

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-12/0148
of 11 January 2018

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

Insulation support - metal nail KEW TSDL-V and
TSD-V WS

Product family
to which the construction product belongs

Nailed-in plastic anchor for fixing of external thermal
insulation composite systems with rendering in concrete
and masonry

Manufacturer

KEW
Kunststofferzeugnisse GmbH Wilthen
Dresdener Straße 19
02681 Wilthen
DEUTSCHLAND

Manufacturing plant

KEW
Kunststofferzeugnisse GmbH Wilthen
Dresdener Straße 19
02681 Wilthen
DEUTSCHLAND

This European Technical Assessment
contains

13 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

This version replaces

ETA-12/0148 issued on 22 March 2017

European Technical Assessment

ETA-12/0148

English translation prepared by DIBt

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Specific Part**1 Technical description of the product**

The nailed-in anchor KEW TSDL-V and TSD-V WS consists of an anchor sleeve made of virgin polypropylene and an accompanying specific nail of galvanised steel or stainless steel. The serrated expanding part of the anchor sleeve is slotted.

The anchor type KEW TSDL-V may in addition be combined with the insulation discs DSB 90, DSB 110 or DSB 140. The head of the special nail for this anchor type has an additional plastic coating.

An illustration and the description of the product are 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 tension resistance	See Annex C 1
Edge distances and spacing	See Annex B 2
Plate stiffness	See Annex C 2
Displacements	See Annex C 2

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. 330196-01-00-0604, 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

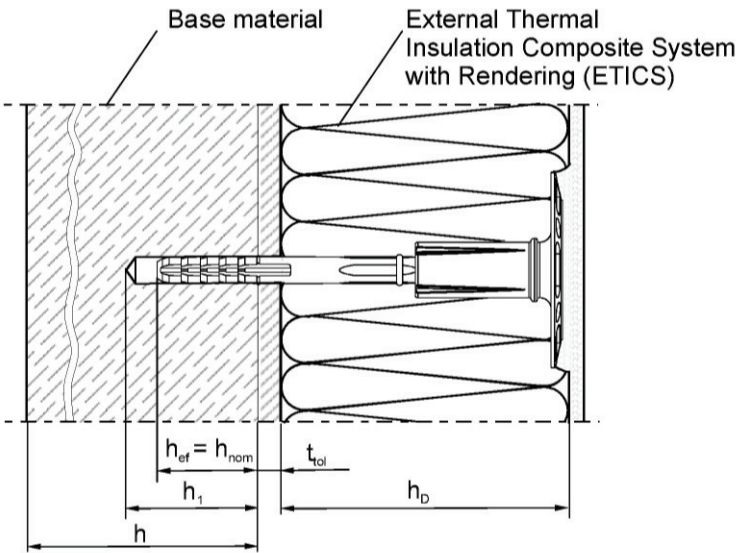
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 11 January 2018 by Deutsches Institut für Bautechnik

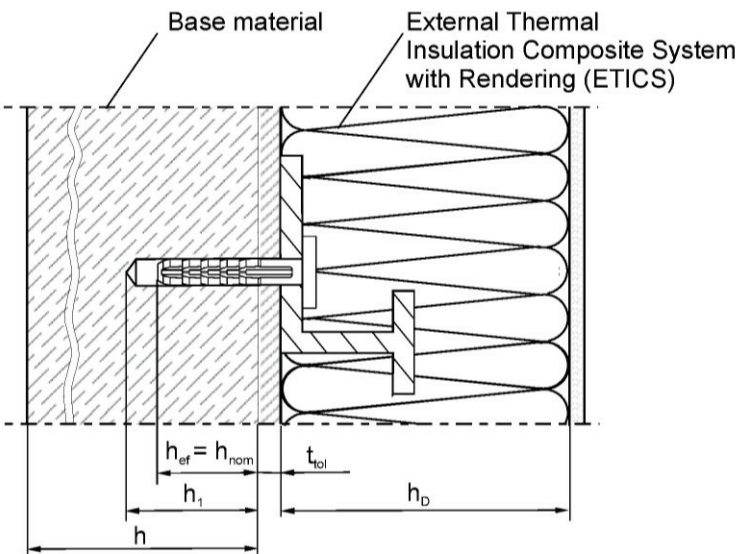
BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Ziegler

