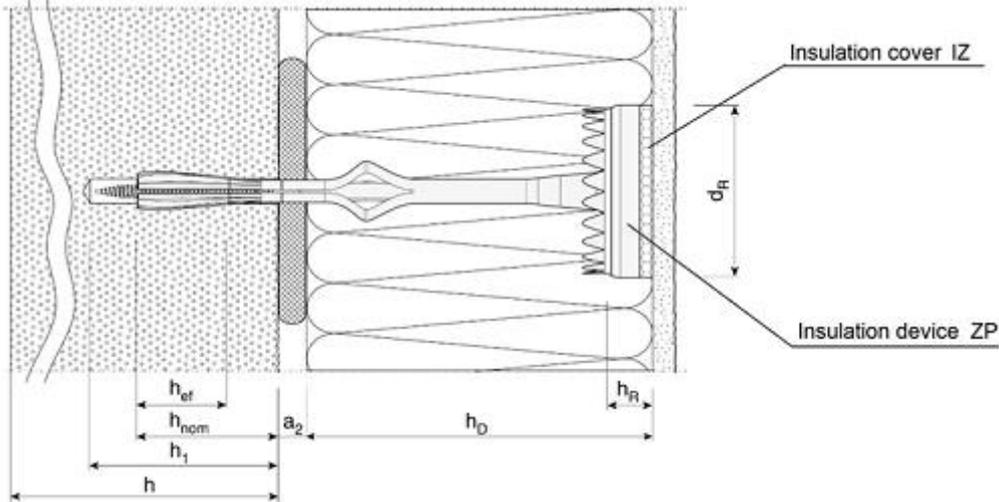
$$L_a \geq h_D + \min. h_{nom} + \max. a_1 + \max. a_2$$

**SPIT PTH-SX**

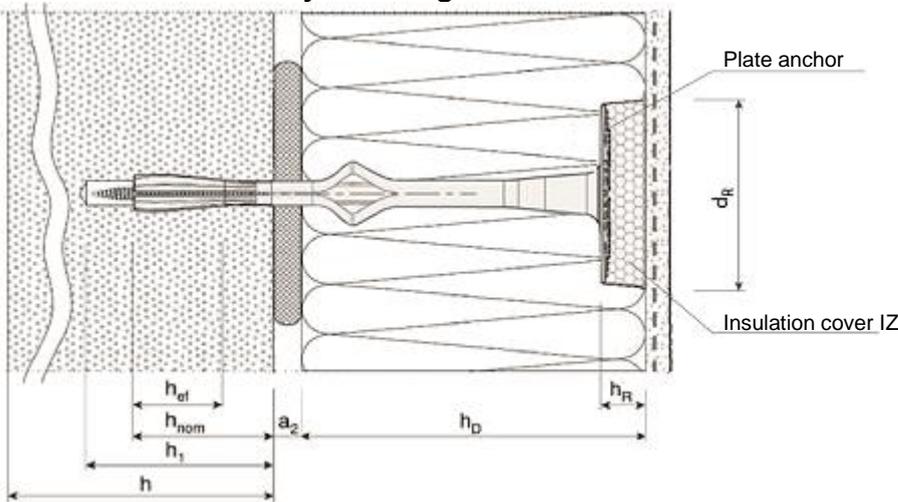
**Product description**  
Installed conditions

**Annex A 2**

**Countersunk assembly for fixing of ETICS with ZP and MPS in category E**



**Countersunk assembly for fixing of ETICS with ZPS or ZPR in category E**



- $h_{nom}$  = overall plastic anchor embedment depth in the base material
- $h_{ef}$  = effective anchorage depth
- $h_{1p}$  = drill hole depth – surface assembly
- $h_{1z}$  = drill hole depth – countersunk assembly
- $h$  = thickness of base material
- $h_D$  = thickness of insulation material

- $h_R$  = thickness of insulation cover
- $a_1$  = thickness of equalization layer or non-load bearing coating
- $a_2$  = thickness of compound and toleration of thickness of equalization layer or non-load bearing coating
- $d_p$  = diameter of plate
- $h_R$  = diameter of insulation cover
- $L_a$  = total length of the anchor

