

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-06/0241
of 23 September 2015

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Würth ceiling anchor W-ZS

Product family
to which the construction product belongs

Deformation- controlled expansion anchor for
multiple use for non-structural applications in
concrete

Manufacturer

Adolf Würth GmbH & Co. KG
Reinhold-Würth-Straße 12-17
74653 Künzelsau
DEUTSCHLAND

Manufacturing plant

Würth Herstellwerk 5, Deutschland

This European Technical Assessment
contains

9 pages including 3 annexes which form an integral part
of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

Guideline for European technical approval of "Metal
anchors for use in concrete", ETAG 001 Part 6: "Anchors
for multiple use for non-structural applications", August
2010,
used as European Assessment Document (EAD)
according to Article 66 Paragraph 3 of Regulation (EU)
No 305/2011.

This version replaces

ETA-06/0241 issued on 23 March 2015

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

Specific Part

1 Technical description of the product

The Würth ceiling anchor W-ZS is an anchor made of galvanised steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

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 anchor 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	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C 1

3.3 Safety in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for all load directions	See Annex C 1

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 001, August 2010, used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of Regulation (EU) No 305/2011, the applicable European legal act is: [97/161/EC].

The system to be applied is: 2+

English translation prepared by DIBt

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

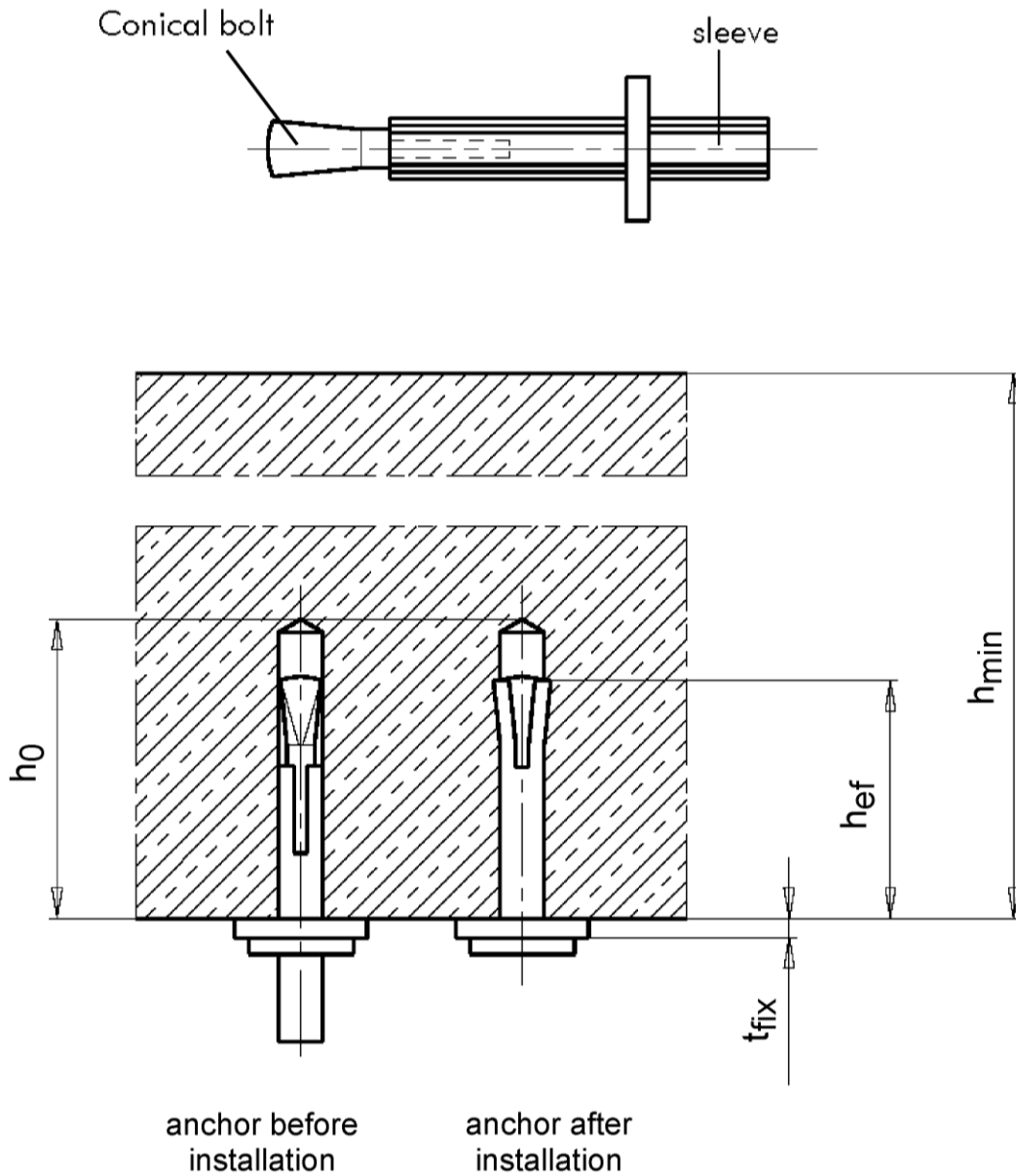
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 23 September 2015 by Deutsches Institut für Bautechnik

