Deutsches Institut für Bautechnik

Approval body for construction products and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and Laender Governments

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European Technical Assessment

ETA-08/0190 of 5 September 2017

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	Würth Plastic Anchor W-UR
Product family to which the construction product belongs	Plastic anchor for multiple use in concrete and masonry for non-structural applications
Manufacturer	Adolf Würth GmbH & Co. KG Reinhold-Würth-Straße 12-17 74653 Künzelsau DEUTSCHLAND
Manufacturing plant	Werk 2
This European Technical Assessment contains	88 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	ETAG 020, edition March 2012, used as EAD according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011.

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Specific Part

1 Technical description of the product

The Würth plastic anchor in the range W-UR 8 and W-UR 10 is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanised steel or of stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

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 anchors 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)

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)

Essential characteristic	Performance
Reaction to fire	Anchorages satisfy requirements for Class A 1
Resistance to fire	See Annex C 2

3.3 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Characteristic resistance for tension and shear loads	See Annexes C 1, C 11 – C 74
Characteristic resistance for bending moments	See Annex C 1
Displacements under shear and tension loads	See Annex C 2
Anchor distances and dimensions of members	See Annex B 2, B 3

3.4 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

In accordance with guideline for European technical approval ETAG 020, March 2012 used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011 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 at Deutsches Institut für Bautechnik.

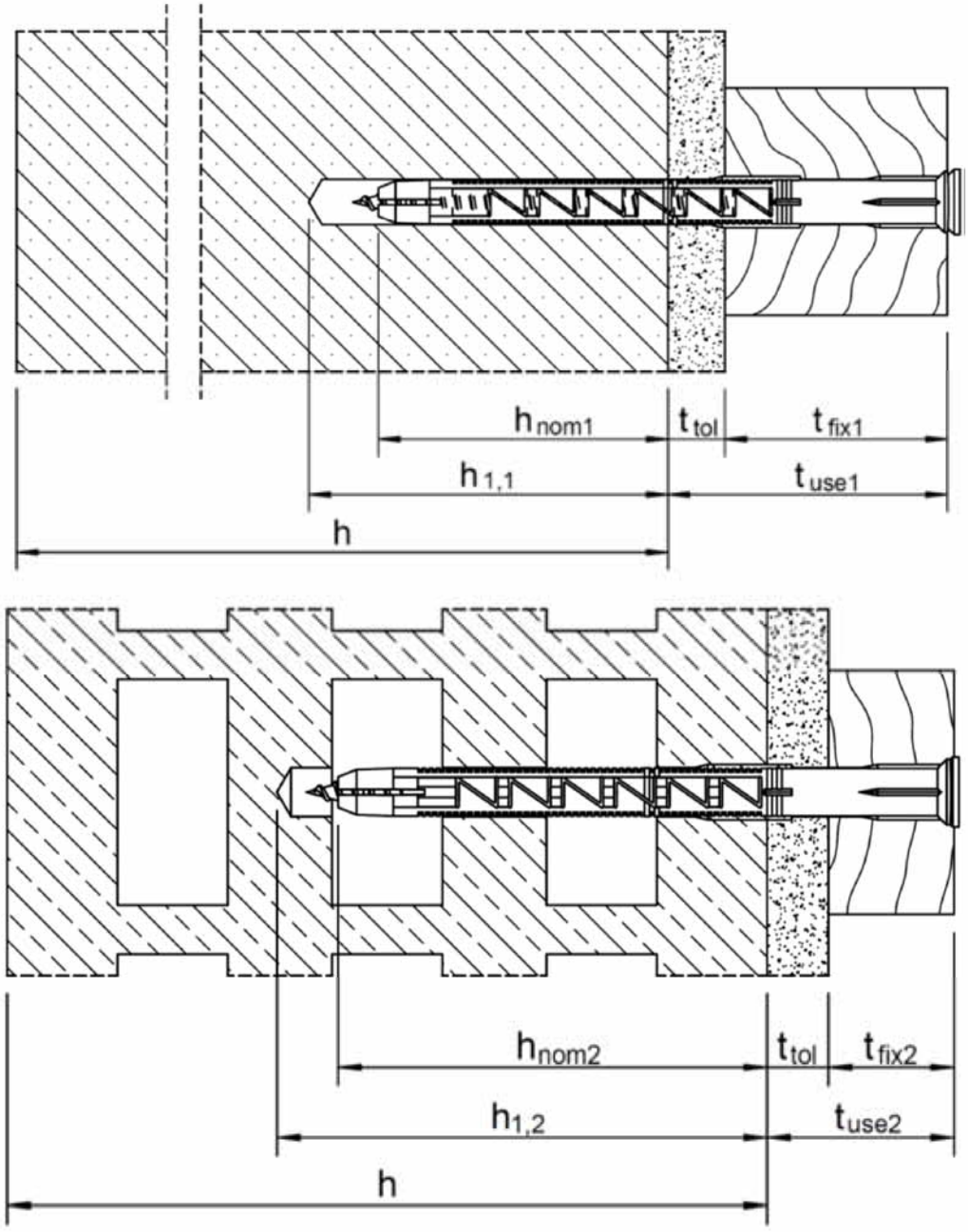
Issued in Berlin on 5 September 2017 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Ziegler

Deutsches Institut für Bautechnik DIBt

Plastic Anchor W-UR 8 and W-UR 10 in-place installation



h_{nom1}: Overall plastic anchor embedment depth in the base material (1)
h_{nom2}: Overall plastic anchor embedment depth in the base material (2)
$h_{1,1}$: Depth of drill hole to deepest point (1)
$h_{1,2}$: Depth of drill hole to deepest point (2)
h: Thickness of member
t_{fix1}: Thickness of fixture (1)
t_{fix2}: Thickness of fixture (2)
t_{tol}: Thickness of non-load-bearing layer
t_{use}: Useable length / anchorage length

Würth Plastic Anchor W-UR	**Annex A 1**
Product description Installed condition in-place installation	

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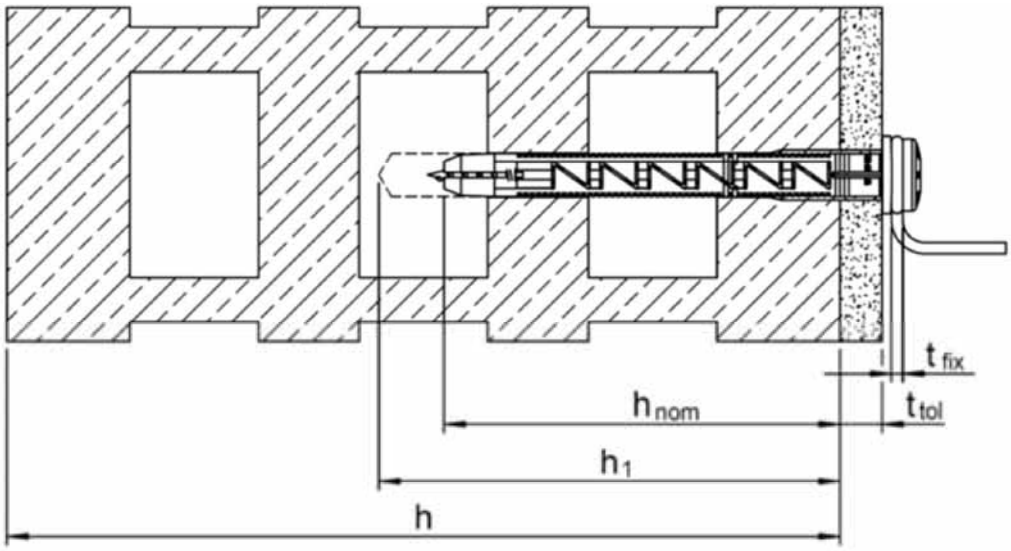
Plastic Anchor W-UR 8 Panhad for pre-positioned installation



h_{nom}: Overall plastic anchor embedment depth in the base material
h_1: Depth of drill hole to deepest point
h: Thickness of member
t_{fix}: Thickness of fixture
t_{tol}: Thickness of non-load-bearing layer

Würth Plastic Anchor W-UR	**Annex A 2**
Product description Installed condition pre-positioned installation	

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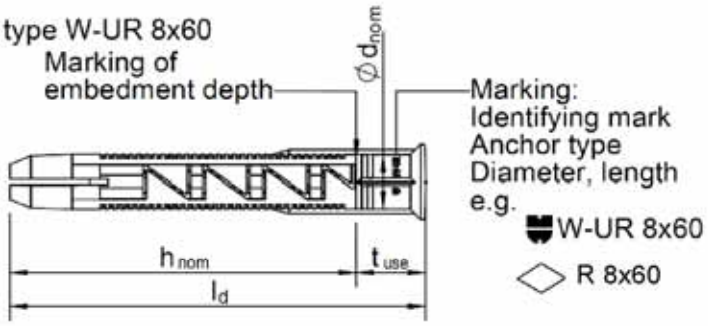
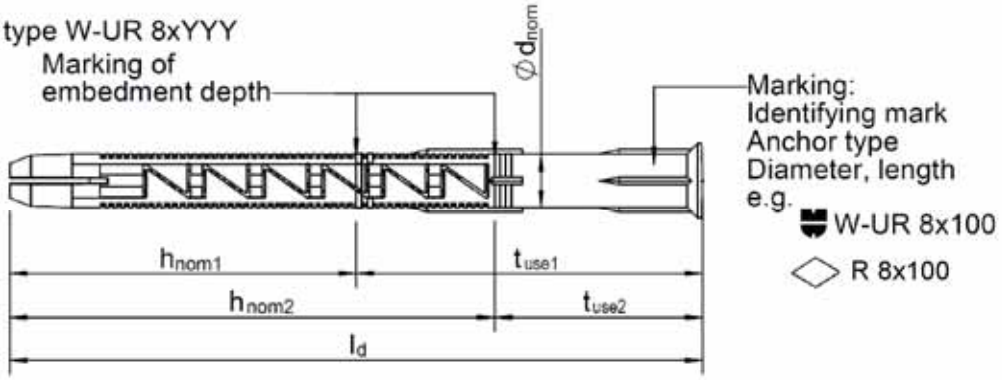
Plastic sleeve

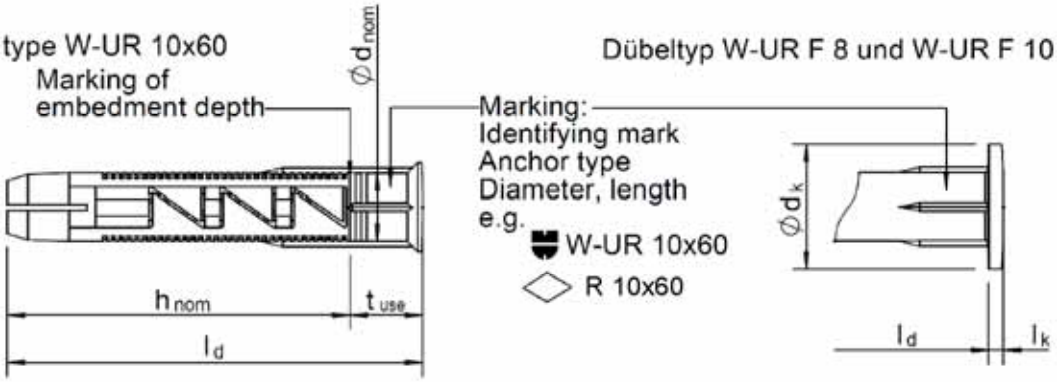
Anchor type W-UR 8x60



Anchor type W-UR 8xYYY

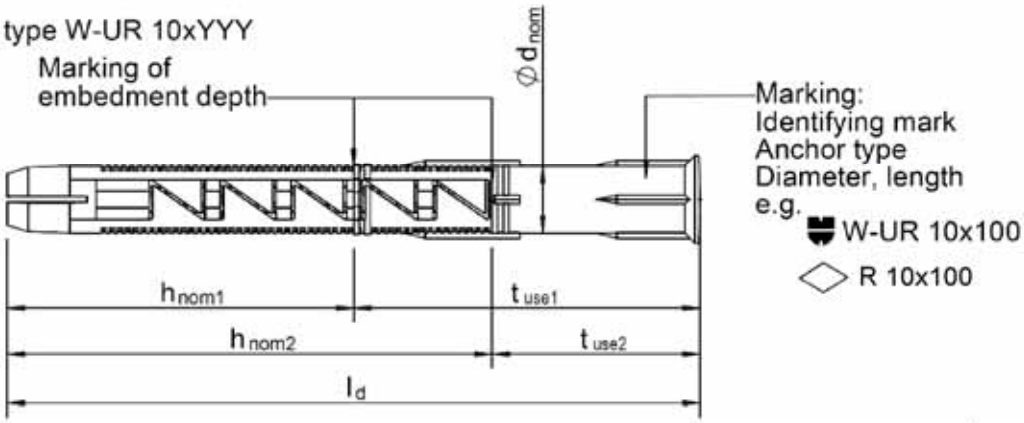


Anchor type W-UR 10x60



Dübeltyp W-UR F 8 und W-UR F 10

Anchor type W-UR 10xYYY



Würth Plastic Anchor W-UR

Product description
Anchor types – head versions of the sleeve
Marking and dimensions

Annex A 3

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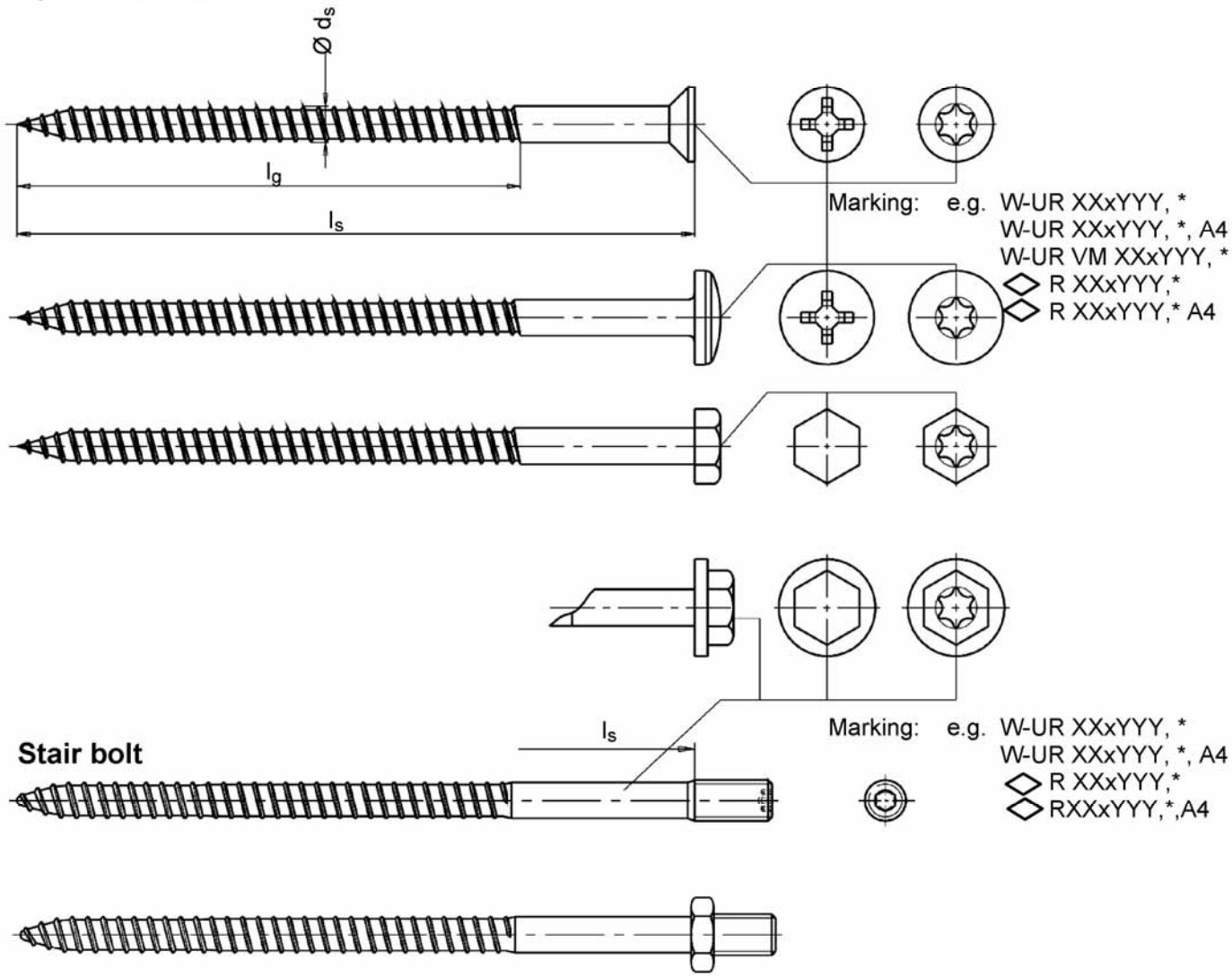
Special screw



Stair bolt

Würth Plastic Anchor W-UR	**Annex A 4**
Product description Special screw – head versions Marking and dimensions	

Table A1: Anchor dimensions

Anchor type			**W-UR 8**		**W-UR 10**	
Overall plastic anchor embedment depth in the base material	$h_{nom} \geq$	[mm]	50 (h_{nom1})	70 (h_{nom2})	50 (h_{nom1})	70 (h_{nom2})
Plastic sleeve						
Plastic sleeve diameter	$\varnothing\ d_{nom}$	[mm]	8		10	
Length of plastic sleeve	$l_d \geq$	[mm]	51	71	71	
Flat collar diameter	$\varnothing\ d_k$	[mm]	14		18	
Thickness of flat collar	$l_k \geq$	[mm]	1.6		2	
Thickness of fixture	$t_{use} \geq$	[mm]	1		1	
Thickness of fixture pre-positioned installation	$t_{fix} \geq$	[mm]	1		-	
Special screw						
Screw diameter	d_s	[mm]	6		7	
Length of screw in-place installation	l_s	[mm]	l_d + 5 mm		l_d + 5 mm	
Length of screw pre-positioned installation	l_s	[mm]	$l_d + t_{fix}$ + 5 mm		-	
Length of thread in-place installation	l_g	[mm]	75		75	
Length of thread pre-positioned installation	l_g	[mm]	85		-	

Table A2: Materials

Designation	**Material**
Plastic sleeve	Polyamid, colour brown
Special screw	Steel, acc. to DIN EN ISO 4042:2001-01 galvanised Stainless steel, 1.4401, 1.4571 or 1.4578

Würth Plastic Anchor W-UR

Product description
Anchor dimensions and materials

Annex A 5

Deutsches Institut für Bautechnik DIBt

Specifications of intended use

Anchorages subject to:

- Static or quasi-static loads
- Multiple fixing of non-structural applications

Base materials:

- Reinforced or unreinforced normal weight concrete with strength classes ≥ C12/15 (use category a), according to EN 206-1:2000, Precast or prestressed hollow core elements according to Annex C 71, C 72, C 73
- Solid brick masonry (use category b), according to Annex C 11, C 12, C 46, C 47, C 54 – C 60, C 74
  Note: The characteristic resistance is also valid for larger brick sizes and larger compressive strength of the masonry unit.
- Hollow brick masonry (use category c), according to Annex C 13 – C 45, C 48 – C 53, C 61 – C 68.
- Autoclaved aerated concrete (use category d), according to Annex C 69 - C 70
- Mortar strength class of the masonry ≥ M2,5 at minimum according to EN 998-2:2010.
- For other base materials of the use categories a, b, c or d d the characteristic resistance of the anchor may be determined by job site tests according to ETAG 020, Annex B Edition March 2012.

