Construction

Sikadur® AnchorFix-1

High performance, two component adhesive anchoring system

Description	Sikadur® AnchorFix-1 adhesive anchoring system has been specially formulated as a high-performance, two component adhesive anchor system for threaded and reinforcing bars in uncracked concrete.
Where to Use	■ Uncracked concrete ■ Hard natural stone ■ Solid rock ■ Solid masonry
Advantages	■ Fixing close to free edges. ■ Versatile range of embedment depths. ■ Anchoring without expansion forces. ■ Component volume ratio of 10:1. ■ Extended working time.
Coverage	See below.
Packaging	10 & 20 fl.oz. cartridge.
Approvals	European Technical Approval (ETA) according to ETAG001-5 for threaded bars only.

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 from 12 months from the date of manufacture.

Storage Conditions Cartridges should be stored in their original packaging, the correct way up, in cool conditions (+41°F to +77°F) out of direct sunlight.

Working & Loading Times

Cartridge Temperature*	T Work (minutes)	Base Material Temperature	T Load (minutes)
+41°F to +50°F	18	+41°F to +50°F	145 minutes
+50°F to +68°F	10	+50°F to +68°F	85 minutes
+68°F to +77°F	6	+68°F to +77°F	50 minutes
+77°F to + 86°F	5	+77°F to + 86°F	40 minutes
+86°F	4	+86°F	35 minutes

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

*Cartridge temperature must be maintained at a minium of +41°F.

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Installation Specification								
Property	Symbol	Unit						
Threaded Rod Diameter	d_a	in	5/16	3/8	1/2	5/8	3/4	1
Drill Bit Diameter	d_o	in	3/8	1/2	9/16	11/16	13/16	1-1/16
Cleaning Brush Size	d_b	in	0.551		0.787		1.142	
Minimum Embedment Depth	$h_{ef,min}$	in	2-1/2	3	4	5	6	8
Maximum Embedment Depth	$h_{ef,max}$	in	3-3/4	4-1/2	6	7-1/2	9	12
Minimum Concrete Thickness	h_{min}	in	h_{ef} + 1-1/4 in ≥ 4 in				h_{ef} + 2 d_o	
Critical Anchor Spacing	S_{cr}	in	4.0 h_{ef}			3.0 h_{ef}		
Critical Edge Distance	c_{ac}	in	2.0 h_{ef}			1.5 h_{ef}		
Maximum Tightening Torque	T_{inst}	ft.lb	7.5	15	25	55	80	120

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

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	3,360	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	16,690	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	50,640	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
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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, inadequatebar development etc.). CONSULT AN ENGINEERING DESIGN PROFESSIONAL PRIOR TO USE.

Anchor diameter	Embedment Depth	Allowable Concrete Capacity / Bond Strength					
		Tension (lb)			Shear (lb)		
		f'_c = 2,500 psi	f'_c = 4,000 psi	f'_c = 8,000 psi	f'_c = 2,500 psi	f'_c = 4,000 psi	f'_c = 8,000 psi
5/16”	2-1/2”	1,517	1,590	1,704	2,022	2,120	2,272
	3-1/8”	1,896	1,987	2,130	2,528	2,650	2,840
	3-3/4”	2,275	2,385	2,556	3,033	3,179	3,408
3/8”	3”	1,785	1,871	2,005	2,380	2,494	2,673
	3-3/4”	2,231	2,338	2,506	2,975	3,118	3,342
	4-1/2”	2,677	2,806	3,007	3,570	3,741	4,010
1/2”	4”	3,276	3,434	3,680	4,368	4,578	4,907
	5”	4,095	4,292	4,600	5,460	5,723	6,134
	6”	4,914	5,151	5,520	6,552	6,867	7,360
5/8”	5”	5,427	5,688	6,096	7,236	7,584	8,128
	6-1/4”	6,784	7,110	7,620	9,045	9,480	10,160
	7-1/2”	8,140	8,532	9,144	10,854	11,376	12,193
3/4”	6”	6,801	7,128	7,640	9,068	9,505	10,187
	7-1/2”	8,501	8,911	9,550	11,335	11,881	12,733
	9”	10,202	10,693	11,460	13,602	14,257	15,280
1”	8”	11,270	11,812	12,660	15,027	15,750	16,880
	10”	14,088	14,766	15,825	18,783	19,687	21,100
	12”	16,905	17,719	18,990	22,540	23,625	25,320

