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and types of construction

Bautechnisches Prüfamt

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ETA-12/0208
of 18 October 2022

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

fischer TermoZ SV II Ecotwist

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

fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1
72178 Waldachtal
DEUTSCHLAND

Manufacturing plant

fischerwerke

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

This version replaces

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Specific part

1 Technical description of the product

The fischer TermoZ SV II Ecotwist screwed-in anchor 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 verification 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 <ul style="list-style-type: none"> - Characteristic resistance under tension load - Minimum edge distance and spacing | See Annex C 1 See Annex B 2 |
| Displacements | See Annex C 2 |
| Plate stiffness | No performance assessed |

3.2 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

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 EAD

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

The following standards and documents are referred to in this European Technical Assessment:

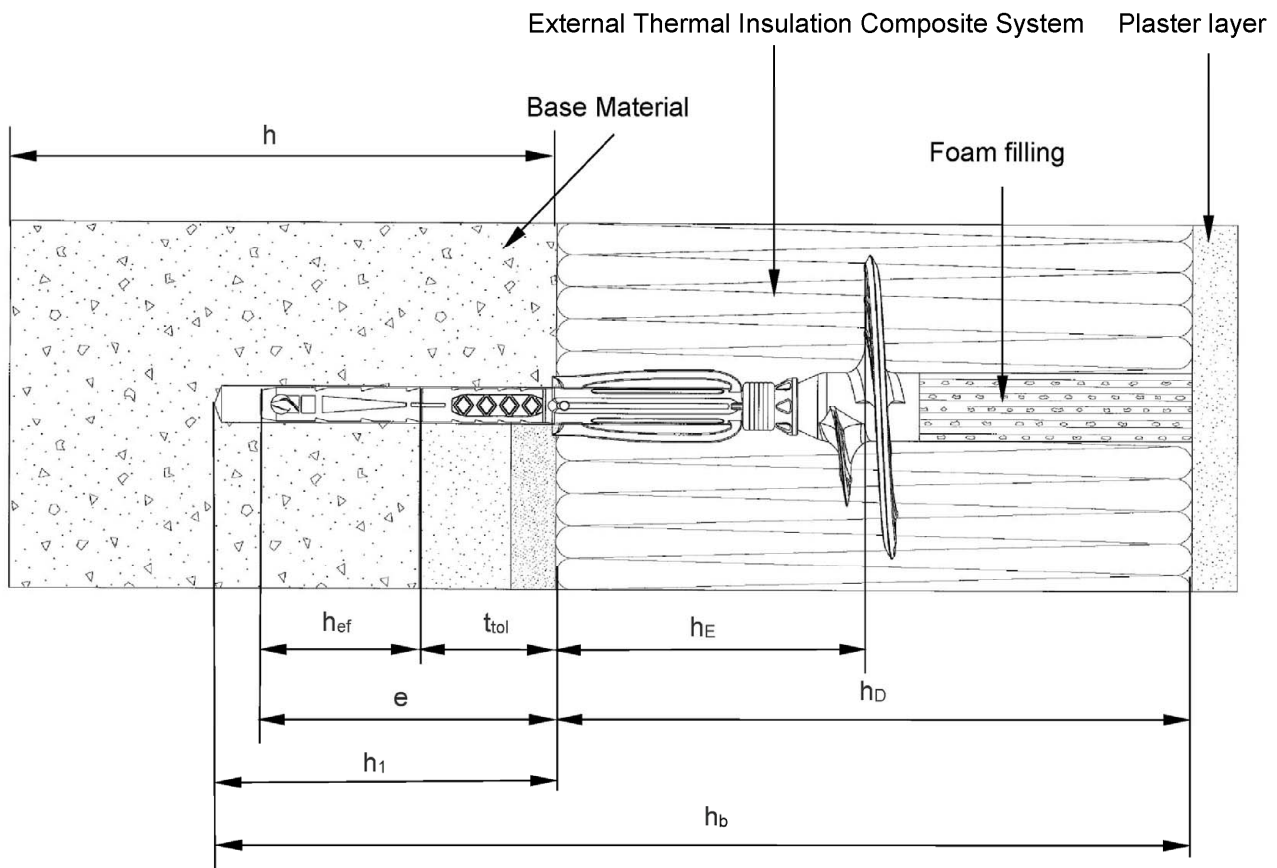
- EOTA Technical Report TR 025, Edition May 2016 Point Thermal Transmittance of Plastic Anchors for ETICS
- EOTA Technical Report TR 051, Edition April 2018 Job site tests of plastic anchors and screws
- EN 206:2013 Concrete - Specification, performance, production and conformity
- EN 771-1:2011+A1:2015 Specification for masonry units - Part 1: Clay masonry units
- EN 771-2:2011+A1:2015 Specification for masonry units - Part 2: Calcium silicate masonry units
- EN 771-3:2011+A1:2015 Specification for masonry units - Part 3: Aggregate concrete masonry units (Dense and lightweight aggregates)
- EN 771-4:2011+A1:2015 Specification for masonry units - Part 4: Autoclaved aerated concrete masonry units
- EN 1520:2011 Prefabricated reinforced components of lightweight aggregate concrete with open structure
- EN ISO 4042:2018-11 Fasteners - Electroplated coating systems

