

Technical Documentation

Sika AnchorFix®-2020

Product Information

Sika Limited



TABLE OF CONTENTS

Chemical Resistance	3
Installation Parameter – Threaded rods	4
Installation Parameters – Rebars	4
Steel Failure in Tension - Threaded Bars	5
Steel Failure in Tension Reinforcing Bars	5
Characteristic Resistance - Combined Pullout and Concrete Cone Failure Using Threaded Rods	5
Seismic Performance C1 and C2	6
Splitting Failure	6
Resistance Values for Threaded Rods in Uncracked Concrete	6
Resistance Values for Threaded Rods in Cracked Concrete	7
Characteristic Resistance - Combined Pullout and Concrete Cone Failure Using Reinforcing Bars	8
Splitting Failure	8
Resistance Values for Reinforcing Bars in Uncracked Concrete	9
Installation Parameters for Post-installed Rebar Connections	10
Design Bond Strength Values - Hammer Drilled or Compressed Air Drilled Holes	10

CHEMICAL RESISTANCE

Chemical adhesive has undergone extensive chemical resistance testing. The results are summarised in the table below:

Chemical Environment	Concentration	Result
Aqueous Solution Acetic Acid	10%	C
Acetone	100%	✗
Aqueous Solution Aluminium Chloride	Saturated	✓
Aqueous Solution Aluminium Nitrate	10%	✓
Ammonia Solution	5%	✓
Jet Fuel	100%	C
Benzene	100%	C
Benzoic Acid	Saturated	✓
Benzyl Alcohol	100%	✗
Sodium Hypochlorite Solution	5 - 15%	✓
Butyl Alcohol	100%	C
Calcium Sulphate Aqueous Solution	Saturated	✓
Carbon Monoxide	Gas	✓
Carbon Tetrachloride	100%	C
Chlorine Water	Saturated	✗
Chloro Benzene	100%	✗
Citric Acid Aqueous Solution	Saturated	✓
Cyclohexanol	100%	✓
Diesel Fuel	100%	C
Diethylene Glycol	100%	✓
Ethanol	95%	✗
Ethanol Aqueous Solution	20%	C
Heptane	100%	C
Hexane	100%	C
Hydrochloric Acid	10%	✓
	15%	✓
	25%	C
Hydrogen Sulphide Gas	100%	✓
Isopropyl Alcohol	100%	✗
Linseed Oil	100%	✓
Lubricating Oil	100%	✓
Mineral Oil	100%	✓
Paraffin / Kerosene (Domestic)	100%	C
Phenol Aqueous Solution	1%	C
Phosphoric Acid	50%	✓
Potassium Hydroxide	10% / pH13	✓
Sea Water	100%	C
Styrene	100%	C
Sulphur Dioxide Solution	10%	✓
Sulphur Dioxide (40°C)	5%	✓
Sulphuric Acid	10%	✓
	50%	✓
Turpentine	100%	C
White Spirit	100%	✓
Xylene	100%	C

✓ = Resistant to 75°C with at least 80% of physical properties retained.

C = Contact only to a maximum of +25°C.

✗ = Not resistant.

Technical Documentation

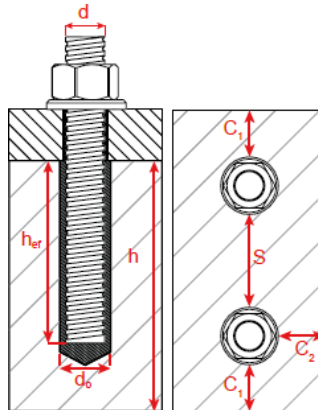
Sika AnchorFix-2020

01 2026 01

870 43 17

INSTALLATION PARAMETER – THREADED RODS

Property			Anchor Diameter							
			M8	M10	M12	M16	M20	M24	M27	M30
Nominal Drill Hole Diameter	d ₀	mm	10	12	14	18	22	26	30	35
Cleaning Brush Diameter	d _b	mm	14	14	20	20	29	29	40	40
Torque Moment	T _{inst}	Nm	10	20	40	80	150	200	240	275
Minimum Embedment Depth	h _{ef,min}	mm	64	80	96	128	160	192	216	240
Maximum Embedment Depth	h _{ef,max}	mm	160	200	240	320	400	480	540	600
Minimum Edge Distance	c _{min}	mm	35	40	50	65	80	96	110	120
Minimum Anchor Spacing	s _{min}	mm	35	40	50	65	80	96	110	120
Minimum Member Thickness	h _{min}	mm	h _{ef} + 30 mm ≥ 100 mm				h _{ef} + 2d ₀			
Maximum Embedment Depth										