Temperature Range:

- Temperature Range b): -40 °C to + 80 °C (max. long term temperature +50 °C and max. short term temperature + 80 °C)
- Temperature Range c): -40 °C to + 50 °C (max long term temperature +30 °C and max. short term temperature + 50 °C)

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (zinc coated steel, stainless steel).
- The specific screw made of galvanized steel may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in this way, that intrusion of moisture into the anchor shaft is prevented. Therefore there shall be an external cladding or a ventilated rainscreen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (e. g. undercoating or body cavity protection for cars).
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel).
- Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Design:

- The anchorages are designed in accordance with the ETAG 020, Annex C Edition March 2012 under the responsibility of an engineer experienced in anchorages and masonry work.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances. The position of the anchor is indicated on the design drawings.
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 020 Edition March 2012.

Installation:

- Hole drilling by the drill modes according to Annex C 11 - Annex C 74
- 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 W-UR 8: ≥ -40 °C; W-UR 10: ≥ -20 °C
- Exposure to UV due to solar radiation of the anchor not protected ≤ 6 weeks

Würth Plastic Anchor W-UR	**Annex B 1**
Intended use Specifications	

Table B1: Installation parameters

Anchor type			**W-UR 8**		**W-UR 10**	
Drill hole diameter	d_0 =	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45	
Depth of drill hole to deepest point[1)]	$h_1 \geq$	[mm]	60 ($h_{1,1}$)	80 ($h_{1,2}$)	60 ($h_{1,1}$)	80 ($h_{1,2}$)
Overall plastic anchor embedment depth in the base material[1), 2)]	$h_{nom} \geq$	[mm]	50 (h_{nom1})	70 (h_{nom2})	50 (h_{nom1})	70 (h_{nom2})
Diameter of clearance hole in the fixture in-place installation	$d_f \leq$	[mm]	8.5		10.5	
Diameter of clearance hole in the fixture pre-positioned installation	$d_f \leq$	[mm]	7		-	

1) See Annex 1 and 2

2) For hollow and perforated masonry the influence of $h_{nom} > 70$ mm (W-UR 8 and W-UR 10) has to be detected by job site tests according ETAG 020 Annex B

For anchorages in hollow and perforated masonry variable set in the range $h_{nom1} = 50$ mm $\leq h_{nom} < 70$ mm $= h_{nom2}$ the characteristic values F_{Rk} for $h_{nom1} = 50$ mm may be taken without performing additional job site tests (compare Annex C 13, Annex C 48, Annex C 50, Annex C 51, Annex C 68)

For anchorages in hollow and perforated masonry with anchor type W-UR 8x60 and W-UR 10 ($h_{nom} = 50$ mm) the influence $50 < h_{nom} \leq 59$ mm always has to be detected by job site tests.

Table B2: Minimum thickness of member, edge distance and anchor spacing in concrete

		h_{nom} [mm]	h_{min} [mm]	$c_{cr,N}$ [mm]	c_{min} [mm]	s_{min} [mm]
W-UR 8	Concrete ≥ C16/20	= 50	100	40	40	40
	Concrete C12/15	= 50	100	60	60	60
	Concrete ≥ C16/20	> 50	100	50	50	50
	Concrete C12/15	> 50	100	70	70	70
W-UR 10	Beton ≥ C16/20	= 50	80	50	50	60
	Beton C12/15	= 50	80	70	70	85
	Concrete ≥ C16/20	> 50	100	100	70	50
	Concrete C12/15	> 50	100	140	100	70

W-UR 8: Fixing points with spacing a ≤ 100 mm are considered as a group with a max. characteristic resistance $N_{Rk,p}$ acc. to Table C 2.1. For a > 100 mm, the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table C 2.1.
W-UR 10: Fixing points with spacing a ≤ 75 mm are considered as a group with a max. characteristic resistance $N_{Rk,p}$ acc. to Table C 2.1. For a > 75 mm, the anchors are considered as single anchors, each with a characteristic resistance $N_{Rk,p}$ acc. to Table C 2.1.

Würth Plastic Anchor W-UR	**Annex B 2**
Intended use Installation parameters, edge distances and spacings for use in concrete	

Table B3: Minimum thickness of member, edge distance and anchor spacing in masonry

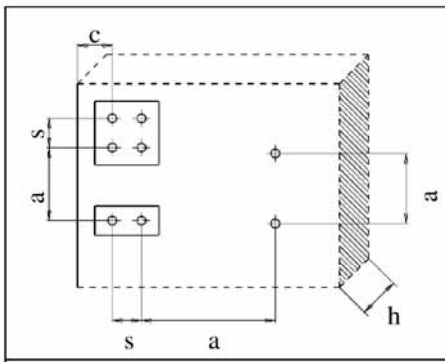
			Masonry			
			W-UR 8		W-UR 10	
Overall plastic anchor embedment depth	h_{nom}	[mm]	50	70	50	70
Minimum thickness of member	h_{min}	[mm]	100 [1]		100 [1]	
Single anchor						
Minimum allowable spacing	a_{min}	[mm]	250		250	
Minimum allowable edge distance	c_{min}	[mm]	100 [1]		100 [1]	
Anchor group						
Spacing perpendicular to free edge	$s_{1,min}$	[mm]	100		250 [2]	100
Spacing parallel to free edge	$s_{2,min}$	[mm]	100		250 [2]	100
Minimum edge distance	c_{min}	[mm]	100 [1]		250 [2]	100 [1]

[1] h_{min} and c_{min} depend on the brick size and/or on the brick: See the following annexes Annex C 11 to Annex C 74

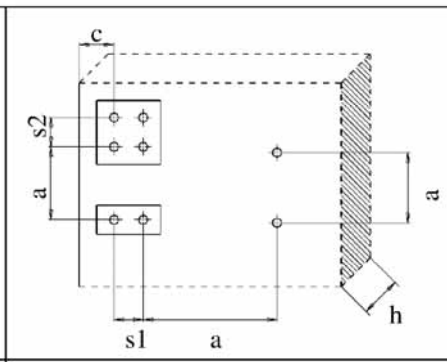
[2] other spacing possible see Annex C 46; C 51; C 54

Table B4: Minimum thickness of member, edge distance and anchor spacing in AAC

			Autoclaved aerated concrete		(Prefabricated) Reinforced AAC
			W-UR 8	W-UR 10	W-UR 10
Minimum thickness of member	h_{min}	[mm]	175	175	175
Single anchor					
Minimum allowable spacing	a_{min}	[mm]	250	250	600
Minimum allowable edge distance	c_{min}	[mm]	60	80	150
Anchor group					
Spacing perpendicular to free edge	$s_{1,min}$	[mm]	80	100	100
Spacing parallel to free edge	$s_{2,min}$	[mm]	80	100	100
Minimum edge distance	c_{min}	[mm]	80	100	150



Concrete (Table B2)



Masonry (Table B3) and AAC (Table B4)

Würth Plastic Anchor W-UR

Intended use
Installation parameters, edge distances and spacing for use in masonry and autoclaved aerated concrete

Annex B 3

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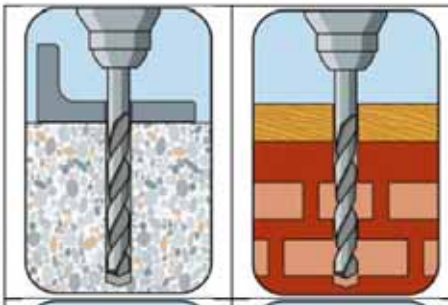
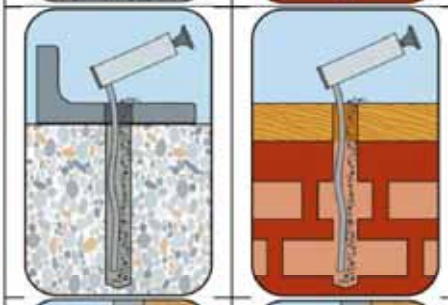
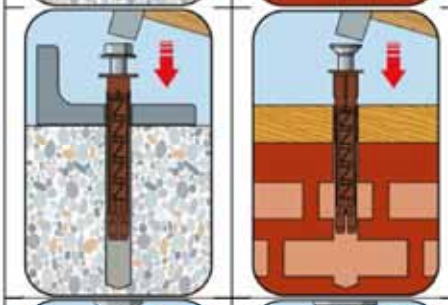
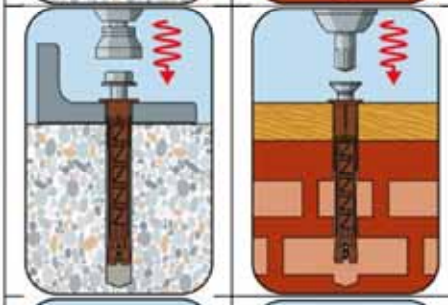
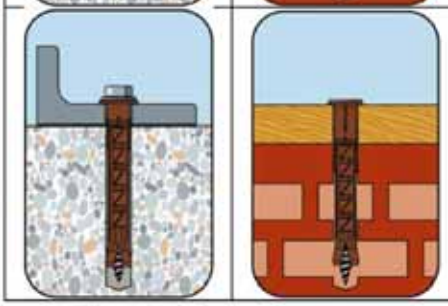
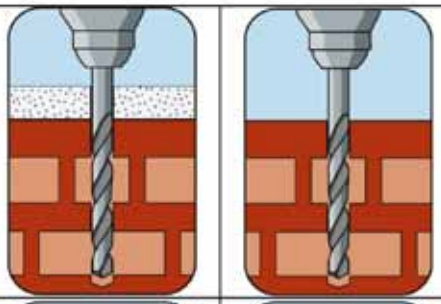
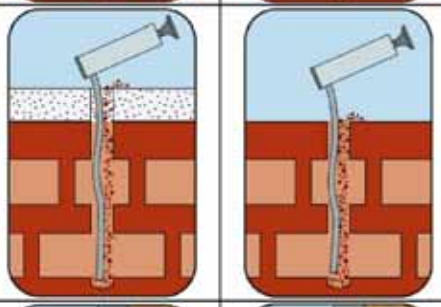
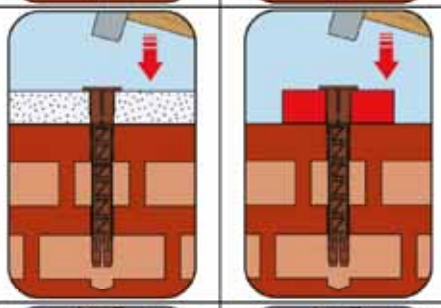
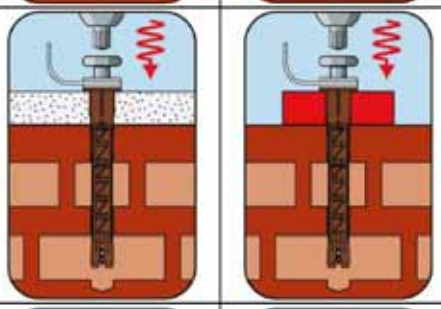
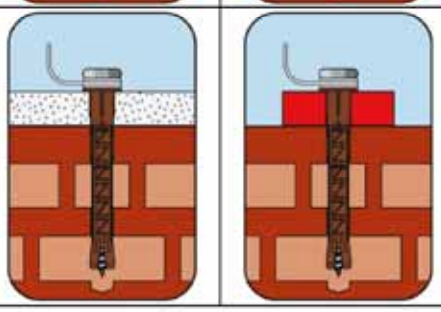
Installation instructions in-place installation for concrete and solid masonry or hollow masonry

	Drill the bore hole
	Clean the drilled bore hole
	Gently hammer the fastener into the hole
	Insert the special screw into the sleeve
	Tighten the screw until the head of the screw touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move on turning of the screw is impossible after the complete turn-in of the screw.

Würth Plastic Anchor W-UR	**Annex B 4**
Intended use Installation instructions in-place installation	

Deutsches Institut für Bautechnik DIBt

Installation instructions pre-positioned installation for concrete and solid masonry or hollow masonry

	Drill the bore hole
	Clean the drilled bore hole
	Insert the fastener through the attachment into the concrete/masonry using carefully a hammer
	Screw the special screw into the sleeve
	Tighten the screw until the head of the screw and the fixture touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move on turning of the screw is impossible after the complete turn-in of the screw.

Würth Plastic Anchor W-UR	**Annex B 5**
Intended use Installation instructions pre-positioned installation	

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Table C 1.1: Characteristic resistance of the screw

Anchor type			Galvanised steel				Stainless steel			
			W-UR 8		**W-UR 10**		**W-UR 8**		**W-UR 10**	
Failure of expansion element (special screw)										
Overall plastic anchor embedment depth	h_{nom}	[mm]	**50**	**70**	**50**	**70**	**50**	**70**	**50**	**70**
Characteristic tension resistance	$N_{Rk,s}$	[kN]	11.8		18.7		13.7		21.8	
Partial safety factor	γ_{Ms} [1)]	[-]	1.5		1.5		1.87		1.87	
Characteristic shear resistance	$V_{Rk,s}$	[kN]	5.9		9.4		6.9		10.9	
Partial safety factor	γ_{Ms} [1)]	[-]	1.25		1.25		1.56		1.56	
Characteristic bending resistance of the special screw										
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	8.8		17.7		10.3		20.6	
Partial safety factor	γ_{Ms} [1)]	[mm]	1.25		1.25		1.56		1.56	

[1)] In absence of other national regulations

Table C 2.1: Characteristic resistance for pullout failure for use in concrete (hammer drilling)

Anchor type			Galvanised steel				Stainless steel			
Pull-out failure (plastic sleeve)			**W-UR 8**		**W-UR 10**		**W-UR 8**		**W-UR 10**	
			50	**70**	**50**	**70**	**50**	**70**	**50**	**70**
Concrete ≥ C16/20										
Characteristic resistance	30°C[2] / 50°C[3] $N_{Rk,p}$	[kN]	4.0	6.0	3.0	4.0	4.0	6.0	3.0	4.0
	50°C[2] / 80°C[3] $N_{Rk,p}$	[kN]	3.5	5.0	2.5	3.5	3.5	5.0	2.5	3.5
Partial safety factor	γ_{Mc} [1)]	[-]	1.8	1.8	1.8	1.8	1.8	1.8	1,8	1.8
Concrete C12/15										
Characteristic resistance	30°C[2] / 50°C[3] $N_{Rk,p}$	[kN]	3.0	4.0	2.0	2.5	3.0	4.0	2.0	2.5
	50°C[2] / 80°C[3] $N_{Rk,p}$	[kN]	2.5	3.5	2.0	2.5	2.5	3.5	2.0	2.5
Partial safety factor	γ_{Mc} [1)]	[-]	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8

[1)] In absence of other national regulations
[2)] Maximum long term temperature
[3)] Maximum short term temperature

Würth Plastic Anchor W-UR

Performances
Characteristic resistance of the screw
characteristic resistance for pullout failure for use in concrete

Annex C 1

Table C 3.1:Displacements[1] under tension and shear loading in concrete, masonry and AAC

Anchor type			Tension load			Shear load		
		h_{nom} [mm]	F[2] [kN]	δ_{N0} [mm]	$\delta_{N\infty}$ [mm]	F[2] [kN]	δ_{V0} [mm]	$\delta_{V\infty}$ [mm]
W-UR 8	Concrete ≥ C16/20	50	1.8	0.26	0.52	1.8	0.96	1.44
W-UR 8	Concrete ≥ C16/20	70	2.4	0.35	0.7	2.4	0.93	1.86
W-UR 10	Concrete ≥ C16/20	50	1.19	0.48	0.96	1.19	0.51	0.77
W-UR 10	Concrete ≥ C16/20	70	1.8	0.16	0.32	1.8	1.18	1.76

1) Valid for all ranges of temperatures
2) Intermediate values by linear interpolation

Table C 4.1: Characteristic values under fire exposure in concrete C20/25 to C50/60 in any load direction, no permanent centric tension load and without lever arm, fastening of facade systems

Anchor type	Fire resistance class	F_{Rk}
W-UR 10	R 90	0.8kN

Würth Plastic Anchor W-UR

Performances
Displacements under tension and shear for concrete, masonry and AAC
Characteristic resistance under fire exposure in concrete

Annex C 2

Footnotes for Annexes C 11 – C 74

1) Characteristic resistance F_{Rk} for tension, shear or combined tension and shear loading.
The characteristic resistance is valid for single plastic anchor or for a group of two or four plastic anchors with spacing equal or larger than the minimum spacing s_{min} according to Annex B 2 (concrete) and B 3 (masonry). The specific conditions for the design method have to be considered according to ETAG 020 Annex C.

