

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 March 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.

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ETA-06/0241**

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## 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.  
Product and 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 Hygiene, health and the environment (BWR 3)

Not applicable.

#### 3.4 Safety in use (BWR 4)

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

#### 3.5 Protection against noise (BWR 5)

Not applicable.

#### 3.6 Energy economy and heat retention (BWR 6)

Not applicable.

#### 3.7 Sustainable use of natural resources (BWR 7)

The sustainable use of natural resources was not investigated.

#### 3.8 General aspects

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

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**4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base**

According to Decision of the Commission of 17 February 1997 (97/161/EC) (OJ L 062 of 04.03.97 p. 41-42), the system of assessment and verification of constancy of performance (see Annex V and Article 65 Paragraph 2 to Regulation (EU) No 305/2011) given in the following table applies.

Product	Intended use(s)	Level or class	System
Metal anchors for use in concrete (light-duty type)	For use in redundant systems for fixing and/or supporting to concrete elements such as lightweight suspended ceilings, as well as installations	—	2+

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

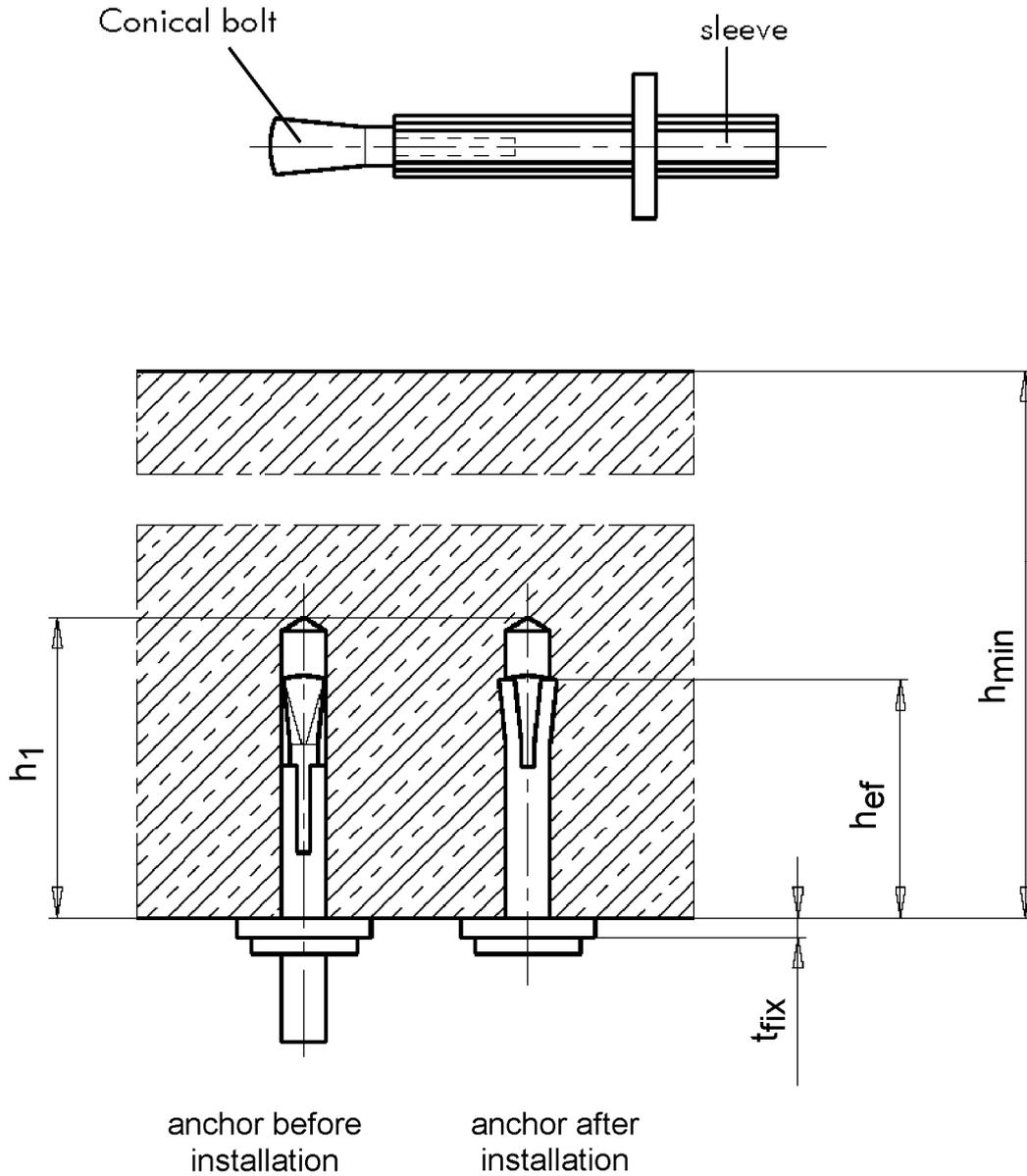
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

