

# Sika AnchorFix<sup>®</sup>-3030

## DICHIARAZIONE DI PRESTAZIONE No. 25601660

1	<b>CODICE DI IDENTIFICAZIONE UNICO DEL PRODOTTO-TIPO:</b>	25601660
2	<b>USI PREVISTI</b>	EAD 330499-01-0601:2018 Sistema di ancoraggio chimico per utilizzo in calcestruzzo fessurato e non fessurato per vita di servizio di 50 e/o 100 anni
3	<b>FABBRICANTE:</b>	Sika Services AG Tüffenwies 16-22 8064 Zürich
4	<b>MANDATARIO:</b>	-
5	<b>SISTEMI DI VVCP:</b>	System 1
6b	<b>DOCUMENTO DI VALUTAZIONE EUROPEA:</b>	EAD 330499-01-0601:2018
	European Technical Assessment:	ETA_17/0694 del 25/10/2021
	Technical Assessment Body:	TECHNICKY A ZKUSEBNI USTAV STAVEBNI PRAHA S. P.
	Notified body/ies:	1020

### Dichiarazione di Prestazione

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**7 PRESTAZIONI DICHIARATE**

<b>Caratteristiche Essenziali</b>	<b>Prestazioni</b>	<b>AVCP</b>	<b>Norma tecnica Armonizzata</b>
Resistenza caratteristica a carichi di trazione (carichi statici e quasi statici)	Annessi C 1, C 2	System 1	
Resistenza caratteristica a carichi di taglio (carichi statici e quasi statici)	Annessi C 3, C 4	System 1	EAD 330499-01-0601:2018
Deformazione sotto carichi a breve termine	Annesso C 5	System 1	
Resistenza caratteristica per categorie di prestazione sismica C1 e C2	Annessi C 6, C 7, C8	System 1	

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**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	$\gamma_{Ms}$	[-]	2,00							
Steel grade 4.8	$N_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 5.8	$N_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 8.8	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 10.9	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	$\gamma_{Ms}$	[-]	1,33							
Stainless steel grade A2-70, A4-70	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,87							
Stainless steel grade A4-80	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$	[-]	1,60							
Stainless steel grade 1.4529	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Stainless steel grade 1.4565	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,87							
Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	17	15	15	12	12	12	11	9,5
Dry, wet concrete, flooded hole										
Partial safety factor	$\gamma_{inst}$	[-]	1,0							
Characteristic bond resistance in cracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,cr}$	[N/mm <sup>2</sup> ]	10	10	10	9,5	9	9	6	6
Dry, wet concrete, flooded hole										
Partial safety factor	$\gamma_{inst}$	[-]	1,0							
Factor for influence of sustained load for a working life 50 years	T3: 50°C / 70°C $\psi_{sus}^0$	[-]	0,72							
Factor for concrete	C25/30 C30/37 C35/45 C40/50 C45/55 C50/60	$\psi_c$	1,02 1,04 1,06 1,07 1,08 1,09							
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 <sub>ef</sub>							
Splitting failure										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Edge distance	$c_{cr,sp}$	[mm]	2 • h <sub>ef</sub>							
Spacing	$s_{cr,sp}$	[mm]	2 • c <sub>cr,sp</sub>							

**Performances** - Design according to EN 1992-4  
Characteristic resistance for tension loads - threaded rod

**Annesso C 1**

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**Table C2:** 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	$\gamma_{Ms}$	[-]	1,4							

Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years										
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	
Characteristic bond resistance in uncracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	13	13	13	12	12	12	8	
Dry and wet concrete										
Installation safety factor	$\gamma_{inst}$	[-]	1,0							
Flooded hole										
Installation safety factor	$\gamma_{inst}$	[-]	1,2							
Characteristic bond resistance in cracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,cr}$	[N/mm <sup>2</sup> ]	8	11	10	10	9	8,5	6,5	
Dry and wet concrete										
Installation safety factor	$\gamma_{inst}$	[-]	1,0							
Flooded hole										
Installation safety factor	$\gamma_{inst}$	[-]	1,2							
Factor for influence of sustained load for a working life 50 years	T3: 50°C / 70°C	$\psi^0_{sus}$	[-]			0,72				
Factor for concrete	C25/30	$\psi_c$	[-]			1,02				
	C30/37		1,04							
	C35/45		1,06							
	C40/50		1,07							
	C45/55		1,08							
	C50/60	1,09								

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]	1,5 $h_{ef}$

Splitting failure										
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32	
Edge distance	$c_{cr,sp}$	[mm]	2 • $h_{ef}$							
Spacing	$s_{cr,sp}$	[mm]	2 • $c_{cr,sp}$							

