

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-06/0259
of 12 January 2022

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 ceiling anchor TDN 6

Product family
to which the construction product belongs

Fasteners for use in concrete for redundant
non-structural systems

Manufacturer

TOGE Dübel GmbH & Co. KG
Illesheimer Straße 10
90431 Nürnberg
DEUTSCHLAND

Manufacturing plant

TOGE Dübel GmbH & Co. KG

This European Technical Assessment
contains

11 pages including 4 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

EAD 330747-00-0601, Edition 06/2018

This version replaces

ETA-06/0259 issued on 8 December 2016

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Specific Part

1 Technical description of the product

The TOGE ceiling anchor TDN 6 is an anchor made of galvanized steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

Product and product description are 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 for all load directions and modes of failure for simplified design | 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 EAD

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 12 January 2022 by Deutsches Institut für Bautechnik

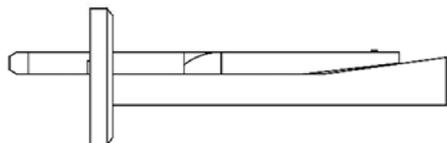
Dipl.-Ing. Beatrix Wittstock
Head of Section

beglaubigt:
Tempel

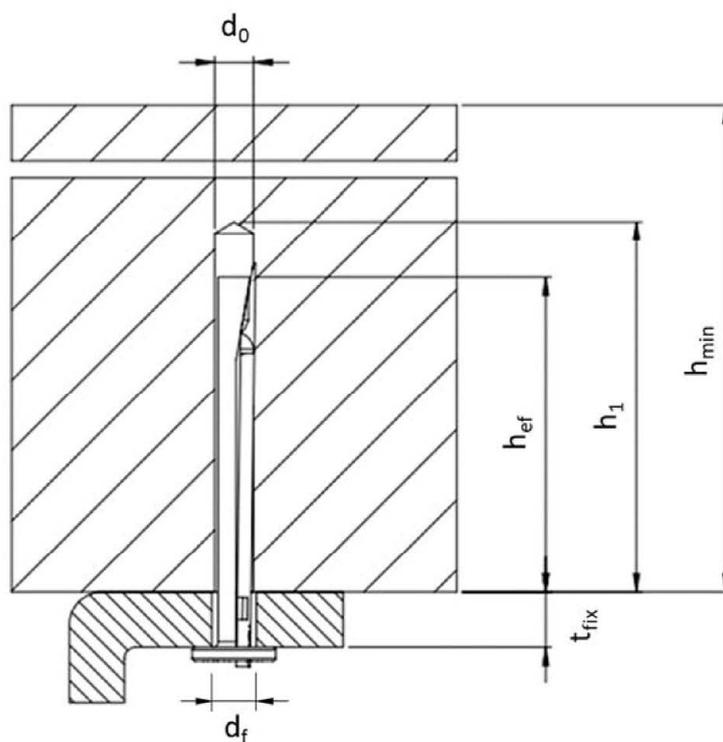
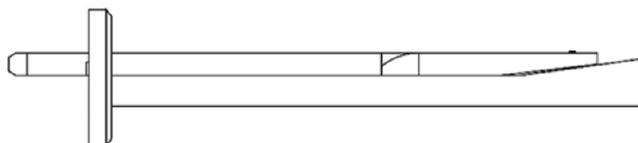
Product in installation condition

TOGE ceiling anchor TDN 6

TDN-6/5



TDN-6/35



- d_0 = nominal drill hole diameter
- t_{fix} = thickness of fixture
- h_{ef} = effective embedment depth
- h_{min} = minimum thickness of member
- h_1 = depth of drill hole
- d_f = clearance hole diameter

