INSTYTUT TECHNIKI BUDOWLANEJ

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

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European Technical Assessment

ETA-21/1079 of 30/09/2024

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	TIF insulation fastener
Product family to which the construction product belongs	Powder-actuated fastener for the fixing of ETICS in concrete
Manufacturer	Trutek Fasteners Polska Sp. z o.o. ul. Wojska Polskiego 3 39-300 Mielec, Poland e-mail: info@trutek.com.pl www.trutek.com.pl www.trutekfasteners.eu
Manufacturing plants	Manufacturing plants No. 8 and No. 9
This European Technical Assessment contains	14 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	European Assessment Document (EAD) 330965-01-0601 "Powder-actuated fastener for the fixing of ETICS in concrete"
This version replaces	ETA-21/1079 issued on 30/12/2021

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 shall be identified as such.

Specific Part

1 Technical description of the product

TIF insulation fastener consist of a plastic part (sleeve with plate) made of high-density polyethylene (PE-HD) and a powder-actuated fastener (nail) made of zinc coated tempered carbon steel, which is driven into the concrete using a powder-actuated fastening tool with a gas cartridge as propelling charge.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in Section 3 are only valid if the fastener 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 fastener of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for 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 Performance of the product

3.1.1 Mechanical resistance and stability (BWR 4)

Essential characteristic	Performance
Resistance to pull-out failure of the nail	Annex C1
Resistance to failure of the plastic part	Annex C1
Minimum edge distance and spacing	Annex C1
Displacement	Annex C2
Plate stiffness	Annex C2

3.1.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	Annex C2

3.2 Methods used for the assessment

The assessment has been made in accordance with EAD 330965-01-0601.

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

According to Decision 97/463/EC of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) No 305/2011).

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 30/09/2024 by Instytut Techniki Budowlanej

