

Soudafix VE400-SF

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Technical Data:

Base	Vinylester styrene free		
Consistency	Stable paste		
Curing system	Chemical reaction		
(1) Cartridge temperature = 15°C (2) Curing time on dry surface (20°C/65% R.H.) (x2 on wet surface)	<u>Temperature</u>	<u>Start</u>	<u>Full Cure</u> ⁽²⁾
	≥-10°C ⁽¹⁾	90 min	24 u
	≥-5°C	90 min	14 u
	≥0°C	45 min	7h
	≥5°C	25 min	2 u
	≥10°C	15 min	80 min
	≥20°C	6 min	45 min
	≥30°C	4 min	25 min
	≥35°C	2 min	20 min
≥40°C	1,5 min	15 min	
Specific Gravity	1,77 g/cm ³		
Temperature Resistance	- 40°C to + 120°C		
Elasticity modulus	14000 N/mm ²		
Maximum bending strength	15 N/mm ²		
Maximum compression strength	100 N/mm ²		

Product:

Soudafix VE400-SF 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, plasterboard walls, etc...

Characteristics:

- Easy to use and to apply
- Fast cure
- Wide application area, even in wet drill holes, under water and at temp. as low as -10°C
- Styrene free (low odour)
- Cartridge re-usable by simply exchanging static mixer
- Watertight and impermeable fixing
- High chemical resistance
- Fire Resistance class F120 (M8-M30)
- European Technical Approval Option 1 for application in cracked and uncracked concrete
- Emission in indoor air class A+

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: 280 ml cartridge for standard skeleton gun, 380 ml for use with special two-component gun.

Shelf life:

18 months in original packaging. Store at cool and dry place at temperatures between +5°C en +25°C.

Substrates:

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

State: Clean, free of dust and grease.

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Application:

Application method: standard skeleton gun for 280 ml cartridge, special 2 component gun for 380 ml, preferably heavy duty.

Application temperature: -10°C to +40°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:

There is a risk of staining on porous substrates such as natural stone. On such substrates a preliminary compatibility test is recommended.

Instructions for use:

- Drill hole at recommended depth
- Clean drill hole with brush and air pump thoroughly
- Screw static mixer onto 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
- 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
- Insert anchoring rod with twisting left-right motion
- 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	24	28	32	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	80	120	160	180	200

Installation parameters reinforcement bars:

Diameter reinforcement bar	d	mm	Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Drill diameter	D_0	mm	12	14	16	18	20	24	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	480	540	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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Table 1: Characteristic tensile strength of threaded rods in uncracked concrete according to TR029												
Diameter threaded rod				M8	M10	M12	M16	M20	M24	M27	M30	
Steel failure												
Characteristic tensile strength, steel class 4.6		$N_{Rk,s}$	kN	15	23	34	63	98	141	184	224	
Partial safety factor		$\gamma_{Ms,N}^{1)}$		2.0								
Characteristic tensile strength, steel class 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	
Partial safety factor		$\gamma_{Ms,N}^{1)}$		1.5								
Characteristic tensile strength, stainless steel A4 and HCR, class 50 (>M24) and 70 (\leq M24)		$N_{Rk,s}$	kN	26	41	59	110	171	247	230	281	
Partial safety factor		$\gamma_{Ms,N}^{1)}$		1.87						2.86		
Combined pullout and concrete cone failure												
Characteristic bond resistance in uncracked concrete C20/25												
Dry and wet concrete	Temperature range I: 40°C to 24°C		$T_{Rk,unr}$	N/mm ²	10	12	12	12	12	11	10	9
	Temperature range II: 80°C to 50°C		$T_{Rk,unr}$	N/mm ²	7.5	9	9	9	9	8.5	7.5	6.5
	Temperature range III: 120°C to 72°C		$T_{Rk,unr}$	N/mm ²	5.5	6.5	6.5	6.5	6.5	6.5	5.5	5.0
	Partial safety factor		$\gamma_{Mc} = \gamma_{Mp}^{1)}$		1.5 ²⁾	1.8 ³⁾						
Flooded bore hole	Temperature range I: 40°C to 24°C		$T_{Rk,unr}$	N/mm ²	7.5	8.5	8.5	8.5	Not admissible			
	Temperature range II: 80°C to 50°C		$T_{Rk,unr}$	N/mm ²	5.5	6.5	6.5	6.5				
	Temperature range III: 120°C to 72°C		$T_{Rk,unr}$	N/mm ²	4.0	5.0	5.0	5.0				
	Partial safety factor		$\gamma_{Mc} = \gamma_{Mp}^{1)}$		2.1 ⁴⁾							
Increasing factors for uncracked concrete Ψ_c		C30/37		1.04								
		C40/50		1.08								
		C50/60		1.10								
Spitting failure												
Edge distance		$C_{cr,sp}$	mm	$1,0 \cdot h_{ef} \leq 2 \cdot h_{ef} (2,5 - h/h_{ef}) \leq 2,4 \cdot h_{ef}$								
Spacing		$S_{cr,sp}$	mm	$2 C_{cr,sp}$								
Partial safety factor (dry and wet concrete)		$\gamma_{Msp}^{1)}$		1.5 ²⁾	1.8 ³⁾							
Partial safety factor (flooded bore hole)		$\gamma_{Msp}^{1)}$		2.1 ⁴⁾				Not admissible				

