Sika® AnchorFix-2 Arctic

High performance, two component, low temperature adhesive anchor system

Description	Sika® AnchorFix-2 Arctic adhesive anchor system has been specifically formulated as a high performance, two component, low temperature adhesive anchor system for threaded 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 1:1. Extended working time.
Packaging	28.7 fl.oz. (850 ml) cartridge
Approval	European Technical Approval (ETA) according to ETAG001-5.

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 a minimum of 12

months from the date of manufacture.

Storage Conditions Cartridges should be stored in their original packaging, the correct way up, in cool conditions (+32°F to +77°F) out of direct sunlight.

Working & Loading Times										
Cartridge Temperature	T Work (minutes)	Base Material Temperature	T Load							
Minimum +23°F	15	-14.8°F - +14°F*	36 hours							
	15	+14°F to +23°F	12 hours							
	15	+23°F to +32°F	100 minutes							
+23°F to +41°F	10	+32°F to +41°F	75 minutes							
+41°F to +50°F	5	+41°F to +50°F	50 minutes							
+50°F to +68°F 2.5		+50°F to +68°F	50 minutes							
+68°F	100 seconds	+68°F	20 minutes							

 $\ensuremath{\textit{T}}$ Work is the typical time to gel at the highest temperature in the range

T Load is the typical time to reach full capacity



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^{*}This application is not covered by the scope of the ETA or any other approval for this product.

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

Installation Specifica	nstallation Specification												
Property	Symbol	Unit											
Threaded Rod Diameter	d _a	in	5/16	3/8	1/2	5/8	3/4	1	1-1/4				
Drill Bit Diameter	d _o	in	3/8	1/2	9/16	11/16	13/16	1-1/16	1-1/2				
Cleaning Brush Size	d _b	in	0.5	551	0.	787	1.1	142	1-2/3				
Minimum Embedment Depth	h _{ef,min}	in	2-1/2	3	4	5	6	8	10				
Maximum Embedment Depth	h _{ef,max}	in	6-1/4	7-1/2	10	12-1/2	15	20	25				
Minimum Concrete Thickness	h _{min}	in		h _{ef} + 1-1/	/4 in ≥ 4 in			h _{ef} + 2 do					
Critical Anchor Spacing	S _{or}	in				3.0 h _{ef}							
Critical Edge Distance	C _{ac}	in	1.5 h _{ef}										
Maximum Tightening Torque	T _{inst}	ft.lb	7.5	15	25	55	80	120	200				

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Allowab	Allowable Steel Strength for Threaded Rods												
		ASTM F 15	on Steel 54 Grade 36 7 Gr.C)	Carbon Steel ASTM A 193 B7			ss Steel 593 CW	Stainless Steel ASTM F 593 SH					
Anchor Diameter (in)		Allowable Tension, N _{all}	Allowable Shear, V _{all}	Allowable Tension, N _{all}	$ \begin{array}{c cccc} \textbf{Allowable} & \textbf{Allowable} & \textbf{Allowable} \\ \textbf{Shear}, \textbf{V}_{\textbf{all}} & \textbf{Tension}, & \textbf{Shear}, \textbf{V}_{\textbf{all}} \\ & \textbf{N}_{\textbf{all}} & \end{array} $		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				
3/0	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				
1/2	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				
5/6	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				
3/4	kN	37.6	19.4	81.0	41.8	55.2	28.4	68.1	35.1				
7/0"	lb	11,500	5,930	24,800	12,780	16,860	8,680	20,830	10,730				
7/8"	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				
1"	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				
1 - 1/4"	kN	104.4	53.8	225.1	116.0	153.1	78.9	171.1	88.2				



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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 S	Size	Allowable Tension, N _{all}	Allowable Shear, V _{all}						
#3	lb	3,280	1,690						
#3	kN	14.6	7.5						
#4	lb	5,831	3,004						
#4	kN	25.9	13.4						
#5	lb	9,111	4,693						
#5	kN	40.5	20.9						
#6	lb	13,121	6,759						
#6	kN	58.4	30.1						
#7	lb	17,859	9,200						
#1	kN	79.4	40.9						
#8	lb	23,326	12,016						
#0	kN	103.8	53.4						
#10	lb	37,623	19,381						
#10	kN	167.4	86.2						

	Allowable Ste	Allowable Steel Strength for Rebar										
7			Carbon Steel CAN/CSA-G30.18 Gr.400									
	Rebar S	Size	Allowable Tension, N _{all}	Allowable Shear, V _{all}								
]	10M	lb	4,016	2,069								
	TOW	kN	17.9	9.2								
	15M	lb	8,052	4,148								
	TOW	kN 35.8		18.5								
]	20M	lb	11,960	6,161								
	20101	kN	53.2	27.4								
	25M	lb	19,975	10,290								
	23101	kN	88.9	45.8								
	30M	lb	28,121	14,486								
	JUIVI	kN	125.1	64.4								
	2514	lb	40,089	20,652								
	35M	kN	178.3	91.9								
	Tension = 0.33 x f		ross sectional area									