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Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Aksünger

TermoZ SV II Ecotwist



Legend

- 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 equalising 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
- e = Effective anchor embedment depth in the base material including thickness of equalising layer and / or non-load bearing coating

Figure not to scale

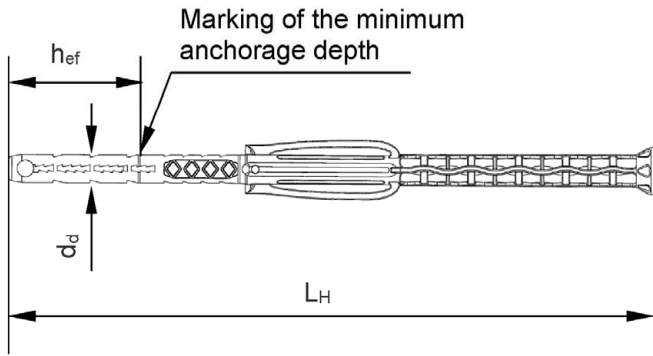
fischer TermoZ SV II Ecotwist

Product description
Installed anchor

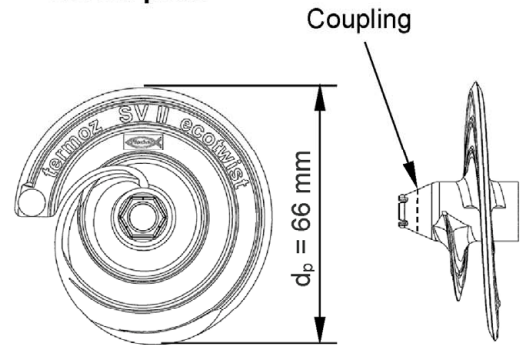
Annex A 1

TermoZ SV II Ecotwist

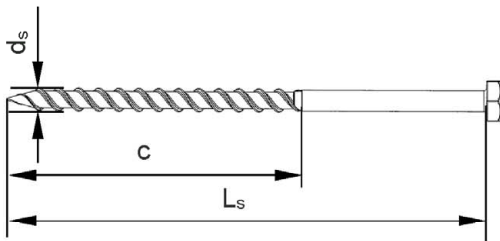
Anchor sleeve



Screw plate

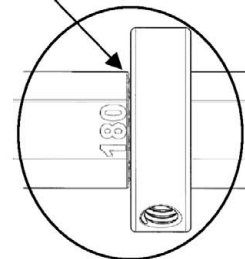
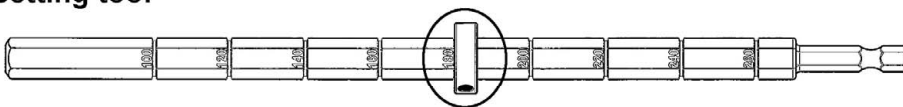