INSTALLATION PARAMETERS – REBARS

Property			Anchor Diameter						
			8mm	10mm	12mm	16mm	20mm	25mm	32mm
Nominal Drill Hole Diameter	d_0	mm	12	14	16	20	25	32	40
Cleaning Brush Diameter	d_b	mm	14	14	19	22	29	40	42
Minimum Embedment Depth									
Minimum Embedment Depth	$h_{ef,min}$	mm	64	80	96	128	160	200	256
Maximum Embedment Depth	$h_{ef,max}$	mm	160	200	240	320	400	500	640
Minimum Edge Distance	c_{min}	mm	35	40	50	65	80	100	130
Minimum Anchor Spacing	s_{min}	mm	35	40	50	65	80	100	130
Minimum Member Thickness	h_{min}	mm	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$		

STEEL FAILURE IN TENSION - THREADED BARS

Characteristic resistance values under tension loading

Steel Grade			Anchor Diameter							
			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}	(-)	2.00							
Steel Grade 5.8	$N_{Rk,s}$	(kN)	18	29	42	79	123	177	230	281
Partial Safety Factor	γ_{Ms}	(-)	1.50							
Steel Grade 8.8	$N_{Rk,s}$	(kN)	29	46	67	126	196	282	367	449
Partial Safety Factor	γ_{Ms}	(-)	1.50							
Steel Grade 10.9*	$N_{Rk,s}$	(kN)	37	58	84	157	245	353	459	561
Partial Safety Factor	γ_{Ms}	(-)	1.33							
Stainless Steel A2-70, A4-70	$N_{Rk,s}$	(kN)	26	41	59	110	172	247	321	393
Partial Safety Factor	γ_{Ms}	(-)	1.87							
Stainless Steel A4-80	$N_{Rk,s}$	(kN)	29	46	67	126	196	282	367	449
Partial Safety Factor	γ_{Ms}	(-)	1.60							
Stainless Steel 1.4529	$N_{Rk,s}$	(kN)	26	41	59	110	172	247	321	393
Partial Safety Factor	γ_{Ms}	(-)	1.50							
Stainless Steel 1.4565	$N_{Rk,s}$	(kN)	26	41	59	110	172	247	321	393
Partial Safety Factor	γ_{Ms}	(-)	1.87							

*Galvanised rods of high strength are sensitive to hydrogen embrittlement.

STEEL FAILURE IN TENSION REINFORCING BARS

Characteristic resistance values under tension loading

Steel Grade			Anchor Diameter						
			8mm	10mm	12mm	16mm	20mm	25mm	32mm
Rebar BSt 500	$N_{Rk,s}$	(kN)	28	43	62	111	173	270	442
Partial Safety Factor	γ_{Ms}	(-)	1.40						

CHARACTERISTIC RESISTANCE - COMBINED PULLOUT AND CONCRETE CONE FAILURE USING THREADED RODS

Dry / Wet Concrete | Temperature Range: -40°C to +70°C

Uncracked Concrete Properties				Anchor Diameter							
				M8	M10	M12	M16	M20	M24	M27	M30
Characteristic Bond Strength Dry/Wet Concrete		T _{Rk}	N/mm ²	11.0	10.0	9.5	9.0	8.5	8.0	6.5	5.5
Installation Factor Dry/Wet concrete		γ _{inst}	-	1.2						1.4	
Factor for Uncracked Concrete Strength	C50/60	Ψ _c	-	1							
Cracked Concrete Properties				Anchor Diameter							
				M8	M10	M12	M16	M20	M24	M27	M30
Characteristic Bond Strength Dry/Wet		T _{Rk}	N/mm ²	-	5.5	5.5	5.5	5	5	-	-
Installation Factor Dry/Wet concrete		γ _{inst}	-	1.2							
Factor for cracked Concrete Strength	C30/37	Ψ _c	-	1.12							
	C40/50			1.23							
	C50/60			1.30							

Technical Documentation

Sika AnchorFix-2020

01 2026 01

870 43 17

SEISMIC PERFORMANCE C1 AND C2

Seismic Conditions			M10	M12	M16	M20	M24
Characteristic Bond Strength for Seismic Conditions – C1	$T_{Rk,C1}$	N/mm ²	5.5	5.5	5.5	4.2	5.0
Characteristic Bond Strength for Seismic Conditions – C2	$T_{Rk,C1}$	N/mm ²	-	1.2	1.4	1.6	-
Installation Factor Dry/Wet Concrete	γ_{inst}	-	1.2				

