BUILDING TRUST

Sika AnchorFix®-2020

DECLARATION OF PERFORMANCE
No. 51274697

1	**UNIQUE IDENTIFICATION CODE OF THE PRODUCT-TYPE:**	51274697
2	**INTENDED USE/S**	Bonded injection type anchor for use in cracked and uncracked concrete
3	**MANUFACTURER:**	Sika Services AG Tüffenwies 16 8064 Zürich Switzerland
5	**SYSTEM/S OF AVCP:**	System 1
6b	**EUROPEAN ASSESSMENT DOCUMENT:**	EAD 330499-01-0601:2018 Bonded fasteners for use in concrete
	European Technical Assessment:	ETA 22/0893 of 07/01/2023
	Technical Assessment Body:	TECHNICKY A ZKUSEBNI USTAV STAVEBNI PRAHA s.p.
	Notified body/ies:	1020

7 DECLARED PERFORMANCE/S

Essential Characteristics	Performance	AVCP	Harmonised Technical Specification
Characteristic resistance to tension load (static and quasi-static loading)	See Annex C 1 to C 4	System 1	EAD 330499-01-0601:2018 Bonded fasteners for use in concrete
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C 5, C 6	System 1	
Displacements under short-term and long-term loading	See Annex C 7	System 1	
Characteristic resistance for seismic performance categories C1 and C2	See Annex C 8 to C 10	System 1	
Hygiene, health and environment (BWR 3)	NPD	System 1	
General aspects relating to fitness for use	Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.	System 1	

Annex B1

Specifications of intended use

Anchorages subject to:

- Static and quasi-static load.
- Seismic actions category C1 (max w = 0,5 mm): threaded rod size M10, M12, M16, M20, M24
- Seismic actions category C2 (max w = 0,8 mm): threaded rod size M12, M16, M20

Base materials

- Uncracked concrete.
- Cracked and uncracked 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 206:2013.

Temperature range:

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

Use conditions (Environmental conditions)

- (X1) Structures subject to dry internal conditions (zinc coated steel, stainless steel, high corrosion resistance steel).
- (X2) Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel A4, high corrosion resistant steel).
- (X3) Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions exist (high corrosion resistant 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).

Concrete conditions:

- I1 – installation in dry or wet (water saturated) concrete and use in service in dry or wet concrete.
- I2 – installation in water-filled (not sea water) and use in service in dry or wet concrete

Design:

- The anchorages are designed in accordance with the EN 1992-4 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.
- Anchorages under seismic actions (cracked concrete) have to be designed in accordance with EN 1992-4.

Installation:

- Hole drilling by hammer drill mode.
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.

Installation direction:

- D3 – downward and horizontal and upwards (e.g. overhead) installation

Annex C1
Table C1: Design method EN 1992-4 Characteristic values of resistance to tension load of threaded rod

Steel failure – Characteristic resistance										
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	γ_{Ms}	[-]	2,0							
Steel grade 5.8	$N_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	γ_{Ms}	[-]	1,5							
Steel grade 8.8	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	γ_{Ms}	[-]	1,5							
Steel grade 10.9	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	γ_{Ms}	[-]	1,3							
Stainless steel grade A2-70, A4-70	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,8							
Stainless steel grade A4-80	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	γ_{Ms}	[-]	1,6							
Stainless steel grade 1.4529	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,5							
Stainless steel grade 1.4565	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,8							

Combined pullout and concrete cone failure in concrete C20/25									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years										
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	11	10	9,5	9,0	8,5	8,0	6,5	5,5
Installation safety factor	γ_{inst}	[-]	1,2						1,4	
Flooded hole	$\tau_{Rk,ucr}$	[N/mm²]	9,0	8,0	7,5	7,0	7,0	6,0		
Installation safety factor	γ_{inst}	[-]	1,4							
Factor for uncracked concrete 50/60	ψ_c	[-]	1							
Size			M10		M12		M16		M20	M24
Characteristic bond resistance in cracked concrete for a working life of 50 years										
Dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]	1,2							
Flooded hole	$\tau_{Rk,cr}$	[N/mm²]	5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]	1,4							
Characteristic bond resistance in cracked concrete for a working life of 100 years										
Dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4,0		4,0		4,0		3,5	3,5
Installation safety factor	γ_{inst}	[-]	1,2							
Flooded hole	$\tau_{Rk,cr}$	[N/mm²]	4,0		4,0		4,0		3,5	3,5
Installation safety factor	γ_{inst}	[-]	1,4							
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73							
Factor for cracked concrete C30/37	ψ_c	[-]	1,12							
Factor for cracked concrete C40/50	ψ_c	[-]	1,23							
Factor for cracked concrete C50/60	ψ_c	[-]	1,30							