**Performances**  
Design according to EN 1992-4  
Characteristic resistance for tension loads - rebar

**Annesso C 2**

Annesso C

**Dichiarazione di Prestazione**

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**Table C3:** 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	$\gamma_{Ms}$ [-]	1,67								
Steel grade 4.8	$V_{Rk,s}$ [kN]	7	12	17	31	49	71	92	112	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 5.8	$V_{Rk,s}$ [kN]	9	15	21	39	61	88	115	140	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 8.8	$V_{Rk,s}$ [kN]	15	23	34	63	98	141	184	224	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 10.9	$V_{Rk,s}$ [kN]	18	29	42	79	123	177	230	281	
Partial safety factor	$\gamma_{Ms}$ [-]	1,5								
Stainless steel grade A2-70, A4-70	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Stainless steel grade A4-80	$V_{Rk,s}$ [kN]	15	23	34	63	98	141	184	224	
Partial safety factor	$\gamma_{Ms}$ [-]	1,33								
Stainless steel grade 1.4529	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Stainless steel grade 1.4565	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
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		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	$\gamma_{Ms}$ [-]	1,67								
Steel grade 4.8	$M^o_{Rk,s}$ [N.m]	15	30	52	133	260	449	666	900	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 5.8	$M^o_{Rk,s}$ [N.m]	19	37	66	166	325	561	832	1125	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 8.8	$M^o_{Rk,s}$ [N.m]	30	60	105	266	519	898	1332	1799	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 10.9	$M^o_{Rk,s}$ [N.m]	37	75	131	333	649	1123	1664	2249	
Partial safety factor	$\gamma_{Ms}$ [-]	1,50								
Stainless steel grade A2-70, A4-70	$M^o_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Stainless steel grade A4-80	$M^o_{Rk,s}$ [N.m]	30	60	105	266	519	898	1332	1799	
Partial safety factor	$\gamma_{Ms}$ [-]	1,33								
Stainless steel grade 1.4529	$M^o_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Stainless steel grade 1.4565	$M^o_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Concrete pryout 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 $d_{nom}$ )								

Performances - Design according to EN 1992-4  
Characteristic resistance for shear loads - threaded rod

**Annesso C3**

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**Table C4:** 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	$\gamma_{Ms}$ [-]	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	$M^o_{Rk,s}$ [N.m]	33	65	112	265	518	1013	2122
Partial safety factor	$\gamma_{Ms}$ [-]	1,5						
Concrete pryout 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	$d_{nom}$ [mm]	8	10	12	16	20	25	32
Effective length of fastener	$l_f$ [mm]	min ( $h_{ef}, 8 d_{nom}$ )						

**Performances**

Design according to EN 1992-4  
Characteristic resistance for shear loads - rebar

**Annesso C 4**

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**Table C5:** Displacement of threaded rod under tension and shear load

Size	M8	M10	M12	M16	M20	M24	M27	M30
Tension load								
Uncracked concrete								
$\delta_{N0}$ [mm/kN]	0,03	0,02	0,02	0,02	0,01	0,01	0,01	0,01
$\delta_{N\infty}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,01	0,01
Cracked concrete								
$\delta_{N0}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,02	0,02
$\delta_{N\infty}$ [mm/kN]	0,35	0,21	0,14	0,12	0,08	0,07	0,07	0,07
Shear load								
$\delta_{V0}$ [mm/kN]	0,71	0,45	0,31	0,17	0,11	0,07	0,06	0,05
$\delta_{V\infty}$ [mm/kN]	1,06	0,67	0,46	0,25	0,16	0,11	0,08	0,07

**Table C6:** Displacement of rebar under tension and shear load

Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Tension load							
Uncracked concrete							
$\delta_{N0}$ [mm/kN]	0,04	0,03	0,02	0,01	0,01	0,01	0,01
$\delta_{N\infty}$ [mm/kN]	0,08	0,05	0,04	0,02	0,02	0,01	0,01
Cracked concrete							
$\delta_{N0}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,02
$\delta_{N\infty}$ [mm/kN]	0,35	0,21	0,17	0,11	0,08	0,07	0,06
Shear load							
$\delta_{V0}$ [mm/kN]	0,38	0,24	0,17	0,10	0,06	0,04	0,02
$\delta_{V\infty}$ [mm/kN]	0,56	0,36	0,25	0,14	0,09	0,06	0,04

**Performances**

Displacement for threaded rod and rebar

**Annesso C 5****Dichiarazione di Prestazione**

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**Table C7: Seismic performance category C1 of threaded rod**

