Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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

European Technical Assessment

ETA-08/0314 of 15 April 2015

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 TSBD, TSBDL, TSBD WS and TSBD WSG
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	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	22 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	Guideline for European technical approval of "Plastic anchors for fixing of external thermal insulation composite systems with rendering", ETAG 014, edition February 2011, used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.
This version replaces	ETA-08/0314 issued on 8 August 2014

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Specific part

1 Technical description of the product

The insulation support metal screw TSBD, TSBDL, TSBD WS und TSBD WSG is a screwed-in anchor which consists of a plastic part made of polypropylene and an accompanying specific screw of galvanised steel or stainless steel and an anchor cap made of polystyrene (for mounting the anchor on the surface of the insulating material) or an insulation cover made of polystyrene or mineral wool (for deep mounting of the anchor in the insulating material).

The anchor types TSBD und TSBDL may in addition be combined with the insulation discs DSB 90, DSB 110 and DSB 140.

The head of the screw for anchor type TSBD has an additional plastic coating.

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 Mechanical resistance and stability (BWR 1)

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement Safety in use.

3.2 Safety in case of fire (BWR 2)

Not applicable.

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances there may be requirements (e.g. transposed European legislation and national laws, regulations and administrative provisions) applicable to the products falling within the scope of this European Technical Assessment. In order to meet the provisions of Regulation (EU) No 305/2011, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	See Annex C 1
Anchor distances and dimensions of members	See Annex B 2
Point thermal transmittance	See Annex C 2, C 3
Plate stiffness	See Annex C 4
Displacements	See Annex C 4

3.5 Protection against noise (BWR 5)

Not applicable.

3.6 Energy economy and heat retention (BWR 6)

Not applicable.

3.7 Sustainable use of natural resources (BWR 7)

The sustainable use of natural resources was not investigated.

3.8 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

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 Commission of 27 June 1997 (Official Journal of the European Communities L 198 of 25.07.1997, p. 31–32) the system of assessment and verification of constancy of performance (AVCP) (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use	Level or class	System
Plastic anchors for use in concrete and masonry	For use in systems, such as façade systems, for fixing or supporting elements which contribute to the stability of the systems	—	2+

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

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

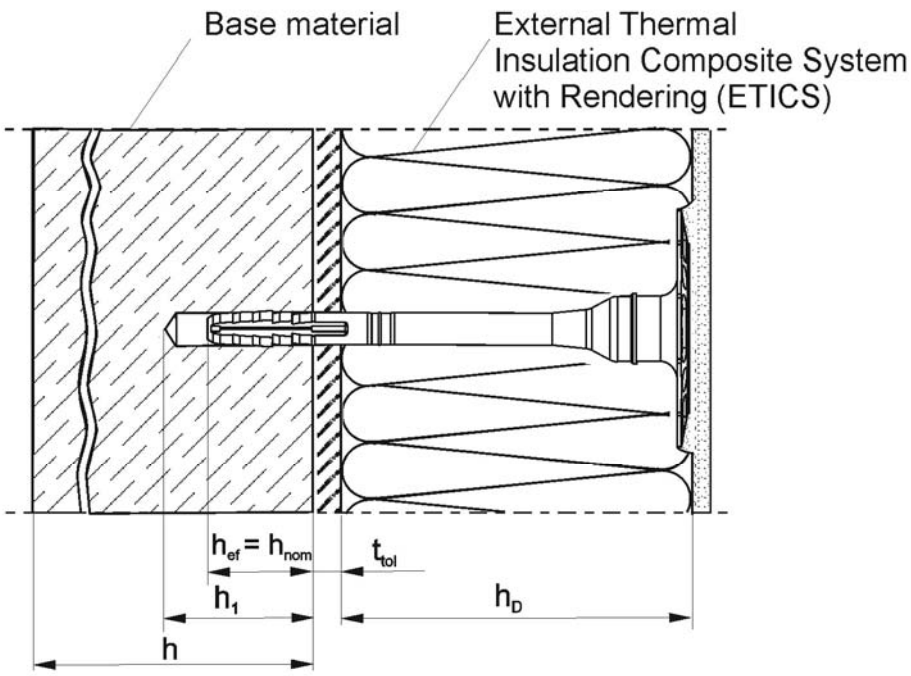
Issued in Berlin on 15 April 2015 by Deutsches Institut für Bautechnik

