Construction

Sika AnchorFix®-2

High-performance anchoring adhesive

Product Description	Solvent- and styrene free, epoxy acrylate based, two part anchoring adhesive.
Uses	As a fast curing anchoring adhesive for all grades of: ■ Rebars / reinforcing steel ■ Threaded rods ■ Bolts and special fastening systems ■ Concrete ■ Solid masonry ■ Steel Prior to any application, the suitability of the Sika AnchorFix® Adhesive for the substrate in terms of the desired bond strength, and for the prevention of surface staining or discolouration, must be confirmed by testing in a sample area. This is due to the wide variation of possible substrates, particularly in terms of strength, composition and porosity: ■ Hard natural stone ■ Solid rock
Characteristics / Advantages	■ Fast curing ■ Standard guns can be used ■ High load capacity ■ Non-sag, even overhead ■ Styrene-free ■ Low odour ■ Low wastage ■ No transportation restrictions

Tests

Approval / Standards

European Technical Approvals for threaded rods:

European Technical Approval ETAG 001 Part 5 Option 7	
Galvanised anchor	Stainless steel anchor
EC Cert. 0679-CPD-0027	EC Cert. 0679-CPD-0028
ETA-05 / 103	ETA-05 / 104

Testing according to ICC / ICBO standards.

Fire resistance:
Test report from the University of Brunswick
Report No. 3551/4926
Tests according DIN EN 1363-1 (ISO 834)

Product Data

Form

Colours

Part A: light green
Part B: black
Part A+B mixed: light grey

Packaging

300 ml standard cartridge, 12 per box.
Pallet: 60 boxes with 12 cartridges.

Storage

Storage Conditions / Shelf-Life

15 months from date of production if stored properly in original unopened, sealed and undamaged packaging in cool and dry conditions at temperatures between +5°C and +20°C. Protect from direct sunlight.

All Sika AnchorFix®-2 cartridges have the expiry date printed on the label.

Technical Data

Density

Part A: 1.62 - 1.70 kg/l
Part B: 1.44 - 1.50 kg/l

1.60 - 1.68 kg/l (part A+B mixed)

Curing Speed

Temperature	Open Time T_{gel}	Curing Time T_{cur}
+20°C - +35°C	1 minute	40 minutes
+10°C - +20°C	4 minutes	70 minutes
+5°C - +10°C	8 minutes	100 minutes
0°C - +5°C	- *	180 minutes
-5°C - 0°C	- *	24 hours

*Min. cartridge temperature = +5°C

Sag Flow

Non-sag, even overhead.

Layer Thickness

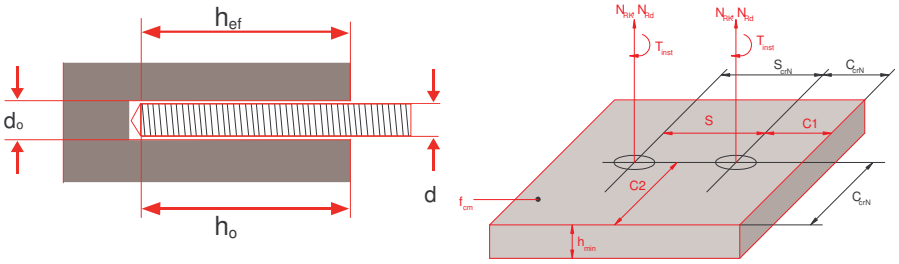
3 mm max.

Mechanical / Physical Properties

Compressive Strength	60 N/mm^2	(According to ASTM D695)

Design

Terminology and Abbreviations:



h_{min}	=	Min. concrete thickness (mm)
h_{ef}	=	Effective anchorage depth (bond length) (mm)
f_{cm}	=	Concrete compressive strength (N/mm^2)
S_{crN}	=	Minimum anchor spacing to achieve N_{RK} (mm)
S	=	Anchor spacing (mm)
C_{crN}	=	Minimum close edge distance to achieve N_{RK} (mm)
C	=	Close edge distance (mm)
h_O	=	Hole depth (mm)
d_O	=	Drilled hole diameter (mm)
d	=	Stud or bar nominal diameter (mm)
N_{RK}	=	Characteristic tensile load (kN)
NR_d	=	Recommended load = N_{RK} multiplied with a total safety factor
Rf_{cN}	=	Close edge reduction factor, tension only
Rf_{cV}	=	Close edge reduction factor, shear only
Rf_{sN}	=	Close spacing reduction factor, tension only
Rf_{sV}	=	Close spacing reduction factor, shear only
T_{inst}	=	Max. installation torque (Nm)

Load Capacity Data for all Thread Rods for concrete C20/25 (according ETAG001)