Size		M8	M10	M12	M16	M20	M24	M27	M30
<b>Tension load</b>									
<b>Steel failure</b>									
Characteristic resistance grade <b>4.6</b>	$N_{Rk,s,eq,C1}$ [kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$ [-]	2,00							
Characteristic resistance grade <b>4.8</b>	$N_{Rk,s,eq,C1}$ [kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade <b>5.8</b>	$N_{Rk,s,eq,C1}$ [kN]	18	29	42	79	123	177	230	281
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade <b>8.8</b>	$N_{Rk,s,eq,C1}$ [kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade <b>10.9</b>	$N_{Rk,s,eq,C1}$ [kN]	37	58	84	157	245	353	459	561
Partial safety factor	$\gamma_{Ms}$ [-]	1,33							
Characteristic resistance <b>A2-70, A4-70</b>	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,87							
Characteristic resistance <b>A4-80</b>	$N_{Rk,s,eq,C1}$ [kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$ [-]	1,60							
Characteristic resistance <b>1.4529</b>	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance <b>1.4565</b>	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,87							
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>									
<b>Characteristic bond resistance</b>									
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C1}$ [N/mm <sup>2</sup> ]	9,4	8,5	10,0	8,7	7,4	7,7	5,7	4,9
Installation safety factor	$\gamma_{inst}$ [-]	1,0							
<b>Shear load</b>									
<b>Steel failure without lever arm</b>									
Characteristic resistance grade <b>4.6</b>	$V_{Rk,s,eq,C1}$ [kN]	5	9	13	20	32	28	37	45
Partial safety factor	$\gamma_{Ms}$ [-]	1,67							
Characteristic resistance grade <b>4.8</b>	$V_{Rk,s,eq,C1}$ [kN]	5	9	13	20	32	28	37	45
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade <b>5.8</b>	$V_{Rk,s,eq,C1}$ [kN]	7	11	16	26	40	35	46	56
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade <b>8.8</b>	$V_{Rk,s,eq,C1}$ [kN]	11	17	25	41	64	56	73	90
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade <b>10.9</b>	$V_{Rk,s,eq,C1}$ [kN]	14	22	32	51	80	71	92	112
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance <b>A2-70, A4-70</b>	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,56							
Characteristic resistance <b>A4-80</b>	$V_{Rk,s,eq,C1}$ [kN]	11	17	25	41	64	56	73	90
Partial safety factor	$\gamma_{Ms}$ [-]	1,33							
Characteristic resistance <b>1.4529</b>	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance <b>1.4565</b>	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,56							
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C7 shall be multiplied by following reduction factor for <b>hot-dip galvanized commercial standard rods</b>									
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c1}$ [-]	0,47	0,47	0,47	0,54	0,54	0,88	0,88	0,88
Factor for annular gap	$\alpha_{gap}$ [-]	0,5							

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

**Performances**

Seismic performance category C1 of threaded rod

**Annesso C 6**

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**Table C8:** Seismic performance category C1 of rebar

Size		Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
<b>Tension load</b>							
<b>Steel failure</b>							
Rebar BSt 500 S	$N_{Rk,s,eq,C1}$ [kN]	43	62	111	173	270	442
Partial safety factor	$\gamma_{Ms}$ [-]	1,4					
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>							
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C1}$ [N/mm <sup>2</sup> ]	9,4	9,8	9,5	8,8	8,0	5,3
<b>Dry and wet concrete</b>							
Installation safety factor	$\gamma_{inst}$ [-]	1,0					
<b>Flooded hole</b>							
Installation safety factor	$\gamma_{inst}$ [-]	1,2					
<b>Shear load</b>							
Steel failure without lever arm							
Rebar BSt 500 S	$V_{Rk,s,eq,C1}$ [kN]	16	23	41	69	67	111
Partial safety factor	$\gamma_{Ms}$ [-]	1,5					
Factor for annular gap	$\alpha_{gap}$ [-]	0,5					