Concrete cone failure			
Factor for concrete cone failure for uncracked concrete	$k_{ucr,N}$	[-]	11
Factor for concrete cone failure for cracked concrete	$k_{cr,N}$		7,7
Edge distance	$c_{cr,N}$	[mm]	$1,5h_{ef}$

Splitting failure										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Edge distance	$c_{cr,sp}$	[mm]	$1,5h_{ef}$							
Spacing	$s_{cr,sp}$	[mm]	$3,0h_{ef}$							

Annex C2
Table C2: Design method EN 1992-4
Characteristic values of resistance to tension load of threaded rod for Sika AnchorFix®-2020 Arctic with installation temperature < -10°C

Combined pullout and concrete cone failure in concrete C20/25										
Size				M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years											
Dry and wet concrete	$\tau_{Rk,u}$	[N/mm²]		11,	10,0	9,5	9,0	8,5	7,5	6,5	5,5
Installation safety factor	γ_{inst}	[-]		1,2						1,4	
Flooded hole	$\tau_{Rk,u}$	[N/mm²]		8,5	8,0	7,5	7,0	6,5	6,0		
Installation safety factor	γ_{inst}	[-]		1,4							
Factor for uncracked concrete 50/60	ψ_c	[-]		1							
Size				M10		M12		M16		M20	M24
Characteristic bond resistance in cracked concrete for a working life of 50 years											
Dry and wet concrete	$\tau_{Rk,c}$	[N/mm²]		5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]		1,2							
Flooded hole	$\tau_{Rk,c}$	[N/mm²]		5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]		1,4							
Characteristic bond resistance in cracked concrete for a working life of 100 years											
Dry and wet concrete	$\tau_{Rk,c}$	[N/mm²]		3,5		3,5		3,5		3,5	3,5
Installation safety factor	γ_{inst}	[-]		1,2							
Flooded hole	$\tau_{Rk,c}$	[N/mm²]		3,5		3,5		3,5		3,5	3,5
Installation safety factor	γ_{inst}	[-]		1,4							
Factor for influence of sustained load for a working life 50 years	ψ^0_{su}	[-]		0,7							
Factor for cracked concrete	C30/37 C40/50 C50/60	ψ_c	[-]	1,1 1,2 1,3							

Concrete cone failure
See Annex C 1

Splitting failure
See Annex C 1

Annex C3

Table C3: Design method EN 1992-4
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	γ_{Ms}	[-]	1,4						

Combined pullout and concrete cone failure in uncracked concrete C20/25									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years									
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	12,0	10,0	10,0	9,0	9,0	9,0	5,5
Installation safety factor	γ_{inst}	[-]	1,2						
Flooded hole	$\tau_{Rk,ucr}$	[N/mm²]	12,0	10,0	10,0	9,0	9,0	9,0	5,5
Installation safety factor	γ_{inst}	[-]	1,4						
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73						
Factor for concrete C50/60	ψ_c	[-]	1						

Concrete cone failure			
Factor for concrete cone failure	$k_{ucr,N}$	[-]	11
Edge distance	$c_{cr,N}$	[mm]	$1,5h_{ef}$

Splitting failure									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Edge distance	$c_{cr,sp}$	[mm]	$1,5h_{ef}$						
Spacing	$s_{cr,sp}$	[mm]	$3,0h_{ef}$						

Annex C4
Table C4: Design method EN 1992-4 Characteristic values of resistance to tension load of rebar for Sika AnchorFix®-2020 Arctic with installation temperature < -10°C

Steel failure – Characteristic resistance
See Annex C 3

Combined pullout and concrete cone failure in uncracked concrete C20/25								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years									
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	11,0	9,5	9,5	9,0	8,5	8,5	5,5
Installation safety factor	γ_{inst}	[-]	1,2						
Flooded hole	$\tau_{Rk,ucr}$	[N/mm²]	11,0	9,5	9,5	9,0	8,5	8,5	5,5
Installation safety factor	γ_{inst}	[-]	1,4						
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73						
Factor for concrete C50/60	ψ_c	[-]	1						

Concrete cone failure
See Annex C 3

Splitting failure
See Annex C 3

Annex C5

Table C5: Design method EN 1992-4 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	γ_{Ms}	[-]	1,67							
Steel grade 5.8	$V_{Rk,s}$	[kN]	9	15	21	39	61	88	115	140
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 8.8	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 10.9	$V_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	γ_{Ms}	[-]	1,5							
Stainless steel grade A2-70, A4-70	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,56							
Stainless steel grade A4-80	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	γ_{Ms}	[-]	1,33							
Stainless steel grade 1.4529	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,25							
Stainless steel grade 1.4565	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,56							
Characteristic resistance of group of fasteners										
Ductility factor	k7 = 1,0 for steel with rupture elongation A5 > 8%									

