Deutsches Institut für Bautechnik

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Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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

European Technical Assessment ETA-21/0840 of 12 October 2021

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	eTics Twister
Product family to which the construction product belongs	Screwed-in plastic anchor for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	Torggler s.r.l. Via Prati Nuovi 9 39020 MARLENGO (BZ) - Alto Adige ITALIEN
Manufacturing plant	Torggler
This European Technical Assessment contains	12 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	EAD 330196-01-0604, Edition 10/2017

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Specific Part

1 Technical description of the product

The screwed-in anchor eTics Twister consist of an anchor sleeve and a screw plate in different colours, both made of polyamide (virgin material) and an accompanying specific screw of galvanised steel.

The product description is given in Annex A.

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 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 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 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic load bearing capacity - Characteristic resistance under tension load - Minimum edge distance and spacing	 See Annex C1 See Annex B2
Displacements	See Annex C2
Plate stiffness	No performance assessed

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	See Annex C2

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

In accordance with EAD No. 330196-01-0604, the applicable European legal act is: [97/463/EC].

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 12 October 2021 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
E. Aksünger

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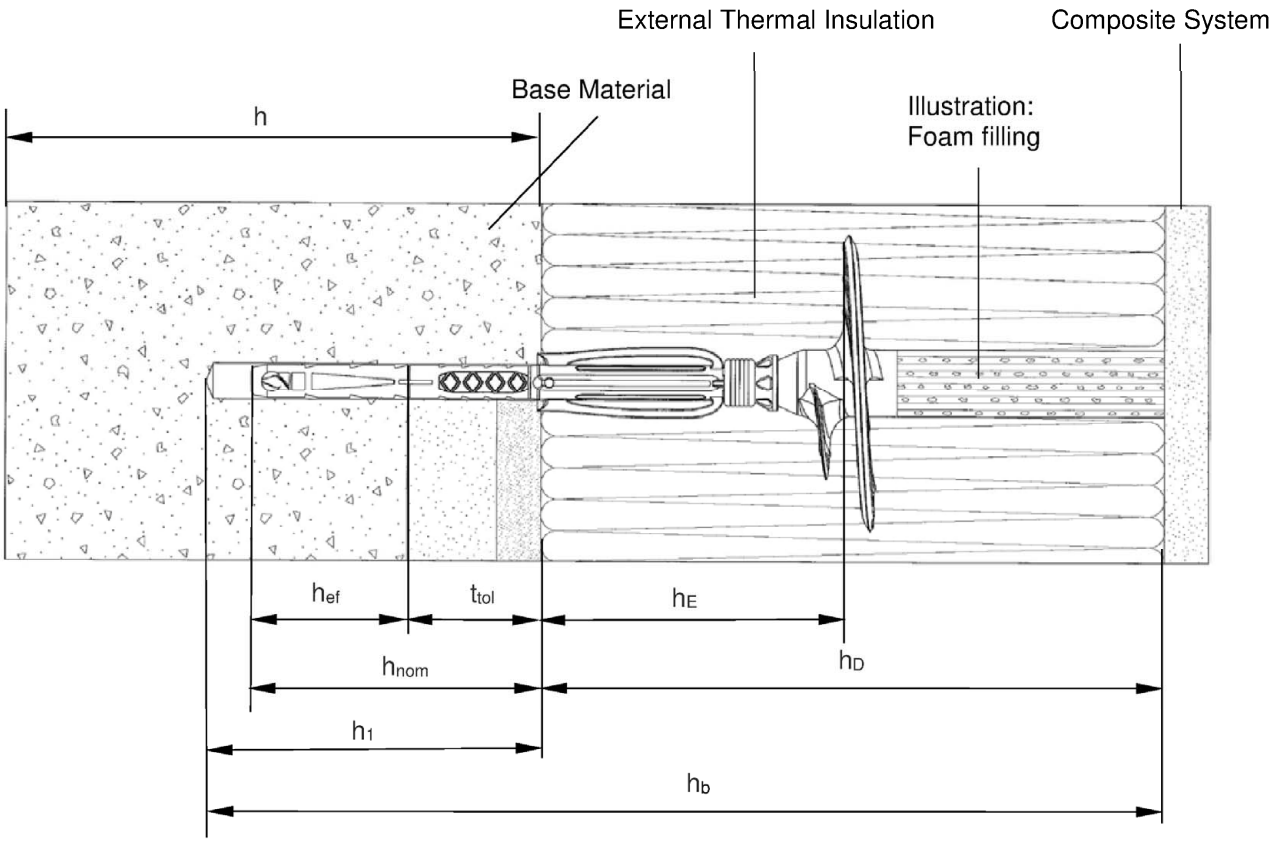
Installed anchor: eTics Twister



