

# SOUDAFIX VE400-SF ARCTIC

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## Technical Data

Base	Vinylester styrene free		
Consistency	Stable paste		
Curing system	Chemical reaction		
Processing time and curing time on dry substrate On wet substrate = time x 2 Cartridge temperature between -20°C and +10°C	<u>Temperature</u>	<u>Start</u>	<u>Full cure</u>
	≥ -20°C	75 min	24 h
	≥ -15°C	55 min	16 h
	≥ -10°C	35 min	10 h
	≥ -5°C	20 min	5 h
	≥ 0°C	10 min	2.5 h
	≥ +5°C ≥ +10°C	6 min 6 min	80 min 60 min
Specific Gravity	1,77 g/cm <sup>3</sup>		
Temperature Resistance	-40°C to +120°C		
Elasticity modulus	14000 N/mm <sup>2</sup>		
Maximum bending strength	15 N/mm <sup>2</sup>		
Maximum compression strength	100 N/mm <sup>2</sup>		

### Description:

SOUDAFIX VE400-SF ARCTIC is a two-component anchoring resin for the pressure-free securing of threaded rods (ETA: M8-M30), studs, reinforcement bars (ETA: Ø8-Ø32), threaded collars, profiles etc in various solid and hollow materials, such as cracked and uncracked concrete, solid brick, hollow brick, porous concrete, natural stone (see remarks), plasterboard walls, etc...

### Properties:

- Good and easy to process
- Easy to use and to apply
- Fast cure
- Wide application area, even in wet drill holes, under water (also sea water) and at temperature as low as -10°C
- Overhead installation allowed
- Styrene free (low odour)
- Cartridge re-usable by simply exchanging static mixer
- Watertight and impermeable fixing
- High chemical resistance (chlorinated pool water and sea water)

- European Technical Assessment ETA 10/0167 based on EAD 330499-02-0601-0601 for application in cracked and uncracked concrete.
- European Technical Assessment ETA 21/0170 based on EAD 330076-01-0604 for application in masonry.

### Application area:

Securing of heavy loads in solid and hollow building materials. Pressure free anchoring even close to edges. Can be used as repair mortar.

### Packaging:

Colour: dark grey after mixing  
Cartridge: 300 ml foil bag cartridge for standard skeleton gun.

### Shelf life and Storage:

18 months in original packaging. Store at cool and dry place at temperatures between -20°C and +25°C.

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**Substrates:**

Type: All usual porous building substrates, poor adhesion on smooth non-porous materials.

State: Clean, free of dust and grease.

**Application:**

Application method: standard skeleton gun for 280 ml cartridge, preferably heavy duty. Do not use a compressed air gun.

Application temperature: -20°C to +10°C

Clean: Before cure: wipe off excess of product and clean afterwards with white spirit or acetone.

After cure: it is recommended to let the product fully cure, so that it can easily be removed mechanically with hammer and chisel.

Repair: with the same material

**Safety recommendations:**

Apply the usual industrial hygiene precautions.

Only use in well-ventilated spaces.

Consult the label for more information.

**Remarks:**

The salt in seawater does not adversely affect the chemical curing reaction. Use in seawater is not covered by the ETA certificate because there is no EAD (European Assessment Document) test procedure for seawater applications.

There is a risk of staining on porous substrates such as natural stone.

**Instructions for use:**

- Drill hole to recommended depth.
- Clean the drilled hole by successive blowing out, brushing and blowing out (4x each time).
- Open the foil packaging and screw static mixing nozzle onto the cartridge.
- Dispense the first 10 cm of the product to waste (on piece of cardboard) until an even colour (dark grey) is achieved, and the product is well mixed.
- Mark embedment depth on the anchor rod. The anchor rod shall be free of dirt, grease or other foreign material.
- Solid stone: fill the drill hole from bottom up. Hollow brick: insert sleeve and fill it bottom up, so that the resin is pressed through the tiny holes of the sleeve.
- Apply anchor rod clockwise.
- Inspect the drill hole for adequate filling.
- Observe hardening time. Don't move the anchoring rod during curing.
- Leave the excess of product to cure as well. Remove it mechanically with hammer and chisel once cured.
- Install component, applying the right torque.