Steel failure with lever arm									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	$M^0_{Rk,s}$	[N.m]	15	30	52	133	260	449	666	900
Partial safety factor	γ_{Ms}	[-]	1,67							
Steel grade 5.8	$M^0_{Rk,s}$	[N.m]	19	37	66	166	325	561	832	1125
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 8.8	$M^0_{Rk,s}$	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 10.9	$M^0_{Rk,s}$	[N.m]	37	75	131	333	649	1123	1664	2249
Partial safety factor	γ_{Ms}	[-]	1,50							
Stainless steel grade A2-70, A4-70	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,56							
Stainless steel grade A4-80	$M^0_{Rk,s}$	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	γ_{Ms}	[-]	1,33							
Stainless steel grade 1.4529	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,25							
Stainless steel grade 1.4565	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,56							
Concrete pry-out failure										
Factor for resistance to pry-out failure	k_8	[-]	2							

Concrete edge failure									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Outside diameter of fastener	d_{nom}	[mm]	8	10	12	16	20	24	27	30
Effective length of fastener	ℓ_f	[mm]	min (h_{ef}, 8 d_{nom})							

Annex C6

Table C6: Design method EN 1992-4 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	$V_{Rk,s}$	[kN]	14	22	31	55	86	135	221
Partial safety factor	γ_{Ms}	[-]	1,5						
Characteristic resistance of group of fasteners									
Ductility factor k_7 = 1,0 for steel with rupture elongation A_5 > 8%									

Steel failure with lever arm								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	$M^0_{Rk,s}$	[N.m]	33	65	112	265	518	1013	2122
Partial safety factor	γ_{Ms}	[-]	1,5						
Concrete pry-out failure									
Factor for resistance to pry-out failure	k_8	[-]	2						

Concrete edge failure								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Outside diameter of fastener		[mm]	8	10	12	16	20	25	32
Effective length of fastener	ℓ_f	[mm]	min (hef, 8 dnom)						

Annex C7

Table C7: Displacement of threaded rod under tension and shear load

Size		M8	M10	M12	M16	M20	M24	M27	M30
Tension load									
Uncracked concrete									
δ_{N0}	[mm/kN]	0,05	0,04	0,03	0,02	0,02	0,02	0,01	0,01
$\delta_{N\infty}$	[mm/kN]	0,11	0,09	0,06	0,04	0,03	0,02	0,02	0,02
Cracked concrete									
δ_{N0}	[mm/kN]		0,08	0,09	0,05	0,03	0,02		
$\delta_{N\infty}$	[mm/kN]		0,51	0,32	0,18	0,13	0,11		
Shear load									
δ_{V0}	[mm/kN]	0,48	0,30	0,20	0,11	0,10	0,08	0,06	0,05
$\delta_{V\infty}$	[mm/kN]	0,72	0,45	0,30	0,17	0,14	0,12	0,10	0,08

Annex C8

Table C8: Displacement of rebar under tension and shear load

Size		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Tension load								
Uncracked concrete								
δ_{N0}	[mm/kN]	0,04	0,03	0,02	0,02	0,01	0,01	0,01
$\delta_{N\infty}$	[mm/kN]	0,09	0,07	0,05	0,03	0,02	0,01	0,01
Shear load								
δ_{V0}	[mm/kN]	0,05	0,04	0,03	0,02	0,01	0,01	0,01
$\delta_{V\infty}$	[mm/kN]	0,08	0,06	0,05	0,03	0,02	0,01	0,01

Annex C9

Table C9: Seismic performance category C1

Size			M10	M12	M16	M20	M24
Tension load							
Steel failure							
Characteristic resistance grade 4.6	$N_{Rk,s,C1}$	[kN]	23	34	63	98	141
Partial safety factor	γ_{Ms}	[-]			2,00		
Characteristic resistance grade 5.8	$N_{Rk,s,C1}$	[kN]	29	42	79	123	177
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance grade 8.8	$N_{Rk,s,C1}$	[kN]	46	67	126	196	282
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance grade 10.9	$N_{Rk,s,C1}$	[kN]	58	84	157	245	353
Partial safety factor	γ_{Ms}	[-]			1,33		
Characteristic resistance A2-70, A4-70	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,87		
Characteristic resistance A4-80	$N_{Rk,s,C1}$	[kN]	46	67	126	196	282
Partial safety factor	γ_{Ms}	[-]			1,60		
Characteristic resistance 1.4529	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance 1.4565	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,87		
Characteristic resistance to pull-out for a working life of 50 years							
Dry, wet concrete and flooded hole	$\tau_{Rk,C1}$	[N/mm^2]	5,5	5,5	5,5	4,2	5,0
Characteristic resistance to pull-out for a working life of 100 years							
Dry, wet concrete and flooded hole	$\tau_{Rk,C1}$	[N/mm^2]	3,8	3,8	4,0	2,6	3,8
Installation safety factor – Dry and wet concrete	γ_{inst}	[-]			1,2		
Installation safety factor – Flooded hole	γ_{inst}	[-]			1,4		

