

Sika Anchorfix®- 2+

DECLARATION OF PERFORMANCE

No. 75386837

1	UNIQUE IDENTIFICATION CODE OF THE PRODUCT-TYPE:	75386837
2	INTENDED USE/S	ETA 14/0346 of 07/10/2016 Bonded injection type anchor for use in cracked and noncracked concrete
3	MANUFACTURER:	Sika Services AG Tüffenwies 16-22 8064 Zürich
4	AUTHORISED REPRESENTATIVE:	
5	SYSTEM/S OF AVCP:	System 1
6b	EUROPEAN ASSESSMENT DOCUMENT:	ETAG 001-Part 1 and Part 5, edition 2013
	European Technical Assessment:	ETA 14/0346 of 07/10/2016

1029

TECHNICKY A ZKUSEBNI USTAV STAVEBNI PRAHA s.p.

Technical Assessment Body:

Notified body/ies:

7 DECLARED PERFORMANCE/S

Reaction to fire - Anchorages satisfy requirements for Class A1

Resistance to fire - No performance assessed

Anchorages subject to:

2 Static and quasi-static load.

2 Seismic performance category C1: threaded rod size M10, M12, M16, M20, M24

Base materials

Non-cracked concrete.

2 Cracked and non-cracked concrete for threaded rod size M10, M12, M16, M20, M24

☑ Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according EN 206-1:2000-12.

Temperature range:

2 -40°C to +80°C (max. short. term temperature +80°C and max. long term temperature +50°C)

Use conditions (Environmental conditions)

② Structures subject to dry internal conditions (zinc coated steel, stainless steel, high corrosion resistance steel).

② Structures subject to external atmospheric exposure including industrial and marine environment, if no particular aggressive conditions exist (stainless steel, high corrosion resistance steel).

② Structures subject to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel, high corrosion resistance steel).

② Structures subject to permanently damp internal condition, with particular aggressive conditions exist (high corrosion resistance steel).

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used).

Use categories: Category 2 – installation in dry or wet concrete or in flooded hole.

Design:

☑ The anchorages are designed in accordance with the EOTA Technical Report TR 029 "Design of bonded anchors" under the responsibility of an engineer experienced in anchorages and concrete work.

② 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.

② Anchorages under seismic actions (cracked concrete) have to be designed in accordance with EOTA Technical Report TR 045 "Design of Metal Anchors under Seismic Action".

Installation:

2 Dry or wet concrete or flooded hole.

Hole drilling by rotary drill mode.

② Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

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Table B1: Installation parameters of threaded rod

Size	-		M8	M10	M12	M16	M20	M24	M27	M30
Nominal drill hole diameter	$Ød_0$	[mm]	10	12	14	18	22	26	30	35
Diameter of cleaning brush	d _b	[mm]	14	14	20	20	29	29	40	40
Torque moment	Tinst	[Nm]	10	20	40	80	150	200	240	275
h _{ef,min} = 8d										
Depth of drill hole	h o	[mm]	64	80	96	128	160	192	216	240
Minimum edge distance	C _{min}	[mm]	35	40	50	65	80	96	110	120
Minimum spacing	smin	[mm]	35	40	50	65	80	96	110	120
Minimum thickness of member	hmin	[mm]	h _{ef}	+ 30 mn	n ≥ 100	mm		h _{ef} +	- 2 d o	•
$h_{ef,max} = 20d$										
Depth of drill hole	h 0	[mm]	160	200	240	320	400	480	540	600
Minimum edge distance	Cmin	[mm]	80	100	120	160	200	240	270	300
Minimum spacing	Smin	[mm]	80	100	120	160	200	240	270	300
Minimum thickness of member	h _{min}	[mm]	h _{ef}	+ 30 mn	n ≥ 100	mm		hef +	- 2do	-

Table B2: Installation parameters of rebar

Size	-		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Nominal drill hole diameter	Ød₀	[mm]	12	14	16	20	25	32	40
Diameter of cleaning brush	d _b	[mm]	14	14	19	22	29	40	42
h _{ef,min} = 8d									
Depth of drill hole	h ₀	[mm]	64	80	96	128	160	200	256
Minimum edge distance	Cmin	[mm]	35	40	50	65	80	100	130
Minimum spacing	Smin	[mm]	35	40	50	65	80	100	130
Minimum thickness of member	hmin	[mm]	h _e	_f + 30 mn	n ≥ 100 m	nm		h _{ef} + 2d ₀)
h _{ef,max} = 20d									
Depth of drill hole	h _o	[mm]	160	200	240	320	400	500	640
Minimum edge distance	Cmin	[mm]	80	100	120	160	200	250	320
Minimum spacing	Smin	[mm]	80	100	120	160	200	250	320
Minimum thickness of member	[mm]	h _e	_f + 30 mn	n ≥ 100 m	h _{ef} + 2d ₀				