Special screw

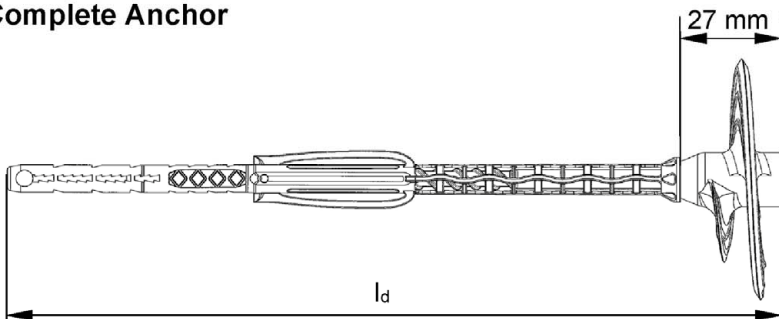


Adjustment of the ring depends on the insulation material thickness, e.g. $h_D = 180 \text{ mm}$
→ adjust value 180 at the setting tool

Setting tool



Complete Anchor




Figures not to scale

fischer TermoZ SV II Ecotwist

Product description
Anchor type and single parts

Annex A 2

| Table A3.1: Dimensions | | | | | | | | |
|---|---|---------------|------------|-------|---------------|-------|-------|-----------|
| Anchor type | Anchor sleeve | | | | Special screw | | | |
| TermoZ SV II Ecotwist | d_d | $h_{ef}^{1)}$ | $h_E^{1)}$ | l_d | L_H | 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 A 1. | | | | | | | | |
| Table A3.2: Marking on the screw plate | | | | | | | | |
| Anchor type | Marking | | | | | | | |
| Name | termoz SV II ecotwist | | | | | | | |
| Works symbol |  | | | | | | | |
| Table A3.2: Marking on the anchor sleeve | | | | | | | | |
| Anchor type | Marking | | | | | | | |
| TermoZ SV II Ecotwist t_{tol} 0-10 mm | t_{tol} 0 - 10 | | | | | | | |
| TermoZ SV II Ecotwist t_{tol} 0-30 mm | t_{tol} 0 - 30 | | | | | | | |
| TermoZ SV II Ecotwist t_{tol} 30-60 mm | t_{tol} 30 - 60 | | | | | | | |
| Table A3.2: Material | | | | | | | | |
| Designation | Material | | | | | | | |
| Anchor sleeve | PA6, colour: grey | | | | | | | |
| Screw plate | PA6 GF, colour: grey, yellow, red, orange, green, blue, mocca-latte, black | | | | | | | |
| Special screw | Galvanised steel gvz with Zn5/Ag or Zn5/An in accordance with EN ISO 4042 | | | | | | | |
| Insulation plug | Polystyrene, mineral wool | | | | | | | |
| fischer TermoZ SV II Ecotwist | | | | | | | | Annex A 3 |
| Product description | | | | | | | | |
| Dimensions anchor types, marking on the screw plate/anchor sleeve Material | | | | | | | | |

Specifications of intended use

Anchorage 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.

Base materials:

- Normal weight concrete without fibres \geq C12/15 (base material group "A") as per EN 206, see Annex C 1.
- Solid masonry (base material group "B") as per EN 771-1, EN 771-2 or EN 771-3, see Annex C 1.
- Hollow or perforated masonry (base material group "C") as per EN 771-1, EN 771-2 or EN 771-3, see Annex C 1.
- Lightweight aggregate concrete (base material group "D") as per EN 1520, see Annex C 1.
- Autoclaved aerated concrete (base material group "E") as per EN 771-4, see Annex C 1.
- 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 in accordance with EOTA Technical Report TR 051.

Temperature Range:

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

Design:

- The anchorages are designed under the responsibility of an engineer experienced in anchorages and masonry work with the partial safety factors for material related resistances $\gamma_M = 2,0$ and for action loads $\gamma_F = 1,5$ 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 external thermal insulation composite systems.