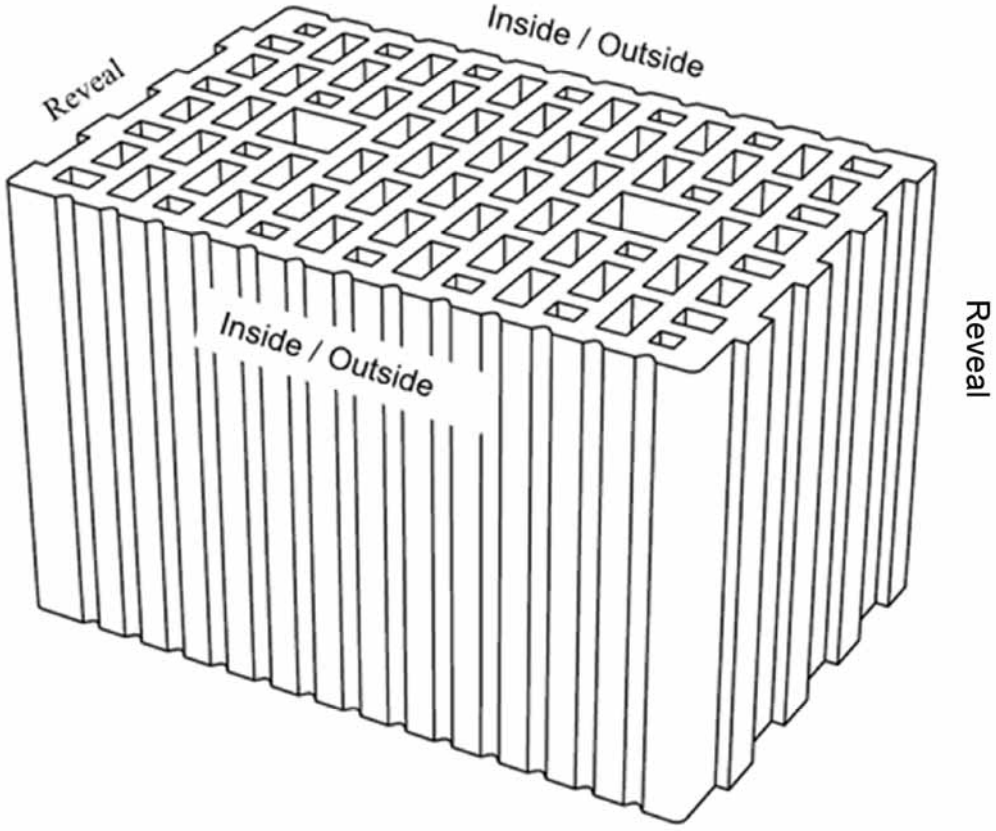
2) In absence of other national regulations

3) Maximum long term temperature

4) Maximum short term temperature

5) The given values F_{Rk} in this column are valid for the embedment depth in the range $50\ mm \leq h_{nom} < 70\ mm$ (see Annex B 2). For plastic anchors W-UR 8 and W-UR 10 set variable in this range no additional job site tests have necessarily to be performed.

6) Installationside see picture (e.g Hollow brick HLz)



7) The characteristic resistance F_{Rk} for load direction V only (only valid for a single anchor or for a group of two anchors with spacing $s_{min} \geq 250mm$ for shear loads without lever arm in the reveal side)

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Würth Plastic Anchor W-UR	**Annex C 3**
Performances Footnotes	

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Table C 5.1: Base material: Concrete, solid masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Concrete					
Concrete ≥ C12/15					**Annex C 1**
Solid masonry					
Solid brick Mz acc. to DIN 105-100:2012-01, EN 771-1:2011	≥ NF	≥ 240x115x71	10 20 28 36	≥ 1.8	**Annex C 11** 771-1-020
	≥ 3DF	≥ 240x175x113			**Annex C 12** 771-1-041
Sand-lime solid brick KS acc. to DIN V 106:2005-10, EN 771-2:2011	≥ NF	≥ 240x115x71	10 20 28	≥ 2.0	**Annex C 46** 771-2-002
Sand-lime solid brick Silka XL Basic, **Sand-lime solid brick Silka XL Plus,** acc. to DIN V 106:2005-10, EN 771-2:2011, Z-17.1-997		≥ 248x175x498	10 20 28	≥ 2.0	**Annex C 47** 771-2-010
Concrete solid block - Vbn acc. to DIN 18153-100:2005-10, EN 771-3:2011	≥ NF	≥ 240x115x71	10 20 28	≥ 2.0	**Annex C 54** 771-3-004
Lightweight concrete solid brick **e.g. Bisoclassic V** acc. to DIN V 18152-100:2005:10, EN 771-3:2011 Bisotherm GmbH	≥ NF	≥ 240x115x71	2 4	≥ 0.9	**Annex C 55** 771-3-008
Lightweight concrete solid brick **V und Vbl e.g. Bisophon** acc. to DIN V 18152-100:2005-10 EN 771-3:2011 Bisotherm GmbH	≥ 3DF	≥ 240x175x113	10 20	≥ 2.0	**Annex C 57** 771-3-017
Lightweight concrete solid brick **e.g. BisoBims V** acc. to DIN V 18152-100:2005-10 EN 771-3:2011 Bisotherm GmbH	≥ NF	≥ 240x115x71	2 4	≥ 1.0	**Annex C 56** 771-3-007
Lightweight concrete solid block – Vbl acc. to DIN V 18152-100:2005-10, e.g. Liapor Massive Wall Liapor GmbH & Co. KG	≥ 24DF	≥ 500x365x238	2	≥ 0.6	**Annex C 58** LAC2
Lightweight concrete solid block – Vbl 2 acc. to DIN 18152-100:2005-10, Z-17.1-839 e.g. Liapor Compact Liapor GmbH & Co. KG Meier Betonwerke GmbH	≥ 16DF	≥ 498x240x239	2	≥ 0.65	**Annex C 59** 771-3-012
Concrete solid block – Vbn acc. to DIN 18153-100:2005-10, e.g. Liapor Element Wall Liapor GmbH & Co. KG	≥ 12DF	≥ 500x175x238	12	≥ 1.4	**Annex C 60** LC16/18

Würth Plastic Anchor W-UR

Annex C 4

Performances
Solid masonry (use category "b")
Format, measurement, minimum compressive strength, bulk density class, Annex

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Table C 6.1: Base material: Hollow or perforated masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick HLz acc. to DIN 105-100:2012-01 EN 771-1:2011 e.g. Wienerberger GmbH e.g. Schlagmann Baustoffwerke GmbH & Co. KG	≥ 2DF	≥ 240x115x113	8 12 20	≥ 1.2	**Annex C 13** 771-1-021
	≥ 12DF	≥ 373x240x238	6 8 10 12	≥ 1.2	**Annex C 14** 771-1-010 771-1-036
Hollow brick POROTON Planziegel T14 acc. to EN 771-1:2011, Z-17.1-625 Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.7	**Annex C 15** 771-1-019
Hollow brick POROTON-T8-P **Hollow brick POROTON-T9-P** acc. to T8: EN 771-1:2011; Z-17.1-982 T9: EN 771-1:2011; Z-17.1-674 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.6	**Annex C 16** 771-1-022
Hollow brick POROTON-T8-MW acc. to EN 771-1:2011; Z-17.1-1041 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6 8	≥ 0.65	**Annex C 17** 771-1-042
Hollow brick POROTON Planziegel T8 acc. to EN 771-1:2011; Z-17.1-972 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6	≥ 0.65	**Annex C 18** 771-1-057
Hollow brick POROTON Planziegel T10 acc. to EN 771-1:2011; Z-17.1-889 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6	≥ 0.65	**Annex C 19** 771-1-033
Hollow brick POROTON S10 acc. to EN 771-1:2011; Z-17.1-1017 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6 8 10	≥ 0.75	**Annex C 20** 771-1-032
Hollow brick POROTON-S11-P 30,0 acc. to EN 771-1:2011; Z-17.1-812 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 10DF	≥ 248x300x249	8	≥ 0.9	**Annex C 21** 771-1-025
Hollow brick POROTON-S11-P 36,5 acc. to EN 771-1:2011; Z-17.1-812 Wienerberger GmbH Schlagmann Baustoffwerke GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6	≥ 0.9	**Annex C 22** 771-1-009
Hollow brick for ceiling DIN 4160-BN 0.8-530-250-210 (system Filigran) acc. to DIN 4160:2000-4 e.g. Wienerberger GmbH		≥ 530x250x210	4	0.8	**Annex C 23** 771-1-031

Würth Plastic Anchor W-UR

Annex C 5

Performances
Hollow or perforated masonry (use category "c")
Format, measurement, minimum compressive strength, bulk density class, Annex

Table C 6.2 Base material: Hollow or perforated masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick POROTHERM 25-38 N+F acc. to EN 771-1:2011 Wienerberger Ziegelindustrie GmbH; Austria		≥ 375x250x238	6 8 10	≥ 0.8	**Annex C 24** 771-1-005
Hollow brick Blocchi Leggeri acc. to EN 771-1:2011 Wienerberger Brunori s.r.l.; Italy		≥ 250x120x330	6	≥ 0.6	**Annex C 25** 771-1-012
Hollow brick for ceiling Blocchi per solaio a travetti acc. to EN 771-1:2011 Wienerberger Tacconi s.r.l.; Italy		≥ 420x120x250	10 14	≥ 0.6	**Annex C 26** 771-1-011
Hollow brick MURBRIC T20 and R20 acc. to EN 771-1:2011 e.g. Wienerberger SAS; France		T20: ≥ 500x200x240 R20: ≥ 500x200x249	6 8 12	≥ 0.7	**Annex C 27** 771-1-018
Hollow brick POROTHERM T30 and R30 acc. to EN 771-1:2011 e.g. Wienerberger SAS; France		T30: ≥ 373x300x249 R30: ≥ 373x300x250	6 8	≥ 0.7	**Annex C 28** 771-1-014
Hollow brick UNIPOR WS11 CORISO acc. to EN 771-1:2011 Z-17.1-1011 UNIPOR Ziegel, Marketing GmbH	≥ 12DF	≥ 247x365x249	10	≥ 0.85	**Annex C 29** 771-1-026
Hollow brick UNIPOR WS14 **Hollow brick UNIPOR WS12 CORISO** acc. to EN 771-1:2011 Z-17.1-883 UNIPOR Ziegel, Marketing GmbH	≥ 10DF	≥ 247x300x249	10 12	≥ 0.8	**Annex C 30** 771-1-016
Hollow brick UNIPOR W14 acc. to EN 771-1:2011 Z-17.1-679 Z-17.1-636 UNIPOR Ziegel, Marketing GmbH	≥ 10DF	W14-Plan: ≥ 240x300x249 W14-Block: ≥ 240x300x238	6	≥ 0.7	**Annex C 31** 771-1-015
Hollow brick UNIPOR CORISO 6DF EWS 365 acc. to EN 771-1:2011 according to Z-17.1-1021 / 1066 UNIPOR Ziegel, Marketing GmbH	≥ 6DF	≥ 118x365x249	6	≥ 0.9	**Annex C 32** 771-1-077
Hollow brick UNIPOR CORISO 6DF EW 365 acc. to EN 771-1:2011 according to Z-17.1-935 UNIPOR Ziegel, Marketing GmbH	≥ 6DF	≥ 118x365x249	4	≥ 0.7	**Annex C 33** 771-1-074

Würth Plastic Anchor W-UR

Performances
Hollow or perforated masonry (use category "c")
Format, measurement, minimum compressive strength, bulk density class, Annex

Annex C 6

Table C 6.3 Base material: Hollow or perforated masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick ThermoPlan MZ7 acc. to EN 771-1:2011 Z-17.1-1016 Mein Ziegelhaus GmbH & Co. KG	≥ 10DF	≥ 248x300x249	4 6 8	≥ 0.6	**Annex C 34** 771-1-052
Hollow brick ThermoPlan MZ8 acc. to EN 771-1:2011 Z-17.1-906 Mein Ziegelhaus GmbH & Co. KG	≥ 12DF	≥ 248x365x249	6 8	≥ 0.6	**Annex C 35** 771-1-023
Hollow brick ThermoPlan MZ10 acc. to EN 771-1:2011 Z-17.1-1015 Mein Ziegelhaus GmbH & Co. KG	≥ 10DF	≥ 248x300x249	6 8	≥ 0.75	**Annex C 36** 771-1-034
Hollow brick ThermoPlan MZ Ergänzung acc. to EN 771-1:2011 according to Z-17.1-1087 Mein Ziegelhaus GmbH & Co. KG	≥ 6DF	≥ 118x365x249	6	≥ 0.8	**Annex C 37** 771-1-081
Hollow brick ThermoPlan TS² acc. to EN 771-1:2011 Z-17.1-993 Mein Ziegelhaus GmbH & Co. KG	≥ 9DF	≥ 373x175x249	6 8 10 12 20	≥ 0,9	**Annex C 38** 771-1-024
Hollow brick ThermoPlan TS 13 acc. to EN 771-1:2011 Z-17.1-914 Mein Ziegelhaus GmbH & Co. KG	≥ 10DF	≥ 248x300x248	8 10	≥ 0.75	**Annex C 39** 771-1-035
Hollow brick THERMOPOR ISO-PD Plus acc. To EN 771-1:2011 Z-17.1-840 Thermopor Ziegel-Kontor Ulm GmbH		≥ 307x240x249	6 8	≥ 0.7	**Annex C 40** 771-1-028
Hollow brick THERMOPOR TV 7-Plan acc. to EN 771-1:2011 Z-17.1-1005 Thermopor Ziegel-Kontor Ulm GmbH	≥ 12DF	≥ 247x365x249	8	≥ 0.5	**Annex C 41** 771-1-030
Hollow brick THERMOPOR TV 9-Plan acc. to EN 771-1:2011 Z-17.1-1006 Thermopor Ziegel-Kontor Ulm GmbH	≥ 10DF	≥ 247x300x249	4 6 8	≥ 0.65	**Annex C 42** 771-1-029
Hollow brick Kellerer ZMK X6 acc. to EN 771-1:2011 Z-17.1-1067 Ziegelsysteme Michael Kellerer GmbH & Co. KG	≥ 10DF	≥ 247x300x249	6	≥ 0.65	**Annex C 43** 771-1-049
Hochlochziegel Kellerer ZMK TX8 acc. to EN 771-1:2011 Z-17.1-1068 Ziegelsysteme Michael Kellerer GmbH & Co. KG	≥ 10DF	≥ 247x300x249	6	≥ 0.65	**Annex C 44** 771-1-050
Hollow brick Ladrillo P NV R150 acc. to EN 771-1:2011 Ceramica La Corona, S.A.; Spain		≥ 276x128x95	12 20 28 36	≥ 1.2	**Annex C 45** 771-1-017

Würth Plastic Anchor W-UR

Annex C 7

Performances
Hollow or perforated masonry (use category "c")
Format, measurement, minimum compressive strength, bulk density class, Annex

Deutsches Institut für Bautechnik DIBt

Table C 6.4: Base material: Hollow or perforated masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Sand-lime perforated brick KS L acc. to DIN V 106:2005-10 EN 771-2:2011	≥ 2DF	≥ 240x115x113	6 8 10 12 16	≥ 1.6	**Annex C 48** 771-2-003 771-2-004
Sand-lime perforated brick KS L acc. to DIN V 106:2005-10 EN 771-2:2011 e.g. Xella Deutschland GmbH	≥ 8DF	≥ 249x240x238	6 8 10 12 16	≥ 1.4	**Annex C 49** 771-2-013 771-2-005
Sand-lime perforated brick KS L acc. to DIN V 106:2005-10 EN 771-2:2011	≥ 12DF	≥ 373x240x238	6 8 10 12 16	≥ 1.4	**Annex C 50, C 51** 771-2-001
Sand-lime perforated brick KS L acc. to DIN V 106:2005-10 EN 771-2:2011 e.g. Xella Deutschland GmbH	≥ 9DF	≥ 373x175x249	6 8 10 12 20	≥ 1.4	**Annex C 52** 771-2-008
Sand-lime perforated brick KS-NT acc. to P-1109/884/07-MPA BS BMO KS-Vertrieb Bielefeld-Münster-Osnabrück GmbH & Co. KG	≥ 4DF	≥ 249x115x248	12 20	≥ 1.2	**Annex C 53** 771-2-009
Hollow brick lightweight concrete 1K Hbl acc. to DIN V 18151-100:2005-10 EN 771-3:2011 e.g. Stark Betonwerk GmbH & Co. KG	≥ 12DF	≥ 490x175x238	2 4	≥ 1.2	**Annex C 61** 771-3-002
Hollow brick lightweight concrete 3K Hbl acc. to DIN V 18151-100:2005-10 EN 771-3:2011 e.g. Heinzmann Baustoffe GmbH, Liapor GmbH & Co. KG	≥ 16DF	≥ 498x240x238	2 4 6	≥ 0.7	**Annex C 62** 771-3-005
Hollow brick lightweight concrete Liapor-Super-K acc. to EN 771-3:2011 Z-17.1-501 Liapor GmbH & Co. KG	≥ 16DF	≥ 495x240x238	2 4	≥ 0.8	**Annex C 63** 771-3-006
Concrete hollow brick 2K Hbn acc. to DIN V 18153-100:2005-10 e.g. Stark Betonwerk GmbH & Co. KG	≥ 12DF	≥ 375x240x238	2 4 6 8	≥ 1.2	**Annex C 64** 771-3-011
Hollow brick lightweight concrete Gisoton Wärme Dämm Block acc. to Z-17.1-873 Gisoton Wandsysteme, Baustoffwerke Gebhart & Söhne GmbH & Co.		≥ 375x300x248	4	≥ 0.8	**Annex C 65** 771-3-009

Würth Plastic Anchor W-UR

Annex C 8

Performances
Hollow or perforated masonry (use category "c")
Format, measurement, minimum compressive strength, bulk density class, Annex

Deutsches Institut für Bautechnik DIBt

Table C 6.5: Base material: Hollow or perforated masonry

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Hollow or perforated masonry					
Hollow brick lightweight concrete Gisoton Thermo Schall acc. to Z-15.2-18 Gisoton Wandsysteme, Baustoffwerke Gebhart & Söhne GmbH & Co.		≥ 498x300x248	2	≥ 0.45	**Annex C 66** 771-3-010
Hollow brick lightweight concrete Bisomark[TEC] acc. to Z-17.1-1026 Bisotherm GmbH	≥ 20DF	≥ 497x300x249	1.6 2 4	≥ 0.4	**Annex C 67** 771-3-015
SEPA Blocs Creux Hollow brick Hbl 4 – 09 acc. to EN 771-3:2011		≥ 500x200x200	6 4	≥ 0.9	**Annex C 68** 771-3-025

Würth Plastic Anchor W-UR

Annex C 9

Performances
Hollow or perforated masonry (use category "c")
Format, measurement, minimum compressive strength, bulk density class, Annex