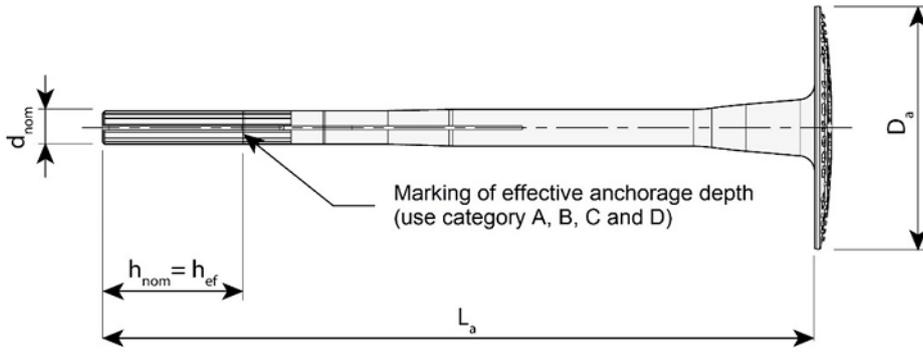
Determination of total length of the anchor  
 $L_a \geq h_D + \min. h_{nom} + \max. a_1 + \max. a_2$

**SPIT PTH-SX**

**Product description**  
 Installed conditions

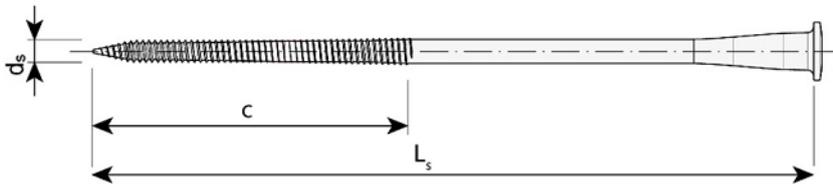
**Annex A 3**

**SPIT PTH-SX**

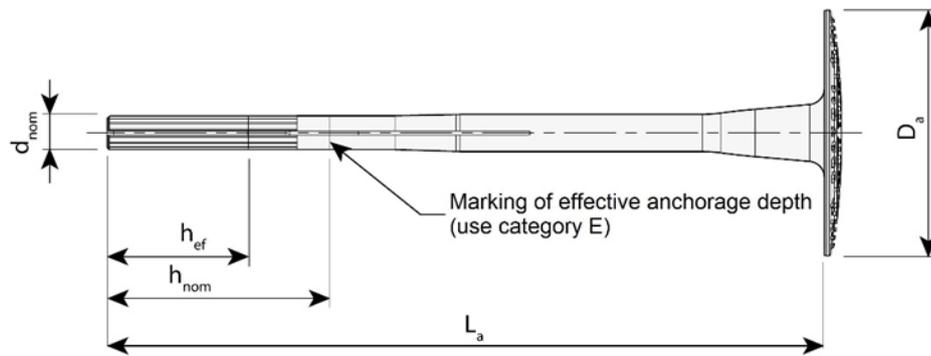


Marking:

- name: BRAVOLL
- anchor type: PTH-SX
- length of anchor ( $L_a$ ) e.g. 175
- CE marking
- use category A, B, C, D

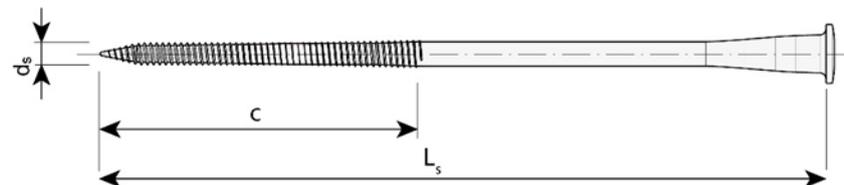


**SPIT PTH-SX**



Marking:

- name: BRAVOLL
- anchor type: PTH-SX
- length of anchor ( $L_a$ ) e.g. 175
- CE marking
- use category E

