

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

ETA-23/0472  
of 11 September 2023

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

FIXALITH VIS BETON

Product family  
to which the construction product belongs

Fasteners for use in concrete for redundant non-structural  
systems

Manufacturer

ETANCO SAS  
Parc des Érables - Bât.1  
66 Route de Sartrouville - BP 49  
78231 Le PECQ Cedex  
FRANKREICH

Manufacturing plant

Plant 1

This European Technical Assessment  
contains

12 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

330747-00-0601, Edition 06/2018

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## Specific Part

### 1 Technical description of the product

The insulation screw FIXALITH VIS BETON in size of 6 mm is an anchor made of galvanized steel or steel with zinc flake coating, made of stainless or high corrosion resistant steel. The anchor is screwed into a predrilled cylindrical drill hole. The special thread of the anchor cuts an internal thread into the member while setting. The anchorage is characterised by mechanical interlock in the special thread.

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 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C2

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

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi-static loading)	See Annex C1
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C1
Durability	See Annex B1

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

In accordance with European Assessment Document EAD No. 330747-00-0601, the applicable European legal act is: [97/161/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 11 September 2023 by Deutsches Institut für Bautechnik

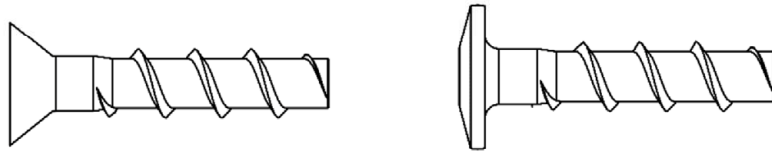
Dipl.-Ing. Beatrix Wittstock  
Head of Section

*beglaubigt:*  
Tempel

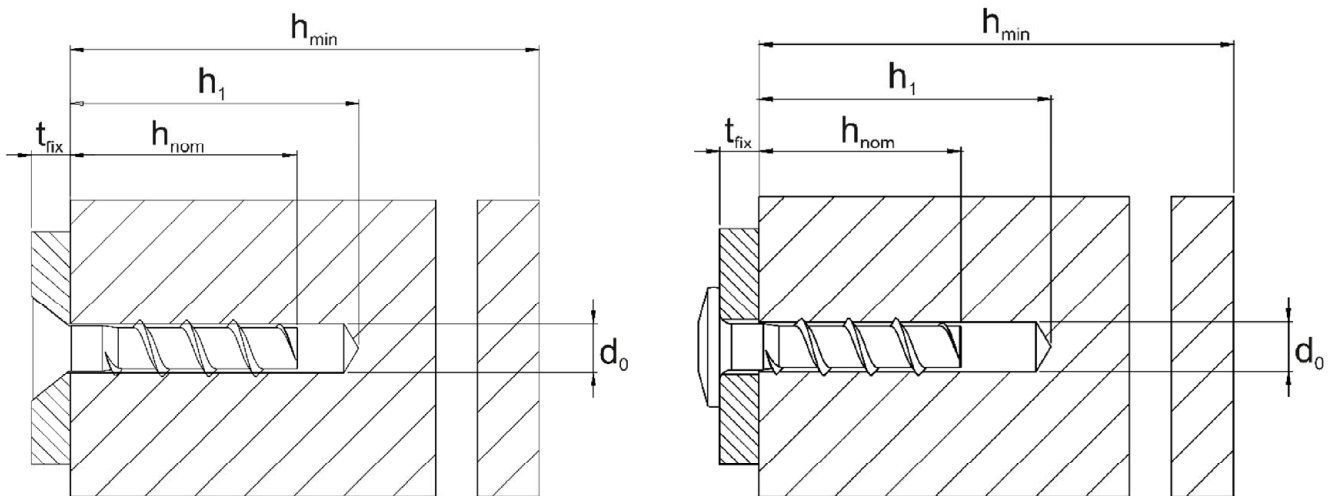
## Product in installed condition

### FIXALITH VIS BETON

- Galvanized carbon steel
- Zinc flakes coated carbon steel
- Stainless steel A4
- High corrosion resistant steel HCR