Uwe Bender
Head of Department

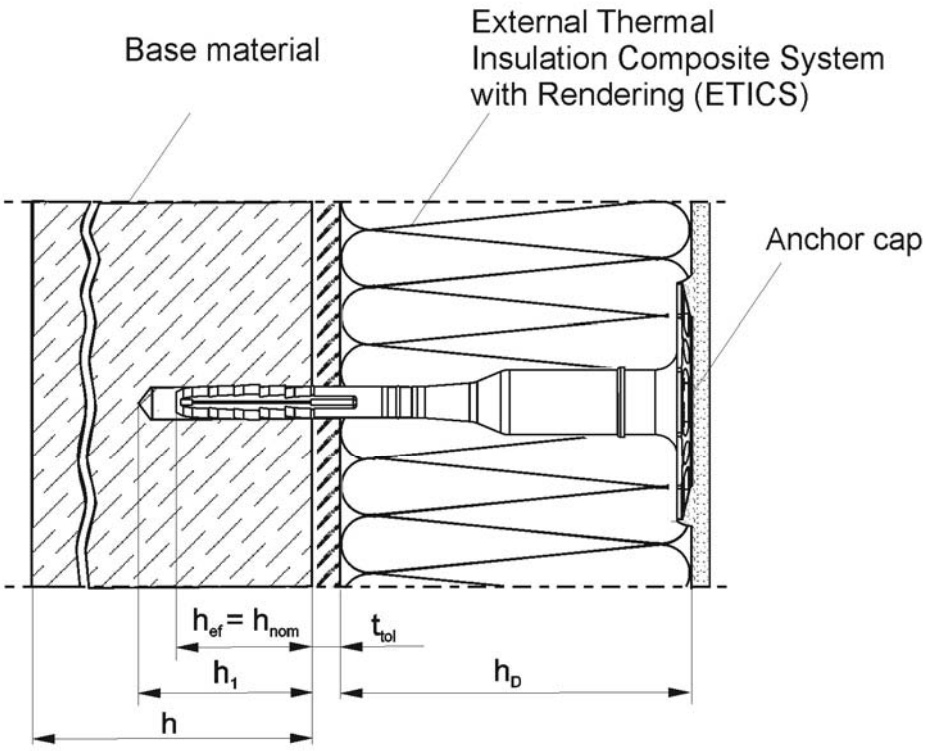
beglaubigt:
Ziegler

Deutsches Institut für Bautechnik DIBt

TSBD



TSBDL



Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Intended use: TSBD, TSBDL

Annex A 1

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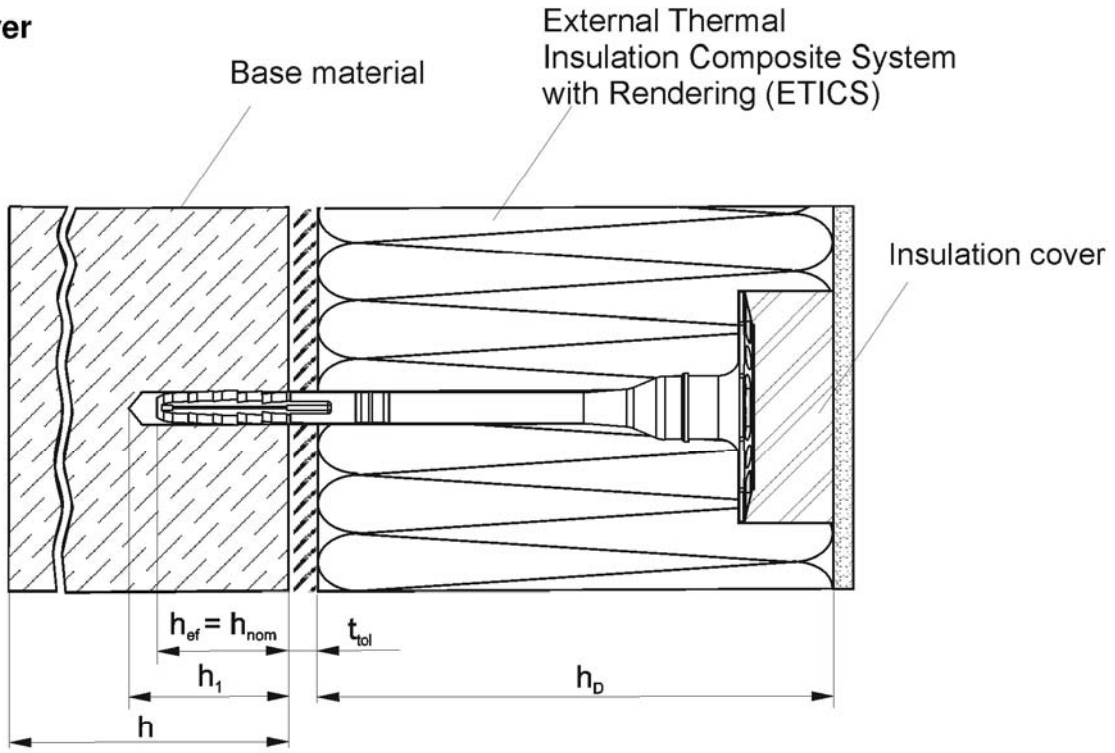
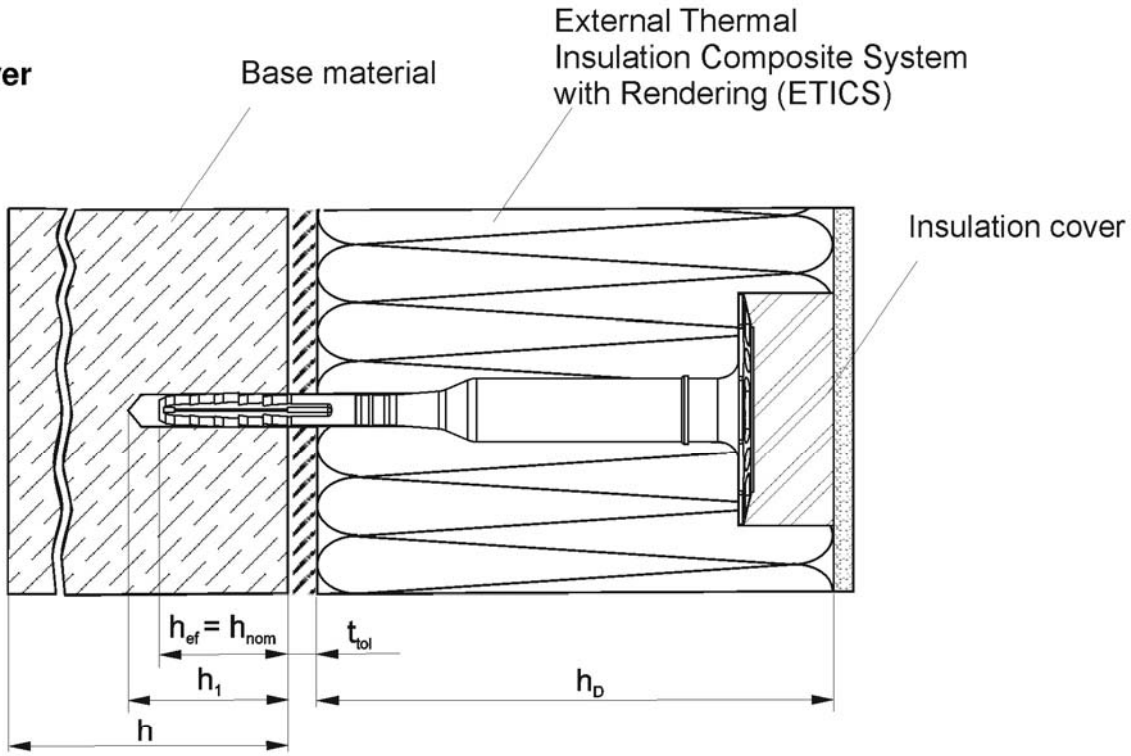
TSBD +
Insulation cover



