European Technical Assessment

ETA-17/0773
of 21 December 2020

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
Schöck Isolink for multi-layer concrete panels

Product family to which the construction product belongs
Glass fibre reinforced plastics (GFRP) connectors for use in sandwich and element walls made of concrete

Manufacturer
Schöck Bauteile GmbH
Vimbucher Straße 2
76534 Baden-Baden (Steinbach)
DEUTSCHLAND

Manufacturing plant
Schöck Werk
Ringstraße 2
06188 Landsberg

This European Technical Assessment contains
17 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 330387-00-0601, Edition 03/2020

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Specific Part

1 **Technical description of the product**

The Schöck Isolink TA-H with nominal diameter of 12 mm is an anchor which consists of a glass fibre reinforce plastic bar. The anchor has a profile in the shape of a trapezoidal thread with a profile depth of 0.6 to 0.75 mm and a pitch of 8 mm. The ends of the TA-H anchor are inclined. The anchor is embedded on both sides in the concrete. It is orientated perpendicular to the wall. 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 GFRP connector 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 channel of at least 50 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 **Mechanical resistance and stability (BWR 1)**

<table>
<thead>
<tr>
<th>Essential characteristic</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance to GFRP failure under compression load</td>
<td>See Annex C1</td>
</tr>
<tr>
<td>Resistance to concrete failure under compression load</td>
<td>See Annex C1</td>
</tr>
<tr>
<td>Resistance to GFRP failure under tension load</td>
<td>See Annex C1</td>
</tr>
<tr>
<td>Resistance to concrete failure (cracked and uncracked concrete) under tension load</td>
<td>See Annex C1</td>
</tr>
<tr>
<td>Resistance to GFRP failure under shear load</td>
<td>No performance assessed</td>
</tr>
<tr>
<td>Resistance to concrete failure under shear load</td>
<td>No performance assessed</td>
</tr>
<tr>
<td>Maximum acceptable shear deformation</td>
<td>See Annex C1</td>
</tr>
<tr>
<td>Minimum edge distances and spacing</td>
<td>See Annex B2</td>
</tr>
<tr>
<td>Durability</td>
<td>See Annex B1</td>
</tr>
<tr>
<td>Modulus of Elasticity</td>
<td>See Annex B2</td>
</tr>
<tr>
<td>Geometric parameters</td>
<td>See Annex B2</td>
</tr>
</tbody>
</table>
4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 330387-00-0601, the applicable European legal act is: [2000/273/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.
Element wall with Schock Isolink® TA-H

Sandwich wall with Schock Isolink® TA-H

Fig. 1: Schock Isolink® type TA-H
Wall with supported cover layer, thickness of insulation layer 60 ≤ h₀ ≤ 350 mm

Schock Isolink® for multi-layer concrete panels

Product description
Installed condition with Schock Isolink® type TA-H

Annex A1
Element wall with Schock Isolink® type TA-HC

Sandwich wall with Schock Isolink® type TA-HC

Fig. 2: Schock Isolink® type TA-HC
Wall with supported cover layer, thickness of insulation layer 60 ≤ h₀ ≤ 350 mm
Schock Isolink® type TA-H

Material:
Fibre-glass reinforced plastic Combar®

Marking:
Identifying mark of the producer: Schock
Type: Combar®

Fig. 3: Schock Isolink® type TA-H

Schock Isolink® type TA-HC

Material:
Fibre-glass reinforced plastic Combar®

Marking:
Identifying mark of the producer: Schock
Type: Combar®

pressed-on depth stop; not movable

Fig. 4: Schock Isolink® type TA-HC

Schöck Isolink® for multi-layer concrete panels

Product description
Material and dimensions
B.1 Specifications of intended use

- Static and quasi-static loads in tension or compression in the direction of the longitudinal axis of the connector.

B.1.1 Base materials

- Reinforced normal-weight concrete according to EN 206-1:2000
- Strength classes C20/25 to C50/60 according to EN 206-1:2000
- Cracked or uncracked concrete

B.1.2 Use conditions (environmental conditions)

- Temperature on the surface of the concrete cover layer between -20°C and +65°C (maximum short-term temperature). Maximum long-term temperature is 40°C.

B.1.3 Design

- Connectors are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The positions of the connectors are indicated on the design drawings (e.g. position of the connector relative to the reinforcement or to supports).
- The connectors are intended to be used for design analogous to EN 1992-4:2018.
- The actual shear deformation is limited to the maximum acceptable shear deformation according Annex C1.

B.1.4 Installation requirements

- The installation of the connectors is carried out by appropriately qualified personnel under the supervision of the person responsible for the technical matters on site.
- Use of the connector as supplied by the manufacturer only – without manipulations or repositioning.
- Installation in accordance with the manufacturer’s specifications given in Annex B4 to B9.
### Table B.1: Installation parameters and layer thickness

<table>
<thead>
<tr>
<th>Description</th>
<th>Abbreviation / Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall embedment depth of the connector in concrete</td>
<td>$h_{\text{nom}}$ [mm]</td>
<td>$\geq 60$</td>
</tr>
<tr>
<td>Minimum thickness of cover layer</td>
<td>$h_{v,\text{min}}$ [mm]</td>
<td>60</td>
</tr>
<tr>
<td>Minimum thickness of insulation</td>
<td>$h_{o,\text{min}}$ [mm]</td>
<td>60</td>
</tr>
<tr>
<td>Maximum thickness of insulation</td>
<td>$h_{o,\text{max}}$ [mm]</td>
<td>350</td>
</tr>
<tr>
<td>Minimum thickness of structural layer</td>
<td>$h_{T,\text{min}}$ [mm]</td>
<td></td>
</tr>
<tr>
<td>Element wall</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Sandwich wall</td>
<td></td>
<td>140 (PC)</td>
</tr>
</tbody>
</table>