TSDL-V



TSD-V WS



Legend

- h_{ef} = effective anchorage depth
- h_1 = depth of drill hole to deepest point
- h = thickness of base material (wall)
- h_D = thickness of insulation material
- t_{tol} = thickness of equalizing layer or non-load bearing coating

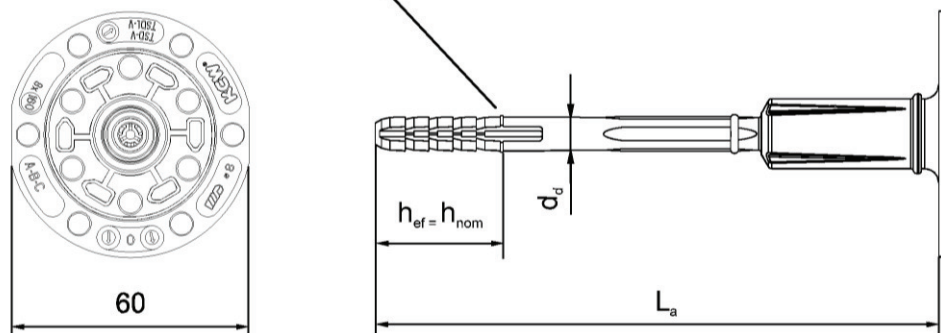
Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Product description
Installed condition

Annex A 1

TSDL-V

marking of effective anchorage depth (A-B-C)



Marking

Company logo – (KEW®)
Anchor type – (TSDL-V)
Diameter of drill hole – (ø8)
Length of anchor – (e.g. 160)

Special nail with special head

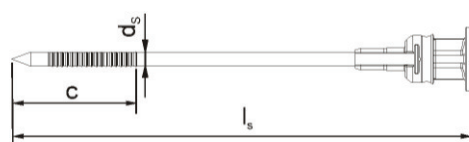


Table A1: Dimensions TSDL-V

Anchor type	Anchor sleeve				Special nail		
	L _a min [mm]	L _a max [mm]	d _d [mm]	h _{ef} [mm]	d _s [mm]	c [mm]	l _s [mm]
KEW - TSDL-V	120	300	8	30	4,0	35	L _a + 4mm
Determination of max. Thinkness of insulation [mm]: h_{Dmax} = L_a – h_{ef} – t_{tol}							
e.g.:	L_a= 160		h_{ef}= 30		t_{tol}= 10		
TSDL-V 8x160	thickness of insulation material h_{D max.} = 120						

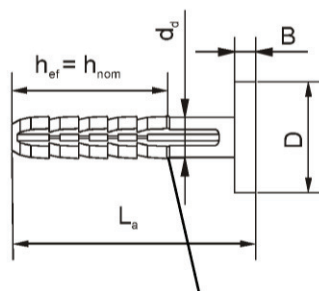
Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Product description

Marking and dimensions of the anchor sleeve TSDL-V
spreading element / special nail

Annex A 2

TSD-V WS



$B \geq 2,5\text{mm}$
 $D \geq 16\text{mm}$

marking of effective anchorage depth

Special nail

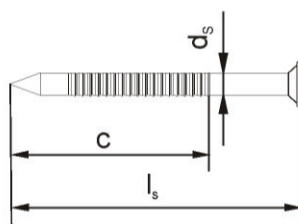


Table A2: Dimensions TSD-V WS

Anchor type	Anchor sleeve				Special nail		
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]	d_s [mm]	c [mm]	l_s [mm]
KEW - TSD-V WS	50	250	8	30	4,0	35	$L_a + 4\text{mm}$

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Produktbeschreibung

Marking and dimensions of the anchor sleeve TSD-V WS
spreading element / special nail

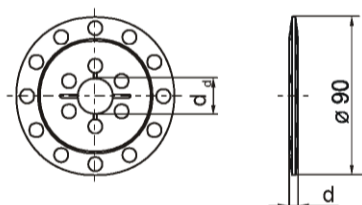
Annex A 3

Table A3: Materials

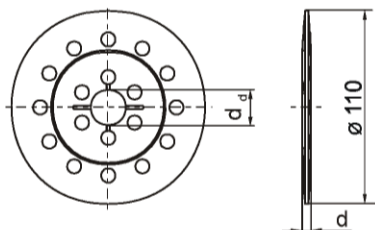
Member	Material
Anchor sleeve	virgin Polypropylen, colour: papyrus white
Special nail	Steel, galvanized A2L or A2K according to EN ISO 4042:1999
	Stainless steel; mat.No. 1.4401, 1.4571 according to EN ISO 3506:2010