Intended use

- Fixing of external thermal insulation composite systems (ETICS) in concrete and masonry
- Fixing of external thermal insulation composite systems (ETICS) in autoclaved aerated concrete and lightweight aggregated concrete

Legend

h_{nom} = Overall plastic anchor embedment depth in the base material with non-load bearing coating (t_{tol})

h_1 = Depth of drilled hole to deepest point in the base material

h = Thickness of base material (wall)

h_D = Thickness of insulation material

t_{tol} = Thickness of equalizing layer and / or non–load bearing coating

h_E = Embedment depth

h_b = Total bore hole depth

h_{ef} = Effective anchor embedment depth in the base material

Figures not to scale.

eTics Twister	**Annex A1**
Product description Installed anchor	

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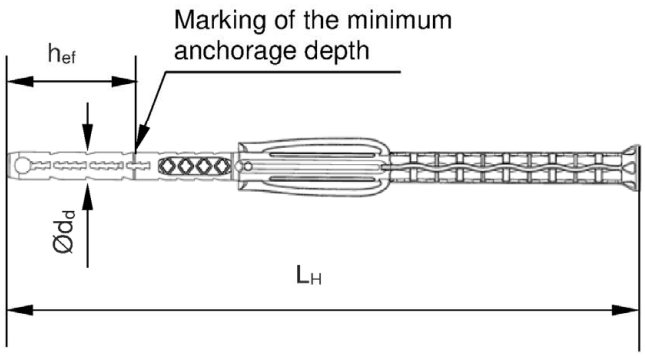
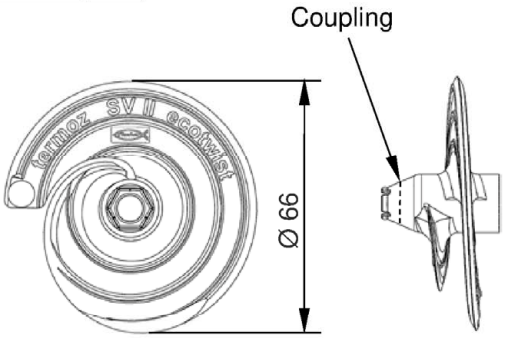
Parts: eTics Twister

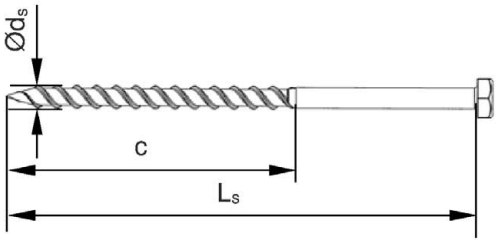
Anchor sleeve



Screw plate

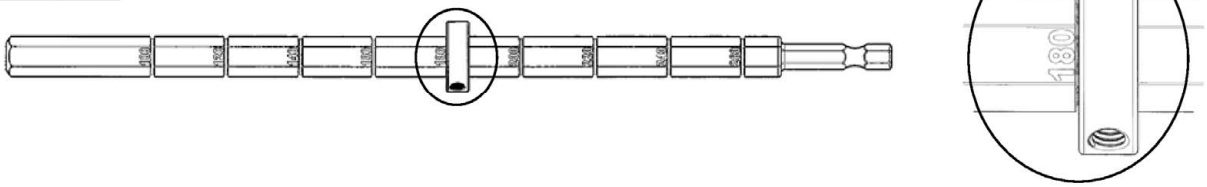


Special screw

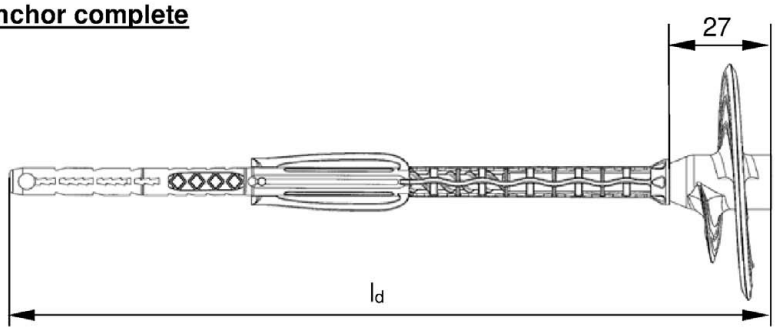


Adjustment of the ring depends of the insulation material thickness, e.g. h_D = 180 mm
→adjust value 180 at the setting tool

