Code	Description	Size	Colour
20268	Gorilla Soudafix Anchoring Adhesive	280ml	Grey (when mixed)

1. Description

Gorilla Soudafix Anchoring Adhesive 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…

2. Characteristics

- Easy to use and to apply
- Fast cure
- Wide application area, even in wet drill holes, under water (near sea 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
- Meets requirements for 'C1' seismic loading
- Fire Resistance class F120 (M8-M30)
- European Technical Assessment ETA-10/0167 based on EAD 330499-00-0601 for application in cracked and uncracked concrete.
- European Technical Assessment ETA-12/0558 based on EAD 330087-00-0601 for application in post-installed rebar connections.
- Indoor air emission class A+

3. 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)	Temperature ≥-10°C (1) ≥-5°C ≥0°C ≥5°C ≥10°C ≥20°C ≥30°C ≥35°C ≥40°C	Start 90 min 90 min 45 min 25 min 15 min 6 min 4 min 2 min 1,5 min	Full Cure (2) 24 u 14 u 7h 2 u 80 min 45 min 25 min 20 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		

**This varies according to ambient conditions such as temperature, humidity, substrate etc*

4. Applications

- A chemical anchor securing of threaded rods (ETA: M8-M30), studs, reinforcement bars (ETA: Ø8-Ø32), threaded collars, profiles etc in various solid and hollow materials.
- for bolts, studs, threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistancesteel), reinforcing bars, internal threaded rods, profiled rod.
- Application in both cracked and uncracked concrete
- Overhead application
- Suitable for attachment points close to the edge, where anchoring is free of expansion forces.

- Concrete – standard, aerated hollow block (with sleeve)
- Fixing handrails and other steel structures
- Mortar repair

5. Packaging

- 280ml cartridge
- *Colour*: dark grey after mixing

6. Shelf Life

18 months in unopened packaging in a dry and cool/dark storage place at temperatures between +5°C and +25°C.

7. Product Features

- Medium and heavy-duty load application
- Quick curing
- Suitable for vertical an overhead application
- Two nozzles with each cartridge
- Cartridge can be used at a later date by cleaning and resealing

8. Application Instructions

Surfaces

Type: All usual porous building substrates, including non-cracked concrete, light-concrete, porous-concrete, solid masonry, hollow brick, natural stone, hammer drilled holes, (poor adhesion to smooth non-porous materials).

State: Clean, dry, free of dust and grease.

Preparation: Before Cure: Wipe of excess and clean using white spirits or Gorilla Solvent cleaner.
After Cure: Let fully cure, remove mechanically.

Repair with Gorilla Soudafix Anchoring Adhesive

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

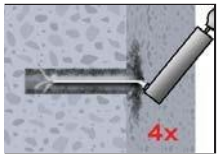
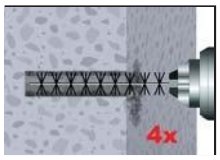
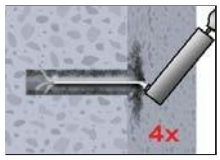
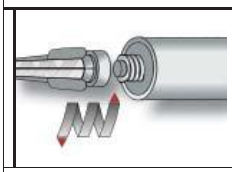
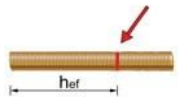
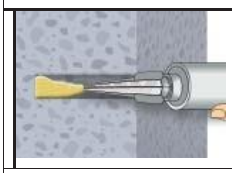
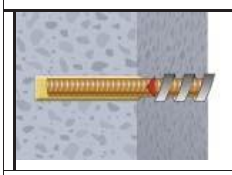
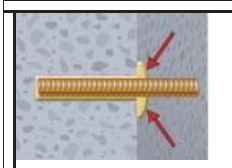