**Performances**

Seismic performance category C1 of rebar

**Annesso C 7****Annex C 8 Performances**

Seismic performance category C2 of threaded rod

**Table C9:** Seismic performance category C2 of threaded rod

Size		M12	M16	M20
<b>Tension load</b>				
<b>Steel failure</b>				
Characteristic resistance grade <b>4.6</b>	$N_{Rk,s,eq,C2}$ [kN]	34	63	98
Partial safety factor	$\gamma_{Ms}$ [-]	2,00		
Characteristic resistance grade <b>4.8</b>	$N_{Rk,s,eq,C2}$ [kN]	34	63	98
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>5.8</b>	$N_{Rk,s,eq,C2}$ [kN]	42	79	123
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>8.8</b>	$N_{Rk,s,eq,C2}$ [kN]	67	126	196
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>10.9</b>	$N_{Rk,s,eq,C2}$ [kN]	84	157	245
Partial safety factor	$\gamma_{Ms}$ [-]	1,33		
Characteristic resistance <b>A2-70, A4-70</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,87		
Characteristic resistance <b>A4-80</b>	$N_{Rk,s,eq,C2}$ [kN]	67	126	196
Partial safety factor	$\gamma_{Ms}$ [-]	1,60		
Characteristic resistance <b>1.4529</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance <b>1.4565</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,87		
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>				
<b>Characteristic bond resistance</b>				
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C2}$ [N/mm <sup>2</sup> ]	3,5	4,0	4,5
Installation safety factor	$\gamma_{inst}$ [-]	1,0		
<b>Performances</b>				<b>Annesso C 8</b>
Seismic performance category C2 of threaded rod				

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**Table C9 (cont):** Seismic performance category C2 of threaded rod

Shear load					
Steel failure without lever arm					
Characteristic resistance grade <b>4.6</b>	$V_{Rk,s,eq,C2}$	[kN]	13	18	28
Partial safety factor	$\gamma_{Ms}$	[-]		1,67	
Characteristic resistance grade <b>4.8</b>	$V_{Rk,s,eq,C2}$	[kN]	13	18	28
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>5.8</b>	$V_{Rk,s,eq,C2}$	[kN]	16	22	35
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>8.8</b>	$V_{Rk,s,eq,C2}$	[kN]	25	36	56
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>10.9</b>	$V_{Rk,s,eq,C2}$	[kN]	32	45	70
Partial safety factor	$\gamma_{Ms}$	[-]		1,50	
Characteristic resistance <b>A2-70, A4-70</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,56	
Characteristic resistance <b>A4-80</b>	$V_{Rk,s,eq,C2}$	[kN]	25	36	56
Partial safety factor	$\gamma_{Ms}$	[-]		1,33	
Characteristic resistance <b>1.4529</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance <b>1.4565</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,56	
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C9 shall be multiplied by following reduction factor for <b>hot-dip galvanized commercial standard rods</b>					
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c2}$	[-]	0,46	0,61	0,61
Factor for annular gap	$\alpha_{gap}$	[-]		0,5	

**Table C10:** Displacement under tensile and shear load - seismic category C2 of threaded rod

Size		M12	M16	M20
$\delta_{N,eq}(DLS)$	[mm]	0,20	0,40	0,77
$\delta_{N,eq}(ULS)$	[mm]	0,76	0,74	1,68
$\delta_{V,eq}(DLS)$	[mm]	5,29	4,12	4,94
$\delta_{V,eq}(ULS)$	[mm]	10,20	9,05	10,99

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

**Performances**

Seismic performance category C2 of threaded rod

**Annesso C 8****Dichiarazione di Prestazione**

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**8 DOCUMENTAZIONE TECNICA APPROPRIATA E/O DOCUMENTAZIONE TECNICA SPECIFICA**

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La prestazione del prodotto sopra identificato è conforme all'insieme delle prestazioni dichiarate. La presente dichiarazione di responsabilità viene emessa, in conformità al regolamento (UE) n. 305/2011, sotto la sola responsabilità del fabbricante sopra identificato.

Firmato a nome e per conto del fabbricante da:

---

Name : Federico Moroni  
Function: PE Refurbishment  
At Peschiera Borromeo  
on 21 Settembre 2023

Name : Salvatore Schirinzi  
Function: General Manager  
At Peschiera Borromeo  
on 21 Settembre 2023

*Federico Moroni*

*Salvatore Schirinzi*


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

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## ETICHETTA CE COMPLETA

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Sika Services AG, Zurich, Switzerland
25601660
Resistenza caratteristica a carichi di trazione (carichi statici e quasi statici) - Annessi C 1, C 2
Resistenza caratteristica a carichi di taglio (carichi statici e quasi statici) - Annessi C 3, C 4
Deformazione sotto carichi a breve termine - Annesso C 5
Resistenza caratteristica per categorie di prestazione sismica C1 e C2 - Annessi C 6, C 7, C 8