Shear load							
Steel failure without lever arm							
Characteristic resistance grade 4.6	$V_{Rk,s,C1}$	[kN]	7	10	23	30	40
Partial safety factor	γ_{Ms}	[-]			1,67		
Characteristic resistance grade 5.8	$V_{Rk,s,C1}$	[kN]	9	13	28	38	51
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance grade 8.8	$V_{Rk,s,C1}$	[kN]	14	21	45	61	81
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance grade 10.9	$V_{Rk,s,C1}$	[kN]	18	26	56	76	101
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance A2-70, A4-70	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,56		
Characteristic resistance A4-80	$V_{Rk,s,C1}$	[kN]	14	21	45	61	81
Partial safety factor	γ_{Ms}	[-]			1,33		
Characteristic resistance 1.4529	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance 1.4565	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,56		
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C7 shall be multiplied by following reduction factor for hot-dip galvanized commercial standard rods							
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h\text{-}dg,c1}$	[-]	0,57	0,56	0,49	0,56	0,61
Factor for annular gap	α_{gap}	[-]			0,5		

The anchor shall be used with minimum rupture elongation after fracture A_5 equal to 19%.

Note: Rebars are not qualified for seismic design

Annex C10

Table C10: Seismic performance category C2

Size			M12	M16	M20
Tension load					
Steel failure					
Characteristic resistance grade 4.6	$N_{Rk,s,C2}$	[kN]	34	63	98
Partial safety factor	γ_{Ms}	[-]		2,00	
Characteristic resistance grade 5.8	$N_{Rk,s,C2}$	[kN]	42	79	123
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance grade 8.8	$N_{Rk,s,C2}$	[kN]	67	126	196
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance grade 10.9	$N_{Rk,s,C2}$	[kN]	84	157	245
Partial safety factor	γ_{Ms}	[-]		1,33	
Characteristic resistance A2-70, A4-70	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,87	
Characteristic resistance A4-80	$N_{Rk,s,C2}$	[kN]	67	126	196
Partial safety factor	γ_{Ms}	[-]		1,60	
Characteristic resistance 1.4529	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance 1.4565	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,87	
Characteristic resistance to pull-out for a working life of 50 years					
Dry, wet concrete and flooded hole	$\tau_{Rk,C2}$	[N/mm^2]	1,2	1,4	1,6
Characteristic resistance to pull-out for a working life of 100 years					
Dry, wet concrete and flooded hole	$\tau_{Rk,C2}$	[N/mm^2]	0,8	1,0	1,0
Installation safety factor – Dry and wet concrete	γ_{inst}	[-]		1,2	
Installation safety factor – Flooded hole	γ_{inst}	[-]		1,4	
Shear load					
Steel failure without lever arm					
Characteristic resistance grade 4.6	$V_{Rk,s,C2}$	[kN]	13	18	28
Partial safety factor	γ_{Ms}	[-]		1,67	
Characteristic resistance grade 5.8	$V_{Rk,s,C2}$	[kN]	16	22	35
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance grade 8.8	$V_{Rk,s,C2}$	[kN]	25	36	56
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance grade 10.9	$V_{Rk,s,C2}$	[kN]	32	45	70
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance A2-70, A4-70	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,56	
Characteristic resistance A4-80	$V_{Rk,s,C2}$	[kN]	25	36	56
Partial safety factor	γ_{Ms}	[-]		1,33	
Characteristic resistance 1.4529	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance 1.4565	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,56	
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C8 shall be multiplied by following reduction factor for hot-dip galvanized commercial standard rods					
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c2}$	[-]	0,46	0,61	0,61
Factor for annular gap	α_{gap}	[-]		0,5	

8 APPROPRIATE TECHNICAL DOCUMENTATION AND/OR - SPECIFIC TECHNICAL DOCUMENTATION

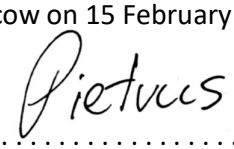
The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:

Name : Tomek Gutowski
Function: Corporate TM Manager
At Warsaw on 15 February 2023

. . . . . .

