Construction

Sika® AnchorFix 500

High Performance, two component adhesive anchor system

Description	Sika® AnchorFix 500 adhesive anchor system has been specially formulated as a high performance, two component adhesive anchor system for threaded rods and reinforcing bars in uncracked concrete to suit transport applications.
Where to Use	■ Uncracked concrete.
Advantages	■ Fixing close to free edges. ■ Versatile range of embedment depths. ■ Anchoring without expansion forces. ■ Component volume ratio of 1:1. ■ Extended working time.
Packaging	20 & 55 fl. oz. cartridges.
Testing	Sika® AnchorFix 500 has been tested according to ASTM C 881 Type IV, Class C, Grade 3.

Typical Data

RESULTS MAY DIFFER BASED UPON STATISTICAL VARIATIONS DEPENDING UPON MIXING METHODS AND EQUIPMENT, TEMPERATURE, APPLICATION METHODS, TEST METHODS, ACTUAL SITE CONDITIONS AND CURING CONDITIONS.

Shelf Life	When stored correctly, the shelf life will be for 24 months from the date of manufacture.
Storage Conditions	Cartridges should be stored in their original packaging, the correct way up, in cool conditions (+50°F to +77°F) out of direct sunlight.

Working & Loading Times

Cartridge Temperature	T Work (minutes)	T Load (hours)
+50°F	75	24
+68°F	30	8
+86°F	15	4
+104°F	7.5	4

T Work is the typical time to gel at the highest temperature in the range
T Load is the typical time to reach full capacity

*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

Construction

Physical Properties		
Property	Result	Method
Consistency	Pass	ASTM C 881
Gel Time	30 minutes	ASTM C 881
Bond Strength (2 day cure)	2000 psi	ASTM C 882
Bond Strength (14 day cure)	2500 psi	ASTM C 882
Compressive Strength (7 day)	>10,000 psi	ASTM D 695
Compressive Modulus (7 days)	400000 psi	ASTM D 695
Water Absorption	0.08%	ASTM D 570
Heat Deflection Temperature	122°F	ASTM D 468
Linear Coefficient of Shrinkage	0.0003 in/in	ASTM D 2566

*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

Installation Specification									
Property	Sym-bol	Unit							
Threaded Rod Diameter	d_a	in	3/8	1/2	5/8	3/4	7/8	1	1-1/4
Drill Bit Diameter	d_o	in	1/2	9/16	3/4	7/8	1	1-1/8	1-3/8
Cleaning Brush Size	d_b	-	S14H/F	S16H/F	S22H/F	S24H/F	S27H/F	S31H/F	S38H/F
Rebar Size	d_a	in	#3	#4	#5	#6	#7	#8	#10
Drill Bit Diameter	d_o	in	9/16	5/8	3/4	7/8	1	1-1/8	1-3/8
Cleaning Brush Size	d_b	-	S16H/F	S18H/F	S22H/F	S27H/F	S31H/F	S35H/F	S43H/F
Minimum Embedment Depth	$h_{ef,min}$	in	3	4	5	6	7	8	10
Maximum Embedment Depth	$h_{ef,max}$	in	4 1/2	6	7 1/2	9	10 1/2	12	15
Minimum Con-crete Thickness	h_{min}	in	$2.0\ h_{ef}$						
Critical Anchor Spacing	S_{cr}	in	$2.0\ c_{ac}$						
Critical Edge Distance	c_{ac}	in	$c_{ac} = h_{ef} * (t_{k,uncr} / 1160)^{0.4} * \max[3.1 - 0.7(h / h_{ef}); 1.4]$						
Maximum Tightening Torque	T_{inst}	ft.lb	15	30	60	100	125	150	200