SPLITTING FAILURE

Property			Anchor Diameter							
			M8	M10	M12	M16	M20	M24	M27	M30
Critical Edge Distance	C _{cr,sp}	mm	1.5 h _{ef}							
Critical Anchor Spacing	S _{cr,sp}	mm	3.0 h _{ef}							
Partial Safety Factor	γ _{Msp}	-	1.8							

RESISTANCE VALUES FOR THREADED RODS IN UNCRACKED CONCRETE

Combined Pullout and Concrete Cone Failure | Temperature Range: +50°C to +80°C

Property			Anchor Diameter							
			M8	M10	M12	M16	M20	M24	M27	M30
Effective Embedment Depth = 8d	h_{ef}	mm	64	80	96	128	160	192	216	240
Characteristic Resistance	N_{Rk}	kN	17.69	25.13	34.38	57.91	85.45	115.81	119.09	124.41
Design Resistance	N_{Rd}	kN	14.74	20.94	28.65	48.25	71.21	96.51	85.07	88.86
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout
Effective Embedment Depth = 12d	h_{ef}	mm	96	120	144	192	240	288	324	360
Characteristic Resistance	N_{Rk}	kN	26.54	37.70	51.57	86.86	128.18	173.72	178.64	186.61
Design Resistance	N_{Rd}	kN	22.12	31.42	42.98	72.38	106.82	144.77	127.6	133.29
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout
Effective Embedment Depth = 20d	h_{ef}	mm	160	200	240	320	400	480	540	600
Characteristic Resistance	N_{Rk}	kN	44.23	62.83	85.95	144.76	213.63	289.53	297.73	311.02
Design Resistance	N_{Rd}	kN	36.86	52.36	71.63	120.63	178.03	241.28	212.66	222.16
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout

- Resistance values are based on combined pullout and concrete cone failure and concrete cone failure according to EOTA TR029. Resistance for steel failure must also be considered - the lowest value controls.
- Resistance values are for single anchors without close edges or eccentric loading considerations.
- Tabulated values correspond to the above stated temperature range and installation conditions only.
- Long term temperatures are those that remain roughly constant over prolonged periods. Short term temperatures occur over brief intervals, e.g.: diurnal cycling.
- The compressive strength of the concrete ($f_{ck,cube}$) is assumed to be 25 N/mm².
- Tabulated resistance values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

RESISTANCE VALUES FOR THREADED RODS IN CRACKED CONCRETE

Combined Pullout and Concrete Cone Failure | Temperature Range: +50°C to +80°C

Property			Anchor Diameter				
			M10	M12	M16	M20	M24
Effective Embedment Depth = 8d	h_{ef}	mm	80	96	128	160	192
Characteristic Resistance	N_{Rk}	kN	13.82	19.91	35.39	50.27	72.38
Design Resistance	N_{Rd}	kN	11.52	16.59	29.49	41.89	60.32
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout
Effective Embedment Depth = 12d	h_{ef}	mm	120	144	192	240	288
Characteristic Resistance	N_{Rk}	kN	20.73	29.86	53.08	75.40	105.57
Design Resistance	N_{Rd}	kN	17.28	24.88	44.23	62.83	90.48
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout
Effective Embedment Depth = 20d	h_{ef}	mm	200	240	320	400	480
Characteristic Resistance	N_{Rk}	kN	34.56	49.76	88.47	125.66	180.96
Design Resistance	N_{Rd}	kN	28.80	41.47	73.72	104.72	150.80
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout

1. Resistance values are based on combined pullout and concrete cone failure and concrete cone failure according to EOTA TR029. Resistance for steel failure must also be considered - the lowest value controls.
2. Resistance values are for single anchors without close edges or eccentric loading considerations.
3. Tabulated values correspond to the above stated temperature range and installation conditions only.
4. Long term temperatures are those that remain roughly constant over prolonged periods. Short term temperatures occur over brief intervals, e.g.: diurnal cycling.
5. The compressive strength of the concrete ($f_{ck,cube}$) is assumed to be 25 N/mm².
6. Tabulated resistance values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

CHARACTERISTIC RESISTANCE - COMBINED PULLOUT AND CONCRETE CONE USING REINFORCING BARS

Dry / Wet Concrete | Temperature Range: +50°C to +80°C

Uncracked Concrete

Property			Anchor Diameter						
			8mm	10mm	12mm	16mm	20mm	25mm	32mm
Characteristic Bond Strength in Dry/Wet	T_{Rk}	N/mm ²	12.0	10.0	10.0	9.0	9.0	9.0	5.5
Installation Factor Dry/Wet Concrete	γ_{inst}	-	1.2						
Factor for Uncracked Concrete Strength	C50/60	Ψ_c	1						