### Dichiarazione di Prestazione

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**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	$\gamma_{Ms}$	[-]	2,00							
Steel grade 4.8	$N_{Rk,s}$	[kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 5.8	$N_{Rk,s}$	[kN]	18	29	42	79	123	177	230	281
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 8.8	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Steel grade 10.9	$N_{Rk,s}$	[kN]	37	58	84	157	245	353	459	561
Partial safety factor	$\gamma_{Ms}$	[-]	1,33							
Stainless steel grade A2-70, A4-70	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,87							
Stainless steel grade A4-80	$N_{Rk,s}$	[kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$	[-]	1,60							
Stainless steel grade 1.4529	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,50							
Stainless steel grade 1.4565	$N_{Rk,s}$	[kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$	[-]	1,87							
Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Characteristic bond resistance in uncracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	17	15	15	12	12	12	11	9,5
Dry, wet concrete, flooded hole										
Partial safety factor	$\gamma_{inst}$	[-]	1,0							
Characteristic bond resistance in cracked concrete										
Temperature T3: -40°C to +70°C	$\tau_{Rk,cr}$	[N/mm <sup>2</sup> ]	10	10	10	9,5	9	9	6	6
Dry, wet concrete, flooded hole										
Partial safety factor	$\gamma_{inst}$	[-]	1,0							
Factor for influence of sustained load for a working life 50 years	T3: 50°C / 70°C $\psi_{sus}^0$	[-]	0,72							
Factor for concrete	C25/30 C30/37 C35/45 C40/50 C45/55 C50/60	$\psi_c$	1,02 1,04 1,06 1,07 1,08 1,09							
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 <sub>ef</sub>							
Splitting failure										
Size			M8	M10	M12	M16	M20	M24	M27	M30
Edge distance	$c_{cr,sp}$	[mm]	2 • h <sub>ef</sub>							
Spacing	$s_{cr,sp}$	[mm]	2 • c <sub>cr,sp</sub>							

**Performances** - Design according to EN 1992-4  
Characteristic resistance for tension loads - threaded rod

**Annesso C 1**

**Dichiarazione di Prestazione**

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**Table C2:** 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	$\tau_{Rk,s}$	[kN]	28	43	62	111	173	270	442	
Partial safety factor	$\gamma_{Ms}$	[-]	1,4							

Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
<b>Characteristic bond resistance in uncracked concrete</b>									
Temperature T3: -40°C to +70°C	$\tau_{Rk,ucr}$	[N/mm <sup>2</sup> ]	13	13	13	12	12	12	8
<b>Dry and wet concrete</b>									
Installation safety factor	$\gamma_{inst}$	[-]	1,0						
<b>Flooded hole</b>									
Installation safety factor	$\gamma_{inst}$	[-]	1,2						
<b>Characteristic bond resistance in cracked concrete</b>									
Temperature T3: -40°C to +70°C	$\tau_{Rk,cr}$	[N/mm <sup>2</sup> ]	8	11	10	10	9	8,5	6,5
<b>Dry and wet concrete</b>									
Installation safety factor	$\gamma_{inst}$	[-]	1,0						
<b>Flooded hole</b>									
Installation safety factor	$\gamma_{inst}$	[-]	1,2						
Factor for influence of sustained load for a working life 50 years	T3: 50°C / 70°C	$\psi^0_{sus}$	0,72						
Factor for concrete	C25/30 C30/37 C35/45 C40/50 C45/55 C50/60	$\psi_c$	1,02 1,04 1,06 1,07 1,08 1,09						

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]	1,5 $h_{ef}$

Splitting failure									
Size			Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Edge distance	$c_{cr,sp}$	[mm]	2 • $h_{ef}$						
Spacing	$s_{cr,sp}$	[mm]	2 • $c_{cr,sp}$						