e.g. FIXALITH VIS BETON, configuration with countersunk head and TORX drive



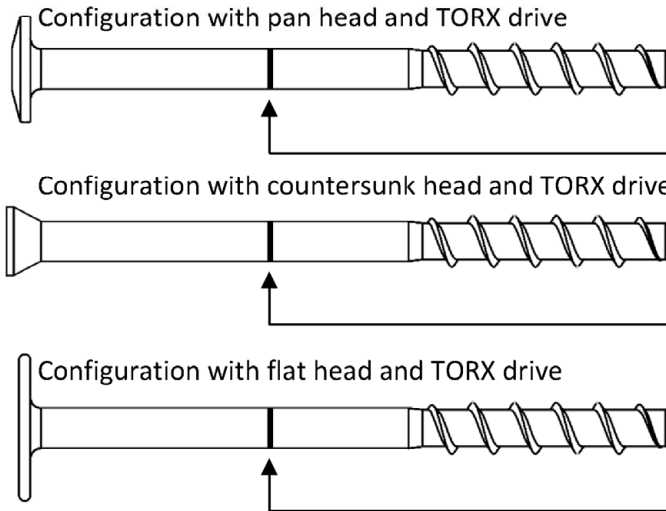
$d_0$  = nominal drill hole diameter  
 $t_{\text{fix}}$  = thickness of fixture  
 $h_1$  = depth of drill hole

$h_{\text{min}}$  = minimum thickness of member  
 $h_{\text{nom}}$  = nominal embedment depth

FIXALITH VIS BETON

**Product description**  
Product in installed condition

**Annex A1**



Marking:  
 FIXALITH VIS BETON: no marking on the shaft  
 FIXALITH VIS BETON HCR: 1 ring on the shaft  
 FIXALITH VIS BETON A4: 2 rings on the shaft

Table 1: Material

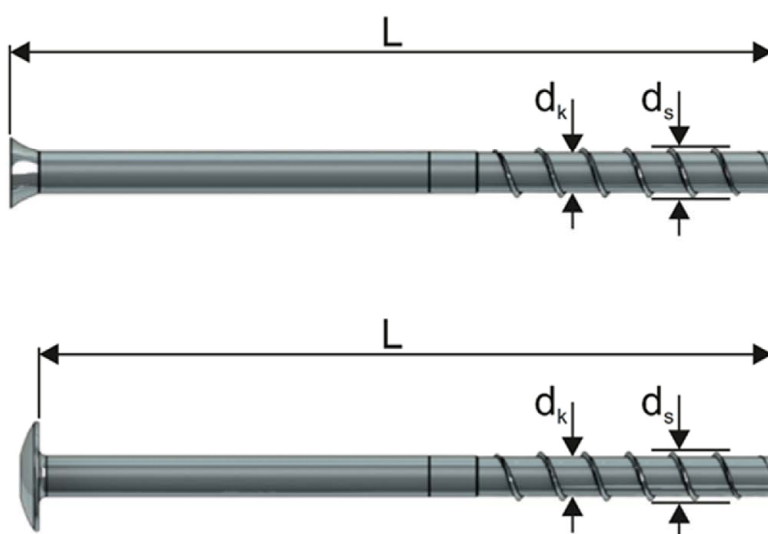
Part	Product name	Material
all types	FIXALITH VIS BETON	- Steel EN 10263-4:2017 galvanized acc. to EN ISO 4042:2018 - Zinc flake coating according to EN ISO 10683:2018 ( $\geq 5\mu\text{m}$ ) - duplex coating
	FIXALITH VIS BETON A4	1.4401; 1.4404; 1.4571; 1.4578
	FIXALITH VIS BETON HCR	1.4529

Part	Product name	Nominal characteristic steel		Rupture elongation $A_5$ [%]
		Yield strength $f_{yk}$ [N/mm <sup>2</sup> ]	Ultimate strength $f_{uk}$ [N/mm <sup>2</sup> ]	
all types	FIXALITH VIS BETON	400	600	$\leq 8$
	FIXALITH VIS BETON A4			
	FIXALITH VIS BETON HCR			

FIXALITH VIS BETON	Annex A2
<b>Product description</b> Screw types and material	

Table 2: Dimensions

Anchor size			6
Screw length	$L \geq$	[mm]	50
	$L \leq$	[mm]	325
Thread outer diameter	$d_s$	[mm]	7,0
Core diameter	$d_k$	[mm]	5,4



**Marking:**

**FIXALITH FIX BETON**

Screw type: TSM TIS

Screw size: 6

Screw length: 100



FIXALITH VIS BETON

**Product description**  
Dimensions and markings

**Annex A3**

## Specification of Intended use

### Anchorage subject to:

- Static and quasi-static loads.
- Used only for anchorages with requirements related to resistance of fire.
- Used only for multiple use for non-structural application according to EN 1992-4:2018.

