DECLARATION OF PERFORMANCE
DoP No. 1343-CPR-M 561-8 / 11.14-EN

1. Unique identification code of the product-type: **Toge concrete screw TSM high performance 5 and 6**
2. Type, batch or serial number or any other element allowing identification of the construction product as required pursuant to Article 11(4):

   Annex A 3
   Batch number: see packaging of the product.
3. Intended use or uses of the construction product, in accordance with the applicable harmonised technical specification, as foreseen by the manufacturer:

generic type	concrete screw
for use in	Cracked and non-cracked concrete C 20/25-C 50/60 (EN 206), only for multiple use of non-structural applications covered sizes: 5,6
option / category	Part 6
loading	static or quasi-static
material	zinc-plated steel, steel with zinc flake coating : dry internal conditions only stainless steel internal and external use without particular aggressive conditions high corrosion resistant steel internal and external use with particular aggressive conditions covered sizes: 6

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required pursuant to Article 11(5):

   Toge Dübel GmbH & Co. KG, Illesheimer Strasse 10, 90431 Nuernberg
5. Where applicable, name and contact address of the authorised representative whose mandate covers the tasks specified in Article 12(2): --
6. System or systems of assessment and verification of constancy of performance of the construction product as set out in Annex V: **System 2+**
7. In case of the declaration of performance concerning a construction product covered by a harmonised standard: --
8. In case of the declaration of performance concerning a construction product for which a European Technical Assessment has been issued:

   Deutsches Institut für Bautechnik, Berlin

   has issued the following:

   ETA-16/0123

   on the basis of

   ETAG 001-1, ETAG 001-6

   The notified body **1343-CPR** performed
   ii) factory production control.
   iii) testing of samples taken at the factory in accordance with a prescribed test plan.
   and has issued the following: certificate of conformity 1343-CPR-M 561-8 /11.14.

9. Declared performance:

Essential Characteristics	Design Method	Performance	Harmonized Technical Specification
Characteristic resistance for tension load	ETAG 001 Annex C	Annex C 1	ETAG 001-01
Characteristic resistance for shear load	ETAG 001 Annex C	Annex C 1	
Minimum spacing and minimum edge distance	ETAG 001 Annex C	Annex B 2	
Characteristic resistance in precast prestressed hollow core slabs	ETAG 001 annex C	Annex C 2	
Characteristic resistance under fire exposure	TR 020	Annex C 2	

Where pursuant to Article 37 or 38 in the Specific Technical Documentation has been used, the requirements with which the product complies: --

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

Waldemar Gunkel
Dipl.-Wirtsch.-Ing. (FH), B.Eng.
Anwendungstechnik und Technsiche Dokumente

Nuernberg, 2016-02-10

Andreas Gerhard
CEO

Nuernberg, 2016-02-10

Table A 1: materials and variants

part	name	Material			
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	Concrete screw	TSM high performance	Steel EN 10263-4 galvanized acc. to EN ISO 4042 or zinc flake coating acc. to EN ISO 10683 (≥ 5µm)		
		TSM high performance A4	1.4401, 1.4404, 1.4571, 1.4578		
		TSM high performance HCR	1.4529		
					TSM high performance TSM high performance A4 TSM high performance HCR
		nominal characteristic steel yield strength	f_{yk}	[N/mm²]	560
		nominal characteristic steel ultimate strength	f_{uk}	[N/mm²]	700


1) Anchor version with connection thread and hexagon socket
e.g. TSM 8x105 M10 SW5


2) Anchor version with connection thread and hexagon drive
e.g. TSM 8x105 M10 SW7


3) Anchor version with washer, hexagon head and TORX
e.g. TSM 8x80 SW13 VZ 40


4) Anchor version with washer and hexagon head
e.g. TSM 8x80 SW13


5) Anchor version with washer, hexagon head and
e.g. TSM 8x80 SW13 OS


6) Anchor version with countersunk head
e.g. TSM 8x80 C VZ 40


7) Anchor version with pan head
e.g. TSM 8x80 P VZ 40


8) Anchor version with large pan head
e.g. TSM 8x80 LP VZ 40


9) Anchor version with countersunk head and connection thread
e.g. TSM 6x55 AG M8


10) Anchor version with hexagon drive and connection thread
e.g. TSM 6x55 M8 SW10