Name : Maciej Pietrus
Function: Standardization and Approvals
At Cracow on 15 February 2023



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

FULL CE MARKING

CE

23

Sika Services AG, Zurich, Switzerland

DoP No. 51274697

Characteristic resistance to tension load (static and quasi-static loading)	See Annex C 1 to C 4
Characteristic resistance to shear load (static and quasi-static loading)	See Annex C 5, C 6
Displacements under short-term and long-term loading	See Annex C 7
Characteristic resistance for seismic performance categories C1 and C2	See Annex C 8 to C 10
Hygiene, health and environment (BWR 3)	NPD
General aspects relating to fitness for use	Durability and serviceability are only ensured if the specifications of intended use according to Annex B 1 are kept.

Annex C1
Table C1: Design method EN 1992-4 Characteristic values of resistance to tension load of threaded rod

Steel failure – Characteristic resistance										
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	γ_{Ms}	[-]	2,0							
Steel grade 5.8	$N_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	γ_{Ms}	[-]	1,5							
Steel grade 8.8	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	γ_{Ms}	[-]	1,5							
Steel grade 10.9	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	γ_{Ms}	[-]	1,3							
Stainless steel grade A2-70, A4-70	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,8							
Stainless steel grade A4-80	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	γ_{Ms}	[-]	1,6							
Stainless steel grade 1.4529	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,5							
Stainless steel grade 1.4565	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	γ_{Ms}	[-]	1,8							

Combined pullout and concrete cone failure in concrete C20/25									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years										
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	11	10	9,5	9,0	8,5	8,0	6,5	5,5
Installation safety factor	γ_{inst}	[-]	1,2						1,4	
Flooded hole	$\tau_{Rk,ucr}$	[N/mm²]	9,0	8,0	7,5	7,0	7,0	6,0		
Installation safety factor	γ_{inst}	[-]	1,4							
Factor for uncracked concrete 50/60	ψ_c	[-]	1							
Size			M10		M12		M16		M20	M24
Characteristic bond resistance in cracked concrete for a working life of 50 years										
Dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]	1,2							
Flooded hole	$\tau_{Rk,cr}$	[N/mm²]	5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]	1,4							
Characteristic bond resistance in cracked concrete for a working life of 100 years										
Dry and wet concrete	$\tau_{Rk,cr}$	[N/mm²]	4,0		4,0		4,0		3,5	3,5
Installation safety factor	γ_{inst}	[-]	1,2							
Flooded hole	$\tau_{Rk,cr}$	[N/mm²]	4,0		4,0		4,0		3,5	3,5
Installation safety factor	γ_{inst}	[-]	1,4							
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73							
Factor for cracked concrete C30/37	ψ_c	[-]	1,12							
Factor for cracked concrete C40/50	ψ_c	[-]	1,23							
Factor for cracked concrete C50/60	ψ_c	[-]	1,30							

Concrete cone failure			
Factor for concrete cone failure for uncracked concrete	$k_{ucr,N}$	[-]	11
Factor for concrete cone failure for cracked concrete	$k_{cr,N}$		7,7
Edge distance	$c_{cr,N}$	[mm]	$1,5h_{ef}$

Splitting failure										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Edge distance	$c_{cr,sp}$	[mm]	$1,5h_{ef}$							
Spacing	$s_{cr,sp}$	[mm]	$3,0h_{ef}$							

Annex C2
Table C2: Design method EN 1992-4
Characteristic values of resistance to tension load of threaded rod for Sika AnchorFix®-2020 Arctic with installation temperature < -10°C

Combined pullout and concrete cone failure in concrete C20/25										
Size				M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years											
Dry and wet concrete	$\tau_{Rk,u}$	[N/mm²]		11,	10,0	9,5	9,0	8,5	7,5	6,5	5,5
Installation safety factor	γ_{inst}	[-]		1,2						1,4	
Flooded hole	$\tau_{Rk,u}$	[N/mm²]		8,5	8,0	7,5	7,0	6,5	6,0		
Installation safety factor	γ_{inst}	[-]		1,4							
Factor for uncracked concrete 50/60	ψ_c	[-]		1							
Size				M10		M12		M16		M20	M24
Characteristic bond resistance in cracked concrete for a working life of 50 years											
Dry and wet concrete	$\tau_{Rk,c}$	[N/mm²]		5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]		1,2							
Flooded hole	$\tau_{Rk,c}$	[N/mm²]		5,5		5,5		5,5		5,0	5,0
Installation safety factor	γ_{inst}	[-]		1,4							
Characteristic bond resistance in cracked concrete for a working life of 100 years											
Dry and wet concrete	$\tau_{Rk,c}$	[N/mm²]		3,5		3,5		3,5		3,5	3,5
Installation safety factor	γ_{inst}	[-]		1,2							
Flooded hole	$\tau_{Rk,c}$	[N/mm²]		3,5		3,5		3,5		3,5	3,5
Installation safety factor	γ_{inst}	[-]		1,4							
Factor for influence of sustained load for a working life 50 years	ψ^0_{su}	[-]		0,7							
Factor for cracked concrete	C30/37 C40/50 C50/60	ψ_c	[-]	1,1 1,2 1,3							