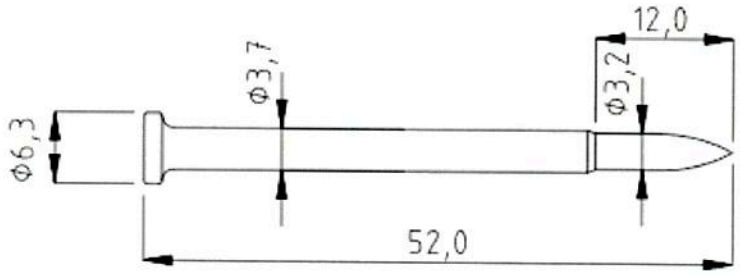
Anna Panek, MSc

Deputy Director of ITB

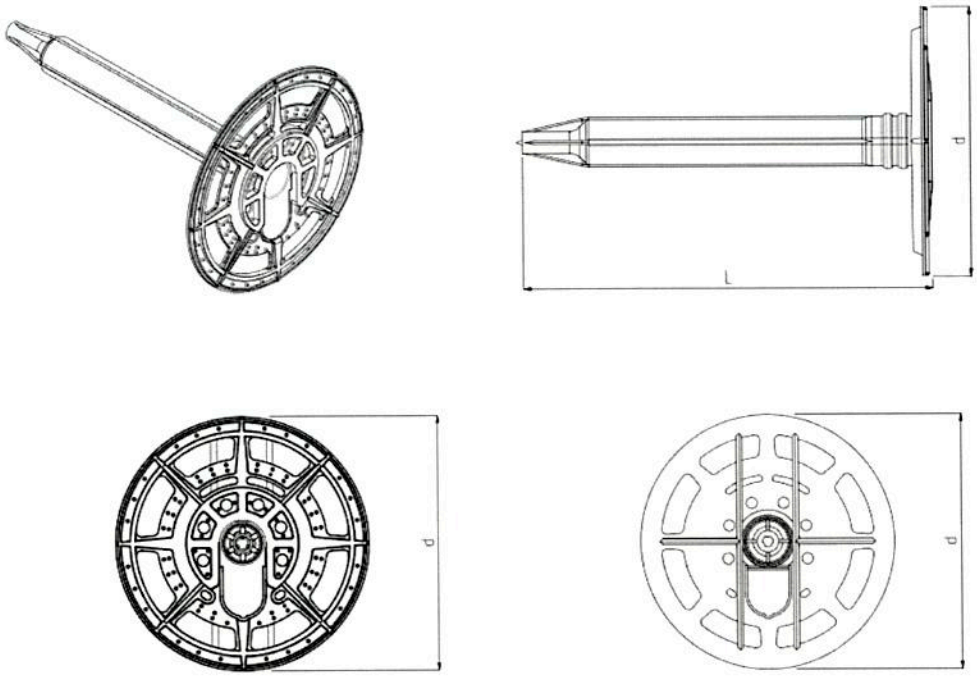
Table A1: Dimensions

Dimensions		Fastener size	
		TIF60	TIF90
Sleeve			
Length	L [mm]	75	80
		95	100
		115	120
		135	140
		145	150
		155	160
		175	180
		195	200
Diameter of plate	d [mm]	60	90
Powder-actuated fastener (nail)			
Diameter	d [mm]	3,2 / 3,7	3,2 / 3,7
Length	L [mm]	52	52

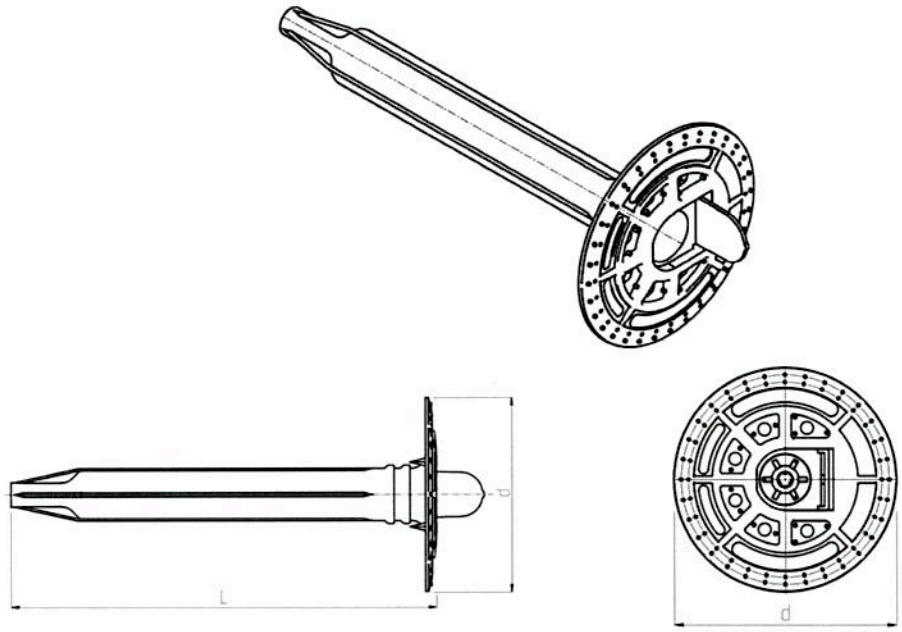
TIF insulation fastener – powder-actuated fastener (nail)



TIF90 – plastic sleeve with plate



TIF60 – plastic sleeve with plate

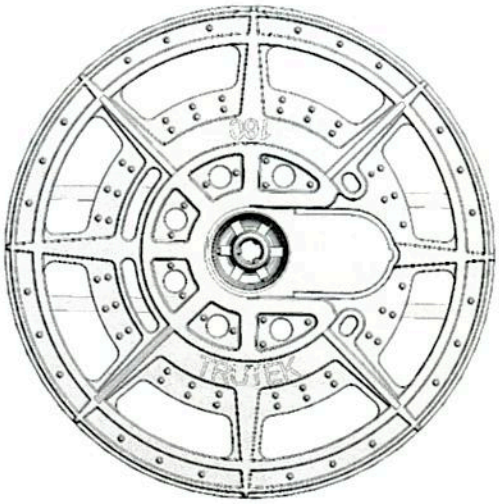


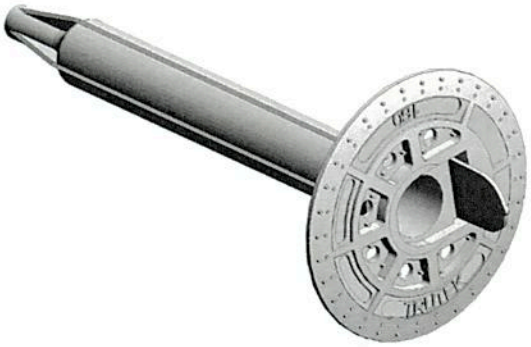
TIF insulation fastener	**Annex A1** of European Technical Assessment ETA-21/1079
Product description Dimensions	