¹⁾ In absence of national regulations

²⁾ Partial safety factor $\gamma_2 = 1.0$ is included

³⁾ Partial safety factor $\gamma_2 = 1.2$ is included

⁴⁾ Partial safety factor $\gamma_2 = 1.4$ is included

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Table 2: Characteristic tensile strength of threaded rods in cracked concrete according to TR029									
Diameter threaded rod			M12	M16	M20	M24	M27	M30	
Steel failure									
Characteristic tensile strength, steel class 4.6		N_{Rks}	kN	34	63	98	141	184	224
Partial safety factor		$\gamma_{Ms,N}^{1)}$		2.00					
Characteristic tensile strength, steel class 5.8		N_{Rks}	kN	42	78	122	176	230	280
Characteristic tensile strength, steel class 8.8		N_{Rks}	kN	67	125	196	282	368	449
Partial safety factor		$\gamma_{Ms,N}^{1)}$		1.50					
Characteristic tensile strength, stainless steel A4 and HCR, class 50 (>M24) and 70 (\leq M24)		N_{Rks}	kN	59	110	171	247	230	281
Partial safety factor		$\gamma_{Ms,N}^{1)}$		1.87			2.86		
Combined pullout and concrete cone failure									
Characteristic bond resistance in uncracked concrete C20/25									
Dry and wet concrete	Temperature range I: 40°C to 24°C	$\tau_{Rk,cr}$	N/mm ²	5.5	5.5	5.5	5.5	6.5	6.5
	Temperature range II: 80°C to 50°C	$\tau_{Rk,cr}$	N/mm ²	4.0	4.0	4.0	4.0	4.5	4.5
	Temperature range III: 120°C to 72°C	$\tau_{Rk,cr}$	N/mm ²	3.0	3.0	3.0	3.0	3.5	3.5
	Partial safety factor	$\gamma_{Mc} = \gamma_{Mp}^{1)}$		1.80					
Flooded bore hole	Temperature range I: 40°C to 24°C	$\tau_{Rk,cr}$	N/mm ²	5.5	5.5	Not admissible			
	Temperature range II: 80°C to 50°C	$\tau_{Rk,cr}$	N/mm ²	4.0	4.0				
	Temperature range III: 120°C to 72°C	$\tau_{Rk,cr}$	N/mm ²	5.0	5.0				
	Partial safety factor	$\gamma_{Mc} = \gamma_{Mp}^{1)}$		2.10					
Increasing factors for uncracked concrete Ψ_c		C30/37		1.04					
		C40/50		1.08					
		C50/60		1.10					
Spitting failure									
Edge distance		$C_{cr,sp}$	mm	$1,0 \cdot h_{ef} \leq 2 \cdot h_{ef} (2,5 - h/h_{ef}) \leq 2,4 \cdot h_{ef}$					
Spacing		$S_{cr,sp}$	mm	$2 C_{cr,sp}$					
Partial safety factor (dry and wet concrete)		$\gamma_{Msp}^{1)}$		1.8 ²⁾					
Partial safety factor (flooded bore hole)		$\gamma_{Msp}^{1)}$		2.1 ³⁾		Not admissible			

