Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

**European Technical Assessment Body for construction products**

Member of EOTA
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Designated in accordance with Article 39 of Regulation (EU) No 2024/3110 and member of EOTA (European Organisation for Technical Assessment)

# European Technical Assessment ETA-20/0779 of 1 July 2026

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 | TOGE Insulation screw TIS |
| Product family to which the construction product belongs | Fasteners for use in concrete for redundant non-structural systems |
| Manufacturer | TOGE Dübel GmbH & Co. KG<br>Illesheimer Straße 10<br>90431 Nürnberg<br>DEUTSCHLAND |
| Manufacturing plant | TOGE Dübel GmbH & Co. KG |
| 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 Article 95(4) of Regulation (EU) 2024/3110, on the basis of | EAD 330747-00-0601 |
| This version replaces | ETA-20/0779 issued on 6 January 2022 |

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## Specific Part

### 1 Technical description of the product

The TOGE Insulation screw TIS 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 1 July 2026 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

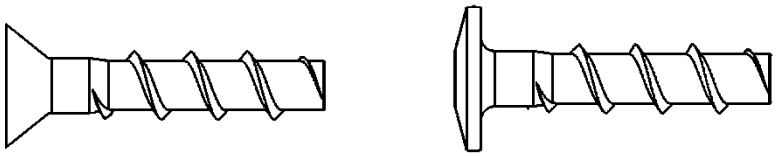
*beglaubigt:*
Tempel

Deutsches Institut für Bautechnik DIBt

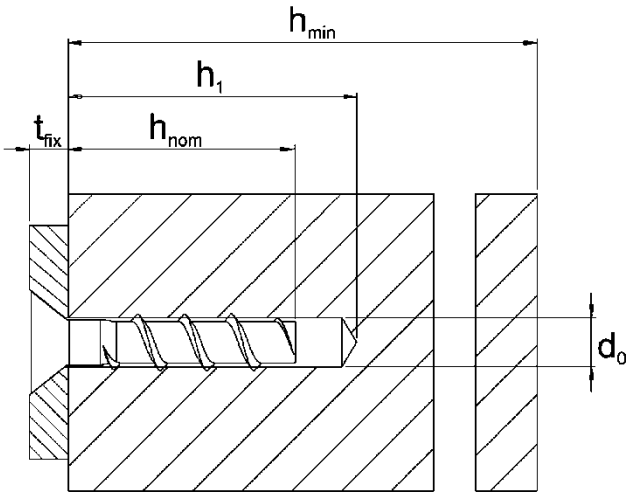
# Product in installed condition

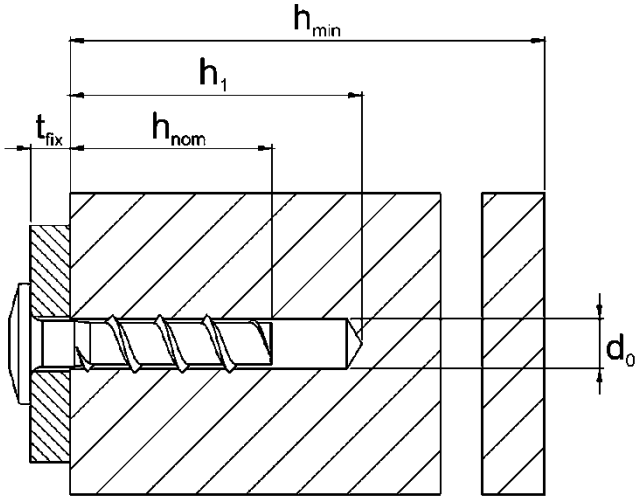
## TOGE Insulation screw TIS

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



e.g. TOGE Insulation screw TIS, configuration with countersunk head and TORX drive

