BUILDING TRUST

PRODUCT DATA SHEET

Sika AnchorFix®-1

High strength, two component adhesive anchoring system

PRODUCT DESCRIPTION

Sika 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.

USES

As a fast curing anchoring adhesive for all grades of:
- Rebars / reinforcing steel
- Threaded rods
- Bolts and special fastening systems

Can be used on:
- Uncracked Concrete
- Solid masonry
- Hard natural stone*
- Solid rock*

* These substrates may vary greatly, in particular with regard to strength, composition and porosity. Therefore, for each application the suitability of Sika AnchorFix®-1 Adhesive must be tested by first applying Sika AnchorFix®-1 Adhesive only to a sample area. Check in particular bond strength, surface staining and discoloration.

CHARACTERISTICS / ADVANTAGES

- Fast curing
- Standard guns can be used
- Can be used at low temperatures
- High load capacity
- Non-sag, even overhead
- Styrene-free polyester resin
- Low wastage

APPROVALS / STANDARDS

- European Technical Approval (ETA) according to ETAG001-5 for threaded bars only.

PRODUCT INFORMATION

Packaging	10.1 fl.oz. (299 ml)
Shelf Life	12 months from date of production All Sika AnchorFix®-1 cartridges have the expiry date printed on the label.
Storage Conditions	Cartridges should be stored in their original packaging, the correct way up, in cool conditions 41 °F to 77 °F (5 °C to 25 °C) out of direct sunlight.

TECHNICAL INFORMATION

Tensile Adhesion Strength

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 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.
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.

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

Service Temperature

Long Term	-40 °F (-40°C) min. / 122 °F (50 °C) max.	(ETA 001, Part 5)
Short term (1–2 hours)	176 °F (80 °C)	

Design Considerations

For details about adhesive anchoring design refer to the separate documentation provided: "Technical Documentation Sika AnchorFix®-1" Ref: 870 43 01

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, Nall = 0.33 x f_u x nominal cross sectional area
Allowable Shear, Vall = 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

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.

SYSTEM INFORMATION

System Structure

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.

APPLICATION INFORMATION

Mixing Ratio

Component A : component B = 10 : 1 by volume

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

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

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

Sag Flow	Non-sag, even overhead
Product Temperature	Sika AnchorFix®-1 must be at a temperature of between 41 °F (5 °C) and 104 °F (40 °C) for application.
Dew Point	▪ Beware of condensation. ▪ Beware of frost.

Open Time

Working & Loading Times

Cartridge Temperature*	T Work (minutes)	Base Material Temperature	T Load (hours)
41°F to 50 °F	18	41 °F to 50 °F	145 hours
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 minimum of 41°F.

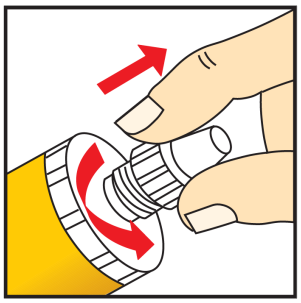
APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY

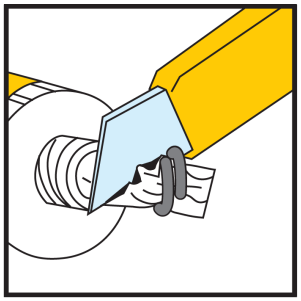
- Mortar and concrete must be at the required strength. No need to be 28 days old.
- Substrate strength (concrete, masonry, natural stone) must be verified.
- Pull-out tests must be carried out if the substrate strength is unknown.
- The anchor hole must always be clean, dry, free from oil and grease etc.
- Loose particles must be removed from the holes.
- Threaded rods and rebars have to be cleaned thoroughly from any oil, grease or any other substances and particles such as dirt etc.