TSBDL +
Insulation cover



Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG	**Annex A 2**
Product description Installed condition with insulation cover: TSBD, TSBDL	

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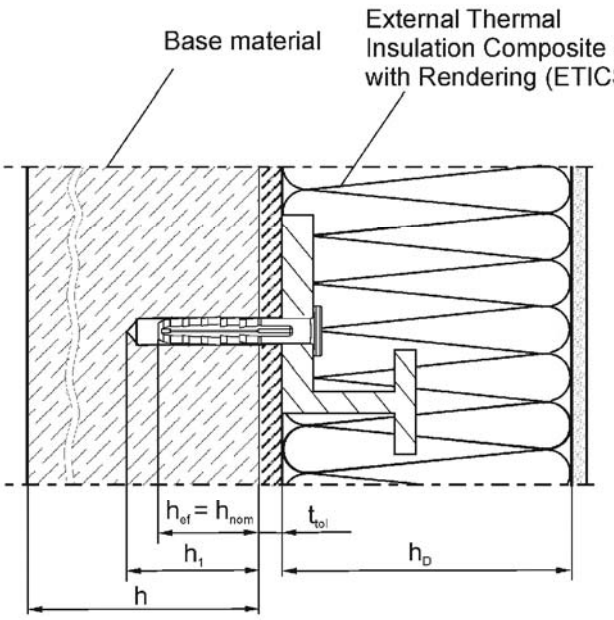
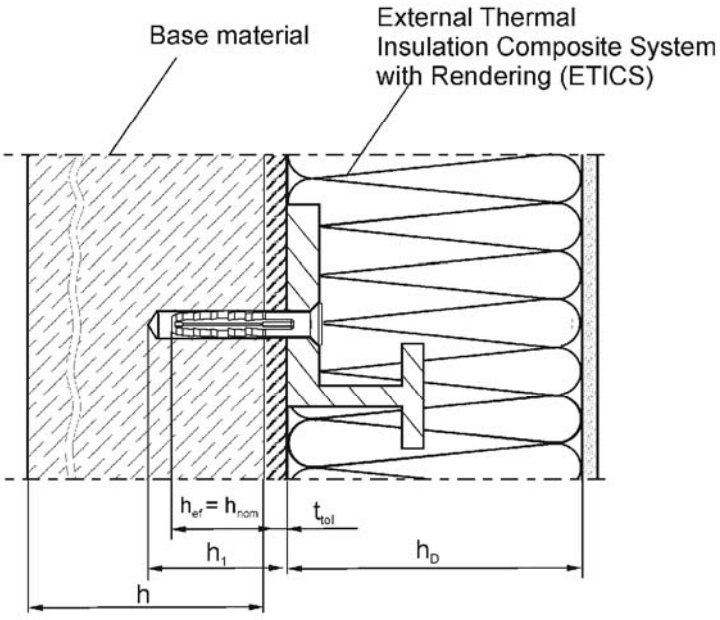
TSBD WS



TSBD WSG



Legend

h_{ef} = effective anchorage depth

h_1 = depth of drilled hole to deepest point

h = thickness of member (wall)

h_D = thickness of insulation material

t_{tol} = thickness of equalizing layer or non-load bearing coating

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG	**Annex A 3**
Product description Installed condition: TSBD WS, TSBD WSG	

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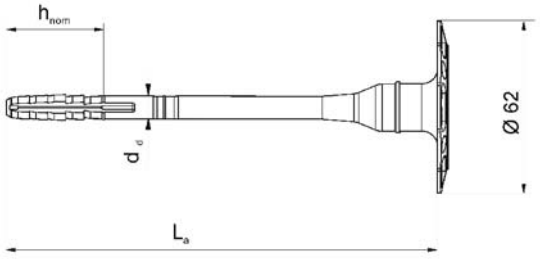
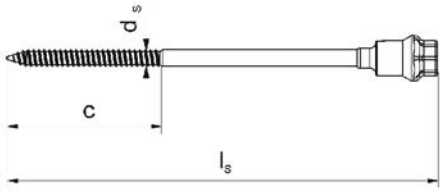
TSBD