**Performances**  
Design according to EN 1992-4  
Characteristic resistance for tension loads - rebar

**Annesso C 2**

**Dichiarazione di Prestazione**

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**Table C3:** 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	$\gamma_{Ms}$ [-]	1,67								
Steel grade 4.8	$V_{Rk,s}$ [kN]	7	12	17	31	49	71	92	112	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 5.8	$V_{Rk,s}$ [kN]	9	15	21	39	61	88	115	140	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 8.8	$V_{Rk,s}$ [kN]	15	23	34	63	98	141	184	224	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 10.9	$V_{Rk,s}$ [kN]	18	29	42	79	123	177	230	281	
Partial safety factor	$\gamma_{Ms}$ [-]	1,5								
Stainless steel grade A2-70, A4-70	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Stainless steel grade A4-80	$V_{Rk,s}$ [kN]	15	23	34	63	98	141	184	224	
Partial safety factor	$\gamma_{Ms}$ [-]	1,33								
Stainless steel grade 1.4529	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Stainless steel grade 1.4565	$V_{Rk,s}$ [kN]	13	20	30	55	86	124	161	196	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
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		M8	M10	M12	M16	M20	M24	M27	M30	
Steel grade 4.6	$M^{\circ}_{Rk,s}$ [N.m]	15	30	52	133	260	449	666	900	
Partial safety factor	$\gamma_{Ms}$ [-]	1,67								
Steel grade 4.8	$M^{\circ}_{Rk,s}$ [N.m]	15	30	52	133	260	449	666	900	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 5.8	$M^{\circ}_{Rk,s}$ [N.m]	19	37	66	166	325	561	832	1125	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 8.8	$M^{\circ}_{Rk,s}$ [N.m]	30	60	105	266	519	898	1332	1799	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Steel grade 10.9	$M^{\circ}_{Rk,s}$ [N.m]	37	75	131	333	649	1123	1664	2249	
Partial safety factor	$\gamma_{Ms}$ [-]	1,50								
Stainless steel grade A2-70, A4-70	$M^{\circ}_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Stainless steel grade A4-80	$M^{\circ}_{Rk,s}$ [N.m]	30	60	105	266	519	898	1332	1799	
Partial safety factor	$\gamma_{Ms}$ [-]	1,33								
Stainless steel grade 1.4529	$M^{\circ}_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,25								
Stainless steel grade 1.4565	$M^{\circ}_{Rk,s}$ [N.m]	26	52	92	233	454	786	1165	1574	
Partial safety factor	$\gamma_{Ms}$ [-]	1,56								
Concrete pryout 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 $d_{nom}$ )								

Performances - Design according to EN 1992-4  
Characteristic resistance for shear loads - threaded rod

**Annesso C3**

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**Table C4:** 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	$\gamma_{Ms}$ [-]	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	$M^o_{Rk,s}$ [N.m]	33	65	112	265	518	1013	2122
Partial safety factor	$\gamma_{Ms}$ [-]	1,5						
Concrete pryout 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	$d_{nom}$ [mm]	8	10	12	16	20	25	32
Effective length of fastener	$l_f$ [mm]	min ( $h_{ef}, 8 d_{nom}$ )						

### Performances

Design according to EN 1992-4  
Characteristic resistance for shear loads - rebar

**Annesso C 4**

### Dichiarazione di Prestazione

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**Table C5:** Displacement of threaded rod under tension and shear load

Size	M8	M10	M12	M16	M20	M24	M27	M30
Tension load								
Uncracked concrete								
$\delta_{N0}$ [mm/kN]	0,03	0,02	0,02	0,02	0,01	0,01	0,01	0,01
$\delta_{N\infty}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,01	0,01
Cracked concrete								
$\delta_{N0}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,02	0,02
$\delta_{N\infty}$ [mm/kN]	0,35	0,21	0,14	0,12	0,08	0,07	0,07	0,07
Shear load								
$\delta_{V0}$ [mm/kN]	0,71	0,45	0,31	0,17	0,11	0,07	0,06	0,05
$\delta_{V\infty}$ [mm/kN]	1,06	0,67	0,46	0,25	0,16	0,11	0,08	0,07

**Table C6:** Displacement of rebar under tension and shear load

Size	Ø8	Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
Tension load							
Uncracked concrete							
$\delta_{N0}$ [mm/kN]	0,04	0,03	0,02	0,01	0,01	0,01	0,01
$\delta_{N\infty}$ [mm/kN]	0,08	0,05	0,04	0,02	0,02	0,01	0,01
Cracked concrete							
$\delta_{N0}$ [mm/kN]	0,05	0,04	0,03	0,03	0,02	0,02	0,02
$\delta_{N\infty}$ [mm/kN]	0,35	0,21	0,17	0,11	0,08	0,07	0,06
Shear load							
$\delta_{V0}$ [mm/kN]	0,38	0,24	0,17	0,10	0,06	0,04	0,02
$\delta_{V\infty}$ [mm/kN]	0,56	0,36	0,25	0,14	0,09	0,06	0,04

**Performances**

Displacement for threaded rod and rebar

**Annesos C 5****Dichiarazione di Prestazione**

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**Table C7: Seismic performance category C1 of threaded rod**