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**Installation parameters threaded rods:**

Diameter threaded rod	d	mm	M8	M10	M12	M16	M20	M24	M27	M30
Drill diameter	$d_0$	mm	10	12	14	18	22	28	30	35
Min. anchorage depth	$h_{ef,min}$	mm	60	60	70	80	90	96	108	120
Max. anchorage depth	$h_{ef,max}$	mm	160	200	240	320	400	480	540	600
Min. edge distance	$c_{min}$	mm	40	50	60	80	100	120	135	150
Min. axial distance	$s_{min}$	mm	40	50	60	80	100	120	135	150
Tightening torque	$T_{inst}$	Nm	10	20	40	60	100	170	250	300

**Installation parameters reinforcement bars:**

Diameter reinforcement bar	d	mm	Ø8	Ø 10	Ø 12	Ø14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32
Drill diameter	$d_0$	mm	10 or 12	12 or 14	14 or 16	18	20	25	32	35	40
Min. anchorage depth	$h_{ef,min}$	mm	60	60	70	75	80	90	100	112	128
Max. anchorage depth	$h_{ef,max}$	mm	160	200	240	280	320	400	500	560	640
Min. edge distance	$c_{min}$	mm	40	50	60	70	80	100	125	140	160
Min. axial distance	$s_{min}$	mm	40	50	60	70	80	100	125	140	160

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Tabel C1: Characteristic values for steel tension and shear of threaded rods										
Diameter threaded rods		M8	M10	M12	M16	M20	M24	M27	M30	
<b>Characteristic values for tension, steel failure</b>										
Characteristic tensile strength, steel class 4.6 en 4.8	$N_{Rk,s}$	kN	15	23	34	63	98	141	184	224
Characteristic tensile strength, steel class 5.6 en 5.8	$N_{Rk,s}$	kN	18	29	42	78	122	176	230	280
Characteristic tensile strength, steel class 8.8	$N_{Rk,s}$	kN	29	46	67	125	196	282	368	449
Characteristic tensile strength, stainless steel A2, A4 and HCR class 50	$N_{Rk,s}$	kN	18	29	42	79	123	177	230	281
Characteristic tensile strength, stainless steel A2, A4 and HCR class 70	$N_{Rk,s}$	kN	26	41	59	110	171	247	-	-
Characteristic tensile strength, stainless steel A4 and HCR class 80	$N_{Rk,s}$	kN	29	46	67	126	196	282	-	-
<b>Characteristic values for tension, partial factor</b>										
Partial factor steel class 4.6	$\gamma_{Ms,N}^{1)}$		2.0							
Partial factor steel class 4.8	$\gamma_{Ms,N}^{1)}$		1.5							
Partial factor steel class 5.6	$\gamma_{Ms,N}^{1)}$		2.0							
Partial factor steel class 5.8	$\gamma_{Ms,N}^{1)}$		1.5							
Partial factor steel class 8.8	$\gamma_{Ms,N}^{1)}$		1.5							
Partial factor stainless steel A2, A4 and HCR class 50	$\gamma_{Ms,N}^{1)}$		2.86							
Partial factor stainless steel A2, A4 and HCR class 70	$\gamma_{Ms,N}^{1)}$		1.87							
Partial factor stainless steel A4 and HCR class 80	$\gamma_{Ms,N}^{1)}$		1.6							
<b>Characteristic shear resistance, steel failure</b>										
<b>Steel failure without lever arm</b>										
Characteristic shear resistance, steel class 4.6 and 4.8	$V_{Rk,s}^0$	kN	9	14	20	38	59	85	110	135
Characteristic shear resistance, steel class 5.6 and 5.8	$V_{Rk,s}^0$	kN	11	17	25	47	74	106	138	140
Characteristic shear resistance, steel class 8.8	$V_{Rk,s}^0$	kN	15	23	34	63	98	141	184	224
Characteristic shear resistance, stainless steel A2, A4 and HCR class 50	$V_{Rk,s}^0$	kN	9	15	21	39	61	88	115	140
Characteristic shear resistance, stainless steel A2, A4 and HCR class 70	$V_{Rk,s}^0$	kN	13	20	30	55	86	124	-	-
Characteristic shear resistance, stainless steel A4 and HCR class 80	$V_{Rk,s}^0$	kN	15	23	34	63	98	141	-	-
<b>Steel failure with lever arm</b>										
Characteristic shear resistance, steel class 4.6 and 4.8	$M_{Rk,s}^0$	kN	15	30	52	133	260	449	666	900
Characteristic shear resistance, steel class 5.6 and 5.8	$M_{Rk,s}^0$	kN	19	37	65	166	324	560	833	1123
Characteristic shear resistance, steel class 8.8	$M_{Rk,s}^0$	kN	30	60	105	266	519	896	1333	1797
Characteristic shear resistance, stainless steel A2, A4 and HCR class 50	$M_{Rk,s}^0$	kN	19	37	66	167	325	561	832	1125
Characteristic shear resistance, stainless steel A2, A4 and HCR class 70	$M_{Rk,s}^0$	kN	26	52	92	232	454	784	-	-
Characteristic shear resistance, stainless steel A4 and HCR class 80	$M_{Rk,s}^0$	kN	30	59	105	266	519	896	-	-
<b>Characteristic shear resistance, partial factor</b>										
Partial factor steel class 4.6	$\gamma_{Ms,V}^{1)}$		1.67							
Partial factor steel class 4.8	$\gamma_{Ms,V}^{1)}$		1.25							
Partial factor steel class 5.6	$\gamma_{Ms,V}^{1)}$		1.67							
Partial factor steel class 5.8	$\gamma_{Ms,V}^{1)}$		1.25							
Partial factor steel class 8.8	$\gamma_{Ms,V}^{1)}$		1.25							
Partial factor stainless steel A2, A4 and HCR class 50	$\gamma_{Ms,V}^{1)}$		2.38							
Partial factor stainless steel A2, A4 and HCR class 70	$\gamma_{Ms,V}^{1)}$		1.56							
Partial factor stainless steel A4 and HCR class 80	$\gamma_{Ms,V}^{1)}$		1.33							