Concrete cone failure
See Annex C 1

Splitting failure
See Annex C 1

Annex C3

Table C3: Design method EN 1992-4
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	γ_{Ms}	[-]	1,4						

Combined pullout and concrete cone failure in uncracked concrete C20/25									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years									
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm²]	12,0	10,0	10,0	9,0	9,0	9,0	5,5
Installation safety factor	γ_{inst}	[-]	1,2						
Flooded hole	$\tau_{Rk,ucr}$	[N/mm²]	12,0	10,0	10,0	9,0	9,0	9,0	5,5
Installation safety factor	γ_{inst}	[-]	1,4						
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73						
Factor for concrete C50/60	ψ_c	[-]	1						

Concrete cone failure			
Factor for concrete cone failure	$k_{ucr,N}$	[-]	11
Edge distance	$c_{cr,N}$	[mm]	$1{,}5h_{ef}$

Splitting failure									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Edge distance	$c_{cr,sp}$	[mm]	$1{,}5h_{ef}$						
Spacing	$s_{cr,sp}$	[mm]	$3{,}0h_{ef}$						

Annex C4
Table C4: Design method EN 1992-4 Characteristic values of resistance to tension load of rebar for Sika AnchorFix®-2020 Arctic with installation temperature < -10°C

Steel failure – Characteristic resistance
See Annex C 3

Combined pullout and concrete cone failure in uncracked concrete C20/25									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Characteristic bond resistance in uncracked concrete for a working life of 50 years and 100 years									
Dry and wet concrete	$\tau_{Rk,ucr}$	[N/mm^2]	11,0	9,5	9,5	9,0	8,5	8,5	5,5
Installation safety factor	γ_{inst}	[-]	1,2						
Flooded hole	$\tau_{Rk,ucr}$	[N/mm^2]	11,0	9,5	9,5	9,0	8,5	8,5	5,5
Installation safety factor	γ_{inst}	[-]	1,4						
Factor for influence of sustained load for a working life 50 years	ψ^0_{sus}	[-]	0,73						
Factor for concrete C50/60	ψ_c	[-]	1						

Concrete cone failure
See Annex C 3

Splitting failure
See Annex C 3

Annex C5

Table C5: Design method EN 1992-4 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	γ_{Ms}	[-]	1,67							
Steel grade 5.8	$V_{Rk,s}$	[kN]	9	15	21	39	61	88	115	140
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 8.8	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 10.9	$V_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	γ_{Ms}	[-]	1,5							
Stainless steel grade A2-70, A4-70	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,56							
Stainless steel grade A4-80	$V_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	γ_{Ms}	[-]	1,33							
Stainless steel grade 1.4529	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,25							
Stainless steel grade 1.4565	$V_{Rk,s}$	[kN]	13	20	30	55	86	124	161	196
Partial safety factor	γ_{Ms}	[-]	1,56							
Characteristic resistance of group of fasteners										
Ductility factor	k7 = 1,0 for steel with rupture elongation A5 > 8%									

Steel failure with lever arm									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Steel grade 4.6	$M^0_{Rk,s}$	[N.m]	15	30	52	133	260	449	666	900
Partial safety factor	γ_{Ms}	[-]	1,67							
Steel grade 5.8	$M^0_{Rk,s}$	[N.m]	19	37	66	166	325	561	832	1125
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 8.8	$M^0_{Rk,s}$	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	γ_{Ms}	[-]	1,25							
Steel grade 10.9	$M^0_{Rk,s}$	[N.m]	37	75	131	333	649	1123	1664	2249
Partial safety factor	γ_{Ms}	[-]	1,50							
Stainless steel grade A2-70, A4-70	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,56							
Stainless steel grade A4-80	$M^0_{Rk,s}$	[N.m]	30	60	105	266	519	898	1332	1799
Partial safety factor	γ_{Ms}	[-]	1,33							
Stainless steel grade 1.4529	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,25							
Stainless steel grade 1.4565	$M^0_{Rk,s}$	[N.m]	26	52	92	233	454	786	1165	1574
Partial safety factor	γ_{Ms}	[-]	1,56							
Concrete pry-out failure										
Factor for resistance to pry-out failure	k_8	[-]	2							