### Base materials:

- Compacted reinforced and compacted unreinforced concrete without fibers according to EN 206:2013.
- Strength classes C20/25 to C50/60 according to EN 206:2013.
- Cracked and uncracked concrete.

### Use conditions (Environmental conditions):

- Concrete screws subject to dry internal conditions: all screw types with  $h_{nom1}$  and  $h_{nom2}$
- For all other conditions corresponding to corrosion resistance classes CRC according to EN 1993-1-4:2006 + A1:2015
  - Stainless steel according to Annex A2, type FIXALITH VIS BETON A4, embedment depth  $h_{nom2}$ : CRC III
  - High corrosion resistant steel acc. to Annex A2, type FIXALITH HCR, embedment depth  $h_{nom2}$ : CRC V

### Design:

- Anchorages are to be designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are to be 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 are designed according to EN 1992-4:2018 and EOTA Technical Report TR 055, Edition February 2018.

The design for shear load according to EN 1992-4:2018, Section 6.2.2 applies for all specified diameters  $d_f$  of clearance hole in the fixture in Annex B2, Table 3.

### Installation:

- Only hammer drilling.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters on site.
- In case of aborted hole: new drilling must be drilled at a minimum distance of twice the depth of aborted hole or closer, if the aborted hole is filled with high strength mortar and only if the hole is not in the direction of the oblique tensile or shear load.
- After installation further turning of the anchor must not be possible. The head of the anchor is supported in the fixture and is not damaged.

FIXALITH VIS BETON

Intended use  
Specification

Annex B1



Table 3: Installation parameters

FIXALITH VIS BETON			6	
Nominal embedment depth	$h_{nom}$		$h_{nom1}^{1)}$	$h_{nom2}$
	[mm]		25	35
Nominal drill hole diameter	$d_0$	[mm]	6,0	
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	6,35	
Drill hole depth	$h_1 \geq$	[mm]	28	38
Clearance hole diameter	$d_f \leq$	[mm]	8	

<sup>1)</sup> only subject to dry internal conditions

Table 4: Minimum thickness of member, minimum edge distance and minimum spacing

FIXALITH VIS BETON			6	
Nominal embedment depth	$h_{nom}$		$h_{nom1}^{1)}$	$h_{nom2}$
	[mm]		25	35
Minimum thickness of member	$h_{min}$	[mm]	80	
Minimum edge distance	$c_{min}$	[mm]	30	
Minimum spacing	$s_{min}$	[mm]	30	