*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

Construction

Allowable Steel Strength for Threaded Rods									
		Carbon Steel ASTM F 1554 Grade 36 (A307 Gr.C)		Carbon Steel ASTM A 193 B7		Stainless Steel ASTM F 593 CW		Stainless Steel ASTM F 593 SH	
Anchor Diameter (in)		Allowable Tension, N_{all}	Allowable Shear, V_{all}	Allowable Tension, N_{all}	Allowable Shear, V_{all}	Allowable Tension, N_{all}	Allowable Shear, V_{all}	Allowable Tension, N_{all}	Allowable Shear, V_{all}
3/8”	lb	2,110	1,080	4,550	2,345	3,630	1,870	4,190	2,160
	kN	9.4	4.8	20.2	10.4	16.1	8.3	18.6	9.6
1/2”	lb	3,750	1,930	8,100	4,170	6,470	3,330	7,450	3,840
	kN	16.7	8,6	36.0	18.5	28.8	14.8	33.1	17.1
5/8”	lb	5,870	3.030	12,655	6,520	10,130	5,220	11,640	6,000
	kN	26.1	13,5	56.3	29.0	45.1	23.2	51.8	26.7
3/4”	lb	8,460	4.360	18,220	9,390	12,400	6,390	15,300	7,880
	kN	37.6	19.4	81.0	41.8	55.2	28.4	68.1	35.1
7/8”	lb	11,500	5,930	24,800	12,780	16,860	8,680	20,830	10,730
	kN	51.2	26.4	110.3	56.8	75.0	38.6	92.7	47.7
1”	lb	15,020	7,740	32,400	16,860	22,020	11,340	27,210	14,020
	kN	66.8	34.4	144.1	74.2	97.9	50.4	121.0	62.4
1 - 1/4”	lb	23,480	12,100	50,610	26,070	34,420	17,730	38,470	19,820
	kN	104.4	53.8	225.1	116.0	153.1	78.9	171.1	88.2

Allowable Tension, N_{all} = 0.33 x f_u x nominal cross sectional area
Allowable Shear, V_{all} = 0.17 x f_u x nominal cross section area
*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

Allowable Steel Strength for Rebar			
		Carbon Steel ASTM A 615 Grade 60	
Rebar Size		Allowable Tension, N_{all}	Allowable Shear, V_{all}
#3	lb	3,280	1,690
	kN	14.6	7.5
#4	lb	5,831	3,004
	kN	25.9	13.4
#5	lb	9,111	4,693
	kN	40.5	20.9
#6	lb	13,121	6,759
	kN	58.4	30.1
#7	lb	17,859	9,200
	kN	79.4	40.9
#8	lb	23,326	12,016
	kN	103.8	53.4
#10	lb	37,623	19,381
	kN	167.4	86.2

*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

Allowable Steel Strength for Rebar			
		Carbon Steel CAN/CSA-G30.18 Gr.400	
Rebar Size		Allowable Tension, N_{all}	Allowable Shear, V_{all}
10M	lb	4,016	2,069
	kN	17.9	9.2
15M	lb	8,052	4,148
	kN	35.8	18.5
20M	lb	11,960	6,161
	kN	53.2	27.4
25M	lb	19,975	10,290
	kN	88.9	45.8
30M	lb	28,121	14,486
	kN	125.1	64.4
35M	lb	40,089	20,652
	kN	178.3	91.9

Tension = 0.33 x f_u x nominal cross sectional area
Shear = 0.17 x f_u x nominal cross section area
*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

1. Above values for reinforcing steel assume the design method is the same as a post-installed adhesive anchor,under the principles of anchor design (failure modes will be concrete breakout, pryout, steel failure, or adhesive bond) and not under the principles of reinforcing steel design (failure modes are typically splitting failure, inadequate bar development etc.). CONSULT AN ENGINEERING DESIGN PROFESSIONAL PRIOR TO USE.

Construction

Coverage

Anchor size:		(in.)	5/16	3/8	1/2	5/8	3/4	1	1 1/4
Drill Hole Diameter:		(in.)	3/8	1/2	9/16	3/4	7/8	1 1/8	1 3/8
Embedment Depth:		(in.)	2 3/8	2 3/8	2 3/4	3 1/8	3 3/4	4	5
Estimated Number of Fixing *	Cartridge Volume	600 ml	176	99	67	33	20	11	6
		1500 ml	455	256	175	86	53	30	16

*Number of fixings assumes 30ml wastage in initial extrusion and holes filled to 3/4 full