Setting tool



Anchor complete



Figures not to scale.

eTics Twister	**Annex A2**
Product description Anchor type and parts	

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Table A3.1: Dimensions

Anchor type	Anchor sleeve					Special screw		
eTics Twister	Ø d_d	h_{ef} [1)]	h_E [1)]	l_d	L_H	Ø d_s	L_s	c
	[mm]							
t_{tol} 0-10 mm	8	35	70	162	135	6	100	74
t_{tol} 0-30 mm				202	175		120	
t_{tol} 30-60 mm				232	205		150	

[1)] see Annex A1

Table A3.2: Marking on the plate

	Marking
Anchor type	termoz SV II ecotwist
Works symbol	

Table A3.3: Marking on the anchor sleeve

	Marking
eTics Twister t_{tol} 0-10 mm	t_{tol} 0-10
eTics Twister t_{tol} 0-30 mm	t_{tol} 0-30
eTics Twister t_{tol} 30-60 mm	t_{tol} 30-60

Table A3.4: Material

Designation	Material
Anchor sleeve	PA6 (virgin material), colour: grey
Screw plate	PA6 (virgin material) GF, colour: grey, yellow, red, orange, green, blue
Special screw	Galvanized steel gvz with Zn5/Ag or Zn5/An in accordance with EN ISO 4042:2018

eTics Twister	**Annex A3**
Product description Anchor types, marking on the anchor plate/sleeve, dimensions and material	

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Specifications of intended use

Anchorages subject to:

- 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 external thermal insulation composite system (ETICS).

Base materials:

- Compacted normal weight concrete without fibres (base material group A), according to Annex C1
- Solid masonry (base material group B), according to Annex C1
- Hollow or perforated masonry (base material group C), according to Annex C1
- Lightweight aggregate concrete (base material group D), according to Annex C1
- Autoclaved aerated concrete (base material group E), according to Annex C1
- For other base materials of the base material groups A, B, C, D and E the characteristic resistance of the anchor may be determined by job site tests acc. to EOTA Technical Report TR 051 Edition April 2018.

Temperature Range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C)

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors γ_M = 2,0 and γ_F = 1,5 in absence of other national regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchors is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of ETICS.

Installation:

- Drill method according to Annex C1
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on the site
- Installation temperature from 0°C to +40°C
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks

eTics Twister	**Annex B1**
Intended use Specifications	

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Table B2.1: Installation parameters

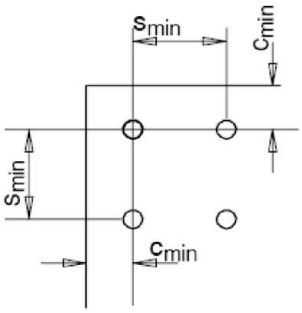
				eTics Twister
Drill hole diameter	d_0	=	[mm]	8
Cutting diameter of drill bit	d_{cut}	≤		8,45
Depth of drill hole to deepest point	h_1	≥		55/75/105
Total bore hole depth **at eTics Twister** t_{tol} 0-10 mm	h_b	≥		h_D + 55
Total bore hole depth **at eTics Twister** t_{tol} 0-30 mm				h_D + 75
Total bore hole depth **at eTics Twister** t_{tol} 30-60 mm				h_D + 105
Overall plastic anchor embedment depth in the base material (see Annex A1) **at eTics Twister** t_{tol} 0-10 mm	h_{nom}	=		45
Overall plastic anchor embedment depth in the base material (see Annex A1) **at eTics Twister** t_{tol} 0-30 mm				65
Overall plastic anchor embedment depth in the base material (see Annex A1) **at eTics Twister** t_{tol} 30-60 mm				95

Table B2.2: Minimum distances and spacings

				eTics Twister
Minimum thickness of member	h_{min}	=	[mm]	100[1)]
Minimum spacing	s_{min}			100
Minimum edge distance	c_{min}			100

[1)] For weather resistant external wall panels: h_{min}=40 mm

Scheme of distances and spacing



eTics Twister	**Annex B2**
Intended use Installation parameters Minimum thickness of member, distances and spacing	