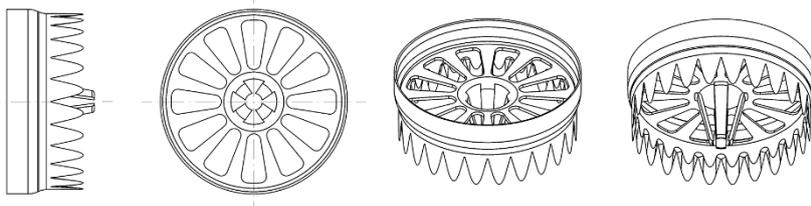


**SPIT PTH-SX**

**Product description**

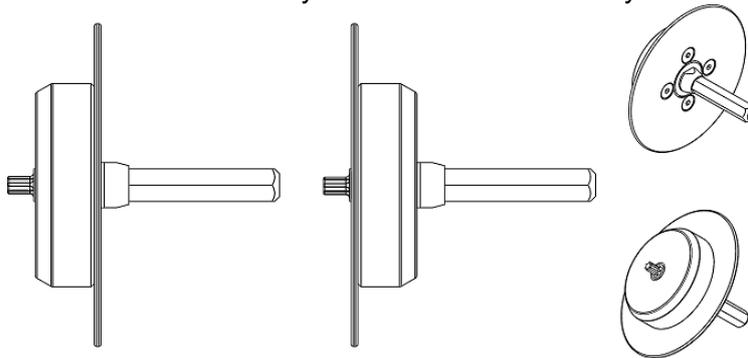
**Annex A 4**

**Assembling tool ZP**



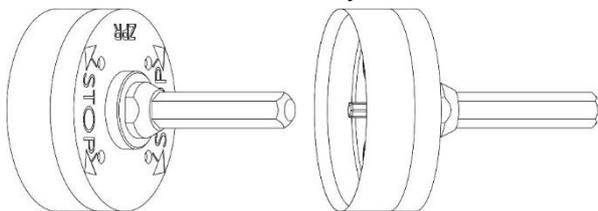
**Assembling tool MPS**

- for countersunk assembly - for surface assembly



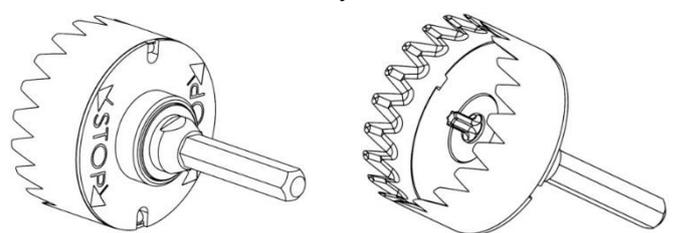
**Assembling tool ZPR**

- for countersunk assembly

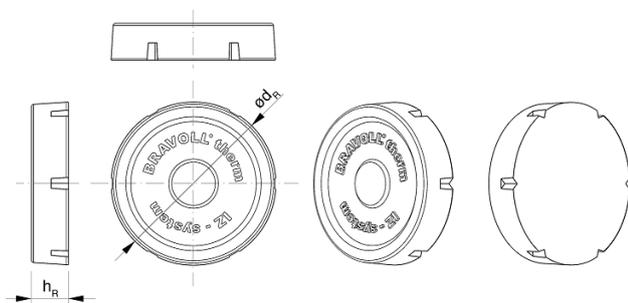


**Assembling tool ZPS**

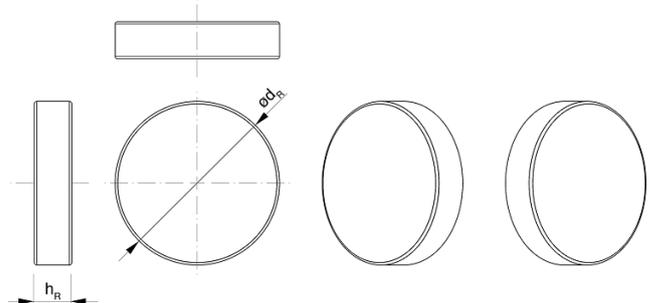
- for countersunk assembly



**Insulation cover IZ for EPS**



**Insulation cover IZ for MW**



**Assembling tool ZP, MPS, ZPR, ZPS and Insulation cover IZ**

**Product description**  
Assembling tool  
Insulation covers

**Annex A 5**

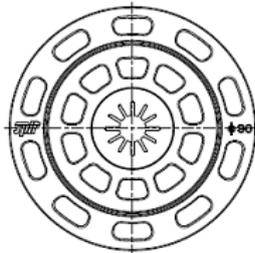
**Table A1: Dimensions [mm]**

Anchor type	Anchor sleeve					Expansion screw $L_n$
	$d_{nom1}$	$h_{ef}$	$h_{nom}$	$h_{nom}$	$L_a$	
Category of material			A, B, C, D	E		
SPIT PTH-SX	8	35	35	55	115 - 255	122 - 262

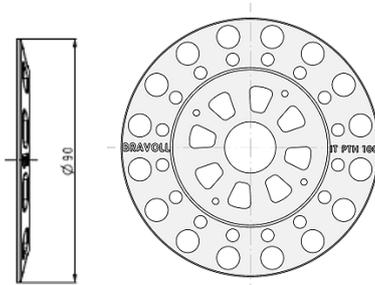
**Table A2: Materials**

Designation	Color	Material
Anchor sleeve SPIT PTH-SX	Natural, yellow	Copolymer polypropylene PP – virgin plastic
Expansion screw SPIT PTH-SX	Natural	Reinforced polyamide
Plate Ø90	Natural	Copolymer polypropylene PP
Plate IT PTH 100 Plate IT PTH 140	Natural	Reinforced polyamide
Assembling tool ZP	Natural	Reinforced polyamide
Plate ZT 100 / ZT 120	Natural	Reinforced polyamide
Insulation cover IZ-EPS	White, grey	Polystyrene EPS 100
Insulation cover IZ-MW	Brown	Mineral wool HD

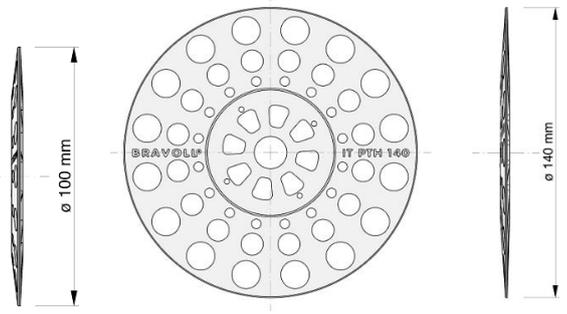
**Plate Ø90**



**Plate IT PTH 100**



**Plate IT PTH 140**



**SPIT PTH-SX**  
**Plate SPIT Ø90 and IT PTH 100 , IT PTH 140**

Dimensions, materials  