Marking

TIF60

TIF90





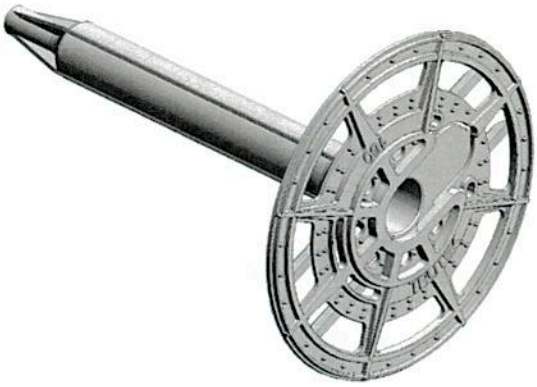


Table A2: Materials

Element	Material		Coating
	TIF90	TIF60	
Sleeve with plate	Polyethylene (PE-HD) Colour: black	Polyethylene (PE-HD) Colour: white / natural	-
Nail	Zinc coated tempered carboon steel with core hardness of 56 - 59 HRC		Non-electrolytically applied zinc flake coating ≥ 5 µm according to EN ISO 10683

Specification of intended use

Anchorages subject to:

- Multiple fixings of external thermal insulation composite systems (ETICS).
- The fastener may only be used for transmission of wind suction loads and shall not be used for the transmission of dead load of the external thermal insulation composite system (ETICS).

Base material:

- Reinforced or unreinforced normal weight concrete of strength classes C12/15 - C35/45 according to EN 206-1.
- The concrete can either be uncoated (Annex B2) or coated (Annex B3).
- Coated concrete with plastering mortar (GP) of compressive strength category CS III according to EN 998-1.

Temperature range:

- -20°C to +60°C.

Use conditions (environmental conditions):

- Structures subject to dry conditions.
- Structures subject to external atmospheric exposure.

Design:

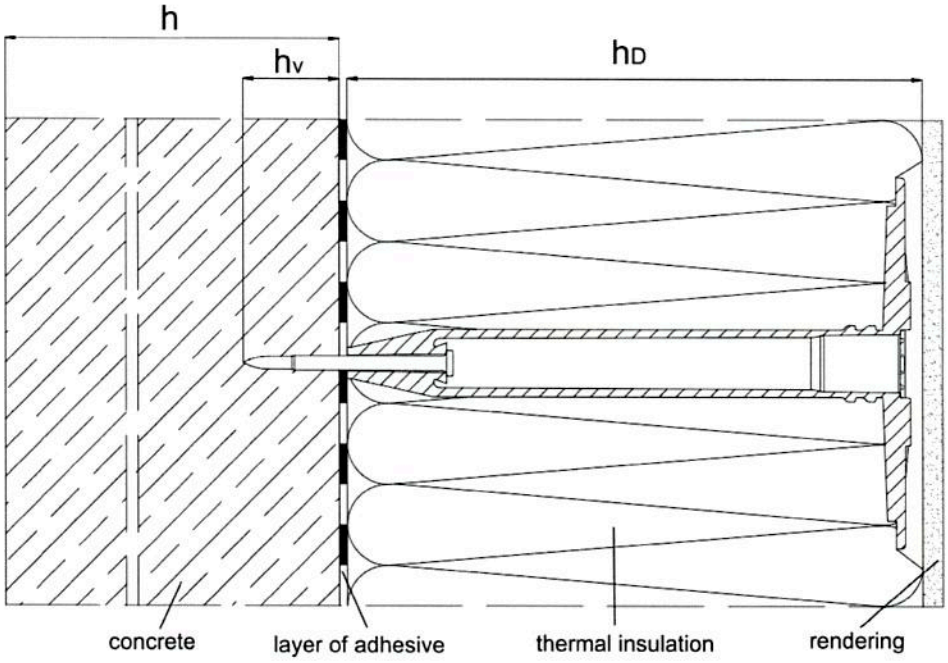
- The anchorages are designed under the responsibility of an engineer experienced in anchorages.
- Design: $N_{Ed} \leq N_{Rd}$
  with:
  N_{Ed} - design value of wind action
  N_{Rd} - design value of resistance of the fixing element,
  either controlled by pullout of the fastener ($N_{Rd,p} = N_{Rk,p} / \gamma_M$) or
  failure of the plastic part ($N_{Rd,Pl} = N_{Rk,Pl} / \gamma_{MPl}$)
  $N_{Rk,p}$ and $N_{Rk,Pl}$ see Annex C1
  $N_{Rd} = \min (N_{Rd,p}; N_{Rd,Pl})$
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the fixing elements is indicated on the design drawings.