Marking

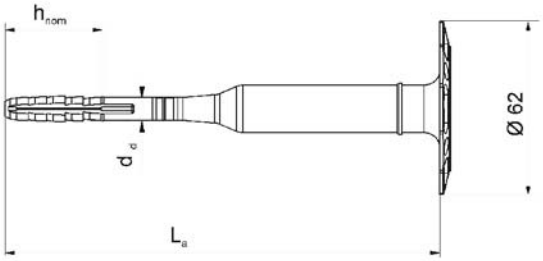
Company logo – (KEW®)
Anchor type – (TSBD)
– (TSBDL)
Diameter – (ø8)
Length of anchor – (e.g. 160)



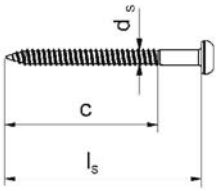
Special screw with special head



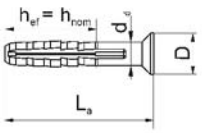
TSBDL



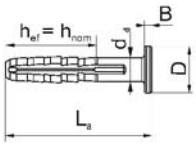
Special screw



TSBD WS / WSG

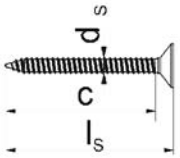


D ≥ 13,5mm



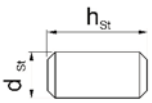
B ≥ 2,5mm
D ≥ 16mm

Special screw

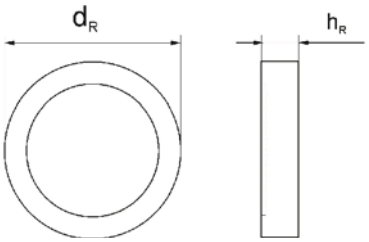


Installation tool

Anchor cap



Insulation cover



Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG	**Annex A 4**
Product description Marking of the anchor sleeve, dimensions, installation tool	

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Table A1: Dimensions TSBD

Anchor type	Anchor sleeve					Special screw		
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]		d_s [mm]	c [mm]	l_s [mm]
TSBD Use category (A-B-C)	100	440	8	30		5,5	52	L_a + 5mm
TSBD Use category (D-E)	100	440	8	30	50	5,5	52	L_a + 5mm
Determination of max. thickness of insulation: $h_D = L_a - h_{nom} - t_{tol}$								
e.g.: TSBD 8x160	L_a= 160			h_{ef}= 30			t_{tol}= 10	
	thickness of insulation material $h_{D\,max.}$ = 120							
e.g.: TSBD 8x160	L_a= 160			h_{ef}= 50			t_{tol}= 10	
	thickness of insulation material $h_{D\,max.}$ = 100							
Determination of max. thickness of insulation: $h_D = L_a - h_{nom} - t_{tol}$ + Insulation cover								
e.g.: TSBD 8x160 With Insulation cover 20mm	L_a= 160			h_{ef}= 30			t_{tol}= 10	
	thickness of insulation material $h_{D\,max.}$ = 140							
e.g.: TSBD 8x160 With Insulation cover 20mm	L_a= 160			h_{ef}= 50			t_{tol}= 10	
	thickness of insulation material $h_{D\,max.}$ = 120							

Table A2: Dimensions TSBDL

Anchor type	Anchor sleeve					Special screw			
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]		d_s [mm]	c [mm]	$l_{s\,min}$ [mm]	$l_{s\,max}$ [mm]
TSBDL Use category (A-B-C)	100	440	8	30		5,5	52	70	310
TSBDL Use category (D-E)	100	440	8	30	50	5,5	52	70	310
Determination of max. thickness of insulation: $h_D = L_a - h_{nom} - t_{tol}$									
e.g.: TSBDL 8x160	L_a= 160			h_{ef}= 30			t_{tol}= 10		
	thickness of insulation material $h_{D\,max.}$ = 120								
e.g.: TSBDL 8x160	L_a= 160			h_{ef}= 50			t_{tol}= 10		
	thickness of insulation material $h_{D\,max.}$ = 100								
Determination of max. thickness of insulation: $h_D = L_a - h_{nom} - t_{tol}$ + Insulation cover									
e.g.: TSBDL 8x160 With Insulation cover 20mm	L_a= 160			h_{ef}= 30			t_{tol}= 10		
	thickness of insulation material $h_{D\,max.}$ = 140								
e.g.: TSBDL 8x160 With Insulation cover 20mm	L_a= 160			h_{ef}= 50			t_{tol}= 10		
	thickness of insulation material $h_{D\,max.}$ = 120								

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Dimensions: TSBD, TSBDL

Annex A 5

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Table A3: Dimensions TSBD WS / WSG

Anchor type	Anchor sleeve					Special screw		
	L_a min [mm]	L_a max [mm]	d_d [mm]	h_{ef} [mm]		d_s [mm]	c [mm]	l_s [mm]
TSBD WS / WSG Use category (A-B-C)	**50**	**250**	**8**	**30**		**5,5**	**52**	**L_a + 5mm**
TSBD WS / WSG Use category (D-E)	**70**	**250**	**8**	**30**	**50**	**5,5**	**52**	**L_a + 5mm**

Table A4: Dimensions Insulation cover and Anchor cap

Anchor type	Insulation cover		Anchor cap	
	d_R [mm]	h_R [mm]	d_{St} [mm]	h_{St} [mm]
TSBD	**66**	**20**	**-**	**-**
TSBDL	**66**	**20**	**13**	**30**

Table A5: Materials

Member	Material
Anchor sleeve	Polypropylen, colour: papyrus white
Special screw	Steel, galvanized A2L or A2K according to EN ISO 4042:2001-01
	Stainless steel; mat.No. 1.4401 – 1.4571 according to EN ISO 3506-01:2010-04
Special head on Special screw	PA GF
Anchor cap	Polystyrene
Insulation cover	Polystyrene
	Mineral wool

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Dimensions: TSBD WS, TSBD WSG, anchor cap, insulation cover, materials