Andreas Kummerow
p.p. Head of Department

beglaubigt:
Baderschneider

Product and Installed condition

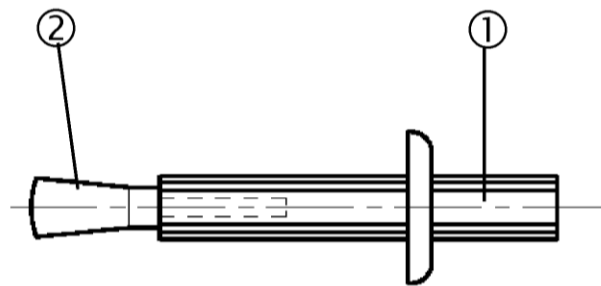


electronic copy of the eta by dibt: eta-06/0241

Würth ceiling anchor W-ZS

Product description
Product and installed condition

Annex A1



Part 1

Part 2

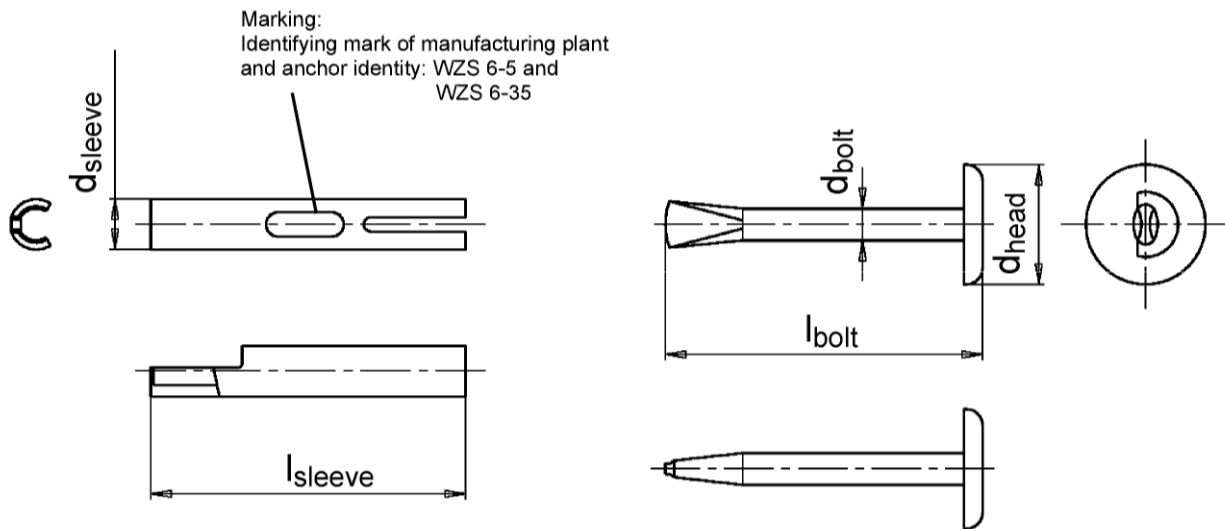


Table A1: Dimensions

Anchor size	t_{fix}	d_{Head}	d_{bolt}	l_{bolt}	d_{sleeve}	l_{sleeve}
W-ZS 6-5 [mm]	5	15	3,65	38,9	6,8	38,5
W-ZS 6-35 [mm]	35	15	3,65	68,9	6,8	68,5

Table A2: Materials

Part	Designation	Materials
		Steel galvanised $\geq 5 \mu m$ acc. to EN ISO 2081:2008
1	Sleeve	Steel C15 (1.0401) acc. to EN 10277-1:2008 or Steel C15E (1.1141) acc. to EN 10132-2:2000
2	Conical bolt	Steel 22B2/23B2 (1.5508) acc. to EN 10263-4:2001 or Steel 20MnB4 (1.5525) acc. to EN 10263-4:2001 or Steel 19MnB4 (1.5523) acc. to DIN 1654-4:1989-10

Würth ceiling anchor W-ZS

Product description
Dimensions
Materials

Annex A2

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads: all sizes.
- Fire exposure: all sizes.