MIXING

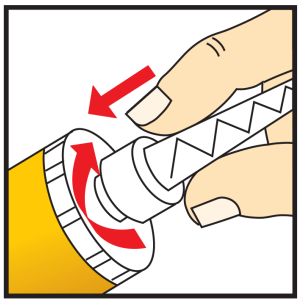
Getting the cartridge ready



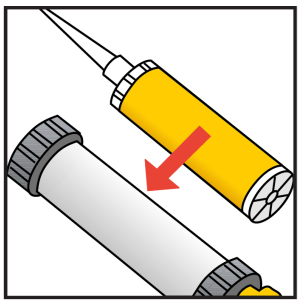
1. Unscrew the cap



2. Cut the film



3. Screw on the static mixer

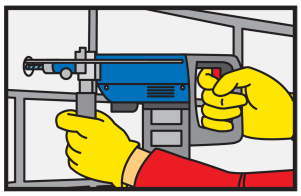


4. Place the cartridge into the gun and start application

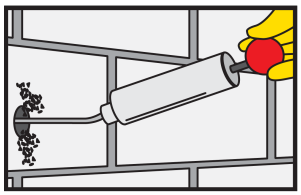
When the work is interrupted the static mixer can remain on the cartridge after the gun pressure has been relieved. If the resin has hardened in the nozzle when work is resumed, a new nozzle must be attached.

APPLICATION METHOD / TOOLS

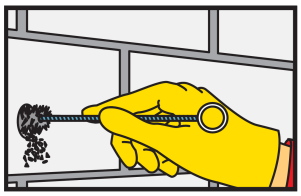
Anchors in solid masonry / concrete



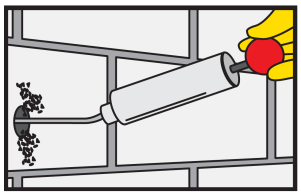
Drilling of hole with an electric drill to the diameter and depth required. Drill hole diameter must be in accordance with anchor size.



The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x) Important: use oil-free compressors.



The drill hole must be thoroughly cleaned with the special steel brush (brush at least 2x). The diameter of the brush must be larger than the diameter of the drill hole.



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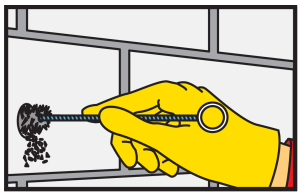

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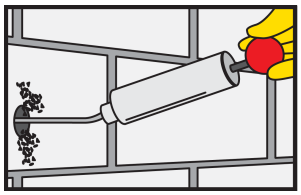
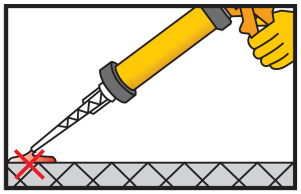
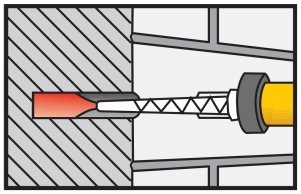


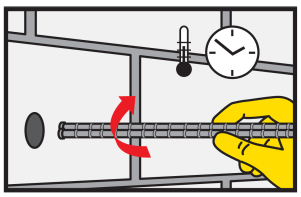
The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x) Important: use oil-free compressors.



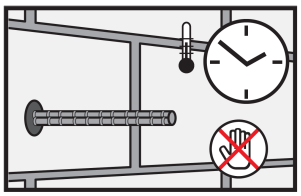
Pump approx. twice until both parts come out uniformly. Do not use this material. Release the gun pressure and clean the cartridge opening with a cloth.



Inject the adhesive into the hole, starting from the bottom, while slowly drawing back the static mixer.In any case avoid entrapping air. For deep holes extension tubing can be used.



Insert the anchor with a rotary motion into the filled drill hole. Some adhesive must come out of the hole.
Important: the anchor must be placed within the open time.



During the resin hardening time the anchor must not be moved or loaded. Wash tools immediately with Sika® Colma Cleaner. Wash hands and skin thoroughly with warm soap water.

CLEANING OF TOOLS

Tools must be cleaned as soon as possible with a clean rag.

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.

BASIS OF PRODUCT 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.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

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

LEGAL DISCLAIMER

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

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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