Concrete edge failure									
Size			M8	M10	M12	M16	M20	M24	M27	M30
Outside diameter of fastener	d_{nom}	[mm]	8	10	12	16	20	24	27	30
Effective length of fastener	ℓ_f	[mm]	min (h_{ef}, 8 d_{nom})							

Annex C6

Table C6: Design method EN 1992-4 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	$V_{Rk,s}$	[kN]	14	22	31	55	86	135	221
Partial safety factor	γ_{Ms}	[-]	1,5						
Characteristic resistance of group of fasteners									
Ductility factor k_7 = 1,0 for steel with rupture elongation A_5 > 8%									

Steel failure with lever arm								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Rebar BSt 500 S	$M^0_{Rk,s}$	[N.m]	33	65	112	265	518	1013	2122
Partial safety factor	γ_{Ms}	[-]	1,5						
Concrete pry-out failure									
Factor for resistance to pry-out failure	k_8	[-]	2						

Concrete edge failure								
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Outside diameter of fastener		[mm]	8	10	12	16	20	25	32
Effective length of fastener	ℓ_f	[mm]	min (hef, 8 dnom)						

Annex C7

Table C7: Displacement of threaded rod under tension and shear load

Size		M8	M10	M12	M16	M20	M24	M27	M30
Tension load									
Uncracked concrete									
δ_{N0}	[mm/kN]	0,05	0,04	0,03	0,02	0,02	0,02	0,01	0,01
$\delta_{N\infty}$	[mm/kN]	0,11	0,09	0,06	0,04	0,03	0,02	0,02	0,02
Cracked concrete									
δ_{N0}	[mm/kN]		0,08	0,09	0,05	0,03	0,02		
$\delta_{N\infty}$	[mm/kN]		0,51	0,32	0,18	0,13	0,11		
Shear load									
δ_{V0}	[mm/kN]	0,48	0,30	0,20	0,11	0,10	0,08	0,06	0,05
$\delta_{V\infty}$	[mm/kN]	0,72	0,45	0,30	0,17	0,14	0,12	0,10	0,08

Annex C8

Table C8: Displacement of rebar under tension and shear load

Size		Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Tension load								
Uncracked concrete								
δ_{N0}	[mm/kN]	0,04	0,03	0,02	0,02	0,01	0,01	0,01
$\delta_{N\infty}$	[mm/kN]	0,09	0,07	0,05	0,03	0,02	0,01	0,01
Shear load								
δ_{V0}	[mm/kN]	0,05	0,04	0,03	0,02	0,01	0,01	0,01
$\delta_{V\infty}$	[mm/kN]	0,08	0,06	0,05	0,03	0,02	0,01	0,01

Annex C9

Table C9: Seismic performance category C1

Size			M10	M12	M16	M20	M24
Tension load							
Steel failure							
Characteristic resistance grade 4.6	$N_{Rk,s,C1}$	[kN]	23	34	63	98	141
Partial safety factor	γ_{Ms}	[-]			2,00		
Characteristic resistance grade 5.8	$N_{Rk,s,C1}$	[kN]	29	42	79	123	177
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance grade 8.8	$N_{Rk,s,C1}$	[kN]	46	67	126	196	282
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance grade 10.9	$N_{Rk,s,C1}$	[kN]	58	84	157	245	353
Partial safety factor	γ_{Ms}	[-]			1,33		
Characteristic resistance A2-70, A4-70	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,87		
Characteristic resistance A4-80	$N_{Rk,s,C1}$	[kN]	46	67	126	196	282
Partial safety factor	γ_{Ms}	[-]			1,60		
Characteristic resistance 1.4529	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance 1.4565	$N_{Rk,s,C1}$	[kN]	41	59	110	172	247
Partial safety factor	γ_{Ms}	[-]			1,87		
Characteristic resistance to pull-out for a working life of 50 years							
Dry, wet concrete and flooded hole	$\tau_{Rk,C1}$	[N/mm^2]	5,5	5,5	5,5	4,2	5,0
Characteristic resistance to pull-out for a working life of 100 years							
Dry, wet concrete and flooded hole	$\tau_{Rk,C1}$	[N/mm^2]	3,8	3,8	4,0	2,6	3,8
Installation safety factor – Dry and wet concrete	γ_{inst}	[-]			1,2		
Installation safety factor – Flooded hole	γ_{inst}	[-]			1,4		