Installation of fasteners:

- The installations is only carried out according to the manufacturer's instructions according to Annex B3.
- The installations is carried out by the TGT IS200 gas fastening tool with a TGC-165S gas cartridges.
- Fastener installation is carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- The minimum setting temperature of the fastener is +5°C.
- Exposure to UV due to solar radiation of the fastener not protected by rendering ≤ 6 weeks.

TIF insulation fastener	**Annex B1** of European Technical Assessment ETA-21/1079
Intended use Specifications	

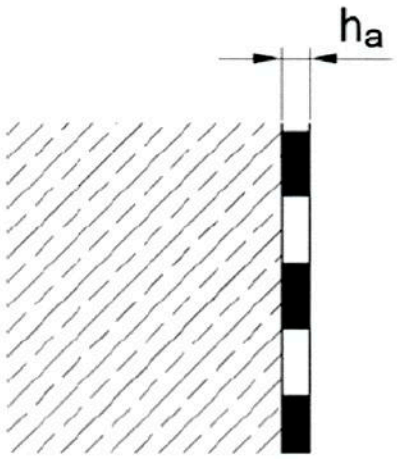
Installed condition in uncoated concrete



h – thickness of member

h_D – thickness of insulation material

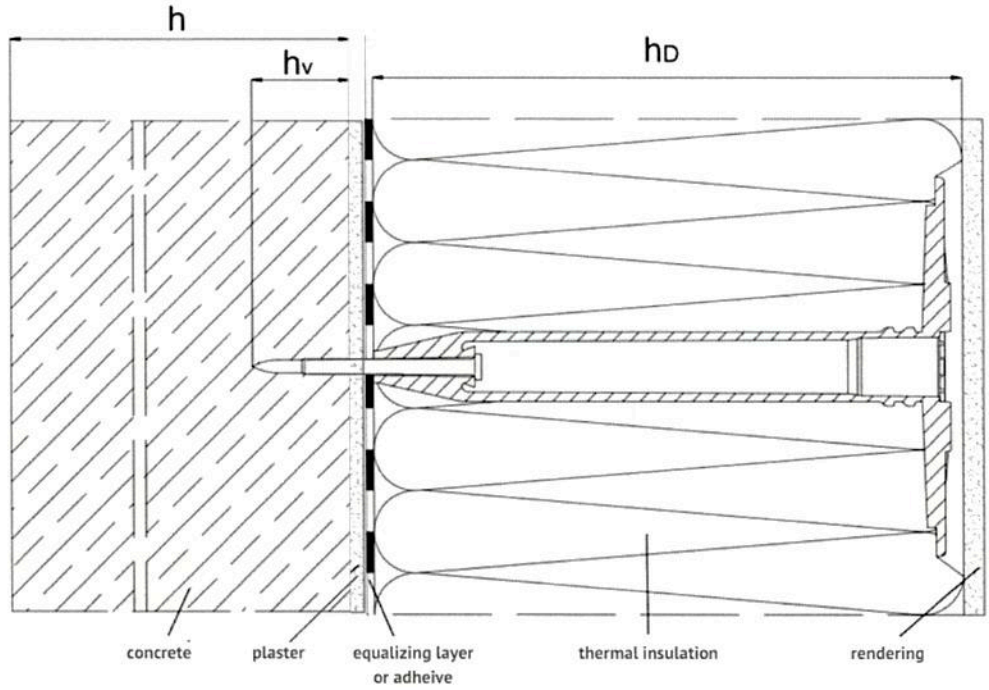
$h_v = h_{ef}$ – anchorage depth in concrete; $\mathbf{h_{ef} \geq 25\ mm}$



h_a – thickness of equalizing layer or adhesive; $\mathbf{h_a \leq 20\ mm}$

TIF insulation fastener	**Annex B2** of European Technical Assessment ETA-21/1079
Intended use Installation parameters – uncoated concrete	