Shear = $0.17 \times f_{x} \times nominal cross section area$

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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	Embedment		Allowable Concrete Capacity / Bond Strength							
diameter	Depth		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			
	2-1/2"	1,517	1,590	1,704	2,022	2,120	2,272			
5/16"	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"	1,785	1,871	2,005	2,380	2,494	2,673			
3/8"	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			
	4"	3,276	3,434	3,680	4,368	4,578	4,907			
1/2"	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"	5,427	5,688	6,096	7,236	7,584	8,128			
5/8"	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			
	6"	6,801	7,128	7,640	9,068	9,505	10,187			
3/4"	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			
	8"	11,270	11,812	12,660	15,027	15,750	16,880			
1"	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 working loads. The allowable working loads have been reduced using 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.

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^{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. Values 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 intervals, for example, diurnal cycling.

^{5.} Linear interpolation is allowed.

Coverage

Anchor size:		(in.)	5/16	3/18	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	850 ml	254	143	97	48	29	16	8

^{*}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	850 ml	193	90	53	24	14	6	3

^{*}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	850 ml	161	75	44	20	12	5	2

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

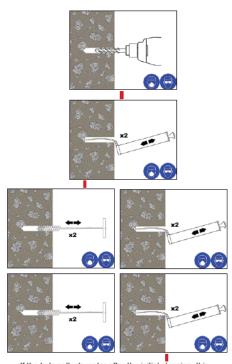
Application

Installation Method (Solid Substrates)

- 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 a brush with the required extensions and a source of clean compressed air. For holes of 15.8 in. (400mm) or less deep, a 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 (at least dispense three full strokes) to waste until an even color has been achieved without streaking in the resin before injecting the resin into the drilled hole.
- 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 .6 in. dia. or more) fit the correct resin stopper to the other end. Attach extension tubing and resin stopper.
- 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



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



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nozzle from the hole ensuring that there are no air voids as the mixer nozzle is withdrawn. Fill the hole to approximately $\frac{1}{2}$ to $\frac{3}{4}$ 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 4).
- 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 4, has elapsed depending on the substrate conditions and ambient temperature.

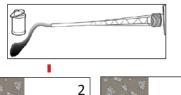
10. Attach the fixture and tighten the nut to the recommended torque, **do not overtighten.**

Hollow Substrate Installation Method

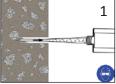
- 1. Drill the hole to the correct diameter and depth. This should be done with a rotary percussion drilling machine to reduce spalling.
- 2. Thoroughly clean the hole in the following sequence using the 2K DF Brush with the required extensions and a source of clean compressed air. For holes of 15.6 in. (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 (at least dispense three full strokes) to waste until an even color has been achieved without streaking in the resin before injecting the resin into the drilled hole.
- 5. Select the appropriate perforated sleeve and insert into the hole.
- 6. Insert the mixer nozzle to the bottom of the perforated sleeve, withdraw 0.07 0.1 in. (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.

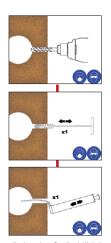




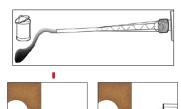


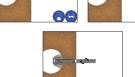






If the hole collects water after the initial cleaning, this water must be removed before injecting the resin.











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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 4, 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.

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- Not for use in overhead applications.
- Not for use in cracked concrete.
- Minimum Application Temperature -14.8°F (-26°C)
- Maximum Application Temperature 68°F (20°C)

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KEEP CONTAINER TIGHTLY CLOSED. KEEP OUT OF REACH OF CHILDREN, NOT FOR INTERNAL CONSUMPTION, FOR INDUSTRIAL USE ONLY, FOR PROFESSIONAL USE ONLY.

For further information and advice regarding transportation, handling, storage and disposal of chemical products, users should refer to the actual Safety Data Sheets containing physical, ecological, toxicological and other safety related data. Read the current actual Safety Data Sheet before using the product. In case of emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Product Data Sheet, product label and Safety Data Sheet which are available online at http://usa.sika.com/ or by calling Sika's Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKA SHALL NOT BE LIABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKA SHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS. SALE OF SIKA PRODUCTS ARE SUBJECT SIKA'S TERMS AND CONDITIONS OF SALE AVAILABLE AT HTTP://USA.SIKA.COM/ OR BY CALLING 201-933-8800. 1-800-933-SIKA NATIONWIDE

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