Anchor size:		(in.)	5/16	3/8	1/2	5/8	3/4	1	1 1/4
Drill Hole Diameter:		(in.)	3/8	1/2	9/16	3/4	7/8	1 1/8	1 3/8
Embedment Depth:		(in.)	3 1/8	3 3/4	5	6 1/4	7 1/2	10	12 1/2
Estimated Number of Fixing *	Cartridge Volume	600 ml	134	62	37	16	10	4	2
		1500 ml	346	162	96	43	26	12	6

*Number of fixings assumes 30ml wastage in initial extrusion and holes filled to 3/4 full

Application

Installation Method (Solid Substrates)

1. Drill hole to required depth using a hammer drill with the drill bit that is appropriate to match the hole diameter as stated.

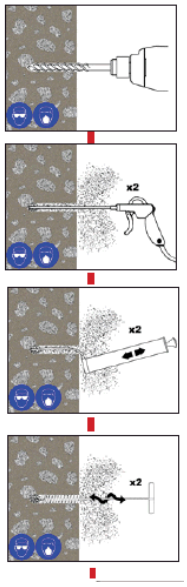
2. Insert the air lance to the bottom of the hole and depress the trigger for 2 seconds. The compressed air used should be at a minimum pressure of 6bar / 90psi and should be free from oil and / or water. Repeat the operation. If using the hand pump, give two blowing operations.

3. Select the correct size brush (see page 9, Installation Accessories). Ensure that the brush is in good condition and check that the diameter of the brush is correct for the size of the drilled hole. Insert the brush to the bottom of the hole and pull out using a back and forth twisting motion. Repeat the operation.

4. Repeat 2

5. Repeat 3

6. Repeat 2

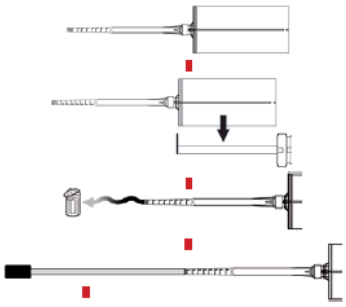


7. Select the appropriate static mixer nozzle for the installation and screw onto the mouth of the cartridge. Insert the cartridge into a good quality extrusion gun after checking that the extrusion gun is in good working order.

8. Extrude the first part of the cartridge to waste until an even colour has been achieved without streaking in the resin.

9. If necessary, attach extension tubing and resin stopper.

10. Insert the mixer nozzle to the bottom of the hole. Begin to extrude the resin and slowly withdraw the mixer nozzle from the hole ensuring that there are no air voids as the mixer nozzle is withdrawn. Fill the hole to approximately ½ to ¾ full and remove the mixer nozzle and cartridge completely.



11. Take the steel element of the anchor. This should be free from oil or other release agents. Insert the steel ele-

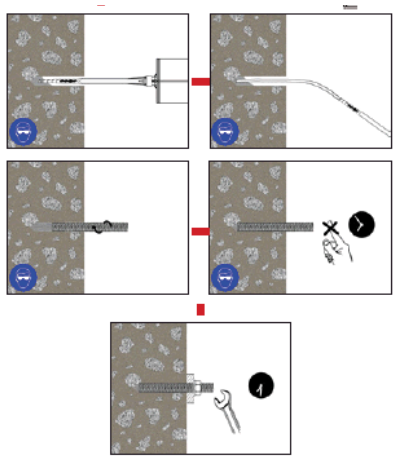
Construction

ment to the bottom of the hole using a back and forth twisting motion. Any excess resin should be expelled from the hole evenly around the steel element.

12. Clean any excess resin from around the mouth of the hole.

13. Leave the anchor to cure. Do not disturb the anchor until the appropriate working time has elapsed depending on the substrate conditions and ambient temperature.

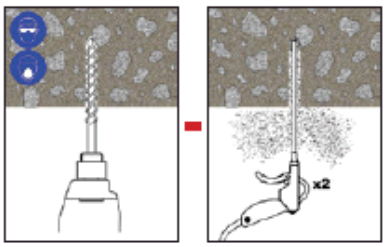
14. Attach the fixture as required.



Overhead Substrate Installation Method

1. Using the SDS Hammer Drill with a carbide tipped drill bit of the appropriate size, drill the hole to suit the anchor.