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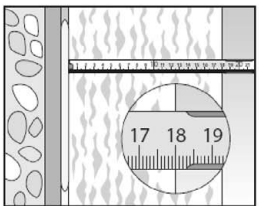
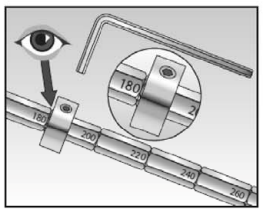
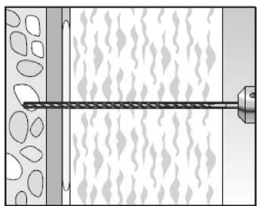
Installation instructions



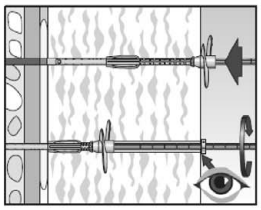
1. Measure insulation thickness h_D (example: 18 cm = 180 mm).



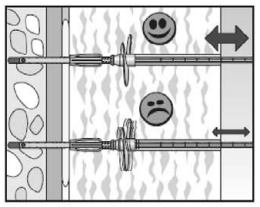
2. Adjust the setting tool ring corresponding to the insulation material thickness h_D in mm.
Number is legible.
Additionally to the setting tool ring a thin plastic plate (maximum 1 mm thickness) can be used as a stop unit for easier mounting.



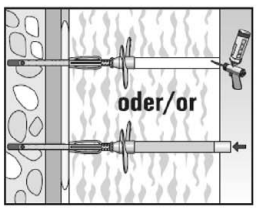
3. Drill bore hole. Total drill hole depth must be at
t_{tol} 0-10 mm→ h_D + 55 mm
t_{tol} 0-30 mm→ h_D + 75 mm
t_{tol} 30-60 mm→ h_D + 105 mm.
Note: bore holes in Hlz and autoclaved aerated concrete only by rotary drilling



4. Press the anchor with the screw plate tight against the surface of the insulation material, then start screwing-in the anchor. Setting is finished when the surface of the ring is flush with the surface of the insulation material.



5. When step 4 is completed, press the adjustment tool tight against the installed anchor.
If there is no axial movement of the anchor, remove the setting tool. In case of axial movement, a new anchor has to be set in a new drill hole.



5. The hole in the insulation material must be filled with a suitable foam (illustrated in Annex A1) or must be closed with an appropriate insulation cylinder.

eTics Twister	**Annex B3**
Intended use Installation instructions	

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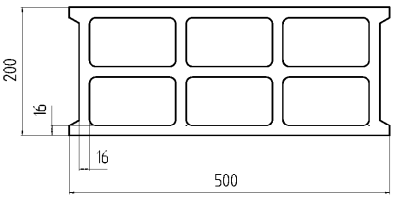
Table C1.1: Characteristic resistance under tension load N_{Rk}

Base material	Group[1)]	Bulk density **ρ** [kg/dm³]	Minimum compress. strength f_b [N/mm²]	Remarks	Drill method[2)]	N_{Rk} [kN]
Weather resistant skin of external wall panels, concrete C20/25 – C50/60	-	-	-	Concrete without fibres C20/25 – C50/60 as per EN 206:2013 Thickness of concrete panels 40 mm ≤ h < 100 mm	H	**0,9**
Weather resistant skin of external wall panels, concrete C20/25 –C50/60	-	-	-	Concrete without fibres C20/25 – C50/60 as per EN 206:2013 Thickness of concrete panels 40 mm ≤ h < 100 mm	R	**1,5**
Concrete C12/15- C50/60	A	-	-	Concrete without fibres C12/15 - C50/60 as per EN 206:2013	H	**1,5**
Sand-lime solid bricks, **KS** as per EN 771-2:2011	B	≥ 2,0	20	Vertically perforation[3)] ≤ 15%	H	**1,5**
			12			**1,2**
Clay bricks, **Mz** as per EN 771-1:2011	B	≥ 1,8	12	Vertically perforation[3)] ≤ 15%	H	**1,2**
Solid concrete block, **Vbn** as per EN 771-3:2011	B	≥ 2,0	20	Vertically perforation[3)] ≤ 10%	H	**1,5**
			12			**1,2**
Lightweight concrete solid blocks, **Vbl** as per EN 771-3:2011	B	≥ 1,4	8	Vertically perforation[3)] ≤ 15%, exterior web thickness ≥ 35 mm	H	**0,6**
Vertically perforated sand-lime bricks, **KSL** as per EN 771-2:2011	C	≥ 1,4	20	Vertically perforation[3)] > 15%, Exterior web thickness ≥ 23 mm	H	**1,2**
			12			**0,75**
Vertically perforated clay bricks, **Hlz** as per EN 771-1:2011	C	≥ 1,0	12	Vertically perforation[3)] >15% and ≤ 50%, Exterior web ≥ 12 mm	R	**0,75**
Lightweight concrete hollow blocks, **Hbl** as per EN 771-3:2011	C	≥ 1,2	10	Vertically perforation[3)] >15% and ≤ 50%, Exterior web ≥ 38 mm	H	**1,2**
			8			**0,9**
			6			**0,75**
			4			**0,6**
Lightweight concrete hollow blocks, **Hbl4** as per EN 771-3:2011	C	≥ 0,9	4		H	**0,5**
Lightweight aggregate concrete, **LAC** as per EN 1520:2011 / EN 771-3:2011	D	≥ 0,9	6	-	H	**0,75**
Autoclaved aerated concrete blocks, **AAC** as per EN 771-4:2011	E	≥ 0,5	4	-	R	**0,4**