Annex A 6

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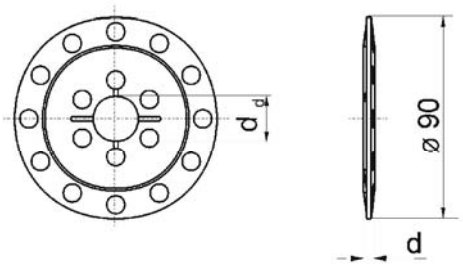
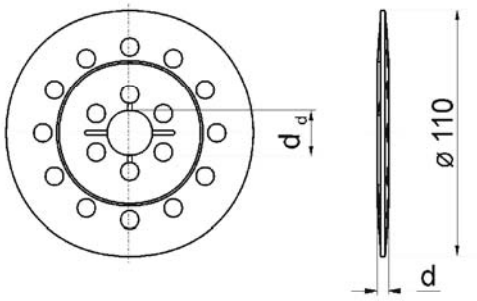
Insulation discs

DSB 90



DSB 110



DSB 140

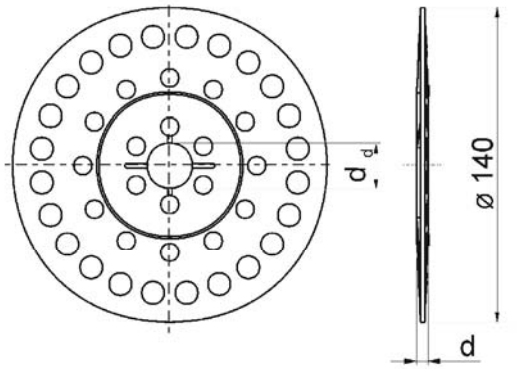


Table A6: Insulation discs, diameters and material

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 •TSBD • TSBDL • TSBD WS • TSBD WSG

Product description
Additional plates in combination with TSBD, TSBDL

Annex A 7

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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 thermal insulation composite system.

Base materials:

- Normal weight concrete (use category A) according to Annex C 1
- Solid masonry (use category B), according to Annex C 1
- Hollow or perforated masonry (use category C), according to Annex C 1 and C 5
- Lightweight aggregate concrete (use category D), according to Annex C 1
- Autoclaved aerated concrete (use category E), according to Annex C 1
- For other base materials of the use categories A, B, C, D or E the characteristic resistance of the anchor may be determined by job site tests according to ETAG 014 Edition February 2011, Annex D.

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 in accordance with the ETAG 014 Edition February 2011 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored.
- Fasteners are only to be used for multiple fixings of thermal insulation composite systems.

Installation:

- Hole drilling by the drill modes according to Annex C 1
- 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 •TSBD • TSBDL • TSBD WS • TSBD WSG	**Annex B 1**
Intended Use Specifications	

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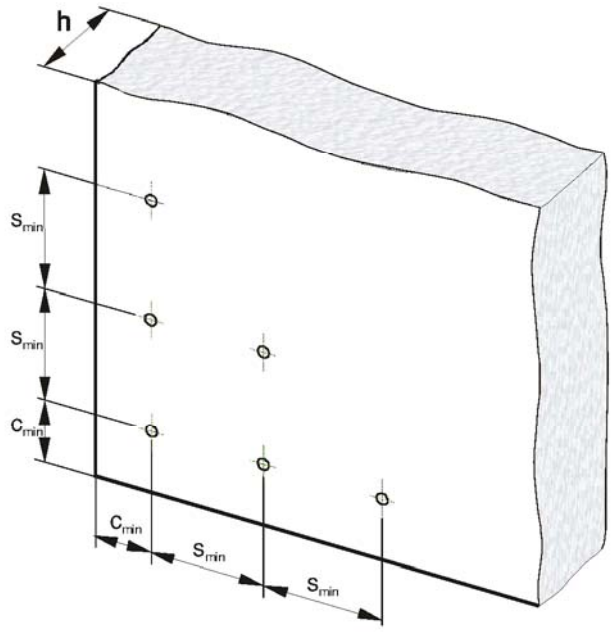
Table B1: Installation parameters

Anchor type			**TSBD, TSBDL**		
			Use category		
			A-B-C	D-E	
Drill hole diameter	d_0 =	[mm]	**8**	**8**	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	**8,45**	**8,45**	
Depth of drilled hole to deepest point	$h_1 \geq$	[mm]	**40**	**40**	**60**
Effective anchorage depth	h_{ef} =	[mm]	**30**	**30**	**50**

Table B2: Minimum distances and dimensions

			TSBD, TSBDL
Minimum thickness of member	h =	[mm]	**100**
Minimum allowable spacing	s_{min} =	[mm]	**100**
Minimum allowable edge distance	c_{min} =	[mm]	**100**

Edge and spacing distances



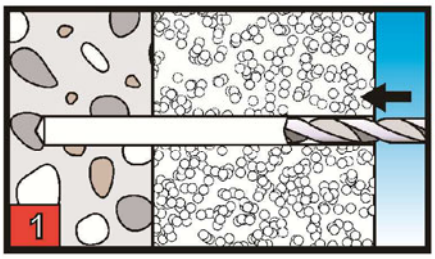
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use
Installation parameters,
Edge distances and spacing