TOGE ceiling anchor TDN 6

Product description
Product in installed condition

Annex A1

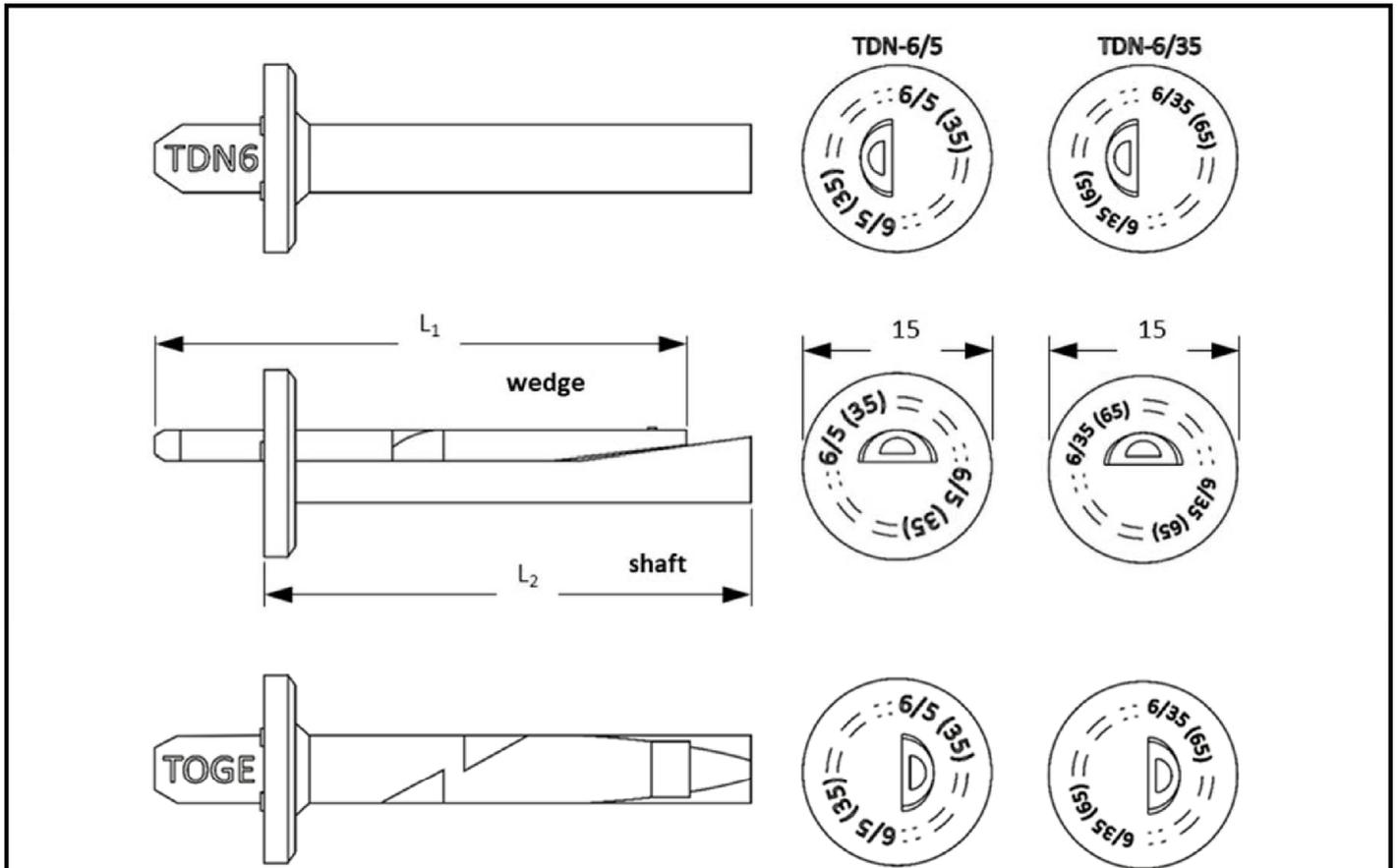


Table 1: Material

| Part | Product name | Material |
|-----------|---------------------------|---|
| all types | Toge ceiling anchor TDN 6 | - Steel EN 10263-4:2017 galvanized acc. to EN ISO 4042:2018 |

Table 2: Dimensions

| TDN 6 ceiling anchor size | | 6/5 | 6/35 |
|---------------------------|------|-----|------|
| length of the wedge L_1 | [mm] | 43 | 73 |
| length of the shaft L_2 | [mm] | 39 | 69,5 |

TOGE ceiling anchor TDN 6

Product description
Material, dimensions and markings

Annex A2

Specification of Intended use

Intended use

Anchorage subject to:

- Static and quasi static loads
- Used only for redundant non-structural systems 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):

- Anchorage 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 are designed according to EN 1992-4:2018 and EOTA Technical Report TR 055, Edition February 2018

Installation:

- Hammer drilling only.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.
- Positioning of the drill holes without damaging the reinforcement
- In case of aborted hole: new drilling at a minimum distance away of twice the depth of aborted hole or smaller distance if the aborted hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.