Anchor dia **d** [mm]	Hole dia d_o [mm]	Hole depth $h_o = h_{ef}$ [mm]	Brush size	Characteristic distances		min concrete thickness h_{min} [mm]	Resin vol [ml]	Max installation torque [Nm] T_{inst}	Resistance to tensile loads in C20/25 concrete [kN] to ETAG 001	
				Edge $C_{cr,N}$	Spacing $S_{cr,N}$				Characteristic load N_{Rk}	Design resistance N_{Rd}
8	10	64	S14	64	128	100	2.8	10	16	7.4
"	"	80	"	80	160	110	3.4	"	20.5	9.5
"	"	96	"	96	192	125	4.1	"	25	11.6
10	12	80	S14	80	160	110	4.5	20	25	11.6
"	"	90	"	90	180	120	5.0	"	29.0	13.4
"	"	120	"	120	240	150	6.7	"	40	18.5
12	14	96	M20	96	192	125	6.9	40	40	18.5
"	"	110	"	110	220	140	7.8	"	46.0	21.3
"	"	144	"	144	288	175	10.3	"	60	27.8
16	18	128	M20	128	256	160	12.2	80	60	27.8
"	"	192	"	192	384	225	18.8	"	95	44.0
20	22	160	L29	160	320	200	21.7	150	75	34.7
"	"	170	"	170	340	220	23.0	"	80.0	37.0
"	"	240	"	240	480	280	32.5	"	115	53.2
24	26	192	L29	192	384	240	34.2	200	115	53.2
"	"	210	"	210	420	270	37.4	"	125	57.9
"	"	288	"	288	576	335	51.3	"	170	78.7

Important Note:
The anchor hole must be dry.

Increasing Factor for concrete:

C30/37	C40/50	C50/60
1.04	1.07	1.09

Close edge (C) and anchor spacing (S) distances:

The characteristic edge distance ($C_{Cr,N}$) is 1.0 x h_{ef}
The characteristic spacing distance ($S_{cr,N}$) is 2.0 x h_{ef}
the minimum edge (C_{min}) and spacing (S_{min}) distance are 0.5 x h_{ef}

All load capacity values assume adequate steel strength; the anchor tests were carried out using 10.9 or 12.9 steel.

Concrete capacity reduction factors, tension (ψ_N):

Single anchor, close edge C:
$\psi_{c,N} = 0.5\ (C/h_{ef}) + 0.5 \leq 1$

Two anchors, close spacing S:
$\psi_{s,N} = 0.25\ (S/h_{ef}) + 0.5 \leq 1$

Two anchors, c/l perpendicular to close edge C_1:
$\psi_{sc,N} = 0.25\ (S/h_{ef}) + 0.25\ (C_1/h_{ef}) + 0.25 \leq 1$

Two anchors, c/l parallel to close edge C_2:
$\psi_{cs,N} = 0.25\ (C_2/h_{ef}) + 0.125\ (S/h_{ef}) + 0.125\ (C/h_{ef})\ (S/h_{ef}) + 0.25 \leq 1$

Concrete capacity reduction for more complex anchor configurations in tension, and for shear forces acting towards a close edge, should be determined using the design method A, given in ETAG 001, Annex C.

Load Capacity Data for Reinforcing Bar Anchors:

Requirements for the calculation of the characteristic load capacity:

Reinforcing bar S500 ribbed
(the load capacity of the reinforcing bar itself must also be verified)

Min. concrete C20 / 25

The anchor hole must be dry

Bar diameter d (mm)	6	8	10	12	14	16	20	25
Hole diameter d_O (mm)	8	10	12	14	18	20	25	32
Minimum anchor embedment h_{min} (mm)	60	80	90	100	115	130	140	150

Equation for tensile load capacity: $$N_{RK} = \frac{h_{ef} - 50}{2,0}$$

Equation for shear load capacity: $$V_{RK} = \frac{h_{ef} * d_O * f_{cm}}{1000} \quad (f_{cm} \leq 50)$$

Reduction Factors for Close Edge Distances and Anchor Spacing:

Close edge, tension:	$Rf_{cN} = 0,4(C/h_{ef}) + 0,4 \leq 1$	(Valid for $0,5 \leq (C/h_{ef}) \leq 1,5$)
Close spacing, tension:	$Rf_{sN} = 0,25(S/h_{ef}) + 0,5 \leq 1$	(Valid for $0,25 \leq (S/h_{ef}) \leq 2,0$)
Close edge, shear:	$Rf_{cV} = 0,6(C/h_{ef}) - 0,2 \leq 1$	(Valid for $0,5 \leq (C/h_{ef}) \leq 2,0$)
Close spacing, shear:	$Rf_{sV} = 0,1(S/h_{ef}) + 0,4 \leq 1$	(Valid for $1,0 \leq (S/h_{ef}) \leq 6,0$)

Close spacing in shear must be considered if $S < 3C$ and when $C < 2h_{ef}$

Important Note:
The load capacity of the thread rod itself must also be verified.
The anchor hole must be dry.