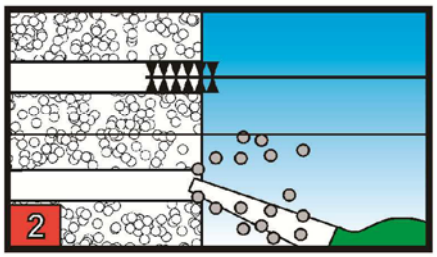
Annex B 2

Deutsches Institut für Bautechnik DIBt

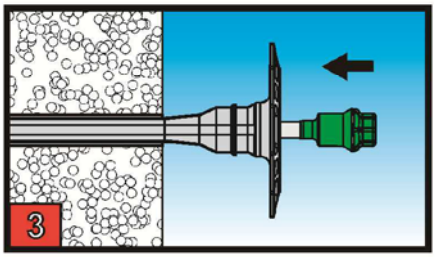
Installation instructions TSBD surface-flush mounted



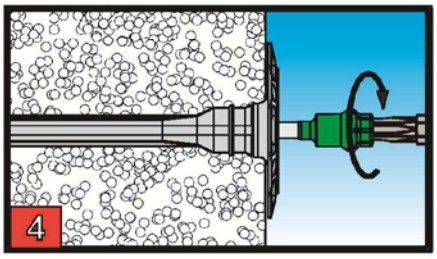
Create a hole considering the drill method according Annex C 1



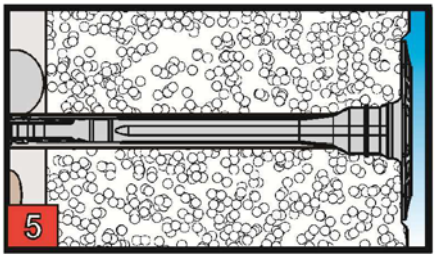
Holes to be cleaned of drilling dust



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



Set the screw with the matching bit



Surface-flush mounted

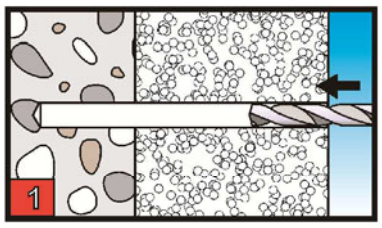
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use
Installation instructions TSBD - surface-flush mounted

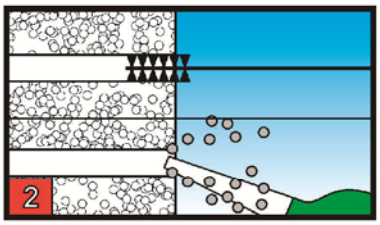
Annex B 3

Deutsches Institut für Bautechnik

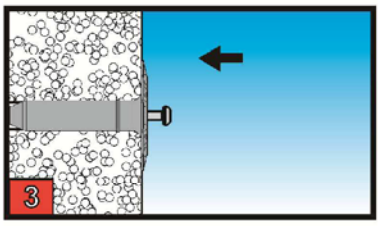
Installation instructions TSBDL surface-flush mounted



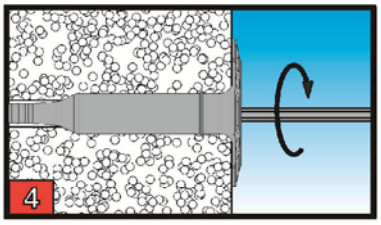
Create a hole considering the drill method according Annex C 1



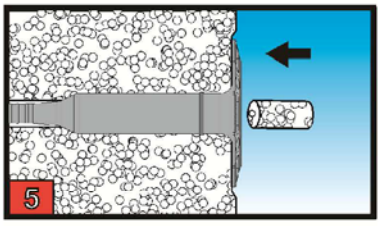
Holes to be cleaned of drilling dust



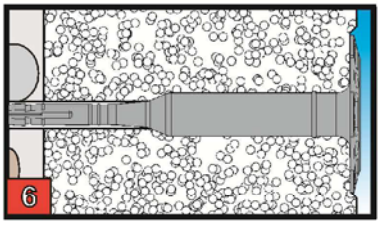
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Put the anchor cap in to the anchor



Surface-flush mounted

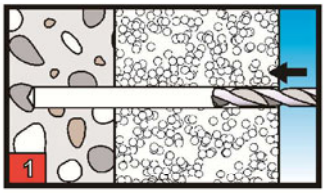
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use
Installation instructions TSBDL - surface-flush mounted

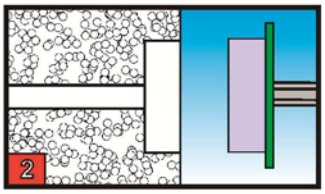
Annex B 4

Deutsches Institut für Bautechnik DIBt

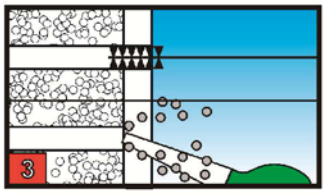
Installation instructions TSBD countersunk



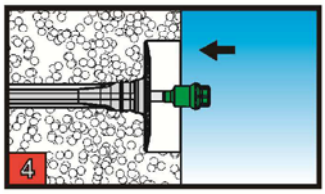
Create a hole considering the drill method according Annex C 1



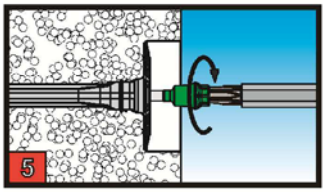
Countersink the insulation



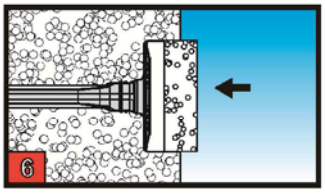
Holes to be cleaned of drilling dust



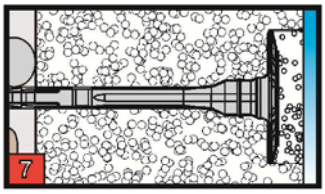
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Put the Insulation cover into the insulation