Table B3: Cleaning

All diameters
- 2 x blowing
- 2 x brushing
- 2 x blowing
- 2 x brushing
- 2 x blowing

Table B4: Minimum curing time

Sika AnchorFix -2 Normal		
Application temperature	Processing time	Load time
+5 to +10°C	10 mins	145 mins
+10 to +15°C	8 mins	85 mins
+15 to +20°C	6 mins	75 mins
+20 to +25°C	5 mins	50 mins
+25 to +30°C	4 mins	40 mins

Processing time refers to the highest temperature in the range.

Load time refers to the lowest temperature in the range.

Cartridge must be conditioned to a minimum +5°C.

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Table C1: Design method TR 029 Characteristic values of resistance to tension load of threaded rod

Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	N _{Rk,s}	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	YMs ¹⁾	[-]		-		-	2			
Steel grade 5.8	NRk,s	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	YMs ¹⁾	[-]		-		1	,5			
Steel grade 8.8	N _{Rk,s}	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	YMs ¹⁾	[-]				1	,5			
Steel grade 10.9	N _{Rk,s}	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	YMs ¹⁾	[-]				1	,4			
Stainless steel grade A4-70	NRk,s	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	YMs ¹⁾	[-]				1	,9			
Stainless steel grade A4-80	N _{Rk,s}	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	YMs ¹⁾	[-]				1	,6			
Stainless steel grade 1.4529	NRk,s	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	YMs ¹⁾	[-]				1	,5			

Combined pullout and concrete cor	ne failure in I	non-cracked	concr	ete C20)/25					
Size	M8	M10	M12	M16	M20	M24	M27	M30		
Characteristic bond resistance in no	on-cracked c	oncrete								
Dry and wet concrete	τ_{Rk}	[N/mm ²]	11	10	9,5	9	8,5	8	6,5	5,5
Partial safety factor	YMc 1)	[-]			1,	8 ²⁾			2,1	L ³⁾
Flooded hole	τ_{Rk}	[N/mm ²]	9	8	7,5	7	7	6		
Partial safety factor	1) γ _{Μc}	[-]				2,:	1 ³⁾			
Factor for concrete C50/60				1	l					

Size				M10	M12	M16	M20	M24
Characteristic bond resistance	in cracked	d concr	ete					
Dry and wet concrete		τ_{Rk}	[N/mm ²]	5	5	5	4,5	4,5
Partial safety factor	•	YMc ¹⁾	[-]		•	1,8 ²⁾		
Flooded hole	•	τ _{Rk}	[N/mm ²]	5	5	5	4,5	4,5
Partial safety factor	•	YMc ¹⁾	[-]			2,13)		•
	C30/37					1,12		
Factor for cracked concrete	C40/50	ψε	[-]			1,23		
	C50/60					1,30		

Splitting failure	Splitting failure												
Size			M8	M10	M12	M16	M20	M24	M27	M30			
Edge distance	[mm]	1,5h _{ef}											
Spacing	[mm]				3,0)h _{ef}							
Partial safety factor	[-]	1,8											

- 1) In absence of national regulations
- 2) The partial safety factor $\gamma_2=1,2$ is included
- 3) The partial safety factor $\gamma_2=1,4$ is included

Table C2: Design method TR 029 Characteristic values of resistance to tension load of rebar

Steel failure – Characteristic resistance									
Size	•		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	N _{Rk,s}	[kN]	28	43	62	111	173	270	442
Partial safety factor	1) γms	[-]				1,4			•

Combined pullout and concrete co	one failure in	non-cracke	d concr	ete C20	/25				
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Characteristic bond resistance in r									
Dry and wet concrete	TRk	[N/mm²]	12	10	10	9	9	9	5,5
Partial safety factor	1) γмс	[-]				1,82)			
Flooded hole	TRk	[N/mm²]	12	10	10	9	9	9	5,5
Partial safety factor	1) γ _{Μc}	[-]	·			2,13)			
Factor for concrete C50/60	ψс	[-]				1			

Splitting failure	•			•	•			•	
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Edge distance	Ccr,sp	[mm]				1,5h _{ef}			
Spacing	Scr,sp	[mm]				3,0hef			
Partial safety factor	1) γMsp	[-]		•	•	1,8		•	

¹⁾ In absence of national regulations

²⁾ The partial safety factor γ_2 =1,2 is included

³⁾ The partial safety factor $\gamma_2=1,4$ is included

Table C3: Design method TR 029 Characteristic values of resistance to shear load of threaded rod