Installation:

- Drilling method according to Annex C 1.
- 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 \leq 6 weeks.

fischer TermoZ SV II Ecotwist

Intended use
Specifications

Annex B 1

| Table B2.1: Installation parameters in all regulated base material groups | | TermoZ SV II Ecotwist |
|---|-----------------------------------|-----------------------|
| Anchor type | | |
| Drill hole diameter | $d_0 = [\text{mm}]$ | 8 |
| Cutting diameter of drill bit | $d_{\text{cut}} \leq [\text{mm}]$ | 8,45 |
| Depth of drill hole to deepest point | | |
| TermoZ SV II Ecotwist t_{tol} 0-10 mm | $h_1 \geq [\text{mm}]$ | 55 |
| TermoZ SV II Ecotwist t_{tol} 0-30 mm | $h_1 \geq [\text{mm}]$ | 75 |
| TermoZ SV II Ecotwist t_{tol} 30-60 mm | $h_1 \geq [\text{mm}]$ | 105 |
| Total bore hole depth at | | |
| TermoZ SV II Ecotwist t_{tol} 0-10 mm | $h_b \geq [\text{mm}]$ | $h_D + 55$ |
| TermoZ SV II Ecotwist t_{tol} 0-30 mm | $h_b \geq [\text{mm}]$ | $h_D + 75$ |
| TermoZ SV II Ecotwist t_{tol} 30-60 mm | $h_b \geq [\text{mm}]$ | $h_D + 105$ |
| Overall plastic anchor embedment depth in the base material including equalising layers / coatings ($h_{\text{ef}} + t_{\text{tol,max}}$) ¹⁾ | | |
| TermoZ SV II Ecotwist t_{tol} 0-10 mm | $e = [\text{mm}]$ | 45 |
| TermoZ SV II Ecotwist t_{tol} 0-30 mm | $e = [\text{mm}]$ | 65 |
| TermoZ SV II Ecotwist t_{tol} 30-60 mm | $e = [\text{mm}]$ | 95 |

¹⁾ see Annex A 1.

Table B2.2: Minimum thickness of member, edge distances and spacing in all regulated base material groups

| Anchor type | | TermoZ SV II Ecotwist |
|-----------------------------|--------------------------------|-----------------------|
| Minimum thickness of member | $h_{\text{min}} = [\text{mm}]$ | 100 ¹⁾ |
| Minimum spacing | $s_{\text{min}} = [\text{mm}]$ | 100 |
| Minimum edge distance | $c_{\text{min}} = [\text{mm}]$ | 100 |

¹⁾ For weather resistant external wall panels: $h_{\text{min}}=40$ mm.

Scheme of edge distances and spacing
for base material group "A", concrete,
group "B" solid bricks, group "C" hollow or
perforated masonry, group "d" lightweight
aggregate concrete, group "E" autoclaved
aerated concrete

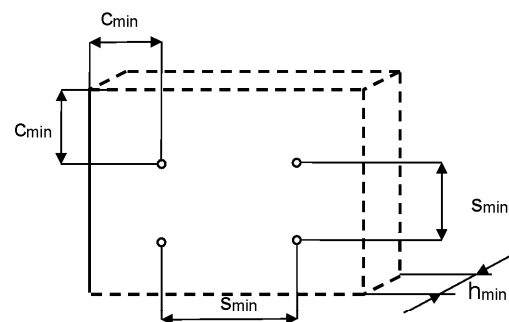
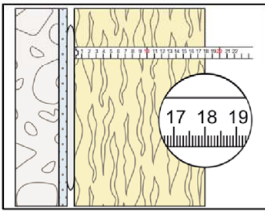


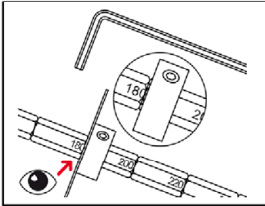
Figure not to scale

| | |
|--|------------------|
| fischer TermoZ SV II Ecotwist | Annex B 2 |
| Intended use Installation Parameters Minimum thickness of member, edge distances and spacing | |

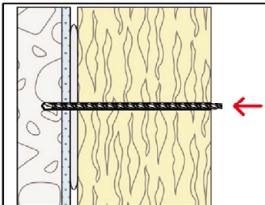
Installation instructions



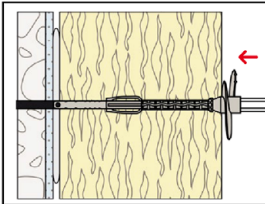
1. Measure insulation thickness h_D (example: 18 cm = 180 mm).