2. *a)* Select the correct Air Lance, insert to the bottom of the hole and depress the trigger for 2 seconds. The compressed air must be clean – free from water and oil – and at a minimum pressure of 90psi (6bar). Perform the blowing operation twice. *b)* If a Manual Pump is to be used, complete the blowing operation as above using the full stroke of the pump and blow the hole clean twice.

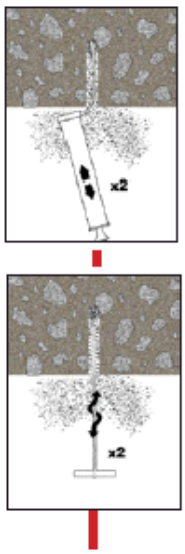


3. Select the correct size Hole Cleaning Brush. Ensure that the brush is in good condition and the correct diameter. Insert the brush to the bottom of the hole and withdraw with a twisting motion. There should be positive interaction between the steel bristles of the brush and the sides of the drilled hole. Perform the brushing operation twice.

4. Repeat 2 (a) or (b)

5. Repeat 3

6. Repeat 2 (a) or (b)



7. Select the appropriate static mixer nozzle and attach to the cartridge. Check the Dispensing Tool is in good working order. Place the cartridge into the dispensing tool.

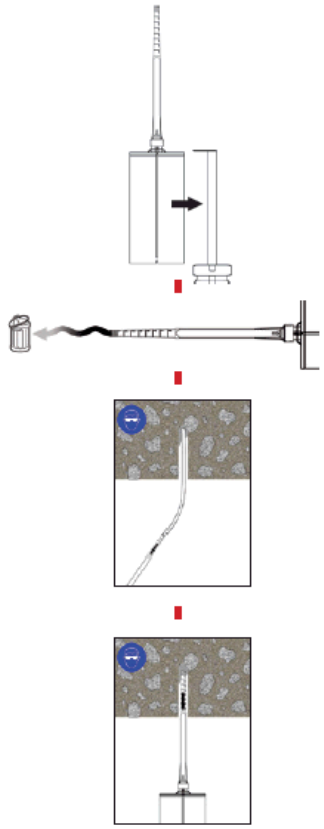
Note: The QH nozzle is in two sections. One section contains the mixing elements and the other section is an extension piece. Connect the extension piece to the mixing section by pushing the two sections firmly together until a positive engagement is felt.

Construction

8. Extrude some resin to waste until an even-colored mixture is extruded, The cartridge is now ready for use.

9. As specified in the Installation Accessories Table, attach an extension tube with resin stopper (if required) to the end of the mixing nozzle with a push fit. (The extension tubes may be pushed into the resin stoppers and are held in place with a coarse internal thread).

10. Insert the mixing nozzle to the bottom of the hole. Extrude the resin and slowly withdraw the nozzle from the hole. Ensure no air voids are created as the nozzle is withdrawn. Inject resin until the hole is approximately ¾ full and remove the nozzle from the hole.



Limitations

THE NTSB HAS STATED THAT THIS PRODUCT IS APPROVED FOR SHORT TERM LOADS ONLY AND SHOULD NOT BE USED IN SUSTAINED TENSILE LOAD ADHESIVE ANCHORING APPLICATIONS WHERE ADHESIVE FAILURE COULD RESULT IN A PUBLIC SAFETY RISK. CONSULT A DESIGN PROFESSIONAL PRIOR TO USE.

*The design professional on the job is ultimately responsible for the interpretation of the data provided on the product data sheet.

Visit our website at usa.sika.com **1-800-933-SIKA NATIONWIDE**

Regional Information and Sales Centers. For the location of your nearest Sika sales office, contact your regional center.

Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: 800-933-7452
Fax: 201-933-6225

Sika Canada Inc.
601 Delmar Avenue
Pointe Claire
Quebec H9R 4A9
Phone: 514-697-2610
Fax: 514-694-2792

Sika Mexicana S.A. de C.V.
Carretera Libre Celaya Km. 8.5
Fracc. Industrial Balvanera
Corregidora, Queretaro
C.P. 76920
Phone: 52 442 2385800
Fax: 52 442 2250537