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000.
- Strength classes C12/15 to C50/60 according to EN 206-1:2000.
- Cracked and non-cracked concrete: all sizes.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e. g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static or quasi-static actions are designed in accordance with ETAG 001, Annex C, design method C, Edition August 2010.
- Anchorages under fire exposure are designed in accordance with ETAG 001, Annex C, design method C, Edition August 2010 and EOTA Technical Report TR 020, Edition May 2004.
- In case of requirements to resistance to fire local spalling of the concrete cover must be avoided.
- Fasteners are only to be used for multiple use for non-structural application, according to ETAG 001 Part 6, Edition August 2010.

Installation:

- Hole drilling by hammer drilling only.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and if under shear or oblique tension load it is not in the direction of load application.

Würth ceiling anchor W-ZS

Intended Use
Specifications

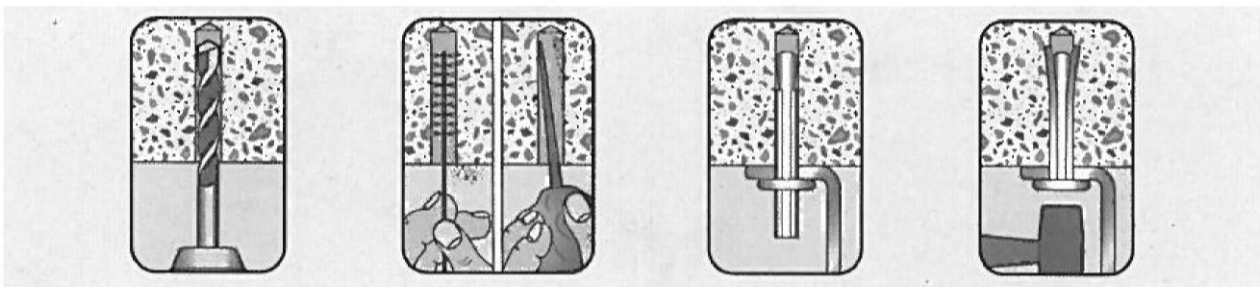
Annex B1

Table B1: Installation Parameters

Anchor size			W-ZS 6-5	W-ZS 6-35
Effective anchoring depth	$h_{ef} \geq$	[mm]	30	
Maximum thickness of fixture	$t_{fix} \leq$	[mm]	5	35
Nominal drill hole diameter	$d_0 =$	[mm]	6,0	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,4	
Depth of drill hole	$h_0 \geq$	[mm]	35	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	
Minimum thickness of member	h_{min}	[mm]	80	
Spacing	$s_{min} = s_{cr}$	[mm]	200	
Edge distance	$c_{min} = c_{cr}$	[mm]	150	

Installation Instruction

- Drilling only by hammer drilling
- Clean drillhole
- Install the ceiling anchor through the fixture
- Expansion of the ceiling anchor by hammering till it is flush



Würth ceiling anchor W-ZS

Intended Use
Installations Parameters
Installations Instruction

Annex B2

Table C1: Characteristic values – for all load direction

Anchor size			W-ZS 6-5	W-ZS 6-35
For all load directions				
Characteristic resistance in C20/25 to C50/60	F_{Rk}	[kN]	3,0	
Characteristic resistance in C12/15	F_{Rk}	[kN]	2,5	
Partial safety factor	$\gamma_M^{1)}$	[-]	1.8	
Shear load with lever arm				
Characteristic bending moment in C12/15 to C50/60	$M_{Rk,s}^0$	[Nm]	2,9	
Installation safety factor	γ_{Ms}	[-]	1,38	

¹⁾ The Installation safety factor $\gamma_2 = 1,2$ is included

Table C2: Characteristic values under fire exposure in concrete C20/25 to C50/60

Anchor size			W-ZS 6-5	W-ZS 6-35
Fire resistance class	For all load directions			
R30	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,2
R60	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,2
R90	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,1
R120	Characteristic resistance	$F_{Rk,fi}$	[kN]	0,1
R30 to R120	Spacing	$s_{cr,fi}$	[mm]	200
	Edge distance	$c_{cr,fi}$	[mm]	150
If the fire attack is from more than one side, the edge distance shall be ≥ 300 mm				

Würth ceiling anchor W-ZS

Performance

Characteristic values – for all load directions
Characteristic values under fire exposure

Annex C1