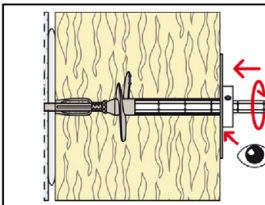
2. Adjust the setting tool ring corresponding to the insulation material thickness h_D in mm. Number is legible. Additionally to the setting tool ring, a thin plastic plate (maximum 1 mm thickness) can be used as a stop unit for easier mounting.



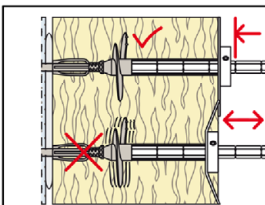
3. Drill bore hole. Total drill hole depth must be at
 t_{tot} 0-10 mm → $h_D + 55$ mm
 t_{tot} 0-30 mm → $h_D + 75$ mm
 t_{tot} 30-60 mm → $h_D + 105$ mm.
 Note: bore holes in Hlz and autoclaved aerated concrete only by rotary drilling.



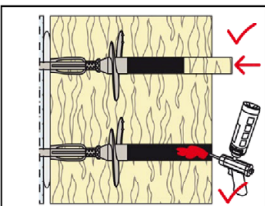
4. Press the anchor with the screw plate tight against the surface of the insulation material, then start screwing-in the anchor. Setting is finished when the surface of the ring is flush with the surface of the insulation material.



5. After reaching the setting depth, press the adjustment tool tight against the installed anchor. If there is no axial movement of the anchor, remove the setting tool. The setting process is finished.



6. In case of axial movement, a new anchor has to be set in a new drill hole.



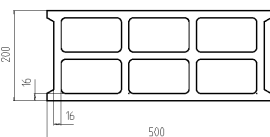
7. The hole in the insulation material must be filled with a suitable foam (illustrated in Annex A 1) or must be closed with an appropriate insulation plug.

fischer TermoZ SV II Ecotwist

Intended use
Installation instructions

Annex B 3

Table C1.1: Characteristic resistance to tension load N_{Rk} for a single anchor TermoZ SV II Ecotwist

| Base material | Group | Bulk density ρ [kg/dm ³] | Mean compressive strength / minimum compressive strength single brick as per EN 771 ⁴⁾ [N/mm ²] | Remarks | Drilling method ¹⁾ | Characteristic resistance to tension load N_{Rk} [kN] |
|--|-----------------|---|---|--|-------------------------------|---|
| Weather resistant skin of external wall panels, concrete C20/25 - C50/60 as per EN 206 | A | - | - | Thickness of concrete panels 40 mm $\leq h < 100$ mm. | H | 0,90 |
| | | | | | R | 1,50 |
| Concrete C12/15 - C50/60 as per EN 206 | A | - | - | - | H | 1,50 |
| Solid clay bricks, Mz as per EN 771-1 | B ²⁾ | $\geq 1,8$ | 15/12 | - | H | 1,20 |
| Sand-lime solid bricks, KS as per EN 771-2 | B ²⁾ | $\geq 2,0$ | 15/12 | - | H | 1,20 |
| | | | 25/20 | | | 1,50 |
| Solid concrete block, Vbn as per EN 771-3 | B ²⁾ | $\geq 2,0$ | 15/12 | - | H | 1,20 |
| | | | 25/20 | | | 1,50 |
| Lightweight concrete solid blocks, Vbl as per EN 771-3 | B ²⁾ | $\geq 1,4$ | 10/8 | - | H | 0,60 |
| Vertically perforated clay bricks, Hz as per EN 771-1 | C ³⁾ | $\geq 1,0$ | 15/12 | Exterior web thickness ≥ 12 mm. | R | 0,75 |
| Vertically perforated sand-lime bricks, KSL as per EN 771-2 | C ³⁾ | $\geq 1,4$ | 15/12 | Exterior web thickness ≥ 23 mm. | H | 0,75 |
| | | | 25/20 | | | 1,20 |
| Lightweight concrete hollow blocks, Hbl as per EN 771-3 | C ³⁾ | $\geq 1,2$ | 5/4 | Exterior web thickness ≥ 38 mm. | H | 0,60 |
| | | | 7,5/6 | | | 0,75 |
| | | | 10/8 | | | 0,90 |
| | | | 12,5/10 | | | 1,20 |
| French lightweight concrete hollow block, Hbl as per EN 771-3 "Sepa Parpaing" 500 x 200 x 190 mm | C ³⁾ | $\geq 0,9$ | 5/4 |  <p>Web thickness ≥ 16 mm.</p> | H | 0,50 |
| Lightweight aggregate concrete, LAC as per EN 1520 | D ³⁾ | $\geq 0,9$ | 7,5/6 | Minimum thickness of solid brick $h = 100$ mm or exterior web thickness ≥ 50 mm. | H | 0,75 |
| Autoclaved aerated concrete, AAC as per EN 771-4 | E | $\geq 0,5$ | 5/4 | - | R | 0,40 |