Table C 7.1 Base material: Autoclaved aerated concrete

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Autoclaved aerated concrete acc. to EN 771-4:2011		≥ 499x175x249	2 4 6 7	≥ 0.3	**Annex C 69**
Reinforced components autoclaved aerated concrete acc. to EN 12602:2016-12			2 - 7	≥ 0.4	**Annex C 70**

Table C 8.1:Base material: Precast or prestressed hollow core elements

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Precast prestressed hollow core elements VMM-L SCD 20 acc. to DIN EN 1168:2011-12, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x800x200	C45/55	≥ 2.4	**Annex C 71**
Precast prestressed hollow core elements VMM-L EPD 32 acc. to DIN EN 1168:2011-12, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x800x320	C45/55	≥ 2.4	**Annex C 72**
Precast prestressed hollow core elements VMM-L SCD 16 acc. to DIN EN 1168:2011-12, Z-15.10-276 e.g. Ketonia GmbH		≥ 1200x400x160	C45/55	≥ 2.4	**Annex C 73**

Table C 9.1: Gypsum blocks: MultiGips R.max Schallschutzplatte

Base material	Format	Measurement [mm]	Minimum compressive strength [N/mm²]	Bulk density class [kg/dm³]	Annex
Gypsum blocks: MultiGips R.max Schallschutzplatte acc. to DIN EN 12859:2011-05		≥ 500x500x100	11.7	≥ 1.2	**Annex C 74**

Würth Plastic Anchor W-UR	**Annex C 10**
Performances Autoclaved aerated concrete, precast or prestressed hollow core elements, gypsum blocks Format, measurement, minimum compressive strength, bulk density class, Annex	

Base material solid masonry: Solid brick Mz, NF

Table C 10.1.1: Brick data

Description of brick	771-1-020		**Mz**
Type of brick			Solid brick Mz
Bulk density	$\rho \geq$	[kg/dm³]	1.8
Standard, approval			DIN 105-100:2012-01; EN 771-1:2011
Format (measurement)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.1.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6)]			Inside / Outside		Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	60	80
Drill method		[-]	Hammer drilling		Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		250	100

Table C 10.1.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6)]			Inside / Outside		Inside / Outside	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**50**	**70**	**50**	**70**
Solid brick Mz, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	1.2	1.5	0.75	2.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	1.2	1.5	0.60	1.5
Solid brick Mz, $f_b \geq 20$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	2.0	2.0	1.5	3.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	2.0	2.0	1.2	2.0
Solid brick Mz, $f_b \geq 28$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	2.5	3.0	1.5	4.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	2.5	3.0	1.2	3.0
Solid brick Mz, $f_b \geq 36$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	3.5	4.0	1.5	5.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	3.5	4.0	1.2	4.0
Partial safety factor	γ_{Mm}[2)]	[-]	2.5		2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Solid masonry: Solid brick Mz, NF
Brick data, installation parameters, characteristic resistance

Annex C 11

Base material solid masonry: Solid brick Mz, 3DF

Table C 10.2.1: Brick data

Description of brick 771-1-041			**Mz**
Type of brick			Solid brick Mz
Bulk density	$\rho \geq$	[kg/dm³]	1.8
Standard, approval			DIN 105-100:2012-01; EN 771-1:2011
Producer of brick			e.g. Wienerberger GmbH
Format (measurement)		[mm]	≥ 3DF (≥ 240x175x113)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.2.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside / Reveal
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	50

Table C 10.2.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside / Reveal
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Solid brick Mz, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	1.5
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	1.5
Solid brick Mz, $f_b \geq 20$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	2.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	2.0
Solid brick Mz, $f_b \geq 28$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	3.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	3.0
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 12**
Performances **Solid masonry: Solid brick Mz, 3DF** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick HLz, 2DF

Table C 10.3.1: Brick data

Description of brick 771-1-021			**HLz**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN 105-100:2012-01; EN 771-1:2011
Producer of brick			e.g. Wienerberger GmbH
Format (measurement)		[mm]	≥ 2DF (≥ 240x115x113)
Minimum thickness of member	h_{min} =	[mm]	115

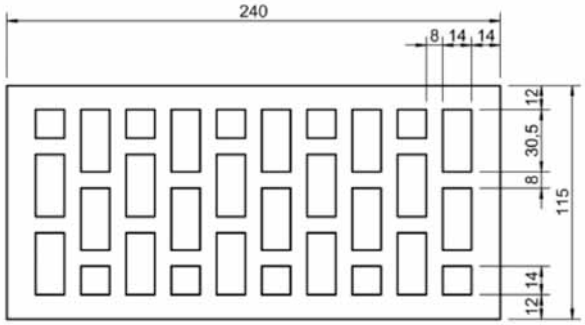

Table C 10.3.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6]			Inside / Outside			
Drill hole diameter	d_0 =	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	60	80
Drill method		[-]	Rotary drilling		Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		250	100

Table C 10.3.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6]			Inside / Outside			
Overall plastic anchor embedment depth	h_{nom}	[mm]	**≥ 50**[5]	**= 70**	**≥ 50**[5]	**= 70**
Hollow brick HLz, $f_b \geq 8$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.6	0.9	-	0.9
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.5	0.75	-	0.75
Hollow brick HLz, $f_b \geq 12$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.9	1.5	0.5	1.5
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.75	0.9	0.4	1.2
Hollow brick HLz, $f_b \geq 20$ N/mm²	30°C[3] / 50°C[4]	[kN]	1.5	2.5	0.75	2.5
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	1.2	1.5	0.6	2.0
Partial safety factor	γ_{Mm}[2]	[-]	2.5		2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: HLz, 2DF
Brick data, installation parameters, characteristic resistance

Annex C 13

Base material hollow masonry: Hollow brick HLz, 12DF

Table C 10.4.1: Brick data

Description of brick	771-1-010;771-1-036	**HLz**
Type of brick		Hollow brick
Bulk density $\rho \geq$	[kg/dm³]	1.2
Standard, approval		DIN 105-100:2012-01; EN 771-1:2011
Producer of brick		e.g. Schlagmann Baustoffwerke GmbH & Co. KG
Format (measurement)	[mm]	≥ 12DF (≥ 373x240x238)
Minimum thickness of member h_{min} =	[mm]	240

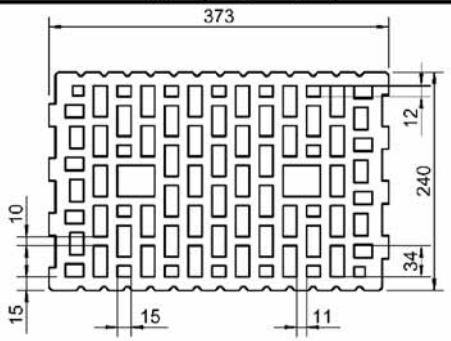

Table C 10.4.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**
Installationsside[6)]			Inside / Outside	Reveal	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80		80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70		70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	45	65	100

Table C 10.4.3: Characteristic resistance F_{Rk}[1)] and V_{Rk}[7)] in [kN] for single anchor

Anchor size			**W-UR 8**			**W-UR 10**
Installationsside[6)]			Inside / Outside	Reveal		Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**			**70**
Characteristic resistance for single anchor		[kN]	**F_{Rk}[1)]**	**F_{Rk}[1)]**	**F_{Rk}[7)]**	**F_{Rk}[1)]**
Hollow brick HLz, $f_b \geq 6$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.6	1.2	1.5	0.9
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.6	1.2	1.5	0.75
Hollow brick HLz, $f_b \geq 8$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.9	2.0	2.0	1.2
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.9	1.5	2.0	0.9
Hollow brick HLz, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	1.2	2.0	2.0	1.5
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	1.2	1.5	2.0	1.2
Hollow brick HLz, $f_b \geq 12$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	1.2	2.0	2.0	2.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	1.2	1.5	2.0	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5			2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: HLz, 12DF
Brick data, installation parameters, characteristic resistance

Annex C 14

Base material hollow masonry: Hollow brick POROTON Planziegel T14, 10DF

Table C 10.5.1: Brick data

Description of brick 771-1-019			**POROTON Planziegel T14**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1:2011; Z-17.1-625
Producer of brick			Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Format (measurement)		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

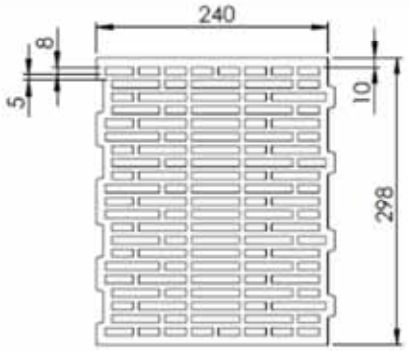

Table C 10.5.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.5.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick POROTON Planziegel T14, $f_b \geq 6$ N/mm²	30°C[3] / 50°C[4]	[kN]	0.4
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	0.4
Partial safety factor	γ_{Mm}[2]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 15**
Performances **Hollow brick: POROTON Planziegel T14, 10DF** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick POROTON-T8-30,0-P and POROTON-T9-30,0-P

Table C 10.6.1: Brick data

Description of brick 771-1-022			**POROTON-T8-30,0-P and POROTON-T9-30,0-P**
Type of brick			Hollow brick POROTON-T8-P, -T9-P
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			T8: EN 771-1:2011; Z-17.1-982 T9: EN 771-1:2011; Z-17.1-674
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

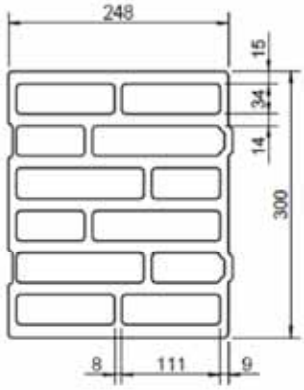

Table C 10.6.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.6.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-T8-30,0-P and POROTON-T9-30,0-P, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	1.5
	50°C[3)] / 80°C[4)]	[kN]	0.9	0.9
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 16

Performances
Hollow brick: POROTON-T8-30,0-P and POROTON-T9-30,0-P
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick POROTON-T8-36,5-MW

Table C 10.7.1: Brick data

Description of brick 771-1-042			**POROTON-T8-36,5-MW**
Type of brick			Hollow brick POROTON-T8-36,5-MW
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			EN 771-1:2011; Z-17.1-1041
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover
Measurement		[mm]	≥ 12DF (≥ 248x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

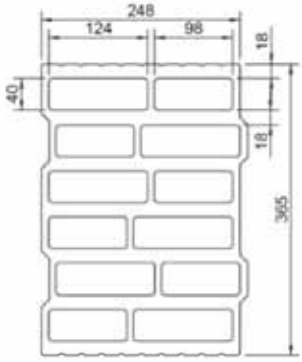

Table C 10.7.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.7.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**	**W-UR 10**
Installationsside[6)]				Inside / Outside	
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**	**70**
POROTON-T8-36,5-MW, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.9	0.9
POROTON-T8-36,5-MW, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5	1.2
	50°C[3)] / 80°C[4)]		[kN]	1.5	1.2
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 17**
Performances **Hollow brick: POROTON-T8-36,5-MW** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick: POROTON Planziegel T8

Table C 10.8.1: Brick data

Description of brick 771-1-057			**POROTON Planziegel T8**
Type of brick			Hollow brick POROTON Planziegel T8
Bulk density	$\rho \geq$	[kg/dm³]	0.60
Standard, approval			Z-17.1-972
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement		[mm]	≥ 12DF (≥ 248x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

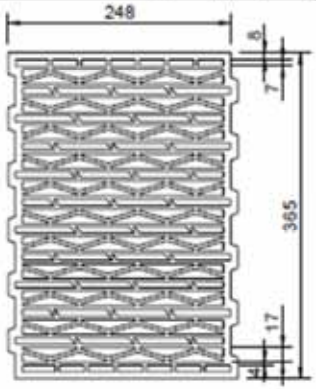

Table C 10.8.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	125

Table C 10.8.3: Charakteristische Tragfähigkeit F_{Rk}[1)] in [kN] für Einzeldübel

Dübelgröße			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
POROTON Planziegel T8, **$f_b \geq 8$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.4
	50°C[3)] / 80°C[4)]	[kN]	0.3
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 18

Performances
Hollow brick: POROTON-Planziegel T8
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick POROTON Planziegel T10

Table C 10.9.1: Brick data

Description of brick 771-1-033			**POROTON Planziegel T10**
Type of brick			Hollow brick POROTON Planziegel T10
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			T10: EN 771-1:2011; Z-17.1-889
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

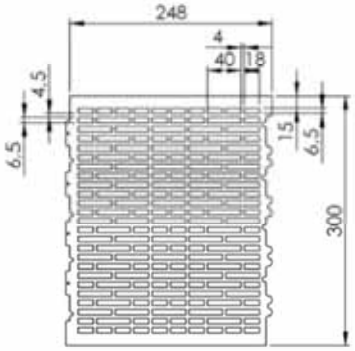

Table C 10.9.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.9.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
POROTON Planziegel T10-30, $f_b \geq 6$ **N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.5
	50°C[3)] / 80°C[4)]	[kN]	0.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: POROTON Planziegel T10
Brick data, installation parameters, characteristic resistance

Annex C 19

Base material hollow masonry: Hollow brick POROTON S10

Table C 10.10.1: Brick data

Description of brick 771-1-032		**POROTON S10**
Type of brick		Hollow brick POROTON S10
Bulk density $\rho \geq$	[kg/dm³]	0.75
Standard, approval		S10: EN 771-1:2011; Z-17.1-1017
Producer of brick		Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement	[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member h_{min} =	[mm]	300

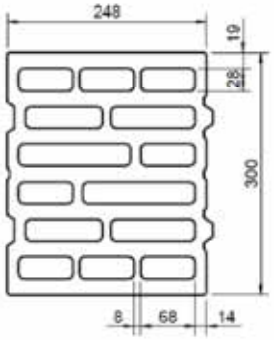

Table C 10.10.2: Installation parameters

Anchor size			**W-UR 8**	
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	50	100

Table C 10.10.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	
Installationsside[6)]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	
POROTON S10-30, $f_b \geq 6$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.6	0.6
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.6	0.6
POROTON S10-30, $f_b \geq 8$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.75	0.75
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.75	0.75
POROTON S10-30, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.9	1.5
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.9	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: POROTON S10
Brick data, installation parameters, characteristic resistance

Annex C 20

Base material hollow masonry: Hollow brick POROTON-S11-30,0-P

Table C 10.11.1: Brick data

Description of brick 771-1-025		**Hollow brick POROTON-S11-30,0-P**
Type of brick		Hollow brick S11-30,0-P
Bulk density $\rho \geq$	[kg/dm³]	0.9
Standard, approval		EN 771-1:2011; Z-17.1-812
Producer of brick		Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement	[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member h_{min} =	[mm]	300

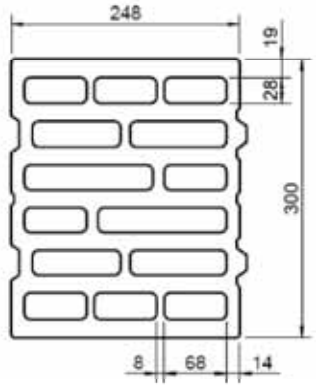

Table C 10.11.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.11.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-S11-30,0-P $f_b \geq 8$ N/mm²	30°C[3] / 50°C[4]	[kN]	2.0	1.5
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	2.0	1.5
Partial safety factor	γ_{Mm}[2]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 21

Performances
Hollow brick: POROTON-S11-30,0-P
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick POROTON-S11-36,5-P

Table C 10.12.1: Brick data

Description of brick 771-1-009		**Hollow brick POROTON-S11-36,5-P**
Type of brick		Hollow brick S11-36,5-P
Bulk density $\rho \geq$	[kg/dm³]	0.9
Standard, approval		EN 771-1:2011; Z-17.1-812
Producer of brick		Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover Schlagmann Baustoffwerke GmbH & Co. KG Ziegeleistraße 1 D-84367 Zeilarn
Measurement	[mm]	12DF (≥ 248x365x249)
Minimum thickness of member h_{min} =	[mm]	365

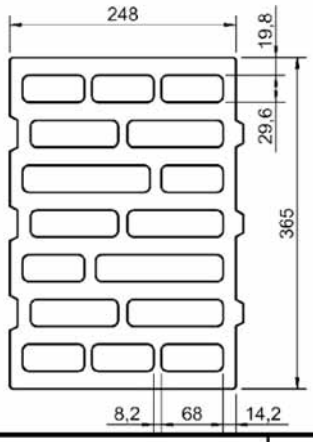

Table C 10.12.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.12.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
POROTON-S11-36,5-P $f_b \geq 6$ N/mm²	30°C[3] / 50°C[4]	[kN]	2.0	2.0
Characteristic resistance F_{Rk}	50°C[3] / 80°C[4]	[kN]	2.0	1.5
Partial safety factor	γ_{Mm}[2]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 22

Performances
Hollow brick: POROTON-S11-36,5-P
Brick data, installation parameters, characteristic resistance

Base material hollow brick for ceiling DIN DIN 4160:2000-4-BN 0,8-530-250-210 (system Filigran)

Table C 10.13.1: Brick data

Description of brick 771-1-031			**Brick for ceiling (system Filigran)**
Type of brick			Brick for ceiling
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			DIN 4160:2000-4
Producer of brick			Wienerberger GmbH Oldenburger Allee 26 D-30659 Hannover
Measurement		[mm]	530x250x210
Minimum thickness of member	h_{min} =	[mm]	210

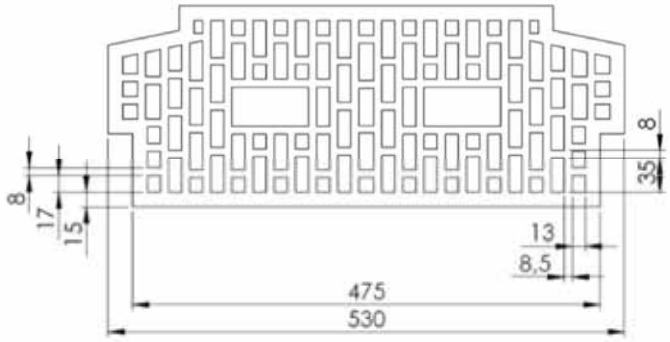

Table C 10.13.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside			bottom view
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.13.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside			bottom view
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Brick for ceiling (system Filigran), **$f_b \geq 4$ N/mm²** Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	0.9
	50°C [3] / 80°C [4]	[kN]	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 23