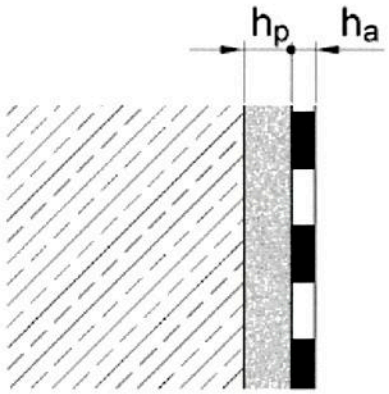
Installed condition in coated concrete



h – thickness of member

h_D – thickness of insulation material

$h_v = h_{ef}$ – anchorage depth in concrete; **$h_{ef} \geq 20$ mm**



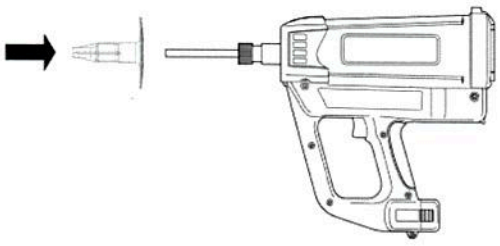
$h_p \leq 15$ mm and $(h_p + h_a) \leq 25$ mm

h_p – thickness of plaster

h_a – thickness of equalizing layer or adhesive

TIF insulation fastener	**Annex B3** of European Technical Assessment ETA-21/1079
Intended use Installation parameters – coated concrete	

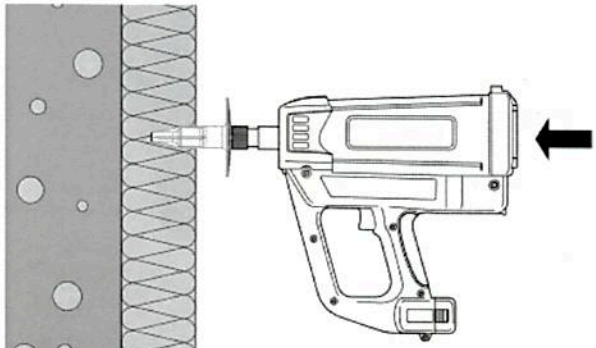
1)



Place the fastener on the guide of the fastening tool.

The fastening tool has to be properly prepared for operation, i.e. it has to be equipped with a charged battery and an appropriate gas cartridge.

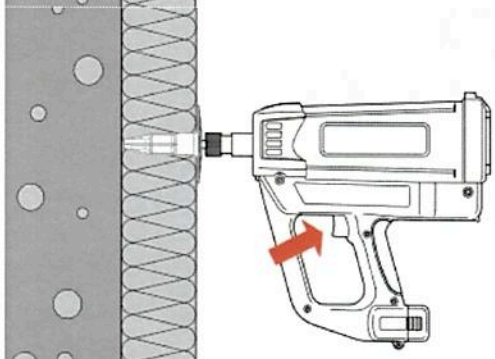
2)



Firmly press the fastening tool with the fastener placed on the guide, piercing the thermal insulation layer / board.

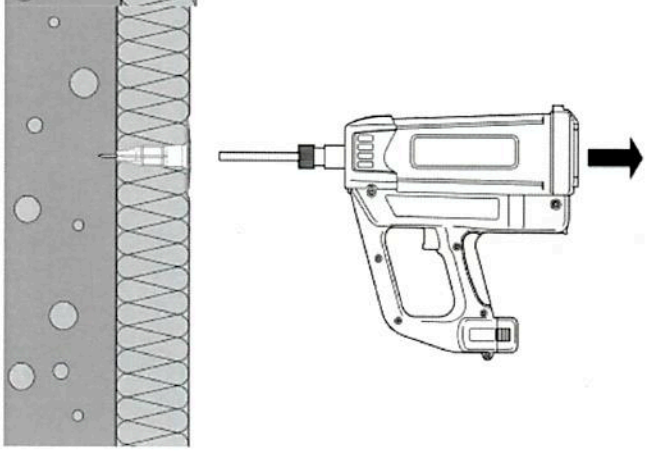
The fastener has to be inserted perpendicular to the substrate surface and fully sink into insulation material.