1) In absence of national regulation

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Table C3 Characteristic values of tension loads under static and quasi-static action											
Diameter threaded rod				M8	M10	M12	M16	M20	M24	M27	M30
<b>Characteristic values of tension loads, steel failure</b>											
Characteristic tension resistance		$N_{Rk,s}$	kN	$A_s \cdot f_{tk}$ (or see table C1)							
Partial factor		$\gamma_{Ms,N}$	-	See table C1							
<b>Combined pull-out and concrete failure</b>											
Characteristic bond resistance in non-cracked concrete C20/25											
Dry and wet concrete	Temperature range I: 40°C to 24°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	10	12	12	12	12	11	10	9
	Temperature range II: 80°C to 50°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	7,5	9	9	9	9	8,5	7,5	6,5
	Temperature range III: 120°C to 72°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	5,5	6,5	6,5	6,5	6,5	6,5	5,5	5,0
Flooded bore hole	Temperature range I: 40°C tot 24°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	7,5	8,5	8,5	8,5	No performance declared			
	Temperature range II: 80°C tot 50°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	5,5	6,5	6,5	6,5				
	Temperature range III: 120°C tot 72°C	$T_{Rk,ucr}$	N/mm <sup>2</sup>	4,0	5,0	5,0	5,0				
Characteristic bond resistance in cracked concrete C20/25											
Dry and wet concrete	Temperature range I: 40°C to 24°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	4,0	5,0	5,5	5,5	5,5	5,5	6,5	6,5
	Temperature range II: 80°C to 50°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	2,5	3,5	4,0	4,0	4,0	4,0	4,5	4,5
	Temperature range III: 120°C to 72°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	2,0	2,5	3,0	3,0	3,0	3,0	3,5	3,5
Flooded bore hole	Temperature range I: 40°C tot 24°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	4,0	4,0	5,5	5,5	No performance declared			
	Temperature range II: 80°C tot 50°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	2,5	3,0	4,0	4,0				
	Temperature range III: 120°C tot 72°C	$T_{Rk,cr}$	N/mm <sup>2</sup>	2,0	2,5	3,0	3,0				
Reduction factor $\psi_{sus}$ in cracked and uncracked concrete C20/25											
Dry and wet concrete and water-filled borehole	Temperature range I: 40°C tot 24°C	$\psi_{sus}^0$	-	0,73							
	Temperature range II: 80°C tot 50°C	$\psi_{sus}^0$	-	0,62							
	Temperature range III: 120°C tot 72°C	$\psi_{sus}^0$	-	0,57							
Increasing factors for concrete		$\psi_c$	-	$(f_{ck} / 20)^{0,11}$							
Characteristic bond resistance depending on concrete class		$T_{Rk,ucr} =$		$\psi_c \cdot T_{Rk,ucr}$ (C20/25)							
		$T_{Rk,cr} =$		$\psi_c \cdot T_{Rk,cr}$ (C20/25)							
<b>Concrete conce failure</b>											
Relevant parameter				See ETA Table C2							
<b>Concrete edge failure</b>											
Relevant parameter				See ETA Table C2							
Installation factor (dry and wet concrete)		$\gamma_{inst}$		1,0	1,2						
Installation factor (flooded bore hole)		$\gamma_{inst}$		1,4					No performance declared		

