



DECLARATION OF PERFORMANCE
DoP No. 1343-CPR-M 561-5 / 11.14-EN

1. Unique identification code of the product-type: **Toge concrete screw TSM 8-14**
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 2

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) covered sizes: 8,10,12,14
option / category	1
loading	static or quasi-static
material	<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: 8,10,12,14

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 1**
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-06/0124

on the basis of

ETAG 001-1, Option 1

The notified body **1343-CPR** performed

i) determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product ;

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 561-5 /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, C 2	ETAG 001-01
Characteristic resistance for shear load	ETAG 001 Annex C	Annex C 1, C 2	
Minimum spacing and minimum edge distance	ETAG 001 Annex C	Annex B 2	
Displacement for serviceability limit state	ETAG 001 Annex C	Annex C 3	
Characteristic resistance under fire exposure	TR 020	Annex C 4	

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, 2014-12-03



Table A1: materials and variants

part	name	Material				
1, 2, 3, 4, 5, 6,	Screw anchor	TSM B, BC	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 BS	1.4401, 1.4404, 1.4571, 1.4578			
		TSM BSH	1.4529			
					B/BC	BS/BSH
		nominal characteristic steel yield strength	f_{yk}	[N/mm ²]	600	700
		nominal characteristic steel ultimate strength	f_{uk}	[N/mm ²]	700	800



1) Anchor version with connection thread



2) Anchor version with washer, hexagon head and TORX



3) Anchor version with washer, hexagon head and



4) Anchor version with hexagon head



5) Anchor version with countersunk head



6) Anchor version with pan head

TOGE concrete screw TSM B, BC, BS, BSH

Product description

Material and screw types

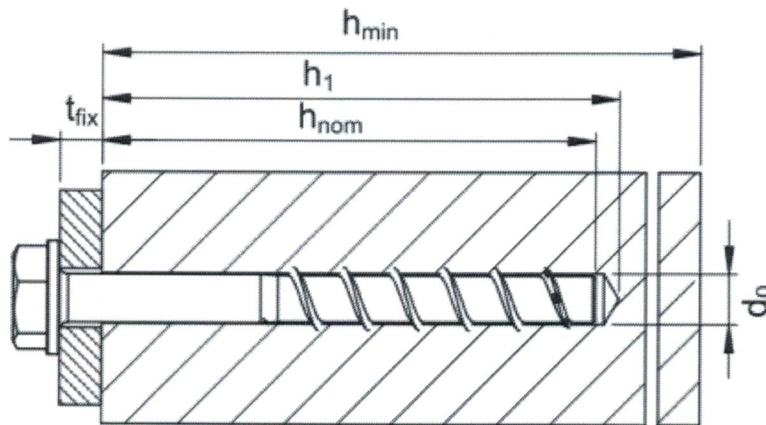
Annex A 2

Table B1: Installation parameters

Anchorsize			TSM 8	TSM 10	TSM 12	TSM 14
Nominal embedment depth			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
nominal drill bit diameter	d_0	[mm]	8	10	12	14
cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45	10,45	12,50	14,50
depth of drill hole	$h_1 \geq$	[mm]	75	95	110	135
nominal embedment depth	$h_{nom} \geq$	[mm]	65	85	100	125
diameter of clearing hole in the fixture	$d_f \geq$	[mm]	12	14	16	18

Table B2: Minimum thickness of member, minimum edge distance and minimum spacing

Anchorsize			TSM 8	TSM 10	TSM 12	TSM 14
Nominal embedment depth			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
minimum thickness of member	h_{min}	[mm]	120	130	150	200
minimum edge distance	c_{min}	[mm]	50	70	80	100
minimum spacing	s_{min}	[mm]	50	70	80	100



TOGE concrete screw TSM B, BC, BS, BSH

Intended use

Installation parameters

Annex B 2

**Table C1: Characteristic values for design method A according to ETAG 001, Annex C
or CEN TS 1992-4 for TSM B and BC**

Anchorsize			TSM B/BC 8	TSM B/BC 10	TSM B/BC 12	TSM B/BC 14
Nominal embedment depth			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
steel failure for tension- and shear load						
characteristic load	$N_{Rk,s}$	[kN]	25,0	42,0	64,0	103,0
	$V_{Rk,s}$	[kN]	18,0	34,0	42,0	64,0
	$M^0_{Rk,s}$	[Nm]	26,0	56,0	123,0	200,0
Poll-out failure						
characteristic tension load in cracked concrete C20/25	$N_{Rk,p}$	[kN]	9	16	Pull-out Failure is not decisive	Pull-out Failure is not decisive
characteristic tension load in non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	12	Pull-out Failure is not decisive	Pull-out Failure is not decisive	Pull-out Failure is not decisive
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]	51	68	80	100
factor for	cracked	$k_{cr}^{1)}$	7,2			
	non cracked	$k_{ucr}^{1)}$	10,1			
concrete cone failure	spacing	$s_{cr,N}$	3 x h_{ef}			
	edge distance	$c_{cr,N}$	1,5 x h_{ef}			
splitting failure	spacing	$s_{cr,Sp}$	3 x h_{ef}			
	edge distance	$c_{cr,Sp}$	1,5 x h_{ef}			
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[-]	1,0 ²⁾			
concrete pry out failure (pry-out)						
k-Factor	$k^{1)} = k_3^{2)}$	[-]	1,0	2,0		
concrete edge failure						
effective length of anchor	$l_f = h_{ef}$	[mm]	51	68	80	100
outside diameter of anchor	d_{nom}	[-]	8	10	12	14