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²⁾ Partial safety factor $\gamma_2 = 1.0$ is included

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Table 3: Characteristic values for shear loads in cracked and uncracked concrete according to TR029											
Diameter threaded rod			M8	M10	M12	M16	M20	M24	M27	M30	
Steel failure without lever arm											
Characteristic shear resistance, steel class 4.6	$V_{Rk,s}$	kN	7	12	17	31	49	71	92	112	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.67								
Characteristic shear resistance, steel class 5.8	$V_{Rk,s}$	kN	9	15	21	39	61	88	115	140	
Characteristic shear resistance, steel class 8.8	$V_{Rk,s}$	kN	15	23	34	63	98	141	184	224	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.25								
Characteristic shear resistance, stainless steel A4 and HCR, class 50 (>M24) and 70 (\leq M24)	$N_{Rk,s}$	kN	13	20	30	55	86	124	115	140	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.56						2.38		
Steel failure with lever arm											
Characteristic shear resistance, steel class 4.6	$V_{Rk,s}$	kN	15	30	52	133	260	449	666	900	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.67								
Characteristic shear resistance, steel class 5.8	$V_{Rk,s}$	kN	19	37	65	166	324	560	833	1123	
Characteristic shear resistance, steel class 8.8	$V_{Rk,s}$	kN	30	60	105	266	519	896	1333	1797	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.25								
Characteristic shear resistance, stainless steel A4 and HCR, class 50 (>M24) and 70 (\leq M24)	$N_{Rk,s}$	kN	26	52	92	232	454	784	832	1125	
Partial safety factor	$\gamma_{Ms,V}^{1)}$		1.56						2.38		
Concrete pryout failure											
Factor k in equation (5.7) of Technical Report TR029 for Design of Bonded Anchors			2.0								
Partial safety factor	$\gamma_{Mcp}^{1)}$		1.5 ²⁾								
Concrete edge failure											
See section 5.2.3.4 of Technical Report TR029 for Design of Bonded Anchors											
Partial safety factor	$\gamma_{Mc}^{1)}$		1.5 ²⁾								

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Table 4: Characteristic tensile strength in uncracked concrete according to TR029												
Diameter reinforcing bar			Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32	
Steel failure												
Characteristic tensile strength reinforcing bar according to ETA-10/0167 Annex 4			N_{Rks}	kN	$A_s \cdot x f_{uk}$							
Partial safety factor			$\gamma_{Ms,N}^{1)}$	TR 029 Section 3.2.2.2, Eq. 3.3a								
Combined pullout and concrete cone failure												
Characteristic bond resistance in uncracked concrete C20/25												
Dry and wet concrete	Temperature range I: 40°C to 24°C	T_{Rkucr}	N/mm ²	10	12	12	12	12	12	11	10	8.5
	Temperature range II: 80°C to 50°C	T_{Rkucr}	N/mm ²	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 ²	5.5	6.5	6.5	6.5	6.5	6.5	6.0	5.0	4.5
	Partial safety factor	$\gamma_{Mc} = \gamma_{Mp}^{1)}$		1.5 ²⁾	1.8 ³⁾							
Flooded bore hole	Temperature range I: 40°C to 24°C	T_{Rkucr}	N/mm ²	7.5	8.5	8.5	8.5	8.5	Not admissible			
	Temperature range II: 80°C to 50°C	T_{Rkucr}	N/mm ²	5.5	6.5	6.5	6.5	6.5				
	Temperature range III: 120°C to 72°C	T_{Rkucr}	N/mm ²	4.0	5.0	5.0	5.0	5.0				
	Partial safety factor	$\gamma_{Mc} = \gamma_{Mp}^{1)}$		2.1 ⁴⁾								
Increasing factors for uncracked concrete Ψ_c		C30/37		1.04								
		C40/50		1.08								
		C50/60		1.10								
Spitting failure												
Edge distance			$C_{cr,sp}$	mm	$1,0 \cdot h_{ef} \leq 2 \cdot h_{ef} \quad (2,5 - h/h_{ef}) \leq 2,4 \cdot h_{ef}$							
Spacing			$S_{cr,sp}$	mm	$2 C_{cr,sp}$							
Partial safety factor (dry and wet concrete)			$\gamma_{Msp}^{1)}$	1.5 ²⁾	1.8 ³⁾							
Partial safety factor (flooded bore hole)			$\gamma_{Msp}^{1)}$	2.1 ⁴⁾					Not admissible			