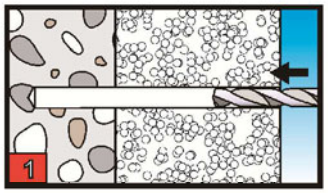


countersunk installation

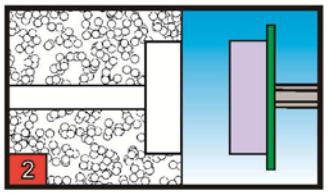
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG	**Annex B 5**
Intended Use Installation instructions TSBD – countersunk installation	

Deutsches Institut für Bautechnik DIBt

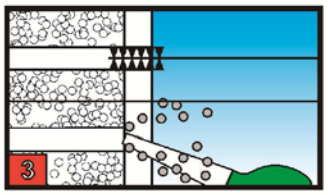
Installation instructions TSBDL countersunk



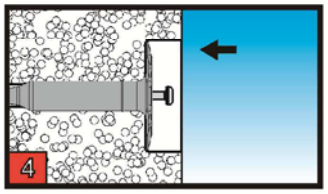
Create a hole considering the drill method according Annex C 1



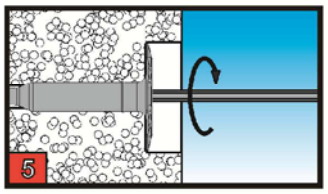
Countersink the insulation



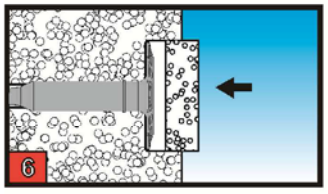
Holes to be cleaned of drilling dust



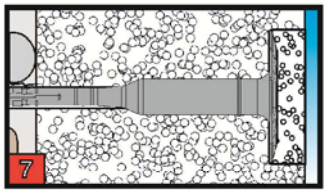
Insert the anchor into the hole until the plate rests on the insulation.



Set the screw with the matching bit



Put the Insulation cover into the insulation



countersunk installation

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Intended Use
Installation instructions TSBDL - countersunk installation

Annex B 6

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Table C1: Characteristic resistance N_{Rk} in [kN] to tension loads for a single anchor

Base material	Bulk density-class ρ [kg/dm³]	Minimum compressive strength f_k [N/mm²]	Remarks	Drill method	N_{Rk} [kN]
Concrete C12/15 EN 206-1:2000				Hammer drilling	**1,5**
Concrete C16/20 – C50/60 EN 206-1:2000					**1,5**
Sand-lime solid bricks , KS e.g. acc. to DIN V 106:2005-10 / EN 771-2:2011	≥1.8	12	Vertically perforation up to 15%		**1,5**
Clay bricks, Mz e.g. acc. to DIN 105-100:2012-01 / EN 771-1:2011	≥1.7	12	Vertically perforation up to 15%		**1,5**
Lightweight concrete solid blocks, Vbl 2 e.g. acc. to DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	2	according to Annex C 5		**0,75**
Lightweight concrete solid blocks, Vbl 4 e.g. acc. to DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	4	according to Annex C 5		**1,2**
Vertically perforated clay bricks, HLz e.g. acc. to DIN 105-100:2012-01 / EN 771-1:2011 with outer web thickness ≥ 12 mm	≥1.0	12	Vertically perforation more than 15% and less than 50%	Rotary drilling	**0,9**
Vertically perforated sand-lime bricks, KSL e.g. acc. to DIN V 106:2005-10 / EN 771-2:2011 with outer web thickness ≥ 20 mm	≥1.4	12	Vertically perforation up to 15%		**1,5**
Lightweight concrete hollow blocks, 4K Hbl e.g. acc. to DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.9	2	according to Annex C 5		**0,75**
Lightweight concrete hollow blocks, 1K Hbl e.g. acc. to DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.8	2	according to Annex C 5		**0,9**
Vertically perforated clay bricks, Hlz 250x380x235	≥1.0	6	according to Annex C 5		**0,5**
Lightweight aggregate concrete, LAC 4 e.g. acc. to EN 1520:2011 / EN 771-3:2011	≥1.0	4	h_{ef} ≥ 30mm	Hammer drilling	**0,4**
			h_{ef} ≥ 50mm		**0,9**
Lightweight aggregate concrete, LAC 6 e.g. acc. to EN 1520:2011 / EN 771-3:2011	≥1.0	6	h_{ef} ≥ 30mm		**0,5**
			h_{ef} ≥ 50mm		**1,2**
autoclaved aerated concrete PP4-0,5 e.g. acc. to DIN V 4165-100:2005-10 / EN 771-4:2011	≥0,5	4	h_{ef} ≥ 30mm	Rotary drilling	**0,30**
			h_{ef} ≥ 50mm		**0,75**

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Performances
Characteristic resistance of the anchor

Annex C 1

Deutsches Institut für Bautechnik DIBt

Table C2: Point thermal transmittance according to EOTA Technical Report TR 025:2007-06

Anchor type	thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
TSBD specific screw of galvanized steel	≤150mm	0,003
TSBD specific screw of galvanized steel	>150mm	0,002
TSBD specific screw of stainless steel	≤150mm	0,002
TSBD specific screw of stainless steel	>150mm	0,001

Anchor type	thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
TSBD + Insulation cover specific screw of galvanized steel	≤150mm	0,002
TSBD + Insulation cover specific screw of galvanized steel	>150mm	0,002
TSBD + Insulation cover specific screw of stainless steel	≤150mm	0,001
TSBD + Insulation cover specific screw of stainless steel	>150mm	0,001