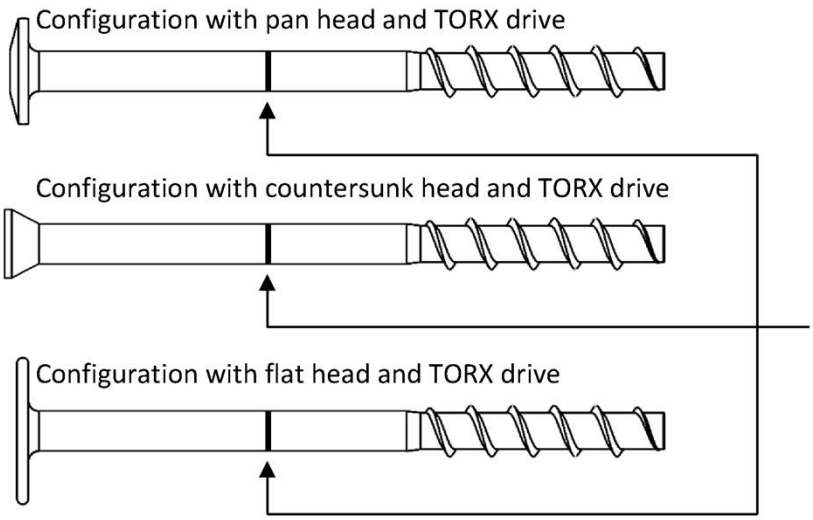



$d_0$ = nominal drill hole diameter
$t_{fix}$ = thickness of fixture
$h_1$ = depth of drill hole

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

| TOGE Insulation screw TIS | Annex A1 |
|---|---|
| **Product description**<br>Product in installed condition | |




Marking:
TIS: no marking on the shaft
TIS HCR: 1 ring on the shaft
TIS A4: 2 ring on the shaft

## Table 1: Material

| Part | Product name | Material |
|---|---|---|
| all types | TIS | - Steel galvanized<br>- Zinc flake coating<br>- duplex coating |
| | TIS A4 | 1.4401; 1.4404; 1.4571; 1.4578 |
| | TIS HCR | 1.4529 |

| Part | Product name | Nominal characteristic steel | | Rupture elongation $A_5$ [%] |
|---|---|---|---|---|
| | | Yield strength $f_{yk}$ [N/mm²] | Ultimate strength $f_{uk}$ [N/mm²] | |
| all types | TIS | 720 | 900 | ≤ 8 |
| | TIS A4 | | | |
| | TIS HCR | | | |

**TOGE Insulation screw TIS**

**Product description**
Screw types and material

**Annex A2**

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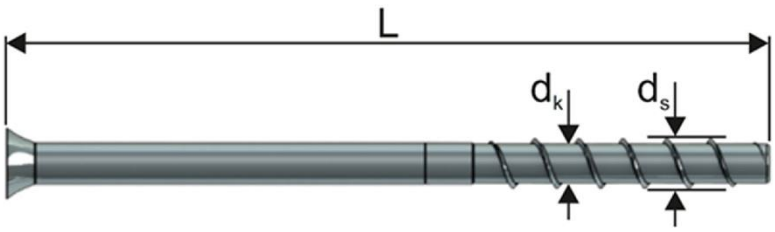
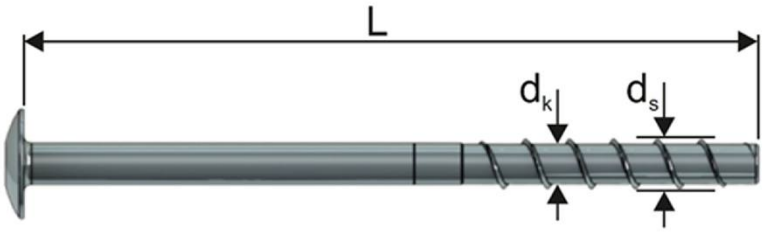
## Table 2: Dimensions

| Anchor size | | | 6 |
|---|---|---|---|
| Screw length | L ≥ | [mm] | 50 |
| | L ≤ | [mm] | 400 |
| Thread outer diameter | $d_s$ | [mm] | 7,0 |
| Core diameter | $d_k$ | [mm] | 5,4 |




**Marking:**
**TSM TIS**
Screw type: TSM TIS
Screw size: 6
Screw length: 100

**TOGE Insulation screw TIS**

**Product description**
Dimensions and markings

**Annex A3**

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# Specification of Intended use