Performances
Hollow brick: Brick for ceiling (system Filigran)
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick POROTHERM 25-38 N+F

Table C 10.14.1: Brick data

Brick data 771-1-005			**POROTHERM 25-38 N+F**
Type of brick			Hollow brick POROTHERM 25-38 N+F
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			EN 771-1:2011
Producer of brick			Wienerberger Ziegelindustrie GmbH Hauptstraße A-2332 Hennersdorf, Austria
Measurement		[mm]	≥ 375x250x238
Minimum thickness of member	h_{min} =	[mm]	250

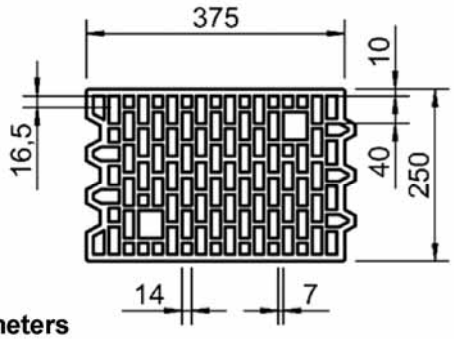

Table C 10.14.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.14.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.75	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.6	0.6
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	1.2
	50°C[3)] / 80°C[4)]	[kN]	0.9	0.9
Hollow brick POROTHERM 25-38 N+F, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2	1.5
	50°C[3)] / 80°C[4)]	[kN]	0.9	1.2
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 24

Performances
Hollow brick: POROTHERM 25-38 N+F
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick Blocchi Leggeri

Table C 10.15.1: Brick data

Description of brick 771-1-012			**Blocchi Leggeri**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1:2011
Producer of brick			Wienerberger Brunori s.r.l. Via Ringhiera 1 I-40020 Mordano (Bologna) fraz. Bubano Italy
Measurement		[mm]	≥ 250x120x330
Minimum thickness of member	h_{min} =	[mm]	120

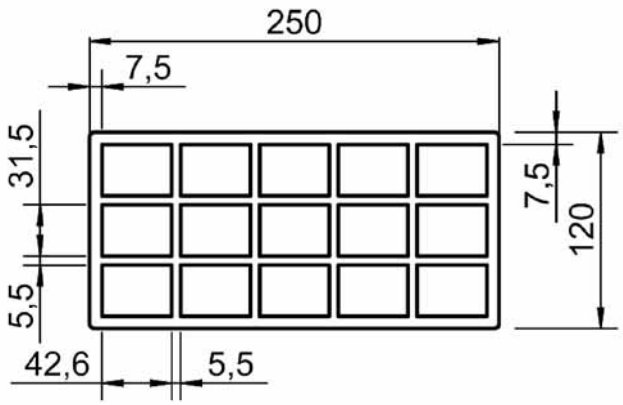

Table C 10.15.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.15.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick Blocchi Leggeri, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	0.3
	50°C[3)] / 80°C[4)]	[kN]	0.6	0.3
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: Blocchi Leggeri
Brick data, installation parameters, characteristic resistance

Annex C 25

Hollow brick for ceiling: Blocchi per solaio a travetti

Table C 10.16.1: Brick data

Description of brick 771-1-011			**Blocchi per solaio a travetti**
Type of brick			Hollow brick for ceiling
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1:2011
Producer of brick			Wienerberger Tacconi s.r.l. Via Ringhiera 1 I-40020 Mordano (Bologna) fraz. Bubano Italy, Werk Terni
Measurement		[mm]	≥ 420x120x250
Minimum thickness of member	h_{min} =	[mm]	120

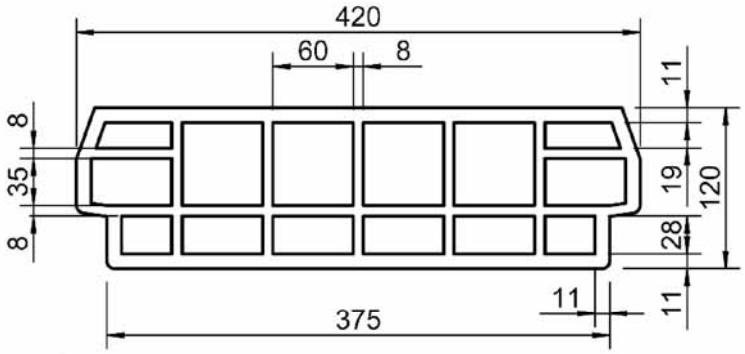

Table C 10.16.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside			bottom view	bottom view
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.16.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside			bottom view	bottom view
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick for ceiling Blocchi per solaio a travetti, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2	0.9
	50°C[3] / 80°C[4]	[kN]	0.9	0.6
Hollow brick for ceiling Blocchi per solaio a travetti, $f_b \geq 14$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	1.2
	50°C[3] / 80°C[4]	[kN]	1.2	0.9
Partial safety factor	γ_{Mm} [2]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 26

Performances
Hollow brick for ceiling Blocchi per solaio a travetti
Brick data, installation parameters, characteristic resistance

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick POROTHERM MURBRIC T20 and R20

Table C 10.17.1: Brick data

Brick data 771-1-018			**POROTHERM MURBRIC T20 and R20**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1:2011
Producer of brick			e.g. Wienerberger SAS 8, Rue du Canal - Achenheim 67087 Strasbourg, France
Measurement		[mm]	T20: 500x200x240 R20: 500x200x249
Minimum thickness of member	h_{min} =	[mm]	200

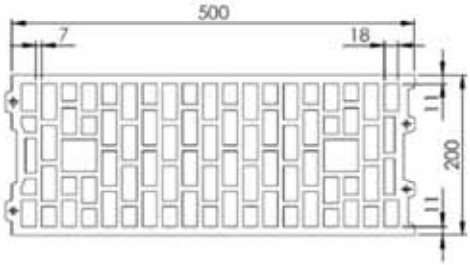

Table C 10.17.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.17.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.3
	50°C[3] / 80°C[4]	[kN]	0.3
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.4
	50°C[3] / 80°C[4]	[kN]	0.4
Hollow brick POROTHERM MURBRIC T20 and R20, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6
	50°C[3] / 80°C[4]	[kN]	0.6
Partial safety factor	γ_{Mm}[2]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 27

Performances
Hollow brick: POROTHERM MURBRIC T20 and R20
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick POROTHERM T30, POROTHERM R30

Table C 10.18.1: Brick data

Brick data 771-1-014			**POROTHERM T30 and R30**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1:2011
Producer of brick			Wienerberger SAS 8, Rue du Canal - Achenheim 67087 Strasbourg France
Measurement		[mm]	T30: 373x300x249 R30: 373x300x250
Minimum thickness of member	h_{min} =	[mm]	300

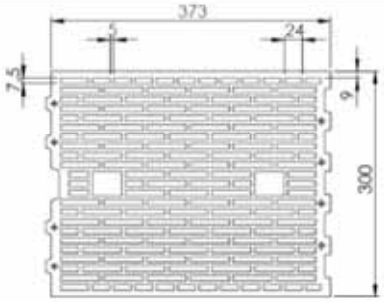

Table C 10.18.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.18.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick POROTHERM R30, Hollow brick POROTHERM T30, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.4
	50°C[3)] / 80°C[4)]	[kN]	0.3
Hollow brick POROTHERM R30, Hollow brick POROTHERM T30, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.5
	50°C[3)] / 80°C[4)]	[kN]	0.4
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: POROTHERM T30 and POROTHERM R30
Brick data, installation parameters, characteristic resistance

Annex C 28

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry: Hollow brick UNIPOR WS11 CORISO

Table C 10.19.1: Brick data

Brick data 771-1-026		**UNIPOR WS11 CORISO**
Type of brick		Hollow brick
Bulk density $\rho \geq$	[kg/dm³]	0.85
Standard, approval		EN 771-1:2011, Z-17.1-1011
Producer of brick		UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Measurement	[mm]	12DF (≥ 247x365x249)
Minimum thickness of member h_{min} =	[mm]	365

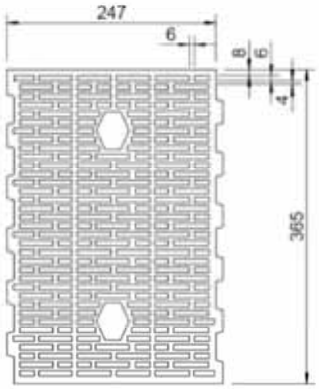

Table C 10.19.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.19.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR WS11 CORISO, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.75
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: UNIPOR WS11 CORISO
Brick data, installation parameters, characteristic resistance

Annex C 29

Base material hollow masonry: Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO

Table C 10.20.1: Brick data

Brick data 771-1-016			**UNIPOR WS14 and UNIPOR WS12 CORISO**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			EN 771-1:2011, Z-17.1-883
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Measurement		[mm]	10DF (≥ 247x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

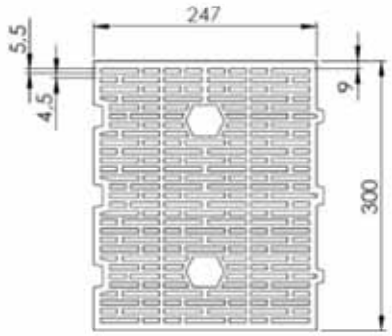

Table C 10.20.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.20.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO, **$f_b \geq 10$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6
	50°C[3)] / 80°C[4)]	[kN]	0.6
Hollow brick UNIPOR WS14 and UNIPOR WS12 CORISO, **$f_b \geq 12$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.75
	50°C[3)] / 80°C[4)]	[kN]	0.75
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 30

Performances
Hollow brick: UNIPOR WS14 and UNIPOR WS12 CORISO
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick UNIPOR W14

Table C 10.21.1: Brick data

Brick data 771-1-015			**UNIPOR W14**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			W14-Plan: EN 771-1:2011, Z-17.1-679, W14-Block: EN 771-1:2011, Z-17.1-636,
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Measurement		[mm]	W14-Plan: ≥ 10DF (≥ 240x300x249) W14-Block: 10DF (≥ 240x300x238)
Minimum thickness of member	h_{min} =	[mm]	300

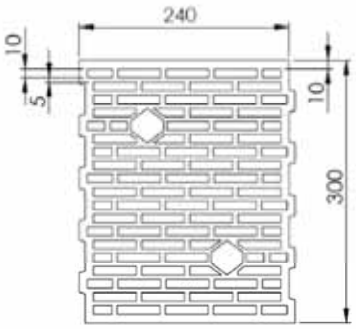

Table C 10.21.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.21.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick UNIPOR W14, **$f_b \geq 6$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.4
	50°C[3)] / 80°C[4)]	[kN]	0.4
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 31

Performances
Hollow brick: UNIPOR W14
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick UNIPOR 6DF EWS 365

Table C 10.22.1: Brick data

Brick data 771-1-077			**UNIPOR 6DF EWS 365**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-1:2011, Z-17.1-1021 / 1066
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Measurement		[mm]	6DF (≥ 118x365x249)
Minimum thickness of member	h_{min} =	[mm]	300

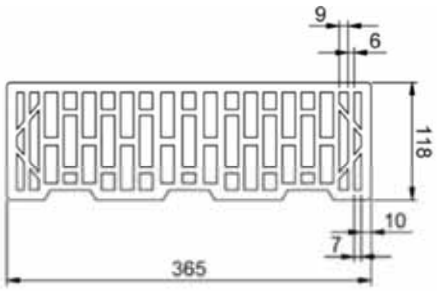

Table C 10.22.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Reveal
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	65

Table C 10.22.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Reveal
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
UNIPOR 6DF EWS 365, $f_b \geq 6$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.4
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.3
UNIPOR 6DF EWS 365, $f_b \geq 8$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.6
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.4
UNIPOR 6DF EWS 365, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.75
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.6
UNIPOR 6DF EWS 365, $f_b \geq 12$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.9
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.6
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 32

Performances
Hollow brick: UNIPOR 6DF EWS 365
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick UNIPOR 6DF EW 365

Table C 10.23.1: Brick data

Brick data 771-1-074			**UNIPOR 6DF EW 365**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.70
Standard, approval			EN 771-1:2011, Z-17.1-935
Producer of brick			UNIPOR Ziegel Marketing GmbH Landsberger Straße 392 D-81241 München
Measurement		[mm]	6DF (≥ 118x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

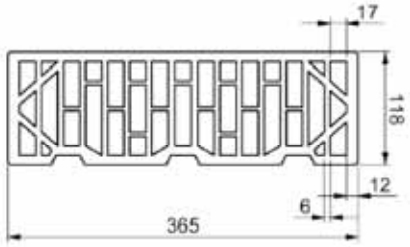

Table C 10.23.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Reveal
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	65

Table C 10.23.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Reveal
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
UNIPOR 6DF EW 365, $f_b \geq 4$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.3
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.3
UNIPOR 6DF EW 365, $f_b \geq 6$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.5
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.4
UNIPOR 6DF EW 365, $f_b \geq 8$ N/mm²	30°C[3)] / 50°C[4)]	[kN]	0.6
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]	[kN]	0.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 33**
Performances **Hollow brick: UNIPOR 6DF EW 365** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick ThermoPlan MZ7

Table C 10.24.1: Brick data

Brick data 771-1-052			**ThermoPlan MZ7**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1:2011, Z-17.1-1016
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

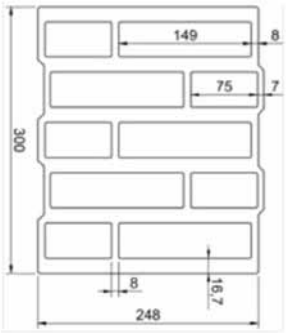

Table C 10.24.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.24.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan MZ7, **$f_b \geq 4$ N/mm²** Characteristic resistance F_{Rk}		30°C[3)] / 50°C[4)]	[kN]	0.75
		50°C[3)] / 80°C[4)]	[kN]	0.5
Hollow brick ThermoPlan MZ7, **$f_b \geq 6$ N/mm²** Characteristic resistance F_{Rk}		30°C[3)] / 50°C[4)]	[kN]	0.9
		50°C[3)] / 80°C[4)]	[kN]	0.75
Hollow brick ThermoPlan MZ7, **$f_b \geq 8$ N/mm²** Characteristic resistance F_{Rk}		30°C[3)] / 50°C[4)]	[kN]	1.5
		50°C[3)] / 80°C[4)]	[kN]	1.2
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 34

Performances
Hollow brick: ThermoPlan MZ7
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick ThermoPlan MZ8

Table C 10.25.1: Brick data

Brick data 771-1-023			**ThermoPlan MZ8**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			EN 771-1:2011, Z-17.1-906
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 12DF (≥ 248x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

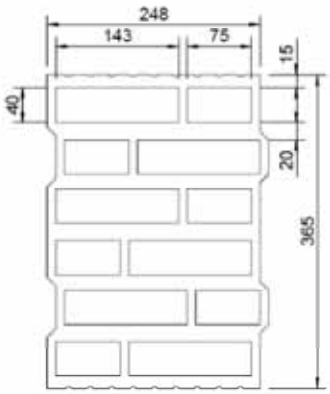

Table C 10.25.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.25.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan MZ8, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.75
Hollow brick ThermoPlan MZ8, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.9
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 35

Performances
Hollow brick: ThermoPlan MZ8
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick ThermoPlan MZ10

Table C 10.26.1: Brick data

Brick data 771-1-034			**ThermoPlan MZ10**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.75
Standard, approval			EN 771-1:2011, Z-17.1-1015
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 10DF (≥ 248x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

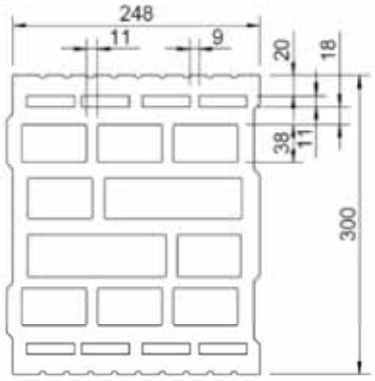

Table C 10.26.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.26.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan MZ10, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2,0
	50°C[3)] / 80°C[4)]	[kN]	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: ThermoPlan MZ10
Brick data, installation parameters, characteristic resistance

Annex C 36

Base material hollow masonry: Hollow brick ThermoPlan MZ Ergänzung

Table C 10.27.1: Brick data

Brick data 771-1-081			**ThermoPlan MZ Ergänzung**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.80
Standard, approval			EN 771-1:2011, in dependence on Z-17.1015
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 6DF (≥ 118x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

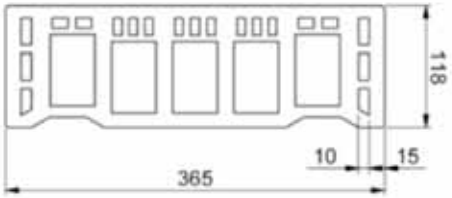

Table C 10.27.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Reveal
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	55

Table C 10.27.3: Characteristic resistance F_{Rk}[1)7)] in [kN] for single anchor

Anchor size			**W-UR 8**	
Installationsside[6)]			Reveal	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	
Characteristic resistance for single anchor		[kN]	F_{Rk}[1)]	F_{Rk}[7)]
Hollow brick ThermoPlan Ergänzung, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.6	0.9
Hollow brick ThermoPlan Ergänzung, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	1.4
	50°C[3)] / 80°C[4)]	[kN]	0.9	1.4
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: ThermoPlan MZ Ergänzung
Brick data, installation parameters, characteristic resistance

Annex C 37

Base material hollow masonry: Hollow brick ThermoPlan TS²

Table C 10.28.1: Brick data

Brick data 771-1-024			**ThermoPlan TS²**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-1:2011, Z-17.1-993
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 9DF (≥ 373x175x249)
Minimum thickness of member	h_{min} =	[mm]	175

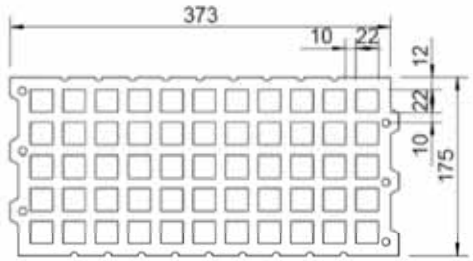

Table C 10.28.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.28.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan TS², $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.6
	50°C[3)] / 80°C[4)]		[kN]	0.4
Hollow brick ThermoPlan TS², $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75
	50°C[3)] / 80°C[4)]		[kN]	0.6
Hollow brick ThermoPlan TS², $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.75
Hollow brick ThermoPlan TS², $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.9
Hollow brick ThermoPlan TS², $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 38