<sup>1)</sup> only subject to dry internal conditions

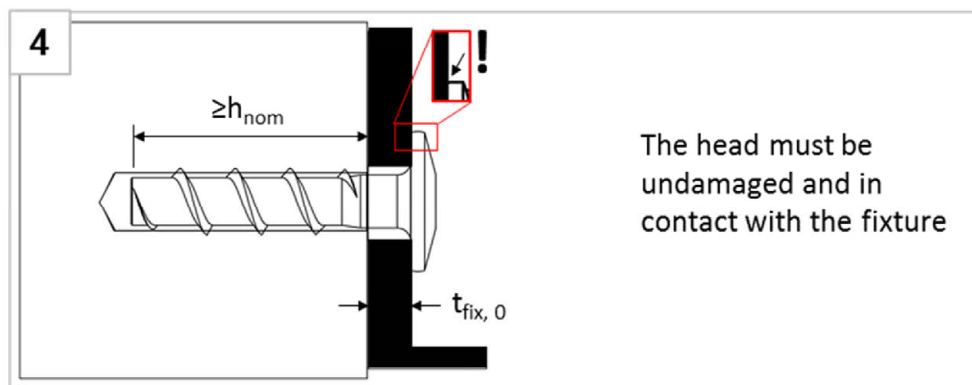
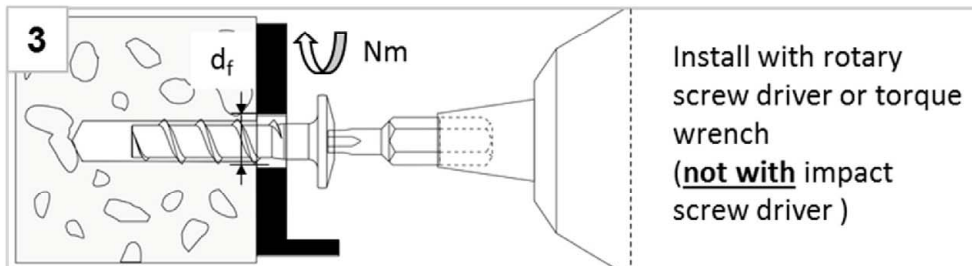
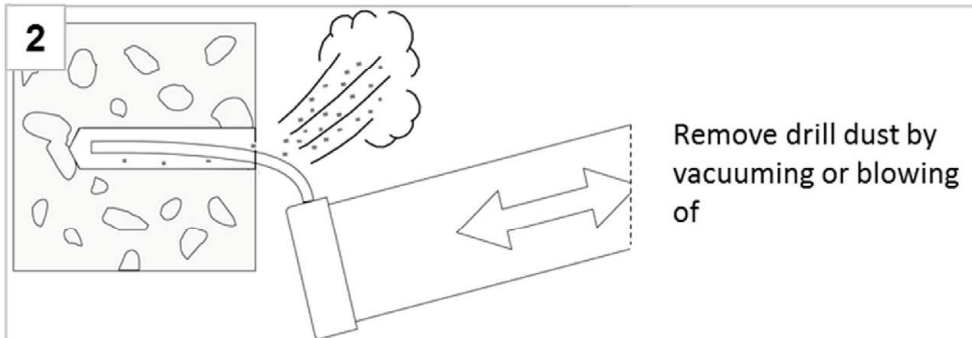
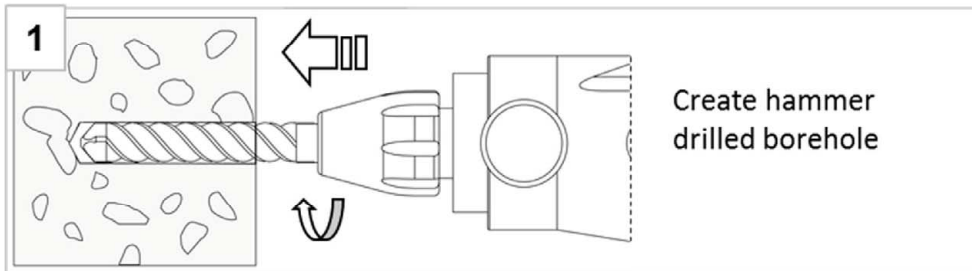
FIXALITH VIS BETON

**Intended use**

Installation parameters  
Minimum thickness of member, minimum edge distance and minimum spacing

**Annex B2**

## Installation Instructions



The use of impact screw driver is not allowed.  
The anchor is correctly installed if the head is supported on the fixture.  
Further turning of the anchor is not possible.