TOGE ceiling anchor TDN 6

Intended use
Specification continuation

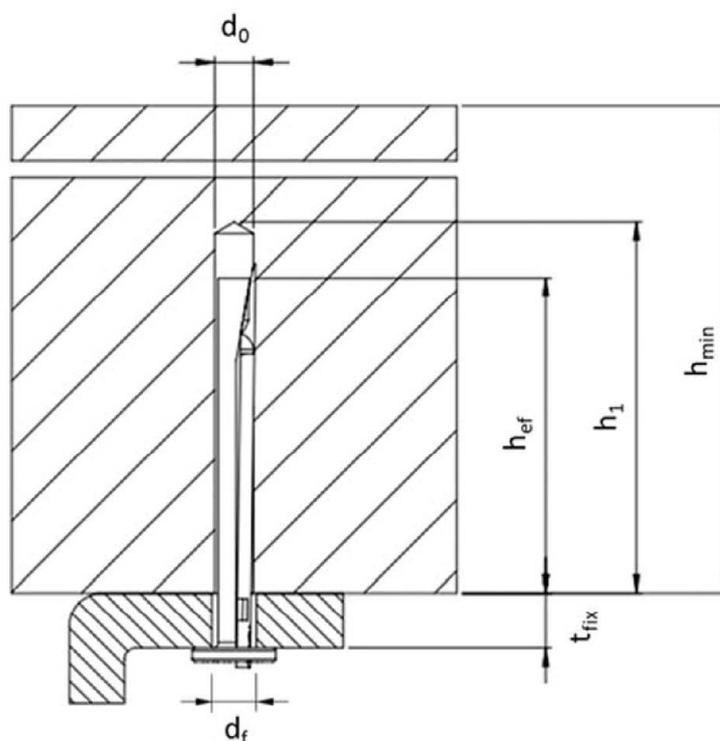
Annex B1

Table 3: Installation parameters

| TDN 6 ceiling anchor size | | | 6/5 | 6/35 |
|-------------------------------|----------------|------|-----|------|
| Nominal drill hole diameter | d_0 | [mm] | 6,0 | |
| Cutting diameter of drill bit | $d_{cut} \leq$ | [mm] | 6,4 | |
| Depth of drill hole | $h_1 \geq$ | [mm] | 40 | |
| Effective embedment depth | $h_{ef} \geq$ | [mm] | 32 | |
| Diameter of clearance hole | $d_f \leq$ | [mm] | 7 | |
| Thickness of fixture | t_{fix} | [mm] | 5 | 35 |

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

| TDN 6 ceiling anchor size | | | 6/5 | 6/35 |
|-----------------------------|-----------|------|-----|------|
| Minimum thickness of member | h_{min} | [mm] | 80 | |
| Minimum edge distance | c_{min} | [mm] | 150 | |
| Minimum spacing | s_{min} | [mm] | 200 | |