 Plate in combination with SPIT PTH-SX for surface assembly

**Annex A 6**

## 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 B3.
- Solid brick (Use category B), according to Annex B3.
- Calcium silicate solid units (Use category B), according to Annex B3.
- Vertical perforated brick (Use category C), according to Annex B3-B4.
- Vertically perforated clay bricks according to ÖNORM B 6124 (Use category C), according to Annex B3-B4.
- Lightweight aggregate concrete hollow blocks LAC (Use category D), according to Annex B3-B4.
- Autoclaved aerated concrete P2-400 (Use category E) according to Annex B3.
- 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:

- The anchors SPIT PTH-SX are used for the 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

**SPIT PTH-SX**

**Intended use**  
Specification

**Annex B 1**

**Installation:**

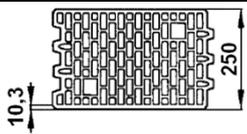
The fitness for use of the anchor can only be assumed if the following conditions of installation are met:

- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the tools.
- Checks before placing the anchor, to ensure that the characteristic values of the base material in which the anchor is to be placed, is identical with the values, which the characteristic loads apply for.
- Observation of the drill method (Drill holes in masonry made of perforated clay bricks, vertically perforated clay bricks and lightweight aggregate concrete hollow blocks (LAC) may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests according to Annex B 5 evaluate the influence of hammer or impact drilling.)
  - SPIT PTH-SX:  $h_{nom} \geq 35 \text{ mm}$  (A, B, C, D)  
 $h_{nom} \geq 55 \text{ mm}$  (E)
- 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.