Resistance

Thermal Resistance

Service Temperature range of the Cured Adhesive, ETAG 001, part 5:
-40°C to +50°C*

*Temperature Resistance of the Cured Adhesive, ETAG 001, part 5

+50°C long term
+80°C short term (1 - 2 hours)

System Information

Application Details

Consumption / Dosage

Material consumption per anchor in ml

Anchor Ø mm	Drill Ø mm	Drill hole depth in mm																	
		8	90	110	120	130	140	160	170	180	200	210	220	240	260	280	300	350	400
8	10	3	4	4	5	5	5	6	6	7	7	7	8	8	9	9	10	11	12
10	12	4	5	5	6	6	6	7	8	8	8	8	9	10	10	11	12	14	15
12	14	5	6	6	6	7	7	8	8	9	10	10	11	11	12	13	14	16	18
14	18	9	10	11	14	14	15	18	19	20	22	23	24	26	28	30	32	37	42
16	18	9	10	11	13	14	15	17	18	19	21	22	23	26	28	30	32	36	40
	20	10	12	12	15	16	17	20	21	22	24	25	26	29	31	33	35	40	46
20	24	12	13	14	15	16	18	22	24	26	28	30	32	36	38	42	48	58	66
	25	18	19	21	23	24	26	30	31	32	36	38	40	44	46	50	54	64	72
24	26	24	25	28	30	33	35	40	43	45	50	55	58	60	65	70	75	100	125

The indicated filling quantities are calculated without wastage. Wastage 10 - 50%.

The filled quantity can be monitored during injection with the help of the scale on the catridge label.

Substrate Quality

Mortar and concrete must be older than 28 days.

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.

Application Conditions / Limitations

Substrate Temperature

-5 °C min. / +35 °C max.

Ambient Temperature

-5 °C min. / +35 °C max.

Material Temperature

Sika AnchorFix®-2 must be at a temperature of between +5 °C and +20 °C for application.

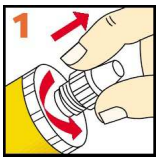
Dew Point

Beware of condensation!

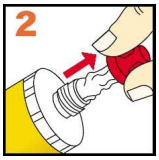
Substrate temperature during application must be at least 3 °C above dew point.

Application Instructions

Mixing	Part A : part B = 10 : 1 by volume
Mixing Tools	*Getting the cartridge ready:*



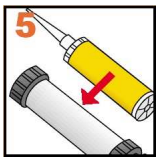
Unscrew and remove the cap



Pull out the red plug

Cut the film and remove the red plug

Screw on the static mixer



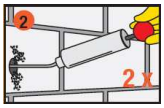
Place the cartridge into the gun and start application

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

General Remarks:

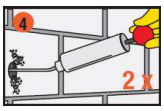
Drilling of hole with an electric drill to the diameter and depth required. Drill hole diameter must be in accordance with anchor size.



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!

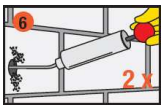
The drill hole must be thoroughly cleaned with the special steel brush (brush at least 2x). The diameter of the brush must be larger than the diameter of the drill hole.



The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x)

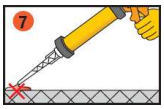
Important: use oil-free compressors!

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.

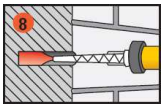


The drill hole must be cleaned with a blow pump or by compressed air, starting from the bottom of the hole. (at least 2x)

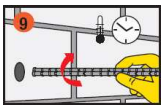
Important: use oil-free compressors!



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.

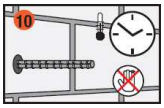


Inject the adhesive into the hole, starting from the bottom, while slowly drawing back the static mixer. In any case avoid entrapping air. For deep holes extension tubing can be used.



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.

Important Note: Anchors in hollow blocks:
Do use Sika AnchorFix®-1 for hollow blocks.

Cleaning of Tools

Clean all tools and application equipment with Thinner C immediately after use. Hardened / cured material can only be mechanically removed.

Value Base

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

Legal Notes

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

Construction

Sika Limited
Watchmead
Welwyn Garden City
Hertfordshire
AL7 1BQ
United Kingdom

Phone +44 1707 394444
Telefax +44 1707 329129
www.sika.co.uk, email: sales@uk.sika.com

ISO 14001 ISO 9001