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Table 5: Characteristic tensile strength in cracked concrete according to TR029												
Diameter reinforcing bar			Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32			
Steel failure												
Characteristic tensile strength reinforcing bar according to ETA-10/0167 Annex 4			N_{RkS}	kN	$A_s \cdot x f_{uk}$							
Partial safety factor			$\gamma_{Ms,N}^{1)}$	TR 029 Section 3.2.2.2, Eq. 3.3 a								
Combined pullout and concrete cone failure												
Characteristic bond resistance in uncracked concrete C20/25												
Dry and wet concrete	Temperature range I: 40°C to 24°C		T_{Rkcr}	N/mm ²	5.5	5.5	5.5	5.5	5.5	6.5	6.5	
	Temperature range II: 80°C to 50°C		T_{Rkcr}	N/mm ²	4.0	4.0	4.0	4.0	4.0	4.5	4.5	
	Temperature range III: 120°C to 72°C		T_{Rkcr}	N/mm ²	3.0	3.0	3.0	3.0	3.0	3.5	3.5	
	Partial safety factor		$\gamma_{Mc} = \gamma_{Mp}^{1)}$	1.8 ²⁾								
Flooded bore hole	Temperature range I: 40°C to 24°C		T_{Rkcr}	N/mm ²	5.5	5.5	5.5	Not admissible				
	Temperature range II: 80°C to 50°C		T_{Rkcr}	N/mm ²	4.0	4.0	4.0					
	Temperature range III: 120°C to 72°C		T_{Rkcr}	N/mm ²	3.0	3.0	3.0					
	Partial safety factor		$\gamma_{Mc} = \gamma_{Mp}^{1)}$	2.1 ⁴⁾								
Increasing factors for uncracked concrete Ψ_c			C30/37	1.04								
			C40/50	1.08								
			C50/60	1.10								
Spitting failure												
Edge distance			$C_{cr,sp}$	mm	$1,0 \cdot h_{ef} \leq 2 \cdot h_{ef} \quad (2,5 - h/h_{ef}) \leq 2,4 \cdot h_{ef}$							
Spacing			$S_{cr,sp}$	mm	$2 C_{cr,sp}$							
Partial safety factor (dry and wet concrete)			$\gamma_{Msp}^{1)}$	1.8 ²⁾								
Partial safety factor (flooded bore hole)			$\gamma_{Msp}^{1)}$	2.1 ⁴⁾				Not admissible				

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Table 6: Characteristic values for shear loads in cracked and uncracked concrete according to TR029									
Diameter wapeningsstaaf	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 20	Ø 25	Ø 28	Ø 32
Steel failure without lever arm									
Characteristic shear resistance reinforcing bar according to ETA-10/0167 Annex 4	V_{Rks}	kN	0,50 x A_s x f_{uk}						
Partial safety factor	$\gamma_{Ms,V}$ ¹⁾	TR 029 Section 3.2.2.2, Eq. 3.3 b+c							
Steel failure with lever arm									
Characteristic bending moment reinforcing bar according to ETA-10/0167 Annex 4	M_{Rks}^0	kN	1,2 x W_{el} x f_{uk}						
Partial safety factor	$\gamma_{Ms,V}$ ¹⁾	TR 029 Section 3.2.2.2, Eq. 3.3 b+c							
Concrete pryout failure									
Factor k in equation (5.7) of Technical Report TR029 for Design of Bonded Anchors			2.0						
Partial safety factor	γ_{Mcp} ¹⁾	1.5 ²⁾							
Concrete edge failure									
See section 5.2.3.4 of Technical Report TR029 for Design of Bonded Anchors									
Partial safety factor	γ_{Mc} ¹⁾	1.5 ²⁾							

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