1. The above values represent mean ultimate values and allowable w orking loads. The allowable working loads have been reduced us ing a safety factor of 4.0 for tension and 3.0 for shear , however, in some cases, such as life safety, safety factors of 10.0 or higher may be necessary.
2. Allowable loads must be checked against steel capacity. The lowest value controls.
3. Tabulated data is applicable to single anchors in normal weight concrete unaffected by edge or spacing reduction factors. V alues are valid for anchors installed into dry concrete in holes drilled with a hammer drill and ANSI carbide drill bit.
4. Service temperatures should remain approximately constant. The maximum long term temperature being 122°F and the maximum short term temperature being 176°F. Short term temperatures are those that occur over brief inte rvals, for example, diurnal cycling.
5. Linear interpolation is allowed.
*The design professional on the job is ultimately responsible for the interpretation of the data provided above.

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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	7/16	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	300 ml	83	47	53	15	9	5	2

*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	300 ml	63	29	17	7	4	2	1

*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 3/4	4 1/2	6	7 1/2	9	12	15
Estimated Number of Fixing *	Cartridge Volume	300 ml	53	24	14	6	4	1	0

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

Application

Solid Substrate Installation Method

1. Drill the hole to the correct diameter and depth. This can be done with either a rotary percussion or rotary machine depending upon the substrate.

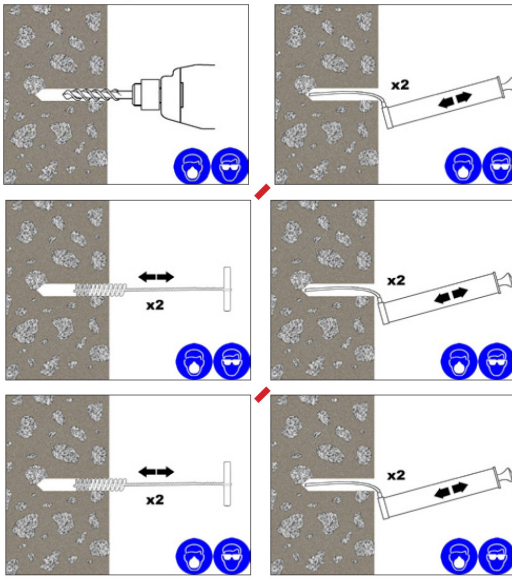
2. Thoroughly clean the hole in the following sequence using the 2K DF Brush with the required extensions and a source of clean compressed air. For holes of 15 3/4" (400mm) or less deep, a 2K Blow Pump may be used:

Blow Clean x2.
Brush Clean x2.
Blow Clean x2.
Brush Clean x2.
Blow Clean x2.

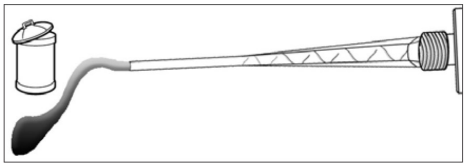
3. Select the appropriate static mixer nozzle for the installation, open the cartridge/foil and screw onto the mouth of the cartridge. Insert the cartridge into a good quality applicator.

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

5. If necessary, cut the extension tube to the depth of the hole and push onto the end of the mixer nozzle, and (for rebars 5/8" (16mm) dia. or more) fit the correct resin stopper to the other end. Attach extension tubing and resin stopper.



If the hole collects water after the initial cleaning, this water must be removed before injecting the resin.



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6. Insert the mixer nozzle (resin stopper /extension tube if applicable) 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 withdraw the nozzle completely.

7. Insert the clean threaded bar, free from oil or other release agents, to the bottom of the hole using a back and forth twisting motion ensuring all the threads are thoroughly coated. Adjust to the correct position within the stated working time (see table on page 1).