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Performances
Point thermal transmittance

Annex C 2

Deutsches Institut für Bautechnik DIBt

Continuation of Table C2: Point thermal transmittance according to EOTA Technical Report TR 025:2007-06

Anchor type	thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
TSBDL specific screw of galvanized steel	≤80mm	0,002
TSBDL specific screw of galvanized steel	>80mm	0,001
TSBDL specific screw of stainless steel	≤240mm	0,001
TSBDL specific screw of stainless steel	>240mm	0,000

Anchor type	thickness of insulation h_D [mm]	Point thermal transmittance χ [W/K]
TSBDL + Insulation cover specific screw of galvanized steel	≤150mm	0,001
TSBDL + Insulation cover specific screw of galvanized steel	>150mm	0,001
TSBDL + Insulation cover specific screw of stainless steel	≤100mm	0,001
TSBDL + Insulation cover specific screw of stainless steel	>100mm	0,000

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Table C3: Plate stiffness according to EOTA Technical Report TR 026:2007-06

Anchor type	Diameter of anchor plate [mm]	Load resistance of anchor plate [kN]	Plate stiffness [kN/mm]
TSBD	60	2,22	1,6
TSBDL	60	2,22	1,6

Table C4: Displacements

Base material	Bulk-density-class ρ [kg/dm³]	Minimum compressive strength f_k [N/mm²]	Tension load N [kN]	Displacements $\delta_m(N)$ [mm]
Concrete C12/15-C50/60 EN 206-1:2000			0,50	0,2
Sand-lime solid bricks, KS DIN V 106:2005-10 / EN 771-2:2011	≥1.8	12	0,50	0,3
Mauerziegel, Mz DIN 105-100:2012-01 / EN 771-1:2011	≥1.7	12	0,50	0,3
Lightweight concrete solid blocks, Vbl 2 DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	2	0,25	0,3
Lightweight concrete solid blocks, Vbl 4 DIN V 18152-100:2005-10 / EN 771-3:2011	≥0.8	4	0,40	0,4
Vertically perforated clay bricks, HLz DIN 105-100:2012-01 / EN 771-1:2011	≥1.0	12	0,30	0,1
Vertically perforated sand-lime bricks, KSL DIN V 106:2005-10 / EN 771-2:2011	≥1.4	12	0,50	0,3
Lightweight concrete hollow blocks, 4K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.9	2	0,25	0,1
Lightweight concrete hollow blocks, 1K Hbl DIN V 18151-100:2005-10 / EN 771-3:2011	≥0.8	2	0,30	0,2
Vertically perforated clay bricks, Hlz 250x380x235	≥1.0	6	0,15	0,1
Lightweight aggregate concrete, LAC 4 EN 1520:2011 / EN 771-3:2011	≥1.0	4	h_{ef} > 30 mm: 0,15	0,1
			h_{ef} ≥ 50 mm: 0,30	0,2
Lightweight aggregate concrete, LAC 6 EN 1520:2011 / EN 771-3:2011	≥1.0	6	h_{ef} > 30 mm: 0,15	0,1
			h_{ef} ≥ 50 mm: 0,40	0,2
autoclaved aerated concrete DIN V 4165-100:2005-10 / EN 771-4:2011	≥0,5	4	h_{ef} > 30 mm: 0,10	0,15
			h_{ef} ≥ 50 mm: 0,25	0,01

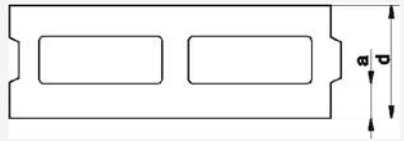
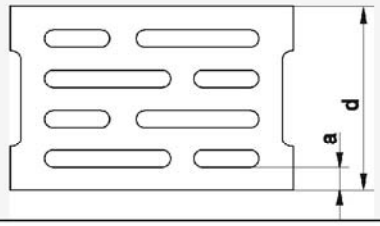
Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Performances
Plate stiffness
Displacements

Annex C 4

Deutsches Institut für Bautechnik DIBt

Table C5: Geometry of Hbl acc. DIN V 18151-100:2005-10 / EN 771-3:2011

Geometry	Thinkness of brick d [mm]	Outer web in longitudinal direction a [mm]
	175	50
	240 300 365	30

The anchor shall be placed in the brick in such way, that the spreading part of the expansion sleeve is located in the outer web.

Table C6: Geometry of Vbl according to DIN V 18152-100:2005-10 / EN 771-3:2011

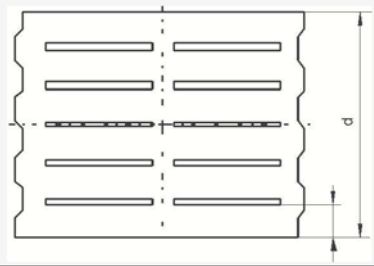
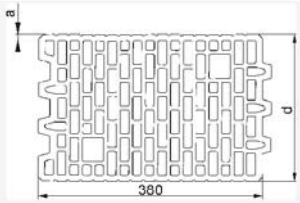
Geometry	Thinkness of brick d [mm]	Outer web in longitudinal direction a [mm]
	248 300 370	≥ 43

Table C7: Geometry of vertically perforated clay bricks Hlz 250x380x235

Geometry	Thinkness of brick d [mm]	Outer web in longitudinal direction a [mm]
	250	≥16

Insulation support •TSBD • TSBDL • TSBD WS • TSBD WSG

Performances
Geometry of lightweight concrete hollow blocks and solid blocks, vertically perforated clay brick 250x380x235

Annex C 5