Size		M8	M10	M12	M16	M20	M24	M27	M30
<b>Tension load</b>									
<b>Steel failure</b>									
Characteristic resistance grade 4.6	$N_{Rk,s,eq,C1}$ [kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$ [-]	2,00							
Characteristic resistance grade 4.8	$N_{Rk,s,eq,C1}$ [kN]	15	23	34	63	98	141	184	224
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade 5.8	$N_{Rk,s,eq,C1}$ [kN]	18	29	42	79	123	177	230	281
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade 8.8	$N_{Rk,s,eq,C1}$ [kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance grade 10.9	$N_{Rk,s,eq,C1}$ [kN]	37	58	84	157	245	353	459	561
Partial safety factor	$\gamma_{Ms}$ [-]	1,33							
Characteristic resistance A2-70, A4-70	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,87							
Characteristic resistance A4-80	$N_{Rk,s,eq,C1}$ [kN]	29	46	67	126	196	282	367	449
Partial safety factor	$\gamma_{Ms}$ [-]	1,60							
Characteristic resistance 1.4529	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance 1.4565	$N_{Rk,s,eq,C1}$ [kN]	26	41	59	110	172	247	321	393
Partial safety factor	$\gamma_{Ms}$ [-]	1,87							
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>									
<b>Characteristic bond resistance</b>									
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C1}$ [N/mm <sup>2</sup> ]	9,4	8,5	10,0	8,7	7,4	7,7	5,7	4,9
Installation safety factor	$\gamma_{inst}$ [-]	1,0							
<b>Shear load</b>									
<b>Steel failure without lever arm</b>									
Characteristic resistance grade 4.6	$V_{Rk,s,eq,C1}$ [kN]	5	9	13	20	32	28	37	45
Partial safety factor	$\gamma_{Ms}$ [-]	1,67							
Characteristic resistance grade 4.8	$V_{Rk,s,eq,C1}$ [kN]	5	9	13	20	32	28	37	45
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade 5.8	$V_{Rk,s,eq,C1}$ [kN]	7	11	16	26	40	35	46	56
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade 8.8	$V_{Rk,s,eq,C1}$ [kN]	11	17	25	41	64	56	73	90
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance grade 10.9	$V_{Rk,s,eq,C1}$ [kN]	14	22	32	51	80	71	92	112
Partial safety factor	$\gamma_{Ms}$ [-]	1,50							
Characteristic resistance A2-70, A4-70	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,56							
Characteristic resistance A4-80	$V_{Rk,s,eq,C1}$ [kN]	11	17	25	41	64	56	73	90
Partial safety factor	$\gamma_{Ms}$ [-]	1,33							
Characteristic resistance 1.4529	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,25							
Characteristic resistance 1.4565	$V_{Rk,s,eq,C1}$ [kN]	10	15	22	36	56	49	64	79
Partial safety factor	$\gamma_{Ms}$ [-]	1,56							
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C7 shall be multiplied by following reduction factor for <b>hot-dip galvanized commercial standard rods</b>									
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c1}$ [-]	0,47	0,47	0,47	0,54	0,54	0,88	0,88	0,88
Factor for annular gap	$\alpha_{gap}$ [-]	0,5							

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

**Performances**

Seismic performance category C1 of threaded rod

**Annesso C 6**

**Dichiarazione di Prestazione**

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**Table C8:** Seismic performance category C1 of rebar

Size		Ø10	Ø12	Ø16	Ø20	Ø25	Ø32
<b>Tension load</b>							
<b>Steel failure</b>							
Rebar BSt 500 S	$N_{Rk,s,eq,C1}$ [kN]	43	62	111	173	270	442
Partial safety factor	$\gamma_{Ms}$ [-]	1,4					
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>							
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C1}$ [N/mm <sup>2</sup> ]	9,4	9,8	9,5	8,8	8,0	5,3
<b>Dry and wet concrete</b>							
Installation safety factor	$\gamma_{inst}$ [-]	1,0					
<b>Flooded hole</b>							
Installation safety factor	$\gamma_{inst}$ [-]	1,2					
<b>Shear load</b>							
Steel failure without lever arm							
Rebar BSt 500 S	$V_{Rk,s,eq,C1}$ [kN]	16	23	41	69	67	111
Partial safety factor	$\gamma_{Ms}$ [-]	1,5					
Factor for annular gap	$\alpha_{gap}$ [-]	0,5					