[1)] Base material group, see Annex B1
[2)] R = Rotary drilling | H = Hammer drilling
[3)] Cross section reduced by perforation vertically to the resting area

Figures not to scale.

eTics Twister

Performance
Characteristic resistance

Annex C1

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Table C2.1: Point thermal transmittance acc. to EOTA Technical TR 025: 2016-05

Anchor type	Thickness of insulation material h_D [mm]	Point thermal transmittance χ [W/K]
eTics Twister EPS-plug and air void t_{tol} = 0 - 10 mm	100 - 240	0,001
	> 240	0
eTics Twister PU-foam filled hole t_{tol} = 0 - 10 mm	100 - 150	0,001
	> 150	0
eTics Twister EPS-plug and air void t_{tol} = 0 - 30 mm	100 - 240	0,001
	> 240	0
eTics Twister PU-foam filled hole t_{tol} = 0 - 30 mm	100 - 150	0,001
	> 150	0
eTics Twister EPS-plug and air void t_{tol} = 30 - 60 mm	100	0,002
	120 - 240	0,001
	> 240	0
eTics Twister PU-foam filled hole t_{tol} = 30 - 60 mm	100	0,002
	120 - 150	0,001
	> 150	0

Table C2.2: Displacements

Base material	Minimum compressive strength f_b [N/mm²]	Tension load **N** [kN]	Displace-ments $\Delta\delta_N$ [mm]
Concrete thin members ≥ C20/25 as per EN 206:2013 (hammer drilling)	-	0,3	< 0,3
Concrete thin members ≥ C20/25 as per EN 206:2013 (rotary drilling)	-	0,5	< 0,3
Concrete C16/20 - C50/60 as per EN 206:2013	-	0,5	< 0,3
Sand-lime solid bricks, **KS** as per EN 771-2:2011	20	0,5	< 0,3
	12	0,4	
Clay bricks, **Mz** as per EN 771-1:2011	12	0,4	< 0,3
Solid concrete block, **Vbn** as per EN 771-3:2011	20	0,5	< 0,3
	12	0,4	
Lightweight concrete solid blocks, **Vbl** as per EN 771-3:2011	8	0,2	< 0,2
Vertically perforated sand-lime bricks, **KSL** as per EN 771-2:2011	20	0,4	< 0,2
	12	0,25	
Vertically perforated clay bricks, **Hlz** as per EN 771-1:2011	12	0,25	< 0,3
Lightweight concrete hollow blocks, **Hbl** as per EN 771-3:2011	10	0,4	< 0,3
	8	0,3	
	6	0,25	
	4	0,2	
Lightweight concrete hollow blocks, **Hbl4** as per EN 771-3:2011	4	0,15	< 0,4
Lightweight aggregate concrete, **LAC** as per EN 1520:2011 / EN 771-3:2011	6	0,25	< 0,2
Autoclaved aerated concrete blocks, **AAC** as per EN 771-4:2011	4	0,15	< 0,1

eTics Twister	**Annex C2**
Performance Point thermal transmittance, displacements	