TOGE ceiling anchor TDN 6

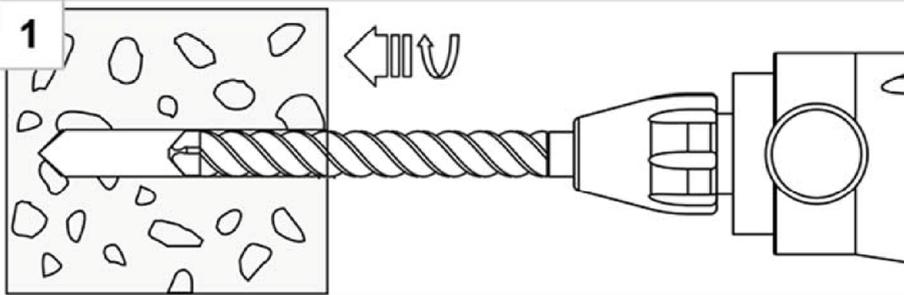
Intended use

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

Annex B2

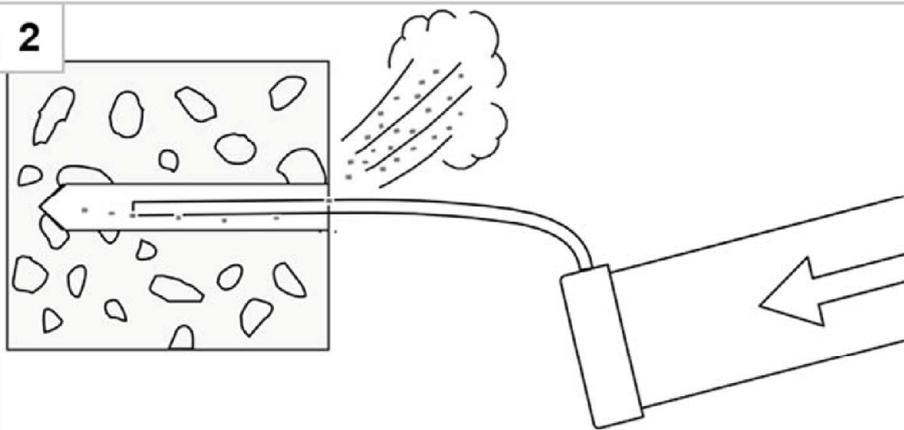
Installation Instructions

1



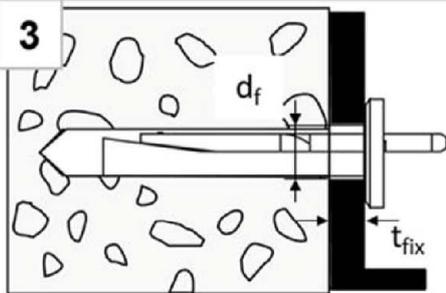
Create drill hole

2



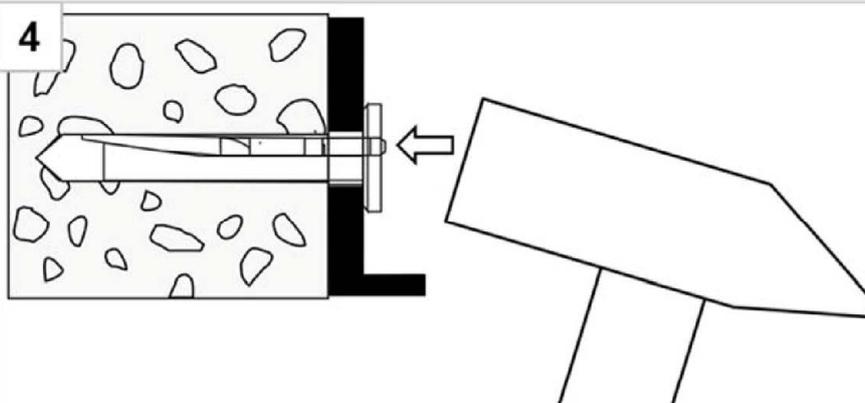
Remove drill dust by
vacuuming or blowing of

3



Insert ceiling anchor
to attachment contact

4



Knock in the protruding
wedge

TOGE ceiling anchor TDN 6

Intended use
Installation instructions

Annex B3

Table 5: Characteristic values for design method C according to EN 1992-4:2018

| | | | |
|--|--------------------|-------|-----|
| TDN 6 ceiling anchor size | | | 6 |
| For all load directions and for all failures | | | |
| Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60 | F_{Rk} | [kN] | 5 |
| Minimum edge distance | $c_{cr} = c_{min}$ | [mm] | 150 |
| Minimum spacing | $s_{cr} = s_{min}$ | [mm] | 200 |
| Installation factor | v_{inst} | [-] | 1,0 |
| Characteristic bending moment | $M^0_{Rk,s}$ | [Nm] | 5,4 |

TOGE ceiling anchor TDN 6

Performances
Characteristic values

Annex C1

Table 6: Fire exposure – characteristic values of resistance

| | | | | |
|---|-------------|--------------------|------|-----------------|
| TDN 6 ceiling anchor size | | | | 6 |
| Effective embedment depth | h_{ef} | [mm] | 32 | |
| Steel failure for tension and shear load | | | | |
| Characteristic resistance | R30 | $N_{Rk,s,fi30}$ | [kN] | 0,8 |
| | R60 | $N_{Rk,s,fi60}$ | [kN] | 0,7 |
| | R90 | $N_{Rk,s,fi90}$ | [kN] | 0,6 |
| | R120 | $N_{Rk,s,fi120}$ | [kN] | 0,4 |
| | R30 | $V_{Rk,s,fi30}$ | [kN] | 0,8 |
| | R60 | $V_{Rk,s,fi60}$ | [kN] | 0,7 |
| | R90 | $V_{Rk,s,fi90}$ | [kN] | 0,6 |
| | R120 | $V_{Rk,s,fi120}$ | [kN] | 0,4 |
| | R30 | $M^0_{Rk,s,fi30}$ | [Nm] | 0,67 |
| | R60 | $M^0_{Rk,s,fi60}$ | [Nm] | 0,55 |
| | R90 | $M^0_{Rk,s,fi90}$ | [Nm] | 0,43 |
| | R120 | $M^0_{Rk,s,fi120}$ | [Nm] | 0,31 |
| Pull-out failure | | | | |
| Characteristic resistance | R30-R90 | $N_{Rk,p,fi}$ | [kN] | 1,25 |
| | R120 | $N_{Rk,p,fi}$ | [kN] | 1 |
| Concrete cone failure | | | | |
| Characteristic resistance | R30-R90 | $N^0_{Rk,c,fi}$ | [kN] | 1,0 |
| | R120 | $N^0_{Rk,c,fi}$ | [kN] | 0,8 |
| Edge distance | | | | |
| R30 - R120 | $c_{cr,fi}$ | [mm] | 150 | |
| In case of fire attack from more than one side, the minimum edge distance shall be ≥ 300 mm. | | | | |
| Spacing | | | | |
| R30 - R120 | $s_{cr,fi}$ | [mm] | 200 | |
| Pry-out failure | | | | |
| 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. | | | | |
| TOGE ceiling anchor TDN 6 | | | | Annex C2 |
| Performances Fire exposure – characteristic values of resistance | | | | |