Table A4: Insulation discs, diameters and material

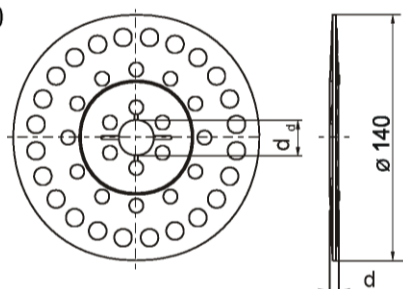
DSB 90



DSB 110



DSB 140



Insulation discs	Ø D [mm]	Ø d _d [mm]	d [mm]	Material
DSB 90	90	20	5	PA 6, PP
DSB 110	110	20	5	PA 6, PP
DSB 140	140	20	5	PA 6, PP

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Product description

Materials

Additional plates in combination with KEW TSDL-V

Annex A 4

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 thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C1.
- Solid masonry (use category B), according to Annex C1.
- Hollow or perforated masonry (use category C), according to Annex C1.
- For other base materials of the use categories A, B or C the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051 edition December 2016.

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 $\gamma_M = 2,0$ and $\gamma_F = 1,5$, if there are no other national regulations.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C1.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of 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

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Annex B 1

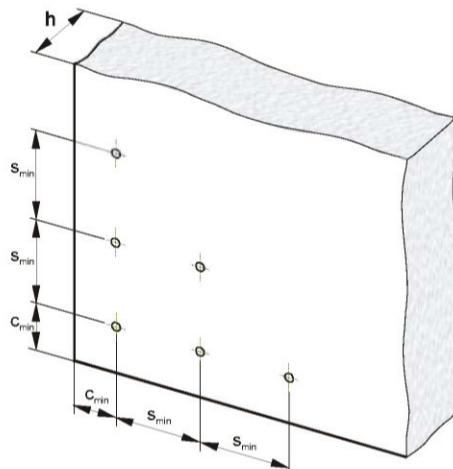
Intended use
Specifications

Table B1: Installation parameters

Anchor type		KEW- TSDL-V
Drill hole diameter	$d_0 =$ [mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45
Depth of drilled hole to deepest point	$h_1 \geq$ [mm]	40
Effective anchorage depth	$h_{ef} =$ [mm]	30

Table B2: Anchor distances and dimensions of members

		KEW- TSDL-V
Thickness of member	$h \geq$ [mm]	100
Minimum allowable spacing	$s_{min} =$ [mm]	100
Minimum allowable edge distance	$c_{min} =$ [mm]	100

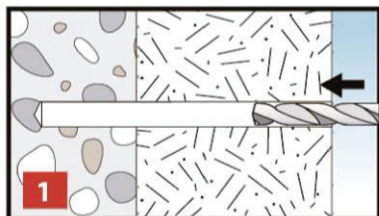


Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

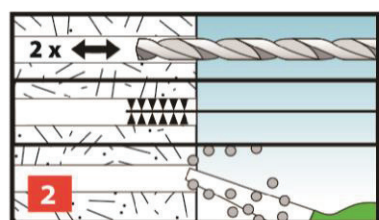
Intended use
Installation parameters,
Anchor distances and dimensions of members

Annex B 2

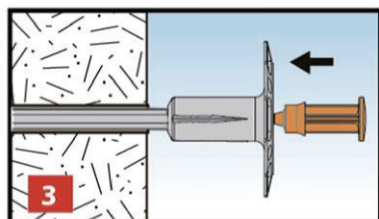
Installation instructions



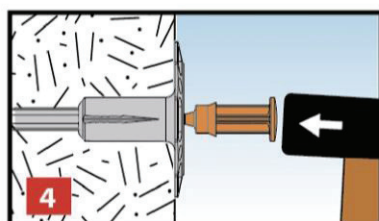
Create a hole considering the drill method according Annex C 1



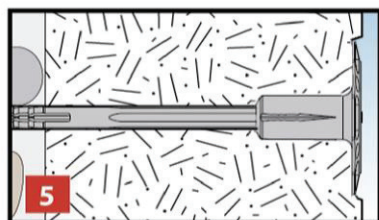
Holes to be cleaned of drilling dust.



