



**Technical and Test Institute
for Construction Prague**
Prosecká 811/76a
190 00 Prague
Czech Republic
eota@tzus.cz



Member of



www.eota.eu

European Technical Assessment

**ETA 17/0222
of 13/04/2017**

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

Trade name of the construction product

Udarna pričvrtnica TS-8

**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

STRELA d.o.o.
Varaždinska ulica, Odv. I/6, Jalkovec
42000 Varaždin HRVATSKA
Republic of Croatia

Manufacturing plant(s)

STRELA d.o.o.

**This European Technical Assessment
contains**

8 pages including 6 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 330335-00-0604

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annex(es) referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body - Technical and Test Institute for Construction Prague. Any partial reproduction has to be identified as such.

1. Technical description of the product

The nailed-in plastic anchors Udarna pričvrsnica TS-8 consist of plastic sleeve with a plate made for fixing the thermal insulation system (ETICS) and an expansion nail. The anchor sleeve is made of polypropylene and the accompanying specific expansion nail is made of polyamide.

The anchor is installed in drilled hole by hammering in the expansion nail.

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 Mechanical resistance and stability (BWR 1)

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

3.2 Safety in case of fire (BWR 2)

EAD 040083-00-04 and ETAG 017 are relevant.

3.3 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C 1

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 Commission¹, 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 13.04.2017

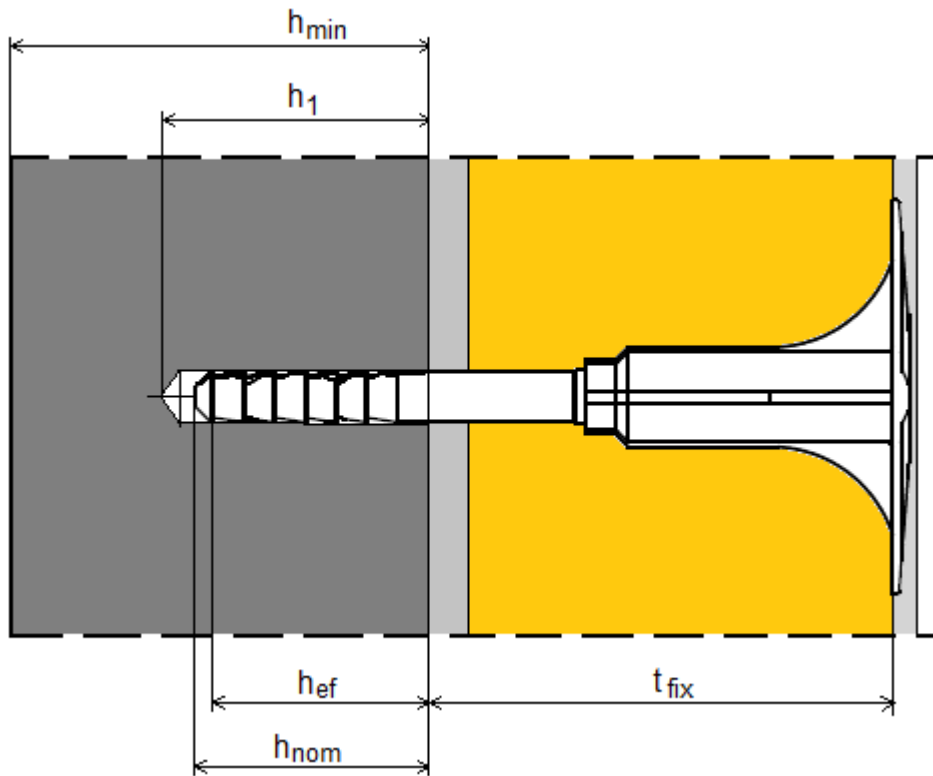
By

Ing. Mária Schaan

Head of the Technical Assessment Body

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

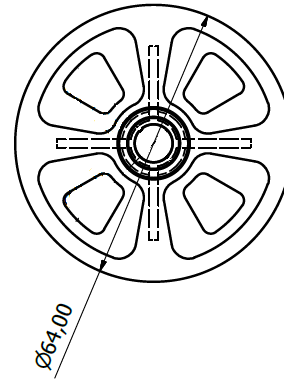
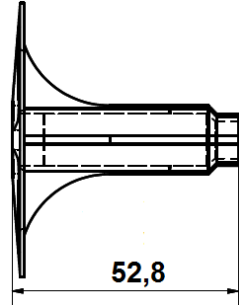
Udarna pričvrsnica TS-8