**Performances**

Seismic performance category C1 of rebar

**Annex C 7****Annex C 8 Performances**

Seismic performance category C2 of threaded rod

**Table C9:** Seismic performance category C2 of threaded rod

Size		M12	M16	M20
<b>Tension load</b>				
<b>Steel failure</b>				
Characteristic resistance grade <b>4.6</b>	$N_{Rk,s,eq,C2}$ [kN]	34	63	98
Partial safety factor	$\gamma_{Ms}$ [-]	2,00		
Characteristic resistance grade <b>4.8</b>	$N_{Rk,s,eq,C2}$ [kN]	34	63	98
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>5.8</b>	$N_{Rk,s,eq,C2}$ [kN]	42	79	123
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>8.8</b>	$N_{Rk,s,eq,C2}$ [kN]	67	126	196
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance grade <b>10.9</b>	$N_{Rk,s,eq,C2}$ [kN]	84	157	245
Partial safety factor	$\gamma_{Ms}$ [-]	1,33		
Characteristic resistance <b>A2-70, A4-70</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,87		
Characteristic resistance <b>A4-80</b>	$N_{Rk,s,eq,C2}$ [kN]	67	126	196
Partial safety factor	$\gamma_{Ms}$ [-]	1,60		
Characteristic resistance <b>1.4529</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,50		
Characteristic resistance <b>1.4565</b>	$N_{Rk,s,eq,C2}$ [kN]	59	110	172
Partial safety factor	$\gamma_{Ms}$ [-]	1,87		
<b>Combined pullout and concrete cone failure in concrete C20/25 for a working life of 50 years and 100 years</b>				
<b>Characteristic bond resistance</b>				
Temperature T3: -40°C to +70°C	$\tau_{Rk,p,eq,C2}$ [N/mm <sup>2</sup> ]	3,5	4,0	4,5
Installation safety factor	$\gamma_{inst}$ [-]	1,0		
<b>Performances</b>				<b>Annexo C 8</b>
Seismic performance category C2 of threaded rod				

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**Table C9 (cont):** Seismic performance category C2 of threaded rod

Shear load					
Steel failure without lever arm					
Characteristic resistance grade <b>4.6</b>	$V_{Rk,s,eq,C2}$	[kN]	13	18	28
Partial safety factor	$\gamma_{Ms}$	[-]		1,67	
Characteristic resistance grade <b>4.8</b>	$V_{Rk,s,eq,C2}$	[kN]	13	18	28
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>5.8</b>	$V_{Rk,s,eq,C2}$	[kN]	16	22	35
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>8.8</b>	$V_{Rk,s,eq,C2}$	[kN]	25	36	56
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance grade <b>10.9</b>	$V_{Rk,s,eq,C2}$	[kN]	32	45	70
Partial safety factor	$\gamma_{Ms}$	[-]		1,50	
Characteristic resistance <b>A2-70, A4-70</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,56	
Characteristic resistance <b>A4-80</b>	$V_{Rk,s,eq,C2}$	[kN]	25	36	56
Partial safety factor	$\gamma_{Ms}$	[-]		1,33	
Characteristic resistance <b>1.4529</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,25	
Characteristic resistance <b>1.4565</b>	$V_{Rk,s,eq,C2}$	[kN]	22	31	49
Partial safety factor	$\gamma_{Ms}$	[-]		1,56	
Characteristic shear load resistance $V_{Rk,s,eq}$ in the Table C9 shall be multiplied by following reduction factor for <b>hot-dip galvanized commercial standard rods</b>					
Reduction factor for hot-dip galvanized rods	$\alpha_{v,h-dg,c2}$	[-]	0,46	0,61	0,61
Factor for annular gap	$\alpha_{gap}$	[-]		0,5	

**Table C10:** Displacement under tensile and shear load - seismic category C2 of threaded rod

Size		M12	M16	M20
$\delta_{N,eq}(DLS)$	[mm]	0,20	0,40	0,77
$\delta_{N,eq}(ULS)$	[mm]	0,76	0,74	1,68
$\delta_{V,eq}(DLS)$	[mm]	5,29	4,12	4,94
$\delta_{V,eq}(ULS)$	[mm]	10,20	9,05	10,99

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

**Performances**

Seismic performance category C2 of threaded rod

**Annesso C 8**

EAD 330499-01-0601:2018

Notified Body 1020

Bonded fastener for use in cracked and uncracked concrete for a service life of 50 and/or 100 years

<http://dop.sika.com>**Dichiarazione di Prestazione**

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## MARCATURA CE DA INSERIRE SULL'ETICHETTA DEL PRODOTTO

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Sika Services AG, Zurich, Switzerland
25601660
For details see accompanying documents
EAD 330499-01-0601:2018
Notified Body 1020
Bonded fastener for use in cracked and uncracked concrete for a service life of 50 and/or 100 years

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### INFORMAZIONI ECOLOGIA SALUTE E SICUREZZA (REACH)

Per informazioni e consigli sulla manipolazione, sullo stoccaggio e sullo smaltimento sicuro di prodotti chimici, chi fa uso dei prodotti deve consultare la versione più recente della Scheda di sicurezza (SDS) che riporta le informazioni sulle caratteristiche fisiche, ecologiche e tossicologiche dei prodotti, insieme ad altre informazioni sulla sicurezza.

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**Sika Italia S.p.A.**  
Via Luigi Einaudi 6  
20068 Peschiera Borromeo  
(MI) Italia  
[www.sika.com](http://www.sika.com)

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