Performances
Hollow brick: ThermoPlan TS²
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick ThermoPlan TS 13

Table C 10.29.1: Brick data

Brick data 771-1-035			**ThermoPlan TS 13**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.75
Standard, approval			EN 771-1:2011, Z-17.1-914
Producer of brick			Mein Ziegelhaus GmbH & Co. KG Märkerstraße 44 D-63755 Alzenau
Measurement		[mm]	≥ 10DF (≥ 248x300x248)
Minimum thickness of member	h_{min} =	[mm]	300

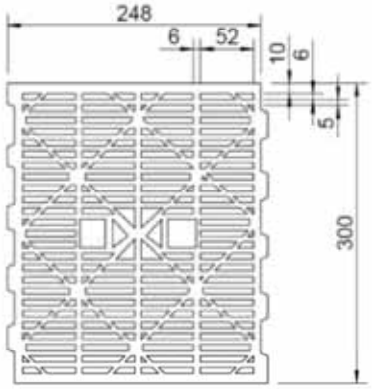

Table C 10.29.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.29.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick ThermoPlan TS 13, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6
	50°C[3)] / 80°C[4)]	[kN]	0.6
Hollow brick ThermoPlan TS 13, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.75
	50°C[3)] / 80°C[4)]	[kN]	0.75
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 39**
Performances **Hollow brick: ThermoPlan TS 13** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick THERMOPOR ISO-PD Plus Objektziegel

Table C 10.30.1: Brick data

Brick data 771-11028			**THERMOPOR ISO-PD Plus**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			EN 771-1:2011, Z-17.1-840
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Measurement		[mm]	≥ 307x240x249
Minimum thickness of member	h_{min} =	[mm]	240

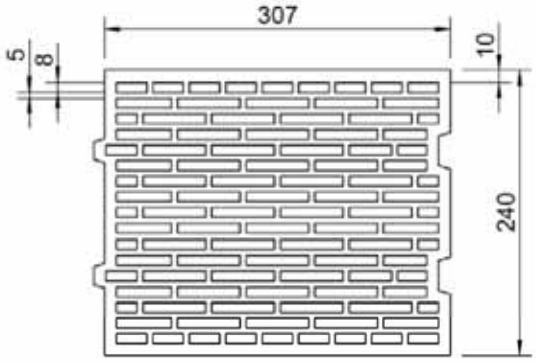

Table C 10.30.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.30.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
THERMOPOR ISO-PD Plus Objektziegel, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.5
	50°C[3)] / 80°C[4)]	[kN]	0.4
THERMOPOR ISO-PD Plus Objektziegel, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6
	50°C[3)] / 80°C[4)]	[kN]	0.6
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 40

Performances
Hollow brick: THERMOPOR ISO-PD Plus
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick THERMOPOR TV 7-Plan

Table C 10.31.1: Brick data

Brick data 771-1-030			**THERMOPOR TV 7-Plan**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.5
Standard, approval			EN 771-1:2011, Z-17.1-1005
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Measurement		[mm]	≥ 12 DF (≥247x365x249)
Minimum thickness of member	h_{min} =	[mm]	365

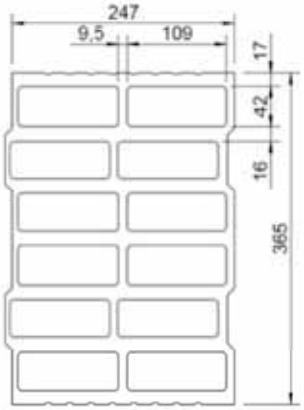

Table C 10.31.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.31.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick THERMOPOR TV 7-Plan, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.9
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 41**
Performances **Hollow brick: THERMOPOR TV 7-Plan** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick THERMOPOR TV 9-Plan

Table C 10.32.1: Brick data

Brick data 771-1-029			**THERMOPOR TV 9-Plan**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			EN 771-1:2011, Z-17.1-1006
Producer of brick			Thermopor Ziegel-Kontor Ulm GmbH Olgastraße 94 D-89073 Ulm
Measurement		[mm]	≥ 10 DF (≥247x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

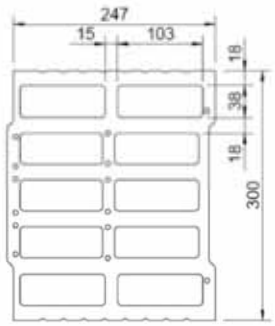

Table C 10.32.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.32.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75
	50°C[3)] / 80°C[4)]		[kN]	0.75
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.9
Hollow brick THERMOPOR TV 9-Plan, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5
	50°C[3)] / 80°C[4)]		[kN]	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 42

Performances
Hollow brick: THERMOPOR TV 9-Plan
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick Kellerer ZMK X6

Table C 10.33.1: Brick data

Brick data 771-1-049			**Kellerer ZMK X6**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.60
Standard, approval			EN 771-1:2011, Z-17.1-1067
Producer of brick			Ziegelsystem Michael Kellerer GmbH & Co KG Ziegeleistraße 13, D-82281 Egenhofen
Measurement		[mm]	≥10DF (247x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

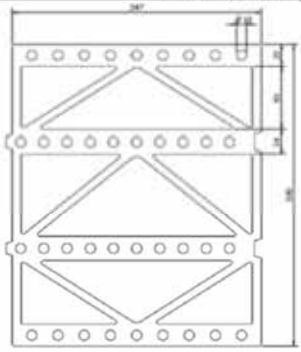

Table C 10.33.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.33.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick Kellerer ZMK X6, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	0.3
	50°C[3] / 80°C[4]		[kN]	0.3
Hollow brick Kellerer ZMK X6, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	0.5
	50°C[3] / 80°C[4]		[kN]	0.5
Hollow brick Kellerer ZMK X6, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	0.75
	50°C[3] / 80°C[4]		[kN]	0.75
Partial safety factor		γ_{Mm}[2]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 43

Performances
Hollow brick: Kellerer ZMK X6
Brick data, installation parameters, characteristic resistance

Base material hollow masonry: Hollow brick Kellerer ZMK TX8

Table C 10.34.1: Brick data

Brick data 771-1-050			**Kellerer ZMK TX8**
Type of brick			Hollow brick
Bulk density	$\rho \geq$	[kg/dm³]	0.60
Standard, approval			EN 771-1:2011, Z-17.1-1068
Producer of brick			Ziegelsystem Michael Kellerer GmbH & Co KG Ziegeleistraße 13, D-82281 Egenhofen
Measurement		[mm]	≥10DF (247x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

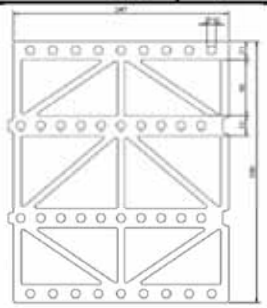

Table C 10.34.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.34.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Hollow brick Kellerer ZMK TX8, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.75
	50°C[3)] / 80°C[4)]	[kN]	0.6
Hollow brick Kellerer ZMK TX8, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2
	50°C[3)] / 80°C[4)]	[kN]	0.9
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 44**
Performances **Hollow brick: Kellerer ZMK TX8** Brick data, installation parameters, characteristic resistance	

Base material hollow masonry: Hollow brick Ladrillo P NV R150

Table C 10.35.1: Brick data

Brick data 771-1-017			**Hollow brick Ladrillo P NV R150**
Type of brick			Hollow brick Ladrillo P NV R150
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			EN 771-1:2011
Producer of brick			Ceramica La Corona, S.A. Carreta de Caldes, km 8, 9 08420 Canovelles, Spain
Measurement		[mm]	≥ 276x128x95
Minimum thickness of member	h_{min} =	[mm]	128

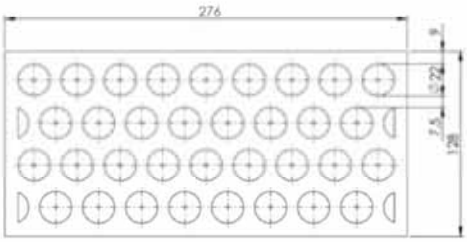

Table C 10.35.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.35.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Hollow brick Ladrillo P NV R150, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.6
	50°C[3)] / 80°C[4)]		[kN]	0.5
Hollow brick Ladrillo P NV R150, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.9
Hollow brick Ladrillo P NV R150, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5
	50°C[3)] / 80°C[4)]		[kN]	1.2
Hollow brick Ladrillo P NV R150, $f_b \geq 36$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick: Ladrillo P NV R150
Brick data, installation parameters, characteristic resistance

Annex C 45

Base material solid masonry, sand-lime solid brick KS, NF

Table C 10.36.1: Brick data

Description of brick 771-1-002			**KS**
Type of brick			Sand-lime solid brick
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			-
Format (measurement)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.36.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6)]			Inside / Outside			
Drill hole diameter	d_0 =	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	60	80
Drill method		[-]	Hammer drilling		Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5	
Spacing perpendicular to free edge	$s_{1,min}$	[mm]	100		100	100
Spacing parallel to free edge	$s_{2,min}$	[mm]	100		200	100
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		50	100

Table C 10.36.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6)]			Inside / Outside			
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**50**	**70**	**50**	**70**
Sand-lime solid brick KS, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	1.5	0.75	2.0
	50°C[3)] / 80°C[4)]	[kN]	1.5	1.5	0.75	1.5
Sand-lime solid brick KS, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5	2.5	1.5	3.0
	50°C[3)] / 80°C[4)]	[kN]	2.0	2.5	1.5	2.5
Sand-lime solid brick KS, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.5	3.5	1.5	4.5
	50°C[3)] / 80°C[4)]	[kN]	3.0	3.5	1.5	3.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5		2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 46**
Performances **Sand-lime solid brick: KS, NF** Brick data, installation parameters, characteristic resistance	

Base material solid masonry, sand-lime solid brick Silka XL Basic, Silka XL Plus

Table C 10.37.1: Brick data

Description of brick 771-2-010			**Silka XL Basic, Silka XL Plus**
Type of brick			Sand-lime solid brick
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN V 106:2005-10; EN 771-2:2011, Z-17.1-997
Producer of brick			Xella Deutschland GmbH Dr.-Hammacher-Str. 49 D-47119 Duisburg
Format (measurement)		[mm]	≥ 248x175x498
Minimum thickness of member	h_{min} =	[mm]	175

Table C 10.37.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside / Reveal	Inside / Outside / Reveal
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	50	50

Table C 10.37.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside / Reveal	Inside / Outside / Reveal
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**	**70**
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	2.5
	50°C[3)] / 80°C[4)]	[kN]	1.5	2.5
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5	3.5
	50°C[3)] / 80°C[4)]	[kN]	2.5	3.5
Sand-lime solid brick Silka XL Basic, Silka XL Plus, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.5	4.5
	50°C[3)] / 80°C[4)]	[kN]	3.5	3.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime solid brick: Silka XL Basic, Silka XL Plus
Brick data, installation parameters, characteristic resistance

Annex C 47

Base material hollow masonry, sand-lime perforated brick KS L, 2DF

Table C 10.38.1: Brick data

Description of brick 771-2-003,771-2-004			**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.6
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			-
Format (measurement)		[mm]	≥ 2DF (≥ 240x115x113)
Minimum thickness of member	h_{min} =	[mm]	115

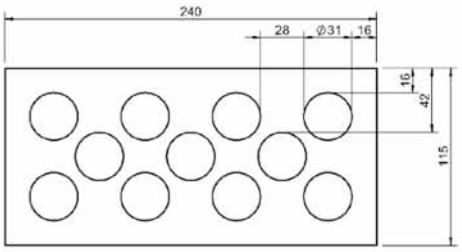

Table C 10.38.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6]			Inside / Outside		Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8		10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80	60	80
Drill method		[-]	Rotary drilling		Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100		100	

Table C 10.38.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 8**		**W-UR 10**	
Installationsside[6]			Inside / Outside		Inside / Outside	
Overall plastic anchor embedment depth	h_{nom}	[mm]	**≥ 50**[5]	**= 70**	**≥ 50**[5]	**= 70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.6	1.2	0.5	0.9
	50°C[3] / 80°C[4]	[kN]	0.5	1.2	0.4	0.9
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9	1.5	0.6	1.2
	50°C[3] / 80°C[4]	[kN]	0.6	1.5	0.5	1.2
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.9	2.0	0.6	1.5
	50°C[3] / 80°C[4]	[kN]	0.9	2.0	0.5	1.5
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.2	2.5	0.9	2.0
	50°C[3] / 80°C[4]	[kN]	0.9	2.5	0.75	2.0
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	1.5	2.5	0.9	2.5
	50°C[3] / 80°C[4]	[kN]	1.2	2.5	0.75	2.5
Partial safety factor	γ_{Mm}[2]	[-]	2.5		2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime perforated brick: KS L, 2DF
Brick data, installation parameters, characteristic resistance

Annex C 48

Base material hollow masonry, sand-lime perforated brick KS L, 8DF

Table C 10.39.1: Brick data

Description of brick 771-2-005, 771-2-013			**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			e.g. Xella Deutschland GmbH
Format (measurement)		[mm]	≥ 8DF (≥ 248x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

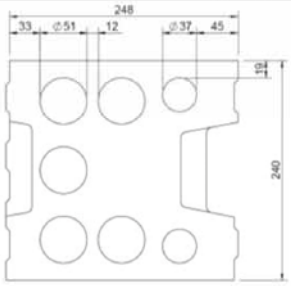

Table C 10.39.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**
Installationsside[6)]			Inside / Outside	Reveal	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80		80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70		70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	60	45	100

Table C 10.39.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**		**W-UR 10**
Installationsside[6)]			Inside / Outside	Reveal	Inside / Outside
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	0.9	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.6	0.9	0.75
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2	1.2	1.2
	50°C[3)] / 80°C[4)]	[kN]	0.9	1.2	0.9
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	1.5	1.5
	50°C[3)] / 80°C[4)]	[kN]	0.9	1.5	1.2
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	2.0	2.0
	50°C[3)] / 80°C[4)]	[kN]	1.2	2.0	1.5
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.0	2.0	2.5
	50°C[3)] / 80°C[4)]	[kN]	1.5	2.0	2.0
Partial safety factor	γ_{Mm}[2)]	[-]	2.5		2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime perforated brick: KS L, 8DF
Brick data, installation parameters, characteristic resistance

Annex C 49

Deutsches Institut für Bautechnik DIBt

Base material hollow masonry, sand-lime perforated brick KS L, 12DF

Table C 10.40.1: Brick data

Description of brick 771-2-001			**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			-
Format (measurement)		[mm]	≥ 12DF (≥ 373x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

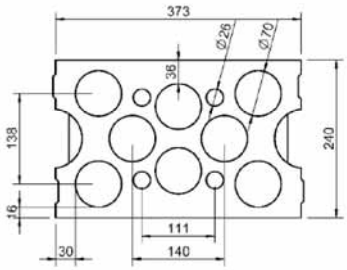

Table C 10.40.2: Installation parameters

Anchor size			**W-UR 8**	
Installationsside[6)]			Inside / Outside	Reval
Drill hole diameter	d_0 =	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	50

Table C 10.40.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**	
Installationsside[6)]				Inside / Outside	Reveal
Overall plastic anchor embedment depth		h_{nom}	[mm]	**50 mm ≤ h_{nom} ≤ 70 mm[5)]**	**= 70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.6	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.5	0.75
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.6	0.9
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9	1.5
	50°C[3)] / 80°C[4)]		[kN]	0.6	1.2
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2	2.0
	50°C[3)] / 80°C[4)]		[kN]	0.9	1.5
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.2	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime perforated brick: KS L, 12DF
Brick data, installation parameters, characteristic resistance

Annex C 50

Base material hollow masonry, sand-lime perforated brick KS L, 12DF

Table C 10.40.4: Brick data

Description of brick 771-2-001			**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			-
Format (measurement)		[mm]	≥ 12DF (≥ 373x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

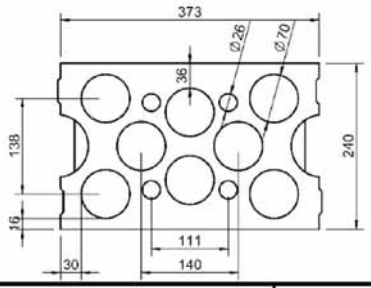

Table C 10.40.5: Installation parameters

Anchor size			**W-UR 10**	
Installationsside[6)]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	10.5	
Spacing perpendicular to free edge	$s_{1,min}$	[mm]	120	100
Spacing parallel to free edge	$s_{2,min}$	[mm]	240	100
Minimum allowable edge distance	$c_{min} \geq$	[mm]	60	100

Table C 10.40.6: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 10**	
Installationsside[6)]				Inside / Outside	
Overall plastic anchor embedment depth		h_{nom}	[mm]	**50 mm ≤ h_{nom} ≤ 70 mm[5)]**	**= 70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.4	0.9
	50°C[3)] / 80°C[4)]		[kN]	0.3	0.6
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.5	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.5	0.75
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.5	1.5
	50°C[3)] / 80°C[4)]		[kN]	0.5	0.9
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75	1.5
	50°C[3)] / 80°C[4)]		[kN]	0.6	1.2
Sand-lime perforated brick KS L, $f_b \geq 16$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75	2.0
	50°C[3)] / 80°C[4)]		[kN]	0.6	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime perforated brick: KS L, 12DF
Brick data, installation parameters, characteristic resistance

Annex C 51

Base material hollow masonry, sand-lime perforated brick KS L, 9DF

Table C 10.41.1: Brick data

Description of brick 771-2-008			**KS L**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 106:2005-10; EN 771-2:2011
Producer of brick			Xella Deutschland GmbH Dr.-Hammacher-Str.49 D-47119 Duisburg
Format (measurement)		[mm]	≥ 9DF (≥ 373x175x249)
Minimum thickness of member	h_{min} =	[mm]	175