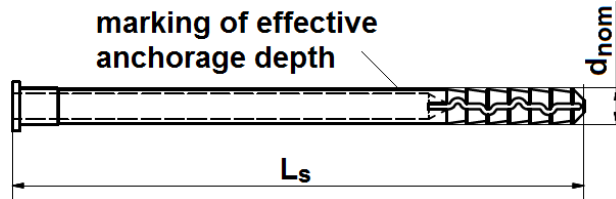
- h_{nom} - overall embedment depth in the base material
- h_{ef} - effective embedment depth
- h_1 - depth of drill hole in base material
- h_{min} - minimum member thickness
- t_{fix} - thickness fixture

Udarna pričvrsnica TS-8	Annex A 1
Product description Installed conditions	

Anchor plate



Anchor expansion sleeve



Marking:

- Identifying mark
- Anchor type
- Length of anchor L_a

Anchor expansion nail

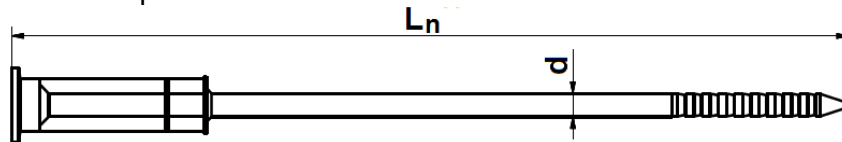


Table A1: Dimensions

Anchor type	Anchor sleeve			Expansion nail		
	h_{ef} [mm]	$\text{Ø}d_{nom}$ [mm]	L_s [mm]	L_a [mm]	L_n [mm]	$\text{Ø}d$ [mm]
TS-8-90	45	8,2	52,5	90	90	5
TS-8-110	45	8,2	72,8	110	110	5
TS-8-140	45	8,2	103,3	140	140	5
TS-8-160	45	8,2	122,8	160	160	5
TS-8-180	45	8,2	142,1	180	180	5
TS-8-200	45	8,2	162,0	200	200	5
TS-8-220	45	8,2	182,0	220	220	5
TS-8-260	45	8,2	221,0	260	260	5

Table A2: Materials

Designation	Color	Material
Anchor sleeve	white (plate), black (expansion sleeve)	polypropylene
Expansion nail	black	polyamide (PA6)

Udarna pričvrsnica TS-8

Product description
Dimensions
Materials

Annex A 2

Specifications of intended use

Anchorage subject to:

- Fixing of profiles for the external thermal insulation composite systems (ETICS).

Base materials

- Reinforced or unreinforced normal weight concrete (Use category A), according to Annex B3.
- Solid clay brick (Use category B), according to Annex B3.
- Vertically perforated clay bricks POROTHERM 17,5 P+D according to ÖNORM B 6124 (Use category C), 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:

- A, B and C.

Design:

- The design of anchorages is carried out in compliance with EAD 330335-00-0604, "Plastic anchors 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.

Udarna pričvrtnica TS-8

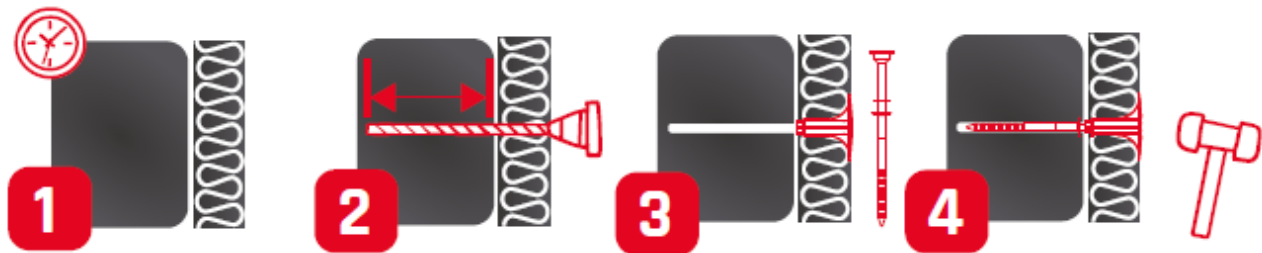
Intended use
Specifications

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 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.)
- Observing the correct drill bit diameter.
- 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.