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

²⁾ Parameter relevant only for design according ETAG 001 Annex C

TOGE concrete screw TSM B, BC, BS, BSH

Performances

Characteristic values for TSM B and BC for design method A

Annex C 1

**Table C2: Characteristic values for design method A according to ETAG 001, Annex C
or CEN TS 1992-4 for TSM BS and BSH**

Anchorsize			TSM BS/BSH 8	TSM BS/BSH 10	TSM BS/BSH 12	TSM BS/BSH 14
Nominal embedment depth			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
steel failure for tension- and sear load						
characteristic load	$N_{Rk,s}$	[kN]	29,0	48,0	73,0	103,0
	$V_{Rk,s}$	[kN]	21,0	40,0	49,0	64,0
	$M^0_{Rk,s}$	[Nm]	29,0	64,0	141,0	229,0
Poll-out failure						
characteristic tension load in cracked concrete C20/25	$N_{Rk,p}$	[kN]	9	16	Pull-out Failure is not decisive	Pull-out Failure is not decisive
characteristic tension load in non-cracked concrete C20/25	$N_{Rk,p}$	[kN]	12	Pull-out Failure is not decisive	Pull-out Failure is not decisive	Pull-out Failure is not decisive
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]	51	68	80	100
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	$s_{cr,Sp}$	$3 \times h_{ef}$			
	edge distance	$c_{cr,Sp}$	$1,5 \times h_{ef}$			
installation safety factor	$\gamma_2^{1)} = \gamma_{inst}^{2)}$	[-]	1,0 ²⁾			
concrete pry out failure (pry-out)						
k-Factor	$k^{1)} = k_3^{2)}$	[-]	1,0	2,0		
concrete edge failure						
effective length of anchor	$l_f = h_{ef}$	[mm]	51	68	80	100
outside diameter of anchor	d_{nom}	[-]	8	10	12	14

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

²⁾ Parameter relevant only for design according ETAG 001 Annex C

TOGE concrete screw TSM B, BC, BS, BSH

Performances

Characteristic values for TSM BS and BSH for design method A

Annex C 2

Table C3: Displacements under tension load for TSM B, BC, BS and BSH

anchor identity			TSM 8	TSM 10	TSM 12	TSM 14
			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
tension load	N	[mm]	4,3	7,6	11,1	15,9
displacement	δ_{N0}	[mm]	0,5			
	δ_{∞}	[mm]	1,0			

Table C4 : Displacements under shear load for TSM B and BC

anchor identity			TSM B/BC 8	TSM B/BC 10	TSM B/BC 12	TSM B/BC 14
			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
shear load	V	[mm]	8,6	16,2	20,0	30,5
displacement	δ_{V0}	[mm]	2,7	2,7	4,0	3,1
	δ_{∞}	[mm]	4,1	4,3	6,0	4,7

Table C5 : Displacements under shear load for TSM BS and BSH

anchor identity			TSM B/BC 8	TSM B/BC 10	TSM B/BC 12	TSM B/BC 14
			$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
shear load	V	[mm]	10,0	19,1	23,2	30,5
displacement	δ_{V0}	[mm]	2,9	3,5	4,1	4,6
	δ_{∞}	[mm]	4,4	5,3	6,2	7,0

TOGE concrete screw TSM B, BC, BS, BSH

Performances

Displacements under tension- and shear loads

Annex C 3

Table C6: Characteristic values of resistance to fire exposure for TSM B and BC

Anchorsize				TSM 8	TSM 10	TSM 12	TSM 14
Nominal embedment depth				$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm
fire resistance class							
R 30	characteristic resistance	$F_{Rk,fi30}$	[kN]	2,3	4,0	6,3	9,8
R 60	characteristic resistance	$F_{Rk,fi60}$	[kN]	1,7	3,3	5,8	8,1
R 90	characteristic resistance	$F_{Rk,fi90}$	[kN]	1,1	2,2	4,2	5,9
R 120	characteristic resistance	$F_{Rk,fi120}$	[kN]	0,8	1,7	3,4	4,8
R 30 bis R 120	spacing	$s_{cr,fi}$	[mm]	4 h_{ef}			
	edge distance	$c_{cr,fi}$					

Table C7: Characteristic values of resistance to fire exposure for TSM BS and BSH

Anchorsize				TSM 8	TSM 10	TSM 12	TSM 14		
Nominal embedment depth				$h_{nom} = 65$ mm	$h_{nom} = 85$ mm	$h_{nom} = 100$ mm	$h_{nom} = 125$ mm		
fire resistance class									
R 30	characteristic resistance	$F_{Rk,fi30}$	[kN]	2,3 ¹⁾	2,3 ²⁾	4,0	4,0	6,3	9,8
R 60	characteristic resistance	$F_{Rk,fi60}$	[kN]	1,7 ¹⁾	2,3 ²⁾	3,3	4,0	5,8	8,1
R 90	characteristic resistance	$F_{Rk,fi90}$	[kN]	1,1 ¹⁾	2,3 ²⁾	2,2	4,0	4,2	5,9
R 120	characteristic resistance	$F_{Rk,fi120}$	[kN]	0,8 ¹⁾	1,8 ²⁾	1,7	3,2	3,4	4,8
R 30 bis R 120	spacing	$s_{cr,fi}$	[mm]	4 h_{ef}					
	edge distance	$c_{cr,fi}$							

¹⁾ For anchor version with hexagon head, pan head and counter sunk socket head

²⁾ For anchor version with connection thread

TOGE concrete screw TSM B, BC, BS, BSH

Performances

Characteristic values of resistance to fire exposure

Annex C 4