11) Anchor version with internal thread and hexagon drive
e.g. TSM 6x55 IM M8/10

TOGE concrete screw TSM high performance

Product description

Material and screw types

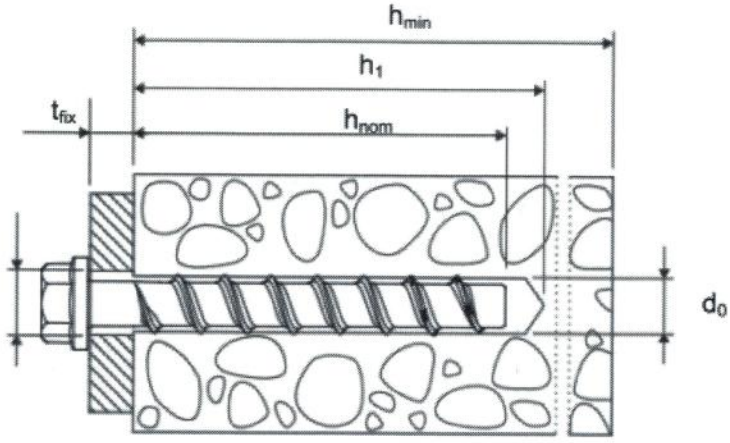
Annex A 3

Table B 1: Installation parameters

Anchorsize			TSM 5	TSM 6	
Nominal embedment depth			h_{nom} = 35 mm	h_{nom} = 35 mm	h_{nom} = 55 mm
nominal drill bit diameter	d_0	[mm]	5	6	
cutting diameter opf drill bit	$d_{cut} \leq$	[mm]	5,40	6,40	
depth of drill hole	$h_1 \geq$	[mm]	40	40	60
Nominal embedment depth	$h_{nom} \geq$	[mm]	35	35	55
diameter of clearing hole in the fixture	$d_f \geq$	[mm]	7	8	
Installation torque	T_{inst}	Nm	8	10	
Maximum nominal torque for installation with an impact screwdriver		Nm	120	150	

Table B 2: Minimum thickness of member, minimum edge distance and minimum spacing

Anchorsize			TSM 5	TSM 6	
Nominal embedmenth depth			h_{nom} = 35 mm	h_{nom} = 35 mm	h_{nom} = 55 mm
minimum thickness of member	h_{min}	[mm]	80	80	100
minimum edge distance	c_{min}	[mm]	35	35	40
minimum spacing	s_{min}	[mm]	35	35	40



TOGE concrete screw TSM high performance

Intended use

Installation parameters

Annex B 2

Table C 1: Characteristic values for design method A according to ETAG 001, Annex C or CEN TS 1992-4

Anchorsize				TSM 5	TSM 6	
Nominal embedment depth				h_{nom} = 35 mm	h_{nom} = 35 mm	h_{nom} = 55 mm
steel failure for tension- and sear load						
characteristic load		$N_{Rk,s}$	[kN]	8,7	13,7	
		$V_{Rk,s}$	[kN]	4,4	7,0	
		$M^0_{Rk,s}$	[Nm]	5,3	10,0	
Poll-out failure						
characteristic tension load in concrete C20/25		$N_{Rk,p}$	[kN]	1,5	1,5	7,5
increasing factor concrete for $N_{Rk,p}$		Ψ_C	C30/37	1,22		
			C40/50	1,41		
			C50/60	1,55		
concrete cone and splitting failure						
effective anchorage depth		h_{ef}	[mm]	27	27	44
factor for	cracked	k_{cr} [1]	[-]	7,2		
	non cracked	k_{ucr} [1]	[-]	10,1		
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	spacing	$s_{cr,Sp}$		120	120	160
	edge distance	$c_{cr,Sp}$		60	60	80
installation safety factor		γ_2 [1] = γ_{inst} [2]	[-]	1,2 [2]	1,2 [2]	1,0 [2]
concrete pry out failure (pry-out)						
k-Factor		k [1] = k_3 [2]	[-]	1,0		
concrete edge failure						
effective length of anchor		$l_f = h_{ef}$	[mm]	27	27	44
outside diameter of anchor		d_{nom}	[-]	5	6	

[1] Parameter relevant only for design according to CEN/TS 1992-4:2009

[2] Parameter relevant only for design according ETAG 001 Annex C

Table C2: Characteristic values of resistance in precast prestressed hollow core slabs C 30/37 to C 50/60

Anchorsize			TSM 6		
Bottom flange thickness	d_b	[mm]	≥ 25	≥ 30	≥ 35
Characteristic resistance	F^0_{Rk}	[kN]	1	2	3
installation safety factor	γ_2 [1] = γ_{inst} [2]	[mm]	1,2		

[1] Parameter relevant only for design according to CEN/TS 1992-4:2009

[2] Parameter relevant only for design according ETAG 001 Annex C

Table C 3: Characteristic values of resistance to fire exposure [1]

Anchorsize				TSM 6		
Nominal embedment depth				h_{nom} = 35 mm	h_{nom} = 55 mm	
				B, BC, BS, BSH	B, BC	BS, BSH
fire resistance class						
R 30	characteristic resistance	$F_{Rk,fi30}$	[kN]	0,38	0,9	1,2
R 60	characteristic resistance	$F_{Rk,fi60}$	[kN]	0,38	0,8	1,2
R 90	characteristic resistance	$F_{Rk,fi90}$	[kN]	0,38	0,6	1,2
R 120	characteristic resistance	$F_{Rk,fi120}$	[kN]	0,30	0,4	0,8
R 30 bis R 120	spacing	$s_{cr,fi}$	[mm]	108	176	
	edge distance	$c_{cr,fi}$		54	88	

[1] Not for using in prestressed hollow core slabs

TOGE concrete screw TSM high performance

Performances
Characteristic values for anchorages in precast prestressed hollow core slabs and characteristic values of resistance to fire exposure

Annex C 2