SPLITTING FAILURE

Property			Anchor Diameter						
			8mm	10mm	12mm	16mm	20mm	25mm	32mm
Characteristic Edge Distance	$C_{cr,sp}$	mm	1.5 hef						
Characteristic Anchor Spacing	$S_{cr,sp}$	mm	3.0 hef						
Partial Safety Factor	γ_{Msp}	-	1.8						

RESISTANCE VALUES FOR REINFORCING BARS IN UNCRACKED CONCRETE

Combined Pullout and Concrete Cone Failure | Temperature Range: +50°C to +80°C

Property			Anchor Diameter						
			8mm	10mm	12mm	16mm	20mm	25mm	32mm
Effective Embedment Depth = 8d	h_{ef}	mm	64	80	96	128	160	200	256
Characteristic Resistance	N_{Rk}	kN	19.30	25.13	36.19	52.13	72.86	101.82	141.55
Design Resistance	N_{Rd}	kN	16.08	20.94	30.16	43.44	60.72	84.85	117.96
Controlling Resistance			Pullout	Pullout	Pullout	Concrete Cone	Concrete Cone	Concrete Cone	Pullout
Effective Embedment Depth = STD	h_{ef}	mm	80	90	110	128	170	250	300
Characteristic Resistance	N_{Rk}	kN	24.13	28.27	41.47	52.13	79.80	142.30	165.88
Design Resistance	N_{Rd}	kN	20.11	23.56	34.56	43.44	66.50	118.59	138.23
Controlling Resistance			Pullout	Pullout	Pullout	Concrete Cone	Concrete Cone	Concrete Cone	Pullout
Effective Embedment Depth = 12d	h_{ef}	mm	96	120	144	192	240	300	384
Characteristic Resistance	N_{Rk}	kN	28.95	37.70	54.29	86.86	133.85	187.06	212.32
Design Resistance	N_{Rd}	kN	24.13	31.42	45.24	72.38	111.54	155.88	176.93
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Concrete Cone	Concrete Cone	Pullout
Effective Embedment Depth = 20d	h_{ef}	mm	160	200	240	320	400	500	640
Characteristic Resistance	N_{Rk}	kN	48.25	62.83	90.48	144.76	226.19	353.43	353.87
Design Resistance	N_{Rd}	kN	40.21	52.36	75.40	120.64	188.50	294.52	294.89
Controlling Resistance			Pullout	Pullout	Pullout	Pullout	Pullout	Pullout	Pullout

1. Resistance values are based on combined pullout and concrete cone failure and concrete cone failure according to EOTA TR029. Resistance for steel failure must also be considered - the lowest value controls.
2. Resistance values are for single anchors without close edges or eccentric loading considerations.
3. Tabulated values correspond to the above stated temperature range and installation conditions only.
4. Long term temperatures are those that remain roughly constant over prolonged periods. Short term temperatures occur over brief intervals, e.g.: diurnal cycling.
5. The compressive strength of the concrete ($f_{ck,cube}$) is assumed to be 25 N/mm².
6. Tabulated resistance values assume that the geometry of the anchor(s) and concrete member is sufficient to avoid splitting failure.

INSTALLATION PARAMETERS FOR POST-INSTALLED REBAR CONNECTIONS

Rebar		Drill Hole Diameter (mm)	Cleaning Brush (mm)	Min Anchorage Length (mm)	Min Lap/Splice Length (mm)	Max. Embedment Depth (mm)
Diameter (mm)	f_{yk} (N/mm ²)					
8	500	12 (10)	14	113	200	400
10	500	14 (12)	14	142	200	500
12	500	16	19	170	200	600
14	500	18	22	198	210	700
16	500	20	22	227	240	800
20	500	25	29	284	300	1000
25	500	32	40	354	375	1000
28	500	35	40	595	630	1000
32	500	40	42	681	720	1000

DESIGN BOND STRENGTH VALUES - HAMMER DRILLED OR COMPRESSED AIR DRILLED HOLES

Design values of the ultimate bond resistance f_{bd} in N/mm² for rotary hammer drilling and compressed air drilling for good bond conditions

Rebar Ø (mm)	Concrete Class								
	C12/15	C16/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
8	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3
10	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3
12	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3
14	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3
16	1.6	2.0	2.3	2.7	3.0	3.4	3.7	4.0	4.3
20	1.6	2.0	2.3	2.7	3.0	3.4	3.7	3.7	3.7
25	1.6	2.0	2.3	2.7	3.0	3.0	3.0	3.0	3.0
28	1.6	2.0	2.3	2.7	2.7	2.7	2.7	2.7	2.7
32	1.6	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3

Tabulated values are valid for good bond conditions according to EN 1992-1-1. For all other bond conditions multiply the values of f_{bd} by 0.7.