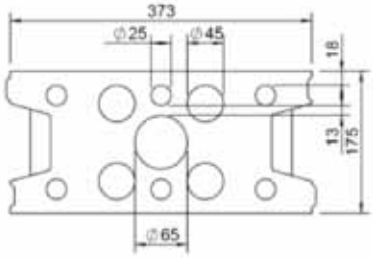

Table C 10.41.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.41.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Sand-lime perforated brick KS L, $f_b \geq 6$ N/mm²	30°C[3)] / 50°C[4)]		[kN]	0.6
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]		[kN]	0.4
Sand-lime perforated brick KS L, $f_b \geq 8$ N/mm²	30°C[3)] / 50°C[4)]		[kN]	0.75
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]		[kN]	0.6
Sand-lime perforated brick KS L, $f_b \geq 10$ N/mm²	30°C[3)] / 50°C[4)]		[kN]	0.9
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]		[kN]	0.75
Sand-lime perforated brick KS L, $f_b \geq 12$ N/mm²	30°C[3)] / 50°C[4)]		[kN]	1.2
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]		[kN]	0.9
Sand-lime perforated brick KS L, $f_b \geq 20$ N/mm²	30°C[3)] / 50°C[4)]		[kN]	2.0
Characteristic resistance F_{Rk}	50°C[3)] / 80°C[4)]		[kN]	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Sand-lime perforated brick: KS L, 9DF
Brick data, installation parameters, characteristic resistance

Annex C 52

Base material hollow masonry, sand-lime perforated brick KS-NT, 4DF

Table C 10.42.1: Brick data

Description of brick 771-2-009			**KS-NT**
Type of brick			Sand-lime perforated brick
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			P-1109/884/07-MPA BS
Producer of brick			BMO KS-Vertrieb Bielefeld-Münster-Osnabrück GmbH & Co. KG Averdiekstr. 9; D-49078 Osnabrück
Format (measurement)		[mm]	≥ 4DF (≥ 249x115x248)
Minimum thickness of member	h_{min} =	[mm]	115

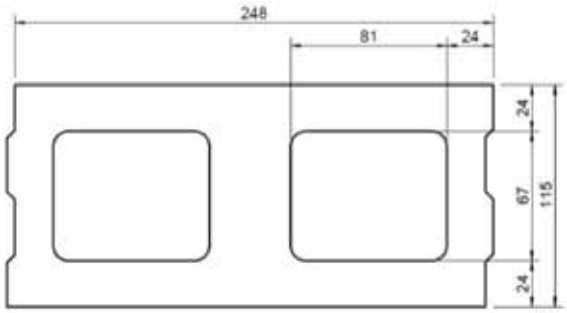

Table C 10.42.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.42.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Sand-lime perforated brick KS-NT, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5
	50°C[3)] / 80°C[4)]	[kN]	1.2
Sand-lime perforated brick KS-NT, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5
	50°C[3)] / 80°C[4)]	[kN]	2.0
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 53

Performances
Sand-lime perforated brick: KS-NT, 4DF
Brick data, installation parameters, characteristic resistance

Deutsches Institut für Bautechnik DIBt

Base material solid masonry, Concrete solid block Vbn, NF

Table C 10.43.1: Brick data

Description of brick 771-3-004			**Vbn**
Type of brick			Concrete solid block
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			DIN V 18153-100:2005-10; EN 771-3:2011
Producer of brick			-
Format (measurement)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.43.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**	
Installationsside[6)]			Inside / Outside	Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	60	80
Drill method		[-]	Hammer drilling	Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5	
Spacing perpendicular to free edge	$s_{1,min}$	[mm]	100	100	100
Spacing parallel to free edge	$s_{2,min}$	[mm]	100	200	100
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	50	100

Table C 10.43.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**	
Installationsside[6)]			Inside / Outside	Inside / Outside	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**50**	**50**	**70**
Concrete solid block Vbn, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	0.75	2.0
	50°C[3)] / 80°C[4)]	[kN]	1.5	0.75	2.0
Concrete solid block Vbn, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5	1.2	3.0
	50°C[3)] / 80°C[4)]	[kN]	2.5	0.9	3.0
Concrete solid block Vbn, $f_b \geq 28$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.5	1.5	4.5
	50°C[3)] / 80°C[4)]	[kN]	3.5	1.5	4.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 54**
Performances **Concrete solid block Vbn, NF** Brick data, installation parameters, characteristic resistance	

Base material solid masonry, Lightweight concrete solid brick V, NF

Table C 10.44.1: Brick data

Description of brick 771-3-008			**V**
Type of brick			Lightweight concrete solid brick
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-3:2011, DIN V 18152-100:2005-10
Producer of brick			e.g. Bisoclassic V Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (measurement)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.44.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.44.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Lightweight concrete solid brick V2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.6
	50°C[3)] / 80°C[4)]	[kN]	0.5
Lightweight concrete solid brick V4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2
	50°C[3)] / 80°C[4)]	[kN]	0.9
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 55**
Performances **Lightweight concrete solid brick V, NF** Brick data, installation parameters, characteristic resistance	

Base material solid masonry, Lightweight concrete solid brick V, NF

Table C 10.45.1: Brick data

Description of brick 771-3-007			**V**
Type of brick			Lightweight concrete solid brick
Bulk density	$\rho \geq$	[kg/dm³]	1.0
Standard, approval			EN 771-3:2011, DIN V 18152-100:2005-10
Producer of brick			e.g. BisoBims, Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (measurement)		[mm]	≥ NF (≥ 240x115x71)
Minimum thickness of member	h_{min} =	[mm]	115

Table C 10.45.2: Installation parameters

Anchor size			**W-UR 8**	
Installationsside[6)]		[-]	Inside / Outside	
Drill hole diameter	d_0 =	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	

Table C 10.45.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**	
Installationsside[6)]			[-]	Inside / Outside	
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**50**	**70**
Lightweight concrete solid brick V 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.4	0.6
	50°C[3)] / 80°C[4)]		[kN]	0.3	0.6
Lightweight concrete solid brick V 4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.9	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.75	1.2
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 56**
Performances **Lightweight concrete solid brick V, NF** Brick data, installation parameters, characteristic resistance	

Base material solid masonry, Lightweight concrete solid brick V and Vbl 3DF

Table C 10.46.1: Brick data

Description of brick 771-3-017			**V and Vbl**
Type of brick			Lightweight concrete solid brick
Bulk density	$\rho \geq$	[kg/dm³]	2.0
Standard, approval			EN 771-3:2011, DIN V 18152-100:2005-10
Producer of brick			e.g. BisoBims, Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (measurement)		[mm]	≥ 3 DF (≥ 240x175x113)
Minimum thickness of member	h_{min} =	[mm]	175

Table C 10.46.2: Installation parameters

Anchor size			**W-UR 8**	
Installationsside[6)]			Inside / Outside / Reveal	
Drill hole diameter	d_0 =	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Hammer drilling	
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	45	

Table C 10.46.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside / Reveal
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Lightweight concrete solid brick V and Vbl, $f_b \geq 10$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.5
	50°C[3)] / 80°C[4)]	[kN]	3.0
Lightweight concrete solid brick V and Vbl, $f_b \geq 20$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	5.0
	50°C[3)] / 80°C[4)]	[kN]	4.0
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Lightweight concrete solid brick V and Vbl 3DF
Brick data, installation parameters, characteristic resistance

Annex C 57

Base material: Lightweight concrete solid block Vbl

Table C 10.47.1: Brick data

Description of brick LAC2			**Vbl 2-0,6-24DF**
Type of brick			Lightweight Aggregate Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.6
Standard, approval			DIN V 18152-100:2005-10
Producer of brick			e.g. Liapor Massive Wall LAC2 by: Liapor GmbH & Co. KG D-91352 Hallerndorf
Measurement		[mm]	≥ 24DF
Minimum thickness of member	h_{min} =	[mm]	365

Table C 10.47.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.47.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**	**W-UR 10**
Installationsside[6)]				Inside / Outside	Inside / Outside
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**70**	**70**
Lightweight concrete solid block Vbl 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2	1.5
	50°C[3)] / 80°C[4)]		[kN]	1.2	1.5
Partial safety factor		γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 58**
Performances **Lightweight concrete solid block Vbl** Brick data, installation parameters, characteristic resistance	

Base material: Lightweight concrete solid block Vbl

Table C 10.48.1: Brick data

Description of brick 771-3-012			**Vbl 2-16DF**
Type of brick			Lightweight Aggregate Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.65
Standard, approval			DIN V 18152-100:2005-10, Z-17.1-839
Producer of brick			e.g. Liapor Compact by: Liapor GmbH & Co. KG D-91352 Hallerndorf Meier Betonwerke GmbH Zur Schanze 2 92283 Lauterhofen
Measurement		[mm]	≥ 16DF (≥ 498x240x239)
Minimum thickness of member	h_{min} =	[mm]	240

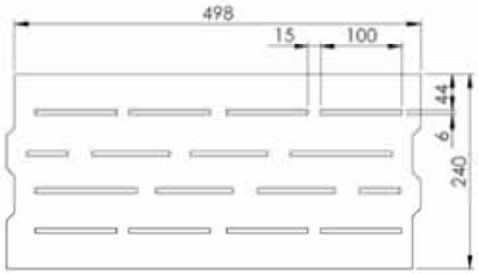

Table C 10.48.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.48.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**70**
Lightweight concrete solid block Vbl 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.9
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Lightweight concrete solid block Vbl
Brick data, installation parameters, characteristic resistance

Annex C 59

Base material: Concrete solid block Vbn

Table C 10.49.1: Brick data

Description of brick LC16/18			**Vbn 12-1,4-12DF**
Type of brick			Concrete
Bulk density	$\rho \geq$	[kg/dm³]	1.4
Standard, approval			DIN V 18153-100:2005-10
Producer of brick			e.g. Liapor Element Wall LC16/18 by: Liapor GmbH & Co. KG D-91352 Hallerndorf
Measurement		[mm]	≥ 12DF
Minimum thickness of member	h_{min} =	[mm]	175

Table C 10.49.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.49.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**	**70**
Concrete solid block Vbn 12, $f_b \geq 12$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.5	3.5
	50°C[3)] / 80°C[4)]	[kN]	3.5	3.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Lightweight concrete solid block Vbn
Brick data, installation parameters, characteristic resistance

Annex C 60

Base material hollow brick lightweight concrete 1K Hbl

Table C 10.50.1: Brick data

Description of brick	771-3-002	**1K Hbl**
Type of brick		Hollow brick lightweight concrete 1K Hbl
Bulk density $\rho \geq$	[kg/dm³]	1.2
Standard, approval		DIN V 18151-100:2005-10; EN 771-3:2011
Producer of brick		e.g. Stahl Betonwerk GmbH & Co. KG D-74547 Untermünkheim-Kupfer
Format (measurement)	[mm]	≥ 12DF (≥ 490x175x238)
Minimum thickness of member h_{min} =	[mm]	175

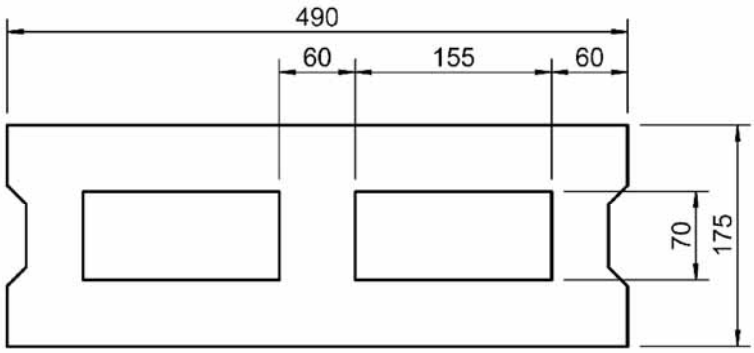

Table C 10.50.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.50.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick lightweight concrete 1K Hbl, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.9	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.9	0.75
Hollow brick lightweight concrete 1K Hbl, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.0	2.0
	50°C[3)] / 80°C[4)]	[kN]	2.0	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick lightweight concrete 1K Hbl
Brick data, installation parameters, characteristic resistance

Annex C 61

Deutsches Institut für Bautechnik DIBt

Base material hollow brick lightweight concrete 3K Hbl

Table C 10.51.1: Brick data

Description of brick 771-3-005			**3K Hbl**
Type of brick			Hollow brick lightweight concrete 3K Hbl
Bulk density	$\rho \geq$	[kg/dm³]	0.7
Standard, approval			DIN V 18151-100:2005-10; EN 771-3:2011
Producer of brick			e.g. Heinzmann Baustoffe GmbH, Liapor GmbH & Co. KG
Format (measurement)		[mm]	≥ 16DF (≥ 498x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

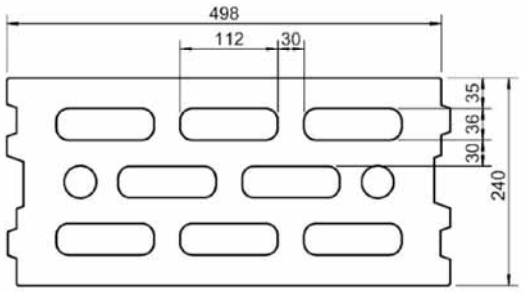

Table C 10.51.2: Installation parameters

Anchor size			**W-UR 8**		**W-UR 10**
Installationsside[6]			Inside / Outside	Reveal	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8		10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45		10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80		80
Drill method		[-]	Rotary drilling		Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70		70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5		10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	55	100

Table C 10.51.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size				**W-UR 8**		**W-UR 10**
Installationsside[6]				Inside / Outside	Reveal	Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**		**70**
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	0.6	0.6	0.5
	50°C[3] / 80°C[4]		[kN]	0.4	0.6	0.3
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	1.2	1.2	0.9
	50°C[3] / 80°C[4]		[kN]	0.9	1.2	0.6
Hollow brick lightweight concrete 3K Hbl, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]		[kN]	1.5	1.2	1.5
	50°C[3] / 80°C[4]		[kN]	1.2	1.2	0.9
Partial safety factor		γ_{Mm}[2]	[-]	2.5		2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick lightweight concrete 3K Hbl
Brick data, installation parameters, characteristic resistance

Annex C 62

Base material hollow brick lightweight concrete: Liapor-Super-K

Table C 10.52.1: Brick data

Description of brick 771-3-006			**Liapor-Super-K**
Type of brick			Hollow brick lightweight concrete 7K
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			EN 771-3:2011; Z-17.1-501
Producer of brick			Liapor GmbH & Co. KG D-91352 Hallerndorf
Format (measurement)		[mm]	≥ 16DF (≥ 495x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

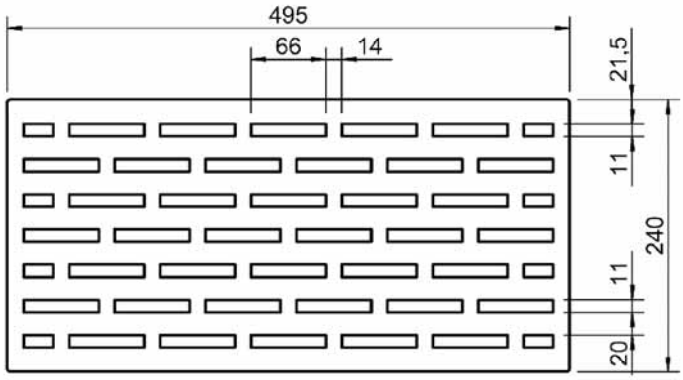

Table C 10.52.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Rotary drilling	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	100

Table C 10.52.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside	Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**	**70**
Hollow brick lightweight concrete Liapor-Super-K, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.75	0.9
	50°C[3)] / 80°C[4)]	[kN]	0.6	0.6
Hollow brick lightweight concrete Liapor-Super-K, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	2.0
	50°C[3)] / 80°C[4)]	[kN]	1.2	1.2
Partial safety factor	γ_{Mm}[2)]	[-]	2.5	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 63

Performances
Hollow brick lightweight concrete: Liapor-Super-K
Brick data, installation parameters, characteristic resistance

Deutsches Institut für Bautechnik DIBt

Base material hollow brick concrete 2K Hbn

Table C 10.53.1: Brick data

Description of brick 771-3-011			**2K Hbn**
Type of brick			Hollow brick concrete
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN V 18153-100:2005-10; EN 771-3:2011
Producer of brick			e.g. Stark Betonwerk GmbH & Co. KG D-74547 Untermünkheim-Kupfer
Format (measurement)		[mm]	≥ 12DF (≥ 375x240x238)
Minimum thickness of member	h_{min} =	[mm]	240

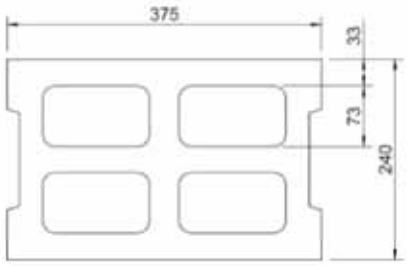

Table C 10.53.2: Installation parameters

Anchor size			**W-UR 8**	
Installationsside[6]			Inside / Outside	Reveal
Drill hole diameter	d_0 =	[mm]	8	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	80

Table C 10.53.3: Characteristic resistance F_{Rk}[1)7)] in [kN] for single anchor

Anchor size				**W-UR 8**		
Installationsside[6]				Inside / Outside	Reveal	
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**		
Characteristic resistance for single anchor			[kN]	F_{Rk}[1)]	F_{Rk}[1)]	F_{RK}[7)]
Hollow brick concrete 2K Hbn 2, $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75	0.3	1.2
	50°C[3)] / 80°C[4)]		[kN]	0.6	0.3	1.2
Hollow brick concrete 2K Hbn 4, $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5	0.6	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.2	0.5	2.0
Hollow brick concrete 2K Hbn 6, $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	2.0	0.6	2.0
	50°C[3)] / 80°C[4)]		[kN]	1.5	0.5	2.0
Hollow brick concrete 2K Hbn 8, $f_b \geq 8$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	3.0	0.6	2.0
	50°C[3)] / 80°C[4)]		[kN]	2.0	0.5	2.0
Partial safety factor		γ_{Mm}[2)]	[-]	2.5		

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Hollow brick concrete 2K Hbn
Brick data, installation parameters, characteristic resistance

Annex C 64

Base material hollow brick lightweight concrete: Gisoton WärmeDämmBlock

Table C 10.54.1: Brick data

Description of brick 771-3-009			**Gisoton WärmeDämmBlock**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.8
Standard, approval			Z-17.1-873
Producer of brick			Gisoton Wandsysteme Baustoffwerke Gebhart & Söhne GmbH & Co. Hochstraße 2 D-88317 Aichstetten
Format (measurement)		[mm]	≥ 375x300x248
Minimum thickness of member	h_{min} =	[mm]	300