**Anchorages subject to:**

- Static and quasi-static loads
- Only for redundant non-structural systems (multiple use) according to EN 1992-4:2018
- Fire exposure

**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, embedment depth $h_{nom2}$, screw with marking A4: CRC III
  - High corrosion resistant steel according to Annex A2, embedment depth $h_{nom2}$, marking HCR: 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.

| TOGE Insulation screw TIS | |
|---|---|
| **Intended use**<br>Specification | **Annex B1** |

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## Table 3: Installation parameters

| Insulation screw TIS | | | 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 | |

1) only subject to dry internal conditions

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

| Insulation screw TIS | | | 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 | |

1) only subject to dry internal conditions

**TOGE Insulation screw TIS**

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

**Annex B2**

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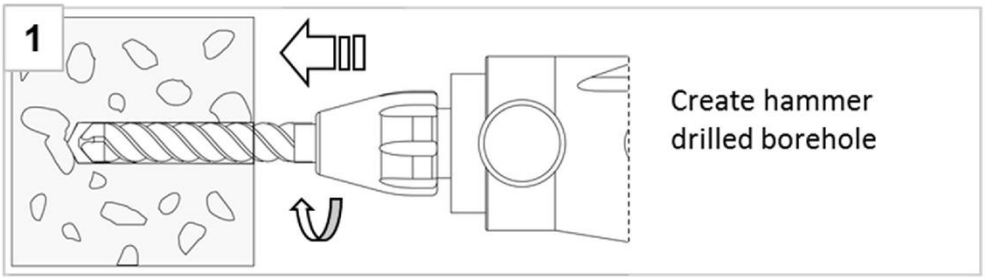
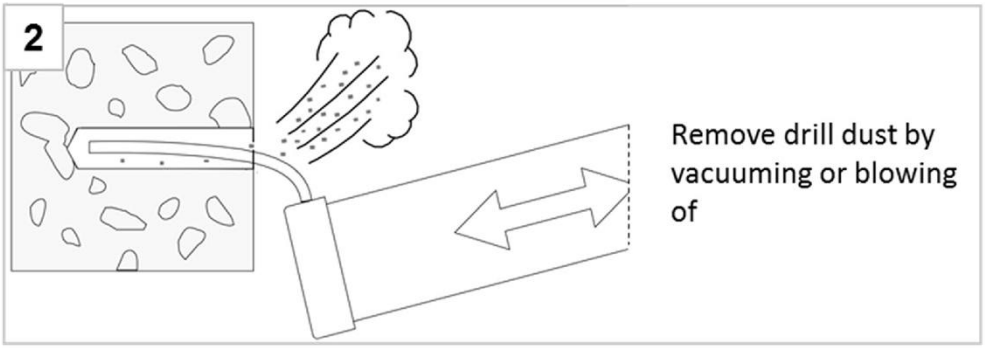
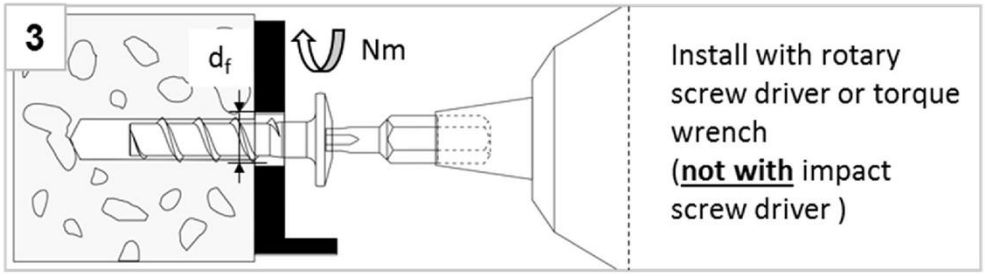
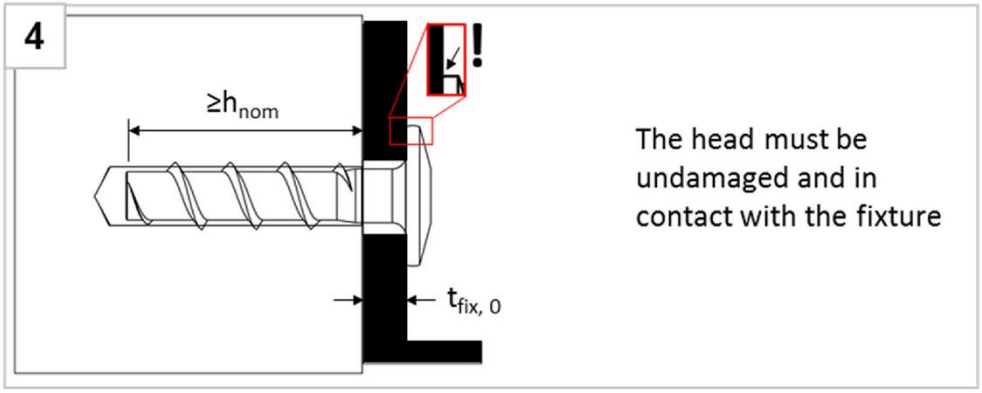
## Installation Instructions