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Table C4: Characteristic values of shear loads under static and quasi-static action											
Diameter threaded rod			M8	M10	M12	M16	M20	M24	M27	M30	
<b>Steel failure without lever arm</b>											
Characteristic shear resistance steel class 4.6, 4.8, 5.6 and 5.8	$V_{RkS}$	kN	0,6 * $A_s$ * $f_{uk}$ (or see table C1)								
Characteristic shear resistance steel class 8.8, stainless steel A2, A4 and HCR, all classe	$V_{RkS}$	kN	0,5 * $A_s$ * $f_{uk}$ (or see table C1)								
Partial factor	$\gamma_{Ms,V}$	-	See table C1								
Ductility factor	$k_7$	-	1,0								
<b>Steel failure with lever arm</b>											
Characteristic bending moment	$M_{RkS}^0$	Nm	1,2 * $W_{el}$ * $f_{uk}$ (of zie tabel C1)								
Elastic section modulus	$W_{el}$	mm <sup>3</sup>	31	62	109	277	541	935	1387	1874	
Partial safety factor	$\gamma_{Ms,V}$	-	See table C1								
<b>Concrete pry-out failure</b>											
Factor	$k_g$	-	2.0								
Installation factor	$\gamma_{inst}$	-	1.0								
<b>Concrete edge failure</b>											
Effective anchor length	$l_f$	mm	min( $h_{ef}$ ; 12 $d_{nom}$ )						min( $h_{ef}$ ; 300 $m_m$ )		
Outside diameter of fastener	$d_{nom}$	mm	8	10	12	16	20	24	27	30	
Installation factor	$\gamma_{inst}$	-	1.0								