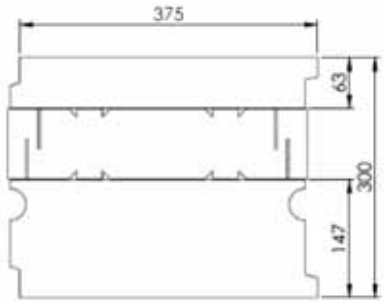

Table C 10.54.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.54.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Gisoton WärmeDämmBlock, **$f_b \geq 4$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5
	50°C[3)] / 80°C[4)]	[kN]	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Gisoton WärmeDämmBlock
Brick data, installation parameters, characteristic resistance

Annex C 65

Base material hollow brick lightweight concrete: Gisoton Thermo Schall

Table C 10.55.1: Brick data

Description of brick 771-3-010			**Gisoton Thermo Schall**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.45
Standard, approval			Z-15.2-18
Producer of brick			Gisoton Wandsysteme Baustoffwerke Gebhart & Söhne GmbH & Co. Hochstraße 2 D-88317 Aichstetten
Format (measurement)		[mm]	≥ 498x300x248
Minimum thickness of member	h_{min} =	[mm]	300

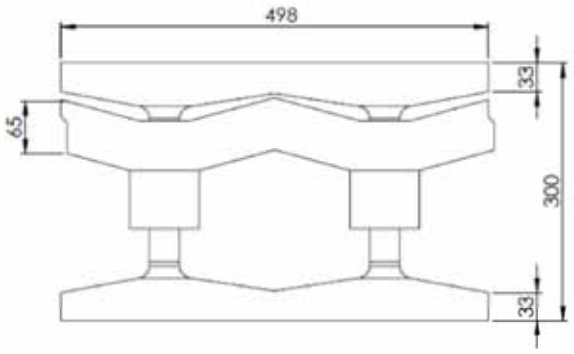

Table C 10.55.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.55.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Gisoton Thermo Schall, **$f_b \geq 2$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5
	50°C[3)] / 80°C[4)]	[kN]	1.5
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Gisoton Thermo Schall
Brick data, installation parameters, characteristic resistance

Annex C 66

Base material hollow brick lightweight concrete: Bisomark[TEC]

Table C 10.56.1: Brick data

Description of brick 771-3-015			**Bisomark[TEC]**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.4
Standard, approval			Z-17.1-1026
Producer of brick			Bisotherm GmbH Eisenbahnstraße 12 D-56218 Mühlheim-Kärlich
Format (measurement)		[mm]	≥ 20DF (≥ 497x300x249)
Minimum thickness of member	h_{min} =	[mm]	300

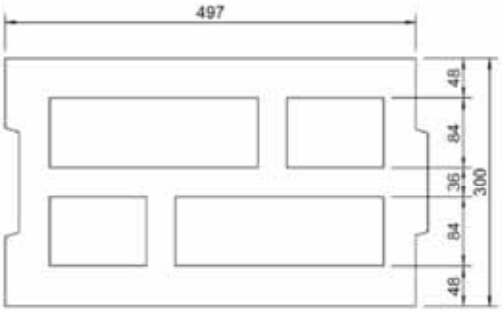

Table C 10.56.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100

Table C 10.56.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				**W-UR 8**
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		h_{nom} =	[mm]	**70**
Bisomark[TEC], **$f_b \geq 1.6$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.6
	50°C[3)] / 80°C[4)]		[kN]	0.5
Bisomark[TEC], **$f_b \geq 2$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.75
	50°C[3)] / 80°C[4)]		[kN]	0.6
Bisomark[TEC], **$f_b \geq 4$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5
	50°C[3)] / 80°C[4)]		[kN]	1.2
Partial safety factor		γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 67

Performances
Hollow brick lightweight concrete: Bisomark[TEC]
Brick data, installation parameters, characteristic resistance

Base material hollow brick lightweight concrete: SEPA Blocs Creux

Table C 10.57.1: Brick data

Description of brick 771-3-025			**SEPA Blocs Creux**
Type of brick			Hollow brick lightweight concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.9
Standard, approval			EN 771-3:2011
Producer of brick			Sepa (France)
Format (measurement)		[mm]	500x200x200
Minimum thickness of member	h_{min} =	[mm]	200

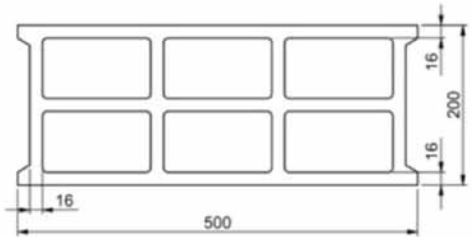

Table C 10.57.2: Installation parameters

Anchor size			**W-UR 10**	
Installationsside[6]			Inside / Outside	
Drill hole diameter	d_0 =	[mm]	10	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10.45	
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	60	80
Drill method		[-]	Rotary drilling	
Overall plastic anchor embedment depth	h_{nom} =	[mm]	50	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	10.5	
Minimum allowable edge distance	$c_{min} \geq$	[mm]	100	

Table C 10.57.3: Characteristic resistance F_{Rk}[1] in [kN] for single anchor

Anchor size			**W-UR 10**
Installationsside[6]			Inside / Outside
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**50 mm ≤ h_{nom} ≤ 70 mm**[5]
B SEPA Blocs Creux, **$f_b \geq 4$ N/mm²** Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.5
	50°C[3] / 80°C[4]	[kN]	0.4
SEPA Blocs Creux , **$f_b \geq 6$ N/mm²** Characteristic resistance F_{Rk}	30°C[3] / 50°C[4]	[kN]	0.75
	50°C[3] / 80°C[4]	[kN]	0.6
Partial safety factor	γ_{Mm}[2]	[-]	2.5

Footnotes see Annex C 3

Recommendation: On the basis of experience values the characteristic resistance F_{Rk} have to be confirmed by job site tests.

Würth Plastic Anchor W-UR	**Annex C 68**
Performances **Hollow brick lightweight concrete: SEPA Blocs Creux** Brick data, installation parameters, characteristic resistance	

Base material solid masonry: Autoclaved Aerated Concrete AAC

Table C 10.58.1: Brick data

Description of brick AAC			**AAC**
Type of brick			Autoclaved Aerated Concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.3
Standard, approval			EN 771-4:2011
Measurement		[mm]	≥ 499x175x249
Minimum thickness of member	h_{min} =	[mm]	175

Table C 10.58.2: Installation parameters

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside / Reveal	Inside / Outside / Reveal
Drill hole diameter	d_0 =	[mm]	8	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80	80
Drill method		[-]	Hammer drilling	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5	10.5

Table C 10.58.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**	**W-UR 10**
Installationsside[6)]			Inside / Outside / Reveal	Inside / Outside / Reveal
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**	**70**
Autoclaved Aerated Concrete AAC $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	0.5	0.75
	50°C[3)] / 80°C[4)]	[kN]	0.4	0.6
Autoclaved Aerated Concrete AAC $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.5	1.7
	50°C[3)] / 80°C[4)]	[kN]	1.2	1.4
Autoclaved Aerated Concrete AAC $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5	2.6
	50°C[3)] / 80°C[4)]	[kN]	2.0	2.1
Autoclaved Aerated Concrete AAC $f_b \geq 7$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	3.0	3.1
	50°C[3)] / 80°C[4)]	[kN]	2.4	2.5
Partial safety factor	γ_{MAAC}[2)]	[-]	2.0	2.0

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Solid masonry: Autoclaved Aerated Concrete
Brick data, installation parameters, characteristic resistance

Annex C 69

(Prefabricated) Reinforced components made of autoclaved aerated concrete (AAC)

Table C 10.59.1: Data

Description			(Prefabricated) Reinforced components made of autoclaved aerated concrete
Bulk density	$\rho \geq$	[kg/dm³]	0.4
Standard, approval			EN 12 602:2016
Minimum thickness of member	h_{min} =	[mm]	175

Table C 10.59.2: Installation parameters

Anchor size			W-UR 10
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	10
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	10.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	10.5
Minimum allowable edge distance	$c_{min} \geq$	[mm]	150

Table C 10.59.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size				W-UR 10
Installationsside[6)]				Inside / Outside
Overall plastic anchor embedment depth		$h_{nom} \geq$	[mm]	**70**
(Prefabricated) Reinforced AAC $f_b \geq 2$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	0.5
	50°C[3)] / 80°C[4)]		[kN]	0.4
(Prefabricated) Reinforced AAC $f_b \geq 3$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.0
	50°C[3)] / 80°C[4)]		[kN]	0.9
(Prefabricated) Reinforced AAC $f_b \geq 4$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.5
	50°C[3)] / 80°C[4)]		[kN]	1.3
(Prefabricated) Reinforced AAC $f_b \geq 4.5$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.75
	50°C[3)] / 80°C[4)]		[kN]	1.5
(Prefabricated) Reinforced AAC $f_b \geq 5$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.75
	50°C[3)] / 80°C[4)]		[kN]	1.5
(Prefabricated) Reinforced AAC $f_b \geq 6$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.75
	50°C[3)] / 80°C[4)]		[kN]	1.5
(Prefabricated) Reinforced AAC $f_b \geq 7$ N/mm² Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]		[kN]	1.75
	50°C[3)] / 80°C[4)]		[kN]	1.5
Partial safety factor		γ_{MAAC}[2)]	[-]	2.0

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Solid masonry: Reinforced components of autoclaved aerated concrete
Brick data, installation parameters, characteristic resistance

Annex C 70

Base material precast prestressed hollow core elements: VMM-L SCD 20

Table C 10.60.1: Data

Description			**VMM-L SCD 20**
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168:2011-12; Z-15.10-276
Producer of brick			e.g. Ketonia GmbH Spannbeton- Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (measurement)		[mm]	≥ 1200x800x200
Minimum thickness of member	h_{min} =	[mm]	200

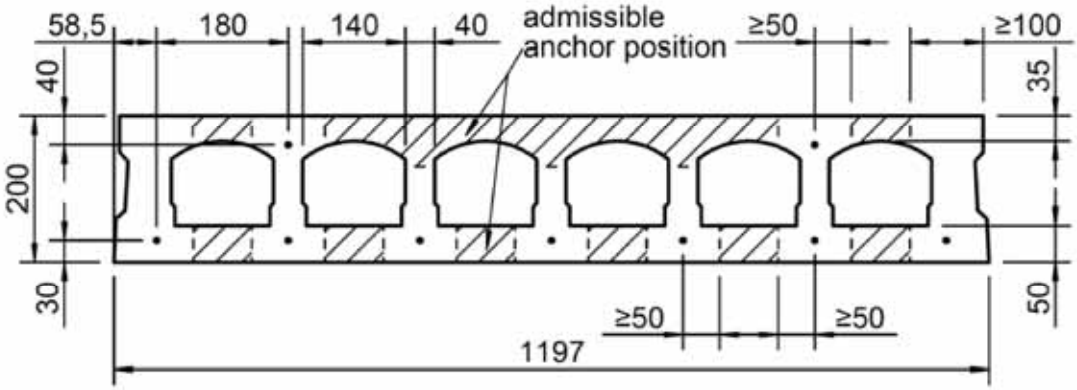

Table C 10.60.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside			top view / bottom view
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table C 10.60.3: Characteristic resistance F_{Rk} [1] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside			top view / bottom view
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Precast prestressed hollow core elements VMM-L SCD 20, C45/55 Characteristic resistance F_{Rk}	30°C [3] / 50°C [4]	[kN]	1.5
	50°C [3] / 80°C [4]	[kN]	1.2
Partial safety factor	γ_{Mc} [2]	[-]	1.8

Footnotes see Annex C 3

Würth Plastic Anchor W-UR	**Annex C 71**
Precast prestressed hollow core elements **VMM-L SCD 20** Brick data, installation parameters, characteristic resistance	

Base material precast prestressed hollow core elements: VMM-L EPD 32

Table C 10.61.1: Data

Description			**VMM-L EPD 32**
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168:2011-12; Z-15.10-276
Producer of brick			e.g. Ketonia GmbH Spannbeton- Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (measurement)		[mm]	≥ 1200x800x320
Minimum thickness of member	h_{min} =	[mm]	320

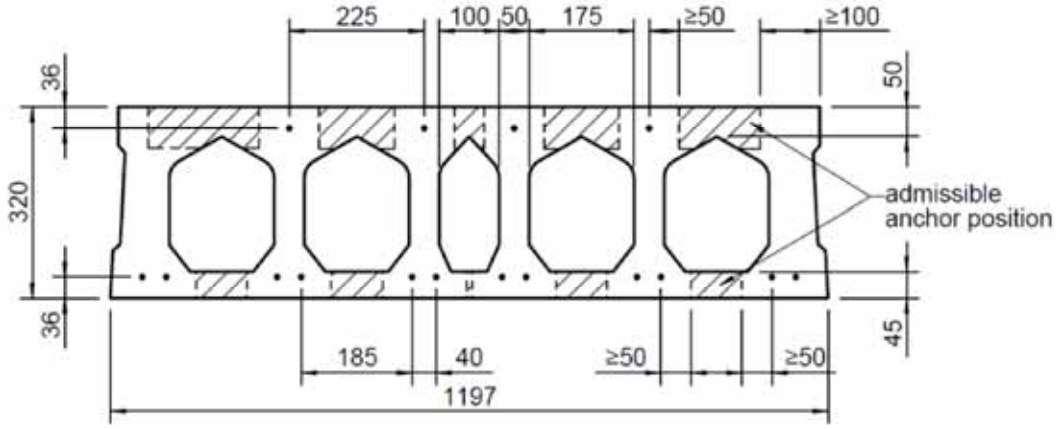

Table C 10.61.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside			top view / bottom view
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table C 10.61.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside			top view / bottom view
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Precast prestressed hollow core elements VMM-L EPD 32, C45/55 Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5
	50°C[3)] / 80°C[4)]	[kN]	1.5
Partial safety factor	γ_{Mc}[2)]	[-]	1.8

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 72

Performances
Precast prestressed hollow core elements VMM-L EPD 32
Brick data, installation parameters, characteristic resistance

Base material precast prestressed hollow core elements: VMM VSD 16

Table C 10.62.1: Data

Description			VMM VSD 16
Type			Precast prestressed hollow core elements
Bulk density	$\rho \geq$	[kg/dm³]	2.4
Standard, approval			DIN EN 1168:2011-12; Z-15.10-276
Producer of brick			z.B. Ketonia GmbH Spannbeton-Fertigteilwerk Almesbach 4 D-92637 Weiden
Format (measurement)		[mm]	≥ 1200x400x160
Minimum thickness of member	h_{min} =	[mm]	160

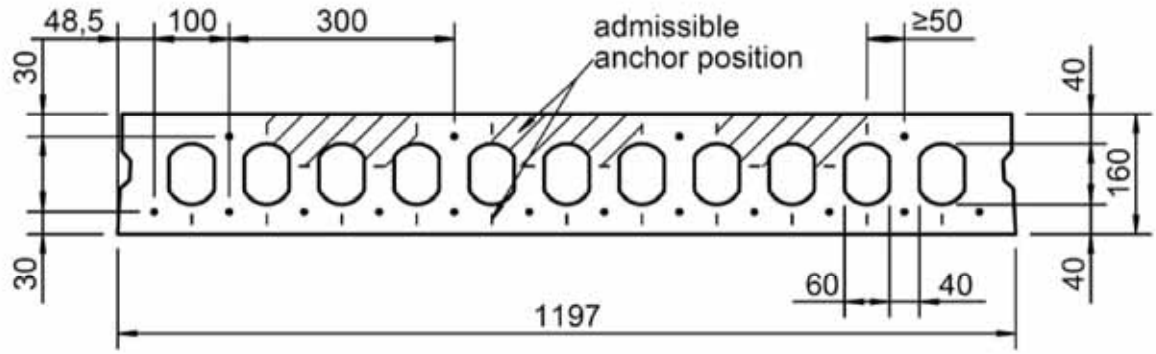

Table C 10.62.2: Installation parameters

Anchor size			W-UR 8
Installationsside			top view / bottom view
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Hammer drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table C 10.62.3Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			W-UR 8
Installationsside			top view / bottom view
Overall plastic anchor embedment depth	h_{nom} =	[mm]	**70**
Precast prestressed hollow core elements VMM VSD 16, C45/55 Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	2.5
	50°C[3)] / 80°C[4)]	[kN]	2.0
Partial safety factor	γ_{Mc}[2)]	[-]	1.8

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Performances
Precast prestressed hollow core elements VMM VSD 16
Brick data, installation parameters, characteristic resistance

Annex C 73

Base material gypsum blocks: MultiGips R.max Schallschutzplatte

Table C 10.63.1: Brick data

Description of brick			**MultiGips R.max Schallschutzplatte**
Type of brick			Gypsum blocks
Bulk density	$\rho \geq$	[kg/dm³]	1.2
Standard, approval			DIN EN 12859:2011-05
Producer of brick			VG-ORTH GmbH & Co. KG Holeburgweg 24 D-37627 Stadtoldendorf
Format (measurement)		[mm]	≥ 500x500x100
Minimum thickness of member	h_{min} =	[mm]	100

Table C 10.63.2: Installation parameters

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Drill hole diameter	d_0 =	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8.45
Depth of drill hole to deepest point	$h_1 \geq$	[mm]	80
Drill method		[-]	Rotary drilling
Overall plastic anchor embedment depth	h_{nom} =	[mm]	70
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	8.5

Table C 10.63.3: Characteristic resistance F_{Rk}[1)] in [kN] for single anchor

Anchor size			**W-UR 8**
Installationsside[6)]			Inside / Outside
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	**70**
Gypsum blocks: **MultiGips R.max Schallschutzplatte,** **$f_b \geq 11{,}7$ N/mm²** Characteristic resistance F_{Rk}	30°C[3)] / 50°C[4)]	[kN]	1.2
	50°C[3)] / 80°C[4)]	[kN]	1.2
Partial safety factor	γ_{Mm}[2)]	[-]	2.5

Footnotes see Annex C 3

Würth Plastic Anchor W-UR

Annex C 74

Performances
Gypsum blocks: MultiGips R.max Schallschutzplatte
Brick data, installation parameters, characteristic resistance