Steel failure without lever arm										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	V _{Rk,s}	[kN]	7	12	17	31	49	71	92	112
Partial safety factor	YMs 1)	[-]		ı	ı	1,	67			
Steel grade 5.8	V _{Rk,s}	[kN]	9	15	21	39	61	88	115	140
Partial safety factor	YMs ¹)	[-]	1,25							
Steel grade 8.8	V _{Rk,s}	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	YMs ¹)	[-]				1,	25			
Steel grade 10.9	V _{Rk,s}	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	YMs ¹⁾	[-]				1	,5			
Stainless steel grade A4-70	V _{Rk,s}	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	YMs ¹⁾	[-]		-	-	1,	56	-	-	
Stainless steel grade A4-80	V _{Rk,s}	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	YMs ¹)	[-]	1,33							
Stainless steel grade 1.4529	V _{Rk,s}	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	YMs ¹)	[-]	1,25							

Steel failure with lever arm										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	M ^o Rk,s	[N.m]	15	30	52	133	260	449	666	900
Partial safety factor	Y _{Ms} ¹⁾	[-]	1,67							
Steel grade 5.8	M ^o Rk,s	[N.m]	19	37	66	166	325	561	832	1125
Partial safety factor	Y _{Ms} ¹⁾	[-]	1,25							
Steel grade 8.8	M ^o Rk,s	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	Y _{Ms} ¹⁾	[-]	1,25							
Steel grade 10.9	M ^o Rk,s	[N.m]	37	75	131	333	649	1123	1664	2249
Partial safety factor	YMs 1)	[-]		•		1,	50			
Stainless steel grade A4-70	M ^o Rk,s	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	Y _{Ms} ¹⁾	[-]		•		1,	56			
Stainless steel grade A4-80	M ^o Rk,s	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	Y _{Ms} ¹⁾	[-]		•		1,	33		•	
Stainless steel grade 1.4529	M° Rk,s	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	Y _{Ms} ¹⁾	[-]		•		1,	25		•	•
Concrete pryout failure										
Factor <i>k</i> from TR 029 Design of bonded anchors, Part 5.2.3.3							2			
Partial safety factor	үм 1)	[-]	1,5							

Concrete edge failure											
Size M8 M10 M12 M16 M20 M24 M27											
See section 5.2.3.4 of Technical Report TR 029 for the D	Design	n of Bo	nded A	Anchor	5						
Partial safety factor $y_{Mr}^{(1)}$ [-] 1,5											

¹⁾ In absence of national regulations

Table C4: Design method TR 029 Characteristic values of resistance to shear load of rebar

Steel failure without lever arm						•			
Size	•		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	VRk,s	[kN]	14	22	31	55	86	135	221
Partial safety factor	1) γ _{Ms}	[-]				1,5			

Steel failure with lever arm			•		•	•			
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	Mork,s	[N.m]	33	65	112	265	518	1013	2122
Partial safety factor	1) VMs	[-]				1,5			
Concrete pryout failure									
Factor k from TR 029 Design of bonded anchors, Part 5.2.3.3		_				2			
Partial safety factor	γ _{мр} ¹⁾	[-]				1,5			

Concrete edge failure												
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32			
See section 5.2.3.4 of Technical Report Ti	R 029 for 1	the De	sign of	Bonded	Anchor	s						
Partial safety factor γ _{Mc} ¹⁾ [-] 1,5												

¹⁾ In absence of national regulations

Table C5: Design method CEN/TS 1992-4 Characteristic values of resistance to tension load of threaded rod

Steel failure – Characteristic resista	nce									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	$N_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	Y _{Ms} 1)	[-]	2							
Steel grade 5.8	$N_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	Y _{Ms} ¹⁾	[-]			•	1	,5			
Steel grade 8.8	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	Y _{Ms} ¹⁾	[-]		•		1	,5			
Steel grade 10.9	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	Y _{Ms} 1)	[-]		•	•	1	,4	•	•	
Stainless steel grade A4-70	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	Y _{Ms} ¹⁾	[-]			•	1	,9			
Stainless steel grade A4-80	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	Y _{Ms} 1)	[-]		•	•	1	,6	•	•	
Stainless steel grade 1.4529	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	Y _{Ms} 1)	[-]		•	•	1	,5	•	•	

Combined pullout and concrete cone	Combined pullout and concrete cone failure in non-cracked concrete C20/25											
Size			M8	M10	M12	M16	M20	M24	M27	M30		
Characteristic bond resistance in nor	n-cracked co	oncrete										
Dry and wet concrete	τ_{Rk}	[N/mm ²]	11	10	9,5	9	8,5	8	6,5	5,5		
Partial safety factor	VMc 1)	[-]	21						2.1	L ³⁾		
Flooded hole	TRk	[N/mm ²]	9	8	7,5	7	7	6				
Partial safety factor	V _{Mc} ¹⁾	[-]				2,	1 ³⁾					
Factor for concrete C50/60	for concrete C50/60 ψc [-]						l					
Factor according to CEN/TS 1992-4-5Se	k ₈				10	,1						