<b>SPIT PTH-SX</b>	<b>Annex B 2</b>
<b>Intended use</b> Installation	

## Types of base materials

**Table B1: Base materials**

Base material	Use category	Bulk density class [kg/dm <sup>3</sup> ]	Min. compressive strength f <sub>B</sub> [N/mm <sup>2</sup> ]	General remarks	Drilling method
Concrete C12/15 according to EN 206-1	A				Hammer drilling
Concrete C16/20 – C50/60 according to EN 206-1	A				Hammer drilling
Solid clay bricks according to EN 771-1	B	≥ 1,7	20	Vertically perforation up to 15%	Hammer drilling
Calcium silicate solid units according to EN 771-2	B	≥ 1,8	12		Hammer drilling
Vertically perforated clay bricks according to EN 771-1	C	≥ 0,7	10	Vertically perforation more than 15% and less than 55%	Only rotary drilling
Vertically perforated clay bricks according to ÖNORM B 6124	C	≥ 0,9	10		Only rotary drilling
Lightweight concrete hollow block according to EN 771-3	D	≥ 0,5	4	see Annex B4	Only rotary drilling
Lightweight aggregate concrete hollow blocks LAC according to EN 1520	D	≥ 1,2	4		Only rotary drilling
Autoclaved aerated concrete P2-400 according to EN 771-4	E	≥ 0,4	2		Only rotary drilling

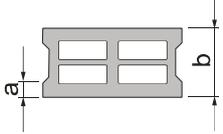
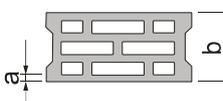
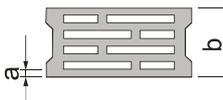
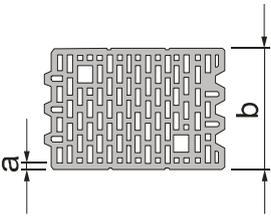
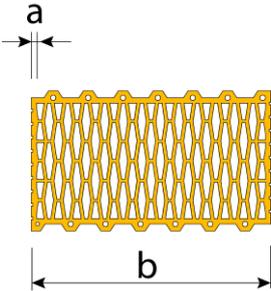
**SPIT PTH-SX**

**Intended use**  
Base materials

**Annex B 3**

## Types of base materials

**Table B2:** Specification

Geometry	Thickness of brick b [mm]	Outer web in longitudinal direction a [mm]	Anchor type
			SPIT PTH-SX
	175	50	●
	240 300	50	●
	175	35	●
	240 300 365	35	●
	240 300 365	30	●
Reference brick ÖNORM B6124 	250	10,3	●
	250	10,1	●

**SPIT PTH-SX**

**Intended use**  
Base materials

**Annex B 4**

## Installation

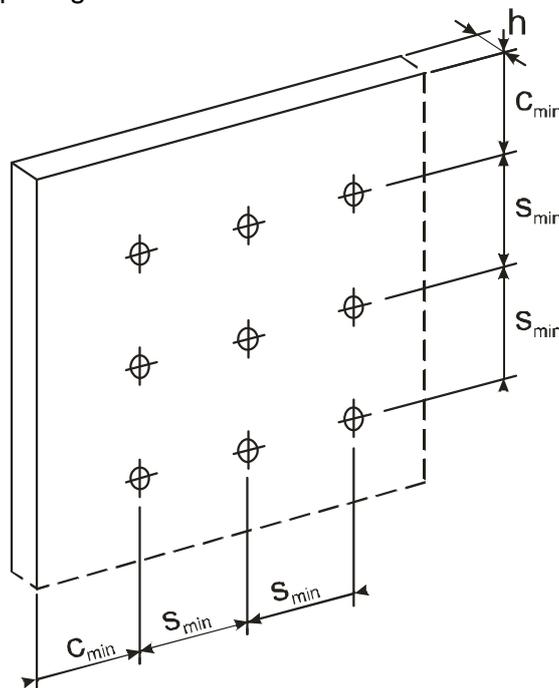
**Table B3: Installation characteristics**

Anchor types		SPIT PTH-SX	
Category of material		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]	8,0	8,0
Max. diameter of drill bit	$d_{cut, max} \leq$ [mm]	8,45	8,45
Depth of drill hole			
- Countersunk assembly	$h_{1Z} \geq$ [mm]	60	80
- Surface assembly	$h_{1P} \geq$ [mm]	45	65
Overall embedment depth	$h_{nom} \geq$ [mm]	35	55

**Table B4: 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]
SPIT PTH-SX	100	100	100

Scheme of distance and spacing.