FIXALITH VIS BETON

Intended use  
Installation instructions

Annex B3

Table 5: Characteristic values for static and quasi-static loading

FIXALITH VIS BETON				6	
Nominal embedment depth	$h_{nom}$		$h_{nom1}^{1)}$	$h_{nom2}$	
	[mm]		25	35	
<b>Steel failure for tension and shear loading</b>					
Characteristic tension load	$N_{Rk,s}$	[kN]	13,7		
Partial safety factor	$\gamma_{Ms,N}$	[-]	1,5		
Characteristic shear load	$V_{Rk,s}$	[kN]	6,9		
Partial safety factor	$\gamma_{Ms,V}$	[-]	1,25		
Ductility factor	$k_7$	[-]	0,8		
Characteristic bending load	$M^0_{Rk,s}$	[Nm]	11,1		
<b>Pull-out failure</b>					
Characteristic tension load C20/25	cracked	$N_{Rk,p}$	[kN]	0,9	2,0
	uncracked	$N_{Rk,p}$	[kN]	2,0	4,0
Increasing $\Psi_c$ factor for $N_{Rk,p}$ $= N_{Rk,p (C20/25)} \cdot \Psi_c$	C25/30	$\Psi_c$	[-]	1,12	
	C30/37			1,22	
	C40/50			1,41	
	C50/60			1,58	
<b>Concrete failure: Splitting failure, concrete cone failure and pry-out failure</b>					
Effective embedment depth	$h_{ef}$	[mm]	19	27	
k-factor	cracked	$k_{cr}$	[-]	7,7	
	uncracked	$k_{ucr}$	[-]	11,0	
Concrete cone failure	spacing	$s_{cr,N}$	[mm]	$3 \times h_{ef}$	
	edge distance	$c_{cr,N}$	[mm]	$1,5 \times h_{ef}$	
Splitting failure	resistance	$N^0_{Rk,sp}$	[kN]	0,9	
	spacing	$s_{cr,sp}$	[mm]	$3 \times h_{ef}$	
	edge distance	$c_{cr,sp}$	[mm]	$1,5 \times h_{ef}$	
Factor for pry-out failure	$k_8$	[-]	1,0		
Installation factor	$\gamma_{inst}$	[-]	1,0		
<b>Concrete edge failure</b>					
Effective length in concrete	$l_f = h_{ef}$	[mm]	19	27	
Nominal outer diameter of screw	$d_{nom}$	[mm]	6		

<sup>1)</sup> only subject to dry internal conditions

FIXALITH VIS BETON

**Performances**

Characteristic values for static and quasi-static loading

**Annex C1**

Table 6: Fire exposure – characteristic values of resistance

FIXALITH VIS BETON				6	
Nominal embedment depth	$h_{nom}$	$h_{nom1}^{1)}$	$h_{nom2}$		
	[mm]	25	35		
<b>Steel failure for tension and shear load</b>					
Characteristic Resistance	R30	$N_{Rk,s,fi30}$	[kN]	0,27	
	R60	$N_{Rk,s,fi60}$	[kN]	0,27	
	R90	$N_{Rk,s,fi90}$	[kN]	0,22	
	R120	$N_{Rk,s,fi120}$	[kN]	0,17	
	R30	$V_{Rk,s,fi30}$	[kN]	0,27	
	R60	$V_{Rk,s,fi60}$	[kN]	0,27	
	R90	$V_{Rk,s,fi90}$	[kN]	0,22	
	R120	$V_{Rk,s,fi120}$	[kN]	0,17	
	R30	$M^0_{Rk,s,fi30}$	[Nm]	0,22	
	R60	$M^0_{Rk,s,fi60}$	[Nm]	0,22	
	R90	$M^0_{Rk,s,fi90}$	[Nm]	0,18	
	R120	$M^0_{Rk,s,fi120}$	[Nm]	0,14	
<b>Pull-out failure</b>					
Characteristic Resistance	R30-R90	$N_{Rk,p,fi}$	[kN]	0,23	0,50
	R120	$N_{Rk,p,fi}$	[kN]	0,18	0,40
<b>Concrete cone failure</b>					
Characteristic Resistance	R30-R90	$N^0_{Rk,c,fi}$	[kN]	0,27	0,65
	R120	$N^0_{Rk,c,fi}$	[kN]	0,22	0,52
<b>Edge distance</b>					
R30 - R120	$c_{cr,fi}$	[mm]	$2 \times h_{ef}$		
In case of fire attack from more than one side, the minimum edge distance shall be $\geq 300$ mm.					
<b>Spacing</b>					
R30 - R120	$s_{cr,fi}$	[mm]	$4 \times h_{ef}$		
<b>Pry-out failure</b>					
R30 - R120	$k_8$	[-]	1,0		
The anchorage depth has to be increased for wet concrete by at least 30 mm compared to the given value.					

<sup>1)</sup> only subject to dry internal condition

FIXALITH VIS BETON

**Performances**  
Fire exposure – characteristic values of resistance

**Annex C2**