**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.**

| | |
|---|---|
| **TOGE Insulation screw TIS** | |
| **Intended use**<br>Installation instructions | **Annex B3** |

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

| Insulation screw TIS | | | | 6 | |
|---|---|---|---|---|---|
| Nominal embedment depth | | $h_{nom}$ | | $h_{nom1}$ [1)] | $h_{nom2}$ |
| | | [mm] | | 25 | 35 |
| **Steel failure for tension and shear loading** | | | | | |
| 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 | |
| **Pull-out failure** | | | | | |
| Characteristic tension load C20/25 | cracked | $N_{Rk,p,cr}$ | [kN] | 0,9 | 2,0 |
| | uncracked | $N_{Rk,p,ucr}$ | [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 | |
| **Concrete failure: Splitting failure, concrete cone failure and pry-out failure** | | | | | |
| 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 x $h_{ef}$ | |
| | edge distance | $c_{cr,N}$ | [mm] | 1,5 x $h_{ef}$ | |
| Splitting failure | resistance | $N^0_{Rk,sp}$ | [kN] | 2,0 | 4,0 |
| | spacing | $s_{cr,sp}$ | [mm] | 3 x $h_{ef}$ | |
| | edge distance | $c_{cr,sp}$ | [mm] | 1,5 x $h_{ef}$ | |
| Factor for pry-out failure | | $k_8$ | [-] | 1,0 | |
| Installation factor | | $\gamma_{inst}$ | [-] | 1,0 | |
| **Concrete edge failure** | | | | | |
| Effective length in concrete | | $l_f = h_{ef}$ | [mm] | 19 | 27 |
| Nominal outer diameter of screw | | $d_{nom}$ | [mm] | 6 | |

[1)] only subject to dry internal conditions

**TOGE Insulation screw TIS**

**Performances**
Characteristic values for static and quasi-static loading

**Annex C1**

Deutsches Institut für Bautechnik DIBt

## Table 6: Fire exposure – characteristic values of resistance

| Insulation screw TIS | | | | 6 | |
|---|---|---|---|---|---|
| Nominal embedment depth | | | $h_{nom}$ | $h_{nom1}$ [1)] | $h_{nom2}$ |
| | | | [mm] | 25 | 35 |
| **Steel failure for tension and shear load** | | | | | |
| 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 | |
| **Pull-out failure** | | | | | |
| Characteristic Resistance | R30-R90 | $N_{Rk,p,fi}$ | [kN] | 0,23 | 0,50 |
| | R120 | $N_{Rk,p,fi}$ | [kN] | 0,18 | 0,40 |
| **Concrete cone failure** | | | | | |
| 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 |
| **Edge distance** | | | | | |
| 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 ≥300mm. | | | | | |
| **Spacing** | | | | | |
| R30 - R120 | | $s_{cr,fi}$ | [mm] | $4 \times h_{ef}$ | |
| The anchorage depth has to be increased for wet concrete by at least 30 mm compared to the given value. | | | | | |

[1)] only subject to dry internal condition

**TOGE Insulation screw TIS**

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

**Annex C2**