Combined pullout and concre	te cone iai	iure III (cracked conc	rete CZU/	23			
Size				M10	M12	M16	M20	M24
Characteristic bond resistanc	e in cracked	d concre	ete					
Dry and wet concrete		τ_{Rk}	[N/mm ²]	5	5	5	4,5	4,5
Partial safety factor		γ _{мс} 1)	[-]			1,8 ²⁾		
Flooded hole		τ_{Rk}	[N/mm ²]	5	5	5	4,5	4,5
Partial safety factor		YMc ¹⁾	[-]			2,13)		•
	C30/37					1,12		
Factor for cracked concrete	C40/50	ψ_{c}	[-]			1,23		
	C50/60					1,30		
Factor according to CEN/TS 199	2-4-5 Section	n 6.2.2	k ₈			7,2		

		M8	M10	M12	M16	M20	M24	M27	M30				
-5 Section 6.2.3	k _{ucr}				10),1							
Falsa diatanas					7,2								
Edge distance C _{cr,N} [mm					1,5h _{ef}								
S _{cr,N}	[mm]				3,0)h _{ef}							
C _{cr.sp}	[mm]				1,5	ih _{ef}							
					3,0)h _{ef}							
Partial safety factor γ_{Ms}^{1} [-]				1,8									
	S _{cr,N} C _{cr,Sp} S _{cr,Sp}		-5 Section 6.2.3	-5 Section 6.2.3	-5 Section 6.2.3	Section 6.2.3 Kucr 10 Kcr 7 7 10 Kcr 7 7 10 Kcr 7 7 7 7 7 7 7 7 7	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10,1 10,1	Section 6.2.3 K _{ucr} 10,1				

¹⁾ In absence of national regulations

Table C6: Design method CEN/TS 1992-4 Characteristic values of resistance to tension load of rebar

Steel failure – Characteristic resi	stance								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	N _{Rk,s}	[kN]	28	43	62	111	173	270	442
Partial safety factor	V _{Ms} 1)	[-]				1,4			

Combined pullout and concrete cone failure in non-cracked concrete C20/25										
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	
Characteristic bond resistance in no	ncrete									
Dry and wet concrete	τ_{Rk}	[N/mm ²]	12	10	10	9	9	9	5,5	
Partial safety factor	γ _{Mc} 1)	[-]				1,8 ²⁾				
Flooded hole	τ_{Rk}	[N/mm ²]	12	10	10	9	9	9	5,5	
Partial safety factor	1) Умс	[-]				2,1 ³⁾				
Factor for concrete C50/60	ψε	[-]				1				
Factor according to CEN/TS 1992-4-5Section 6.2.2			k ₈ 10,1							

Concrete cone failure									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Factor according to CEN/TS 1992-4-5 Section 6.2.3 k _{ucr}			10,1						
Edge distance	C _{cr,N}	[mm]	1,5h _{ef}						
Spacing	S _{cr,N}	[mm]	3,0h _{ef}						
Splitting failure									
Edge distance	C _{cr,sp}	[mm]	1,5h _{ef}						
Spacing	S _{cr,sp}	[mm]	3,0h _{ef}						
Partial safety factor	γ _{Ms} 1)	[-]	1,8						

¹⁾ In absence of national regulations

8 APPROPRIATE TECHNICAL DOCUMENTATION AND/OR - SPECIFIC TECHNICAL DOCUMENTATION

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Declaration of Performance



²⁾ The partial safety factor $y_2=1,2$ is included

³⁾ The partial safety factor $\gamma_2=1,4$ is included

²⁾ The partial safety factor γ_2 =1,2 is included

³⁾ The partial safety factor y2=1,4 is included

Name: Jamie Squires Function: Product Manager **Engineered Refurbishment** At Sika Ltd on 01 December 2020 Name: Martin Liska Function: R & D Manager

At Sika Ltd on 01 December 2020

End of information as required by Regulation (EU) No 305/2011



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Sika Services AG, Zurich, Switzerland

DoP No. 75386837

ETAG 001, Part 1 "Anchors in general", Part 5 "Bonded anchors"

Notified Body 1020

Bonded injection type anchor for use in cracked and non-cracked concrete

http://dop.sika.com

ECOLOGY, HEALTH AND SAFETY INFORMATION (REACH)

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety related data.

LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sikas recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.



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