Insert the anchor into the hole until the plate rests on the insulation.



Hammer in the nail with a matching hammer




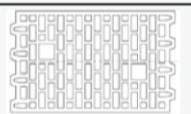
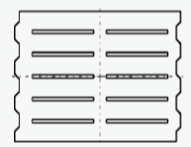
Flush mounted installation

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Intended use
Installation instructions

Annex B 3

Table C1: Characteristic resistance N_{Rk} in concrete and masonry for a single anchor in kN

Base material	Bulk density ρ [kg/dm ³]	Minimum Compressive strength f_b [N/mm ²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15			EN 206-1:2000	Hammer drilling	1,2
Concrete C16/20 – C50/60			EN 206-1:2000	Hammer drilling	1,5
Sand-lime solid bricks, KS e.g. acc. to EN 771-2:2011	≥ 1.8	12	Vertically perforation up to 15%	Hammer drilling	1,5
Clay bricks, Mz e.g. acc. to EN 771-1:2011	≥ 1.7	20	Vertically perforation up to 15%	Hammer drilling	1,5
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥ 1.0	12	Vertically perforation more than 15% and less than 50% outer web thickness $\geq 12\text{mm}$	Rotary drilling	0,9
Vertically perforated sand-lime bricks KS L, e.g. acc. to EN 771-2:2011	≥ 1.4	12	Vertically perforation more than 15% outer web thickness $\geq 22\text{mm}$	Rotary drilling	1,2
Lightweight concrete hollow blocks, Hbl e.g. acc. to EN 771-3:2011	≥ 0.8	2	 outer web thickness $\geq 50\text{mm}$	Rotary drilling	0,6
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥ 0.9	12	 outer web thickness $\geq 10\text{mm}$	Rotary drilling	0,75
Lightweight concrete solid blocks, Vbl e.g. acc. to EN 771-3:2011	≥ 0.8	2	 outer web thickness $\geq 43\text{mm}$	Hammer drilling	0,6

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Performances
Characteristic resistance of the anchor in concrete and masonry

Annex C 1

Table C2: Displacements

Base material	Bulk-density-class ρ [kg/dm ³]	Minimum compressive strength f_b [N/mm ²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15 EN 206-1:2000			0,4	0,2
Concrete C16/20 – C50/60 EN 206-1:2000			0,5	0,2
Sand-lime solid bricks, KS e.g. acc. to EN 771-2:2011	≥ 1.8	12	0,5	0,3
Clay bricks, Mz e.g. acc. to EN 771-1:2011	≥ 1.7	12	0,5	0,3
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥ 1.0	12	0,3	0,1
Vertically perforated sand-lime bricks KS L, e.g. acc. to EN 771-2:2011	≥ 1.4	12	0,4	0,3
Lightweight concrete hollow blocks, Hbl e.g. acc. to EN 771-3:2011	≥ 0.8	2	0,2	0,2
Vertically perforated clay bricks, HLz e.g. acc. to EN 771-1:2011	≥ 0.9	12	0,25	0,1
Lightweight concrete solid blocks, Vbl e.g. acc. to EN 771-3:2011	≥ 0.8	2	0,2	0,1

Table C3: Point thermal transmittance according to EOTA Technical Report TR 025:2016-05

Anchor type	Thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
KEW TSDL-V (galvanized steel)	50 ¹⁾ - 270	0,002
KEW TSDL-V (stainless steel)	50 ²⁾ - 270	0,001

¹⁾ for vertically perforated bricks and $h_D = 50$ mm: $\chi = 0,001$ W/K

²⁾ for concrete and $h_D = 50$ mm: $\chi = 0,002$ W/K

Table C4: Plate stiffness according to EOTA Technical Report TR 026:2016-05

Anchor type	Diameter of anchor plate [mm]	Load resistance of anchor plate [kN]	Plate stiffness [kN/mm]
KEW TSDL-V	60	1,75	1,24

Insulation support – metal nail KEW TSDL-V and KEW TSD-V WS

Performances
Displacements, point thermal transmittance, plate stiffness

Annex C 2