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Table C7: Characteristic values of tension loads under static and quasi-static action													
Diameter reinforcing bar			Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32		
<b>Steel failure</b>													
Characteristic tension resistance	$N_{Rks}$	kN	$A_s \cdot x f_{yk}^{(1)}$										
	$N_{Rks,eq}$	kN	$1,0 \cdot A_s \cdot x f_{yk}^{(1)}$										
Cross section area	$A_s$	mm <sup>2</sup>	50	79	113	154	201	314	491	616	804		
Partiële veiligheidsfaktor	$\gamma_{Ms,N}$		1,4 <sup>2)</sup>										
<b>Combined pull-out and concrete failure</b>													
Characteristic bond resistance in non-cracked concrete C20/25													
Dry and wet concrete	Temperature range I: 40°C to 24°C	$T_{RKucr}$	N/mm <sup>2</sup>	10	12	12	12	12	12	11	10	8,5	
	Temperature range II: 80°C to 50°C	$T_{RKucr}$	N/mm <sup>2</sup>	7,5	9	9	9	9	9	8,0	7,0	6,0	
	Temperature range III: 120°C to 72°C	$T_{RKucr}$	N/mm <sup>2</sup>	5,5	6,5	6,5	6,5	6,5	6,5	6,0	5,0	4,5	
Flooded bore hole	Temperature range I: 40°C to 24°C	$T_{RKucr}$	N/mm <sup>2</sup>	7,5	8,5	8,5	8,5	8,5	No performance declared				
	Temperature range II: 80°C to 50°C	$T_{RKucr}$	N/mm <sup>2</sup>	5,5	6,5	6,5	6,5						
	Temperature range III: 120°C to 72°C	$T_{RKucr}$	N/mm <sup>2</sup>	4,0	5,0	5,0	5,0						
Characteristic bond resistance in cracked concrete C20/25													
Dry and wet concrete	Temperature range I: 40°C to 24°C	$T_{RKucr}$	N/mm <sup>2</sup>	4,0	5,0	5,5	5,5	5,5	5,5	5,5	6,5	6,5	
	Temperature range II: 80°C to 50°C	$T_{RKucr}$	N/mm <sup>2</sup>	2,5	3,5	4,0	4,0	4,0	4,0	4,0	4,5	4,5	
	Temperature range III: 120°C to 72°C	$T_{RKucr}$	N/mm <sup>2</sup>	2,0	2,5	3,0	3,0	3,0	3,0	3,0	3,5	3,5	
Flooded bore hole	Temperature range I: 40°C to 24°C	$T_{RKucr}$	N/mm <sup>2</sup>	4,0	4,0	5,5	5,5	5,5	No performance declared				
	Temperature range II: 80°C to 50°C	$T_{RKucr}$	N/mm <sup>2</sup>	2,5	3,0	4,0	4,0	4,0					
	Temperature range III: 120°C to 72°C	$T_{RKucr}$	N/mm <sup>2</sup>	2,0	2,5	3,0	3,0	3,0					
Reduction factor $\psi_{sus}^0$ in cracked and non-cracked concrete C20/25													
Dry and wet concrete and flooded bore hole	Temperature range I: 40°C to 24°C	$\psi_{sus}^0$	-	0,73									
	Temperature range II: 80°C to 50°C	$\psi_{sus}^0$	-	0,62									
	Temperature range III: 120°C to 72°C	$\psi_{sus}^0$	-	0,57									
Increasing factors for concrete	$\psi_c$	-	$(f_{ck} / 20)^{0,11}$										
Characteristic bond resistance depending on concrete class	$T_{RKucr} =$		$\psi_c \cdot T_{RKucr} (C20/25)$										
	$T_{RKcr} =$		$\psi_c \cdot T_{RKcr} (C20/25)$										
<b>Concrete cone failure</b>													
Relevant parameter			See Table C2										
<b>Concrete edge failure</b>													
Relevant parameter			See Table C2										
Installation factor (dry and wet concrete)	$\gamma_{inst}$		1,0									1,2	
Installation factor (flooded bore hole)	$\gamma_{inst}$		1,4						No performance declared				

<sup>1)</sup>  $f_{yk}$  shall be taken from the specifications of reinforcing bars

<sup>2)</sup> In absence of national regulation

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Table C8: Characteristic values of shear loads under static and quasi-static action

Diameter reinforcing bar			Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32		
<b>Steel failure without lever arm</b>													
Characteristic shear resistance	$V_{Rks}$	kN	$0,50 \times A_s \times f_{uk}^{1)}$										
Cross section area	$A_s$	mm <sup>2</sup>	50	79	113	154	201	314	491	616	804		
Partial factor	$\gamma_{Ms,V}$	-	1,5 <sup>2)</sup>										
Ductility factor	$k_7$	-	1,0										
<b>Steel failure with lever arm</b>													
Characteristic bending moment	$M_{Rks}^0$	Nm	$1,2 \times W_{el} \times f_{uk}^{1)}$										
Elastic section modulus	$W_{el}$	mm <sup>3</sup>	50	98	170	269	402	785	1534	2155	3217		
Partial factor	$\gamma_{Ms,V}$	-	1,5 <sup>2)</sup>										
<b>Concrete pry-out failure</b>													
Factor	$k_8$	-	2.0										
Installation factor	$\gamma_{inst}$	-	1,0										
<b>Concrete edge failure</b>													
Effective length of anchor	$l_f$	mm	$\min(h_{ef}; 12 d_{nom})$						$\min(h_{ef}; 300 m_m)$				
Effective length of anchor	$d_{nom}$	mm	8	10	12	14	16	20	25	28	32		
Installation factor	$\gamma_{inst}$	-	1.0										

<sup>1)</sup>  $f_{uk}$  shall be taken from the specifications of reinforcing bars

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