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

Uwe Bender  
Head of Department

*beglaubigt:*  
Baderschneider

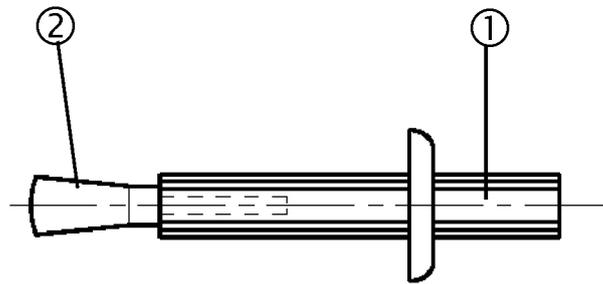
## Product and Installed condition



Würth ceiling anchor W-ZS

**Product description**  
Product and installed condition

Annex A1



Part 1

Part 2

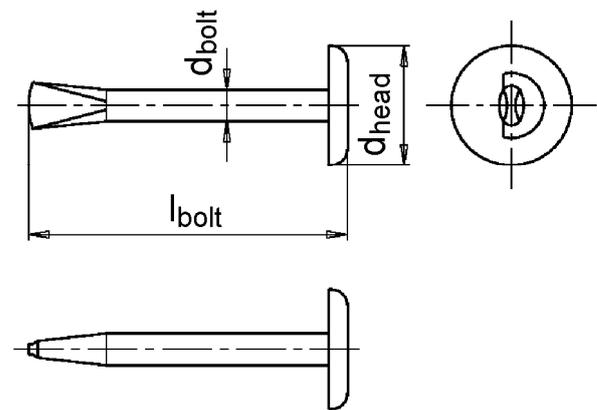
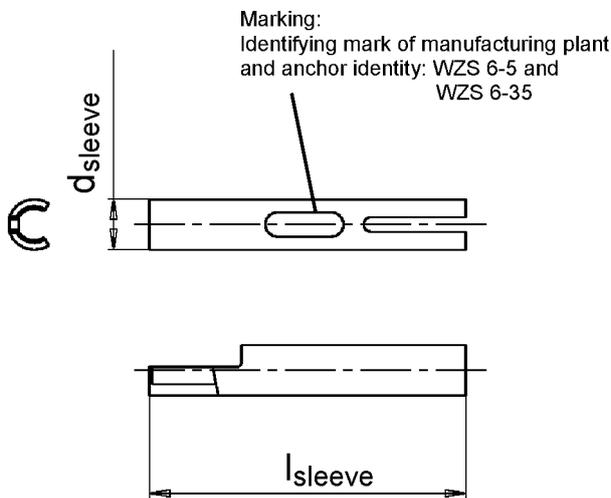


Table A1: Dimensions

Anchor size	$t_{\text{fix}}$	$d_{\text{Kopf}}$	$d_{\text{Bolzen}}$	$l_{\text{Bolzen}}$	$d_{\text{Hülse}}$	$l_{\text{Hülse}}$
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 $\geq 5 \mu\text{m}$ 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 202, 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**

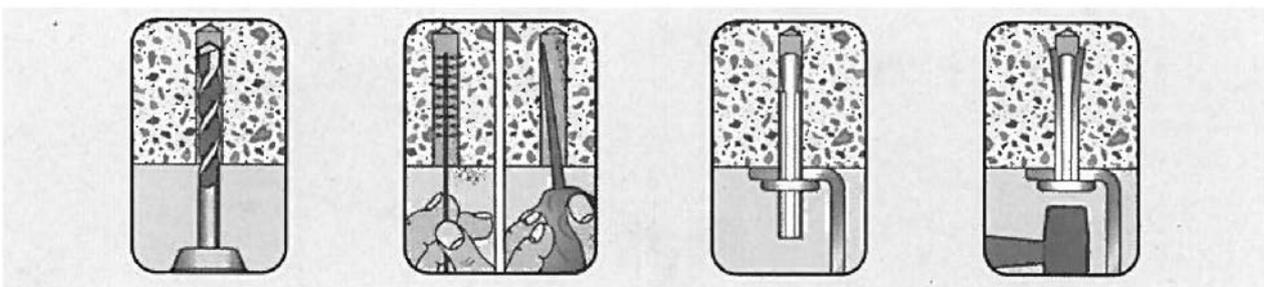
Annex B1

**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	$d_o =$	[mm]	6,0	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,4	
Depth of drill hole	$h_o \geq$	[mm]	35	
Diameter of clearance hole in the fixture	$d_f \leq$	[mm]	7	
Minimum thickness of member	$h_{min}$	[mm]	80	
Minimum spacing	$s_{cr}$	[mm]	200	
Minimum edge distance	$c_{cr}$	[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
<b>For all load directions</b>				
Characteristic resistance in C20/25 to C50/60	$F_{Rk}$	[kN]	3,0	
Characteristic resistance in C12/15	$F_{Rk}$	[kN]	2,5	
Installation safety factor	$\gamma_2$	[-]	1.2	
<b>Shear load with lever arm</b>				
Characteristic bending moment in C12/15 to C50/60	$M_{Rk,s}^0$	[Nm]	2,9	
Installation safety factor	$\gamma_2$	[-]	1.2	

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

Anchor size			W-ZS 6-5	W-ZS 6-35
<b>Fire resistance class</b>	<b>For all load directions</b>			
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]	120
	Edge distance	$c_{cr,fi}$	[mm]	60
If the fire attack is from more than one side, the edge distance shall be $\geq 300$ mm				

Würth ceiling anchor W-ZS

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

Annex C1