3)



Press the trigger when the fastening tool is fully pressed (to the stop).

4)



After fixing, withdraw the fastening tool and close the flap closing the inner space of the fastener.

The plate of properly fixed fastener should slightly sink into the insulation material.

TIF insulation fastener	**Annex B4** of European Technical Assessment ETA-21/1079
Intended use Installation instructions	

Fastening tool – TGT IS200

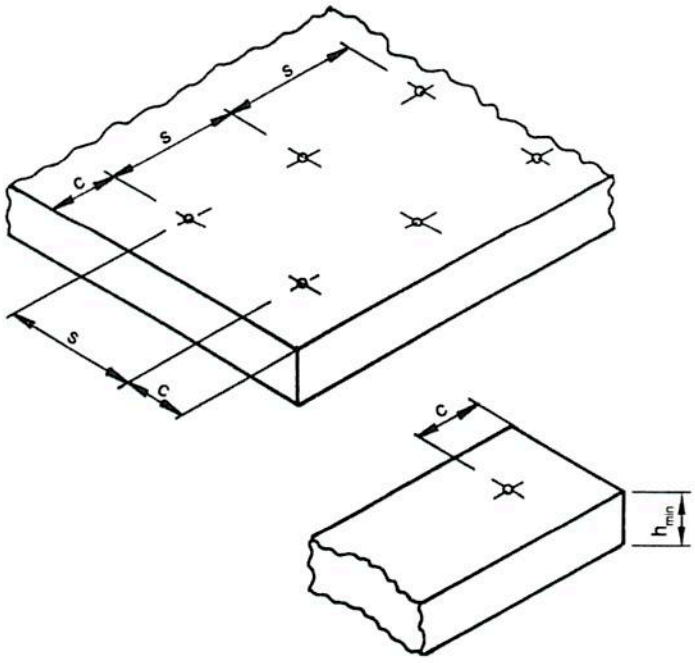
Gas cartrige – TGC-165S

TIF insulation fastener	**Annex B5** of European Technical Assessment ETA-21/1079
Intended use Tools	

Table C1. Characteristic resistance, spacing and edge distance

TIF90, TIF60		
Resistance to pull-out failure of the nail in uncoated concrete	$N_{Rk,p}$ [kN]	0,75
Resistance to pull-out failure of the nail in coated concrete [1)]	$N_{Rk,p}$ [kN]	0,50
Partial safety factor – fastener pull-out [2)]	γ_M	2,0
Resistance to failure of the plastic part	$N_{Rk,Pl}$ [kN]	0,80
Partial safety factor – plastic part [2)]	$\gamma_{M,Pl}$	1,3
Minimum spacing	s_{min} [mm]	200
Minimum edge distance	c_{min} [mm]	100
Minimum thickness of concrete member	h_{min} [mm]	100

[1)] applicable for concrete coated with plastering mortar (GP) of compressive strength category CS III according to EN 998-1
[2)] in the absence of other national regulations



TIF insulation fastener	Annex C1 of European Technical Assessment ETA-21/1079
Performances Characteristic resistance, spacing and edge distance	

Table C2. Displacement

TIF90, TIF60		
Tension load	N [kN]	0,25
Displacement	δ_0 [mm]	0,90

Table C3. Plate stiffness

Fastener type	Diameter of the plate [mm]	Load resistance of the plate, [kN]	Plate stiffness c, [kN/mm]
TIF90	90	1,7	0,1
TIF60	60	1,7	0,3

Table C4. Point thermal transmittance

Fastener type	Insulation thickness h_D [mm]	Point thermal transmittance χ [W/K]
TIF90	100	0,0004
	150	0,0003
	200	0,0003
TIF60	100	0,0003
	150	0,0003
	200	0,0002

TIF insulation fastener	Annex C2 of European Technical Assessment ETA-21/1079
Performances Displacement, plate stiffness, point thermal transmittance	