### Table B.2: Calculation values for connector Schöck Isolink®

<table>
<thead>
<tr>
<th>Description</th>
<th>Abbreviation / Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal diameter</td>
<td>$d$ [mm]</td>
<td>12</td>
</tr>
<tr>
<td>Nominal area (cross section)</td>
<td>$A$ [mm$^2$]</td>
<td>113</td>
</tr>
<tr>
<td>Area moment of inertia around y axis</td>
<td>$I_y$ [mm$^4$]</td>
<td>1161</td>
</tr>
<tr>
<td>Area moment of inertia around z axis</td>
<td>$I_z$ [mm$^4$]</td>
<td>1161</td>
</tr>
<tr>
<td>Modulus of elasticity under normal force</td>
<td>$E_N$ [N/mm$^2$]</td>
<td>60000</td>
</tr>
<tr>
<td>Modulus of elasticity under normal force</td>
<td>$E_M$ [N/mm$^2$]</td>
<td>60000</td>
</tr>
</tbody>
</table>

### Table B.3: Minimum edge distances and spacing

<table>
<thead>
<tr>
<th>Description</th>
<th>Abbreviation / Unit</th>
<th>Overall embedment depth of the anchor in concrete $h_{\text{nom}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum spacing (=3,0 $h_{\text{nom}}$)</td>
<td>$s_{\text{min}}$ [mm]</td>
<td>60 mm: 180, 100 mm: 300</td>
</tr>
<tr>
<td>Minimum edge spacing (=1,5 $h_{\text{nom}}$)</td>
<td>$c_{\text{min}}$ [mm]</td>
<td>60 mm: 90, 100 mm: 150</td>
</tr>
</tbody>
</table>

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**Schöck Isolink® for multi-layer concrete panels**

<table>
<thead>
<tr>
<th>Intended Use</th>
<th>Annex B2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation parameters</td>
<td></td>
</tr>
</tbody>
</table>
Arrangement of Schöck Isolink® in a grid accordance with structural calculations, e.g. spacing for 4 Schöck Isolink® per m²: \( s_1 = s_2 = 50 \text{ cm} \).

**Fig. 5:** Example of wall with supported cover layer (Installation parameters in accordance with Annex B2)

**Schöck Isolink® for multi-layer concrete panels**

**Intended Use**
Example of wall with connectors

**Annex B3**
Schöck Isolink® for multi-layer concrete panels

Intended use
Installation instruction for sandwich walls

Annex B4
Fig. 7: Installation instruction - Schöck Isolink® for sandwich wall – page 2

**Schöck Isolink® for multi-layer concrete panels**

**Intended use**
Installation instruction for sandwich walls 2

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Annex B5
Fig. 8: Installation instruction - Schöck Isolink® for sandwich wall – page 3
Fig. 9: Installation instruction - Schöck Isolink® for element wall – page 1

Schöck Isolink® for multi-layer concrete panels

<table>
<thead>
<tr>
<th>Intended use</th>
<th>Installation instruction for element walls 1</th>
<th>Annex B7</th>
</tr>
</thead>
</table>

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English translation prepared by DIبت
Fig. 10: Installation instruction - Schöck Isolink® for element wall – page 2

Schöck Isolink® for multi-layer concrete panels

Intended use
Installation instruction element walls 2

Annex B8
**Fig. 11:** Installation instruction - Schöck Isolink® for element wall – page 3

**Schöck Isolink® for multi-layer concrete panels**

**Intended Use**
Installation instruction element walls 3

Annex B9
Table C.4: Characteristic resistance under tension and compression load and acceptable shear deformation

<table>
<thead>
<tr>
<th>Essential characteristic</th>
<th>Abbreviation</th>
<th>Concrete strength class</th>
<th>Thickness of insulation h_D</th>
<th>Overall embedment depth of the connector in concrete h_nom</th>
<th>60 mm</th>
<th>100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance to GFRP failure under compression load</td>
<td>NRk,GFRP_D</td>
<td>C20/25 to C50/60</td>
<td>250 mm</td>
<td>31.5 kN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>350 mm</td>
<td>17.2 kN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance to concrete failure under compression load</td>
<td>NRk,c_D</td>
<td>C20/25 to C50/60</td>
<td>60 mm to 350 mm</td>
<td>20.4 kN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance to GFRP failure under tension load</td>
<td>NRk,GFRP</td>
<td>C20/25 to C50/60</td>
<td>60 mm to 350 mm</td>
<td>14.9 kN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance to concrete failure under tension load (uncracked concrete)</td>
<td>NRk,c,ucr</td>
<td>C20/25 to C50/60</td>
<td>60 mm to 350 mm</td>
<td>10.8 kN  25.5 kN</td>
<td>19.0 kN 42.4 kN</td>
<td></td>
</tr>
<tr>
<td>Resistance to concrete failure under tension load (cracked concrete)</td>
<td>NRk,c,cr</td>
<td>C20/25 to C50/60</td>
<td>60 mm to 350 mm</td>
<td>6.1 kN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum acceptable shear deformation</td>
<td>W_max</td>
<td>C20/25 to C50/60</td>
<td>60 mm</td>
<td>2.0 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100 mm</td>
<td>5.0 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Schöck Isolink® for multi-layer concrete panels
Performance
Characteristic resistances and acceptable shear deformation

Annex C1