**SPIT PTH-SX**

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

**Annex B 5**

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

Base material	Use category	Bulk density class	Min. compressive strength $f_c$	SPIT PTH-SX Surface assembly	SPIT PTH-SX Countersunk assembly
		[kg/dm <sup>3</sup> ]	[N/mm <sup>2</sup> ]	[kN]	[kN]
Concrete C 12/15 according to EN 206-1	A			1,2	1,5
Concrete C 16/20 –C50/60 according to EN 206-1	A			1,2	1,5
Solid clay bricks according to EN 771-1	B	≥ 1,7	20	1,2	1,5
Calcium silicate solid units according to EN 771-2	B	≥ 1,8	12	1,2	1,5
Vertically perforated clay bricks according to EN 771-1	C	≥ 0,7	10	0,6	0,9
Vertically perforated clay bricks according to ÖNORM B6124	C	≥ 0,9	10	0,9	0,9
Lightweight concrete hollow block according to EN 771-3	D	≥ 0,5	4	1,2	1,5
Lightweight aggregate concrete hollow blocks LAC according to EN 1520	D	≥ 1,2	4	0,9	1,5
Autoclaved aerated concrete P2-400 e.g. according to EN 771-4	E	≥ 0,4	2	0,5	0,5
Partial safety factor	$\gamma_M =$	2,0*			

\* in the absence of other national regulations

**Table C2: Displacement under tension loads**

Assembly	Surface		Countersunk	
	Tension load $N_{Sk}$ [kN]	Displacements $\Delta\delta_N$ [mm]	Tension load $N_{Sk}$ [kN]	Displacements $\Delta\delta_N$ [mm]
C12/15 EN 206-1	0,25	<b>0,81</b>	0,5	<b>0,92</b>
C16/20 EN 206-1	0,4	<b>0,81</b>	0,5	<b>0,93</b>
C50/60 EN 206-1	0,4	<b>0,81</b>	0,5	<b>0,93</b>
Solid clay bricks EN 771-1	0,4	<b>0,85</b>	0,5	<b>0,90</b>
Calcium silicate solid units EN 771-2	0,4	<b>0,85</b>	0,5	<b>0,94</b>
Vertically perforated clay bricks ÖNORM B6124	0,3	<b>0,62</b>	0,3	<b>0,70</b>
Vertically perforated clay bricks POROTHERM P+D 44 EN 771-1	0,2	<b>0,43</b>	0,3	<b>0,52</b>
Lightweight concrete hollow blocks EN 771-3	0,4	<b>0,83</b>	0,5	<b>0,89</b>
Lightweight aggregate concrete EN 1520 (LAC)	0,3	<b>0,65</b>	0,5	<b>0,73</b>
Autoclaved aerated concrete P2-400 EN 771- 4	0,25	<b>0,38</b>	0,25	<b>0,41</b>

**SPIT PTH-SX****Performances**

Characteristic tension load  
Displacement under tension load

**Annex C 1**

**Table C3: Point thermal transmittance**

Anchor type	Insulation thickness $h_D$ [mm]	Point thermal transmittance $\chi$ [W/K]
SPIT PTH-SX	40 - 210	0*

\*The Point thermal transmittance of the anchor is smaller than 0,0005 W/K and can therefore be neglected in the calculation.

**Table C4: Plate stiffness**

Anchor type	Diameter of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
SPIT PTH-SX	60	1,54	0,7

**SPIT PTH-SX****Performances**

Point thermal transmittance

Plate stiffness

**Annex C 2**