¹⁾ H = Hammer drilling, R = Rotary drilling.

²⁾ Vertically perforation $\leq 15\%$; cross section reduced by perforation vertically to the resting area.

³⁾ Vertically perforation $> 15\%$ and $\leq 50\%$, cross section reduced by perforation vertically to the resting area.

⁴⁾ The compressive strength of the single brick must not be less than 80% of the mean compressive strength.

fischer TermoZ SV II Ecotwist

Performances

Characteristic resistance to tension load for single anchor

Annex C 1

Table C2.1: Point thermal transmittance according to EOTA Technical Report TR 025

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

Table C2.2: Displacements for TermoZ SV II Ecotwist

| Base material | | Mean compressive strength / minimum compressive strength single brick as per EN 771 ¹⁾ [N/mm ²] | Tension load N [kN] | Displacements $\Delta\delta_N$ [mm] |
|---|-----------------|--|---------------------------|---|
| Concrete, thin members C20/25 - C50/60 as per EN 206 | Hammer drilling | - | 0,30 | < 0,30 |
| | Rotary drilling | - | 0,50 | < 0,30 |
| Concrete, C16/20 - C50/60 as per EN 206 | | - | 0,50 | < 0,30 |
| Clay bricks, Mz as per EN 771-1 | | 15/12 | 0,40 | < 0,30 |
| Sand-lime solid bricks, KS as per EN 771-2 | | 15/12 | 0,40 | < 0,30 |
| | | 25/20 | 0,50 | |
| Solid concrete block, Vbn as per EN 771-3 | | 15/12 | 0,40 | < 0,30 |
| | | 25/20 | 0,50 | |
| Lightweight concrete solid blocks, Vbl as per EN 771-3 | | 10/8 | 0,20 | < 0,20 |
| Vertically perforated clay bricks, Hlz as per EN 771-1 | | 15/12 | 0,25 | < 0,30 |
| Vertically perforated sand-lime bricks, KSL as per EN 771-2 | | 15/12 | 0,25 | < 0,20 |
| | | 25/20 | 0,40 | |
| Lightweight concrete hollow blocks, Hbl as per EN 771-3 | | 5/4 | 0,20 | < 0,30 |
| | | 7,5/6 | 0,25 | |
| | | 10/8 | 0,30 | |
| | | 12/10 | 0,40 | |
| Lightweight concrete hollow blocks, Hbl as per EN 771-3 | | 5/4 | 0,15 | < 0,40 |
| Lightweight aggregate concrete, LAC as per EN 1520 | | 7,5/6 | 0,25 | < 0,20 |
| Autoclaved aerated concrete blocks, AAC as per EN 771-4 | | 5/4 | 0,15 | < 0,10 |

¹⁾ The compressive strength of the single brick must not be less than 80% of the mean compressive strength.

| | |
|--|------------------|
| fischer TermoZ SV II Ecotwist | Annex C 2 |
| Performances | |
| Point thermal transmittance Displacements | |