8. Any excess resin should be expelled from the hole evenly around the steel element showing that the hole is full.

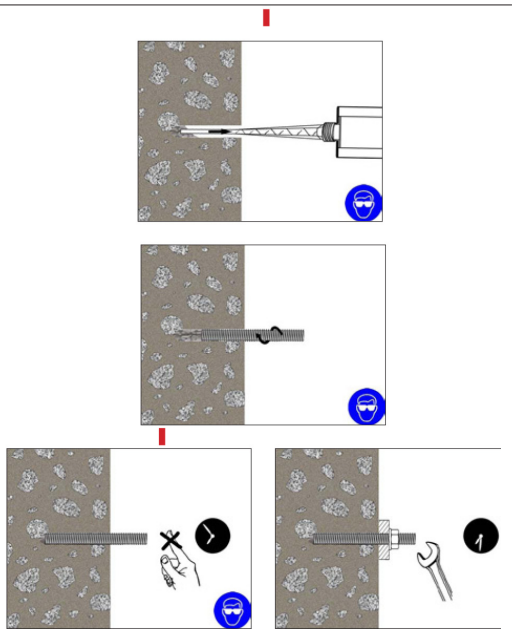
This excess resin should be removed from around the mouth of the hole before it sets.

9. Leave the anchor to cure.

Do not disturb the anchor until the appropriate loading/curing time, on page 1, has elapsed depending on the substrate conditions and ambient temperature.

10. Attach the fixture and tighten the nut to the recommended torque.

Do not overtighten.



Hollow Substrate Installation Method

1. Drill the hole to the correct diameter and depth. This should be done with a rotary percussion drilling machine to reduce spalling.

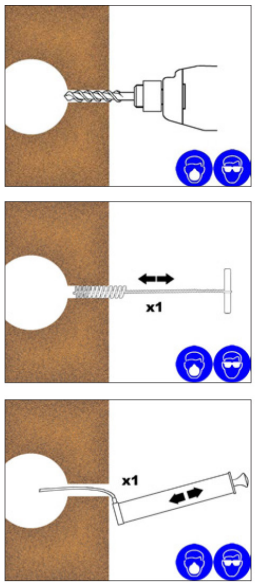
2. Thoroughly clean the hole in the following sequence using a brush with the required extensions and a source of clean compressed air. For holes of 15 3/4" (400mm) or less deep, a blow pump may be used:

Brush Clean x1.
Blow Clean x1.

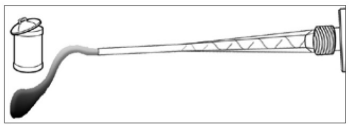
3. Select the appropriate static mixer nozzle for the installation, open the cartridge/foil and screw onto the mouth of the cartridge. Insert the cartridge into a good quality applicator.

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

5. Select the appropriate perforated sleeve and insert into the hole.



If the hole collects water after the initial cleaning, this water must be removed before injecting the resin.



Construction

6. Insert the mixer nozzle to the bottom of the perforated sleeve, withdraw 1/12" (2-3mm) then 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 perforated sleeve completely and remove the mixer nozzle and cartridge completely.

7. Insert the clean threaded bar, free from oil or other release agents, to the bottom of the hole using a back and forth twisting motion ensuring all the threads are thoroughly coated. Adjust to the correct position within the stated working time (see table on page 1).

8. Any excess resin should be expelled from the hole evenly around the steel element showing that the hole is full.

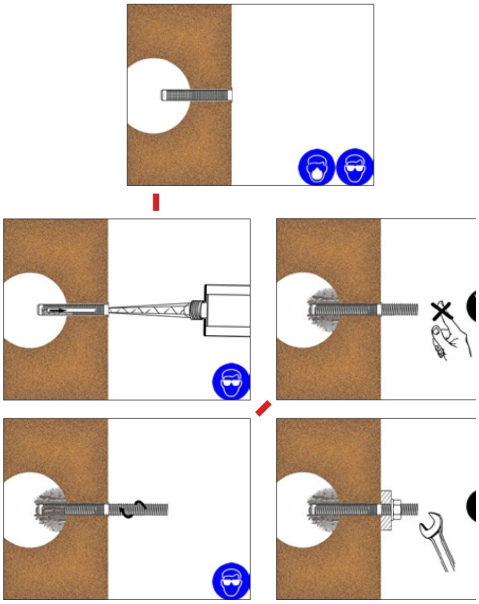
This excess resin should be removed from around the mouth of the hole before it sets.

9. Leave the anchor to cure.

Do not disturb the anchor until the appropriate loading/curing time, on page 1, has elapsed depending on the substrate conditions and ambient temperature.

10. Attach the fixture and tighten the nut to the recommended torque.

Do not overtighten.



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**

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