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

Sika® AnchorFix-1 may only be used by experienced professionals.

**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 discolouration.

## 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<br>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 w orking 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 re-duction 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 oc-cur 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.

**Service Temperature**

| | | |
|---|---|---|
| Long Term | 40 °F (4 °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.<br>▪ 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 minium of 41°F.

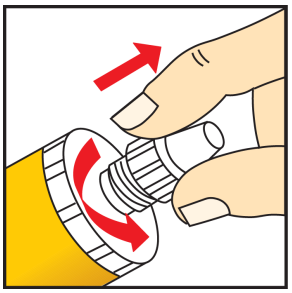
## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY

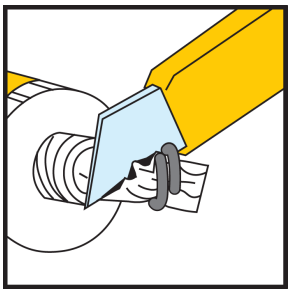
- Mortar and concrete must be at the required strength. No need to be 28 days old.
- Substrate strength (concrete, masonry, natural stone) must be verified.
- Pull-out tests must be carried out if the substrate strength is unknown.
- The anchor hole must always be clean, dry, free from oil and grease 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

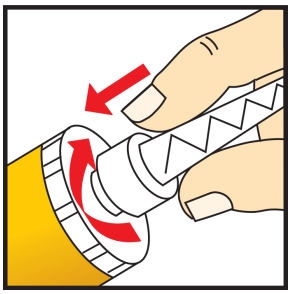
**Getting the cartridge ready**



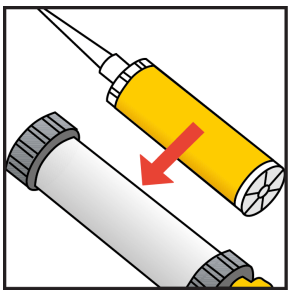
1. Unscrew the cap



2. Cut the film



3. Screw on the static mixer

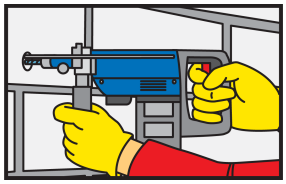


4. Place the cartridge into the gun and start application

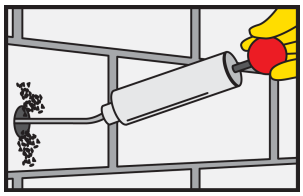
When the work is interrupted the static mixer can remain on the cartridge after the gun pressure has been relieved. If the resin has hardened in the nozzle when work is resumed, a new nozzle must be attached.

## APPLICATION METHOD / TOOLS

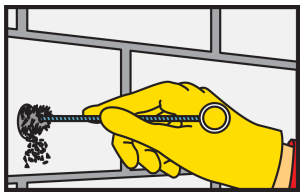
### Anchors in solid masonry / concrete



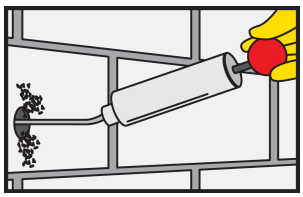
Drilling of hole with an electric drill to the diameter and depth required. Drill hole diameter must be in accordance with anchor size.



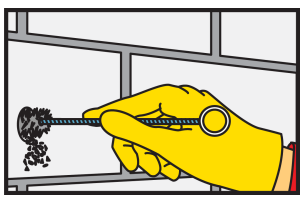
The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x) Important: use oil-free compressors.



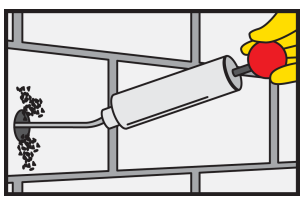
The drill hole must be thoroughly cleaned with the special steel brush (brush at least 2x). The diameter of the brush must be larger than the diameter of the drill hole.



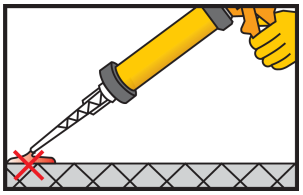
The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x) Important: use oil-free compressors.



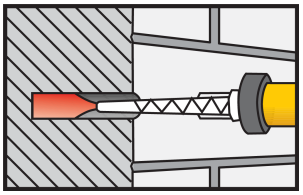
The drill hole must be thoroughly cleaned with the special steel brush (brush at least 2x). The diameter of the brush must be larger than the diameter of the drill hole.



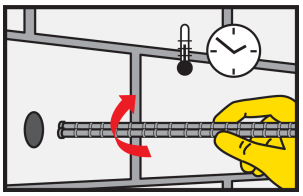
The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x) Important: use oil-free compressors.



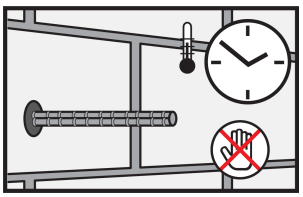
Pump approx. twice until both parts come out uniformly. Do not use this material. Release the gun pressure and clean the cartridge opening with a cloth.



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.

## LOCAL RESTRICTIONS

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 instructions for each Sika product for each Sika product as set forth in the current Product Data Sheet, product label and Safety Data Sheet prior to product use.

## ECOLOGY, HEALTH AND SAFETY

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.

## LEGAL NOTES

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