TS-8 are installed after the adhesive is dry beneath the insulation panel

Is necessary to drill a hole 20 mm deeper than the length of TS-8. Drill bit 9 mm.

Surface of the hat comes in contact with the insulating plate. Tap lightly with a hammer a plastic pin in.

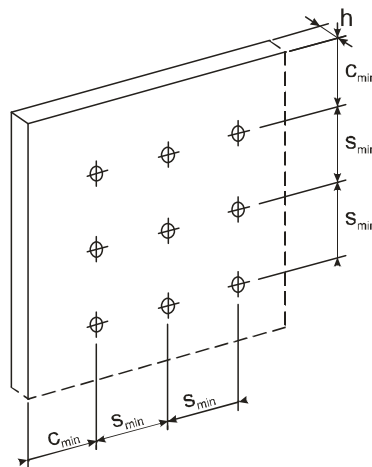
Table B1: Installation Characteristics

Anchor type	Nominal diameter of drill bit d_o [mm]	Cutting diameter of drill bit $d_{cut,max} \leq$ [mm]	Cutting diameter of drill bit $d_{cut,min} \geq$ [mm]	Depth of drill hole $h_1 \geq$ [mm]	Overall embedment depth h_{nom} [mm]
TS-8	9	9,4	9,2	65	45

Table B2: Minimum thickness of base material, edge distance and anchor spacing

Anchor type	Minimum thickness of base material h_{min} [mm]	Minimum spacing s_{min} [mm]	Minimum edge distance c_{min} [mm]
TS-8	100	100	100

Scheme of distance and spacing.



Udarna pričvrsnica TS-8

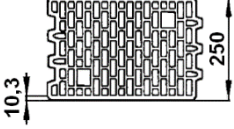
Intended use

Installation characteristics
Edge and axial distances

Annex B 2

Types of base materials

Table B3: Base materials

Base material	Use category	Bulk density [kg/dm ³]	Min. compressive strength f_c [N/mm ²]	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	$\geq 1,7$	20	Vertically perforation up to 15%	Hammer drilling
Vertically perforated clay bricks POROTHERM 17,5 P+D according to ÖNORM B 6124	C	$\geq 0,9$	10		Only rotary drilling

Udarna pričvrsnica TS-8

Intended use
Base materials

Annex B 3

Table C1: Characteristic resistance to tension loads for single anchor

Base material	Use category	Bulk density [kg/dm ³]	Min. compressive strength β [N/mm ²]	TS-8 [kN]
Concrete C 12/15 according to EN 206-1	A			0,3
Concrete C 16/20 –C50/60 according to EN 206-1	A			0,4
Solid clay bricks according to EN 771-1	B	$\geq 1,7$	20	0,4
Vertically perforated clay bricks POROTHERM 17,5 P+D according to ÖNORM B6124	C	$\geq 0,9$	15	0,3
Partial safety factor	γ_M	2,0*		

* in the absence of other national regulations

Table C2: Displacement under tension loads

Base material	Tension load N_{Sk} [kN]	Displacement $\Delta\delta_N$ [mm]
Concrete C12/15 according to EN 206-1	0,1	0,44
Concrete C16/20 – C50/60 according to EN 206-1	0,13	0,44
Solid clay bricks according to EN 771-1	0,13	0,21
Vertically perforated clay bricks POROTHERM 17,5 P+D according to ÖNORM B 6124	0,1	0,35

Table C3: Plate stiffness

Anchor type	Diameter of the anchor plate [mm]	Load resistance of the anchor plate [kN]	Plate stiffness [kN/mm]
TS-8	64	1,42	0,6

Table C4: Point thermal transmittance

Anchor type	Insulation thickness h_D [mm]	Point thermal transmittance χ [W/K]
TS-8	54 - 215	0

The thermal bridge effect of the anchor is smaller than 0,0005 W/K and can therefore be neglected in the calculation.

Udarna pričvrsnica TS-8

Performances

Characteristic tension load and displacement under tension load
Point thermal transmittance and plate stiffness

Annex C 1