Shear load							
Steel failure without lever arm							
Characteristic resistance grade 4.6	$V_{Rk,s,C1}$	[kN]	7	10	23	30	40
Partial safety factor	γ_{Ms}	[-]			1,67		
Characteristic resistance grade 5.8	$V_{Rk,s,C1}$	[kN]	9	13	28	38	51
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance grade 8.8	$V_{Rk,s,C1}$	[kN]	14	21	45	61	81
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance grade 10.9	$V_{Rk,s,C1}$	[kN]	18	26	56	76	101
Partial safety factor	γ_{Ms}	[-]			1,50		
Characteristic resistance A2-70, A4-70	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,56		
Characteristic resistance A4-80	$V_{Rk,s,C1}$	[kN]	14	21	45	61	81
Partial safety factor	γ_{Ms}	[-]			1,33		
Characteristic resistance 1.4529	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,25		
Characteristic resistance 1.4565	$V_{Rk,s,C1}$	[kN]	12	18	39	53	71
Partial safety factor	γ_{Ms}	[-]			1,56		
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C7 shall be multiplied by following reduction factor for hot-dip galvanized commercial standard rods							
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h\text{-}dg,c1}$	[-]	0,57	0,56	0,49	0,56	0,61
Factor for annular gap	α_{gap}	[-]			0,5		

The anchor shall be used with minimum rupture elongation after fracture A_5 equal to 19%.

Note: Rebars are not qualified for seismic design

Annex C10

Table C10: Seismic performance category C2

Size			M12	M16	M20
Tension load					
Steel failure					
Characteristic resistance grade 4.6	$N_{Rk,s,C2}$	[kN]	34	63	98
Partial safety factor	γ_{Ms}	[-]		2,00	
Characteristic resistance grade 5.8	$N_{Rk,s,C2}$	[kN]	42	79	123
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance grade 8.8	$N_{Rk,s,C2}$	[kN]	67	126	196
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance grade 10.9	$N_{Rk,s,C2}$	[kN]	84	157	245
Partial safety factor	γ_{Ms}	[-]		1,33	
Characteristic resistance A2-70, A4-70	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,87	
Characteristic resistance A4-80	$N_{Rk,s,C2}$	[kN]	67	126	196
Partial safety factor	γ_{Ms}	[-]		1,60	
Characteristic resistance 1.4529	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance 1.4565	$N_{Rk,s,C2}$	[kN]	59	110	172
Partial safety factor	γ_{Ms}	[-]		1,87	
Characteristic resistance to pull-out for a working life of 50 years					
Dry, wet concrete and flooded hole	$\tau_{Rk,C2}$	[N/mm^2]	1,2	1,4	1,6
Characteristic resistance to pull-out for a working life of 100 years					
Dry, wet concrete and flooded hole	$\tau_{Rk,C2}$	[N/mm^2]	0,8	1,0	1,0
Installation safety factor – Dry and wet concrete	γ_{inst}	[-]		1,2	
Installation safety factor – Flooded hole	γ_{inst}	[-]		1,4	
Shear load					
Steel failure without lever arm					
Characteristic resistance grade 4.6	$V_{Rk,s,C2}$	[kN]	13	18	28
Partial safety factor	γ_{Ms}	[-]		1,67	
Characteristic resistance grade 5.8	$V_{Rk,s,C2}$	[kN]	16	22	35
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance grade 8.8	$V_{Rk,s,C2}$	[kN]	25	36	56
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance grade 10.9	$V_{Rk,s,C2}$	[kN]	32	45	70
Partial safety factor	γ_{Ms}	[-]		1,50	
Characteristic resistance A2-70, A4-70	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,56	
Characteristic resistance A4-80	$V_{Rk,s,C2}$	[kN]	25	36	56
Partial safety factor	γ_{Ms}	[-]		1,33	
Characteristic resistance 1.4529	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,25	
Characteristic resistance 1.4565	$V_{Rk,s,C2}$	[kN]	22	31	49
Partial safety factor	γ_{Ms}	[-]		1,56	
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C8 shall be multiplied by following reduction factor for hot-dip galvanized commercial standard rods					
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c2}$	[-]	0,46	0,61	0,61
Factor for annular gap	α_{gap}	[-]		0,5	

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Notified Body 1020
Bonded injection type anchor for use in cracked and uncracked concrete

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CE marking to be placed on the label

CE
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Sika Services AG, Zurich, Switzerland
DoP No. 51274697
For details see accompanying documentation
EAD 330499-01-0601:2018 Bonded fasteners for use in concrete
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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

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