



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:

<b>generic type</b>	concrete screw
<b>for use in</b>	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
<b>option / category</b>	Part 6
<b>loading</b>	static or quasi-static
<b>material</b>	<u>zinc-plated steel, steel with zinc flake coating :</u> dry internal conditions only <u>stainless steel</u> internal and external use without particular aggressive conditions <u>high corrosion resistant steel</u> 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.

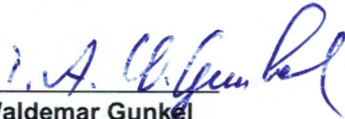
9. Declared performance:

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 Technische Dokumente  
 Nuernberg, 2016-03-07



**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 ( $\geq 5\mu\text{m}$ )	
		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/mm <sup>2</sup> ] 560
		nominal characteristic steel ultimate strength	$f_{uk}$	[N/mm <sup>2</sup> ] 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

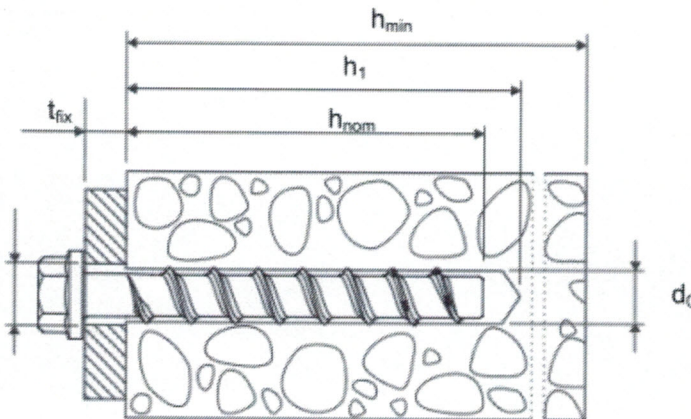
**Annex A 3**

**Table B 1: Installation parameters**

Anchorsize			TSM 5	TSM 6	
Nominal embedment depth			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
nominal drill bit diameter	$d_0$	[mm]	5	6	
cutting diameter of 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 embedment depth			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
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			$h_{nom} = 35 \text{ mm}$	$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$
<b>steel failure for tension- and shear load</b>					
characteristic load	$N_{Rk,s}$	[kN]	8,7	13,7	
	$V_{Rk,s}$	[kN]	4,4	7,0	
	$M_{Rk,s}^0$	[Nm]	5,3	10,0	
<b>Pull-out failure</b>					
characteristic tension load in concrete C20/25	$N_{Rk,p}$	[kN]	1,5	1,5	7,5
increasing factor concrete for $N_{Rk,p}$	$\Psi_C$	C30/37	1,22		
		C40/50	1,41		
		C50/60	1,55		
<b>concrete cone and splitting failure</b>					
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	$s_{cr,N}$	$3 \times h_{ef}$		
	edge distance	$c_{cr,N}$	$1,5 \times h_{ef}$		
splitting failure	spacing	$s_{cr,Sp}$	120	120	160
	edge distance	$c_{cr,Sp}$	60	60	80
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[-]	$1,2^{2)}$	$1,2^{2)}$	$1,0^{2)}$
<b>concrete pry out failure (pry-out)</b>					
k-Factor	$k^{1)} = k_3^{2)}$	[-]	1,0		
<b>concrete edge failure</b>					
effective length of anchor	$l_f = h_{ef}$	[mm]	27	27	44
outside diameter of anchor	$d_{nom}$	[-]	5	6	

<sup>1)</sup> Parameter relevant only for design according to CEN/TS 1992-4:2009

<sup>2)</sup> Parameter relevant only for design according ETAG 001 Annex C

**TOGE concrete screw TSM high performance**

**Performances**

Characteristic values for design method A

**Annex C 1**

**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]	$\geq 25$	$\geq 30$	$\geq 35$
Characteristic resistance	$F_{Rk}^0$	[kN]	1	2	3
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[mm]	1,2		

<sup>1)</sup> Parameter relevant only for design according to CEN/TS 1992-4:2009

<sup>2)</sup> Parameter relevant only for design according ETAG 001 Annex C

**Table C 3: Characteristic values of resistance to fire exposure <sup>1)</sup>**

Anchorsize				TSM 6		
Nominal embedment depth				$h_{nom} = 35 \text{ mm}$	$h_{nom} = 55 \text{ mm}$	
				B, BC, BS, BSH	B, BC	BS, BSH
fire resistance class						
R 30	characteristic resistance	$F_{Rk, f30}$	[kN]	0,38	0,9	1,2
R 60	characteristic resistance	$F_{Rk, f60}$	[kN]	0,38	0,8	1,2
R 90	characteristic resistance	$F_{Rk, f90}$	[kN]	0,38	0,6	1,2
R 120	characteristic resistance	$F_{Rk, f120}$	[kN]	0,30	0,4	0,8
R 30 bis R 120	spacing	$s_{cr,fl}$	[mm]	108	176	
	edge distance	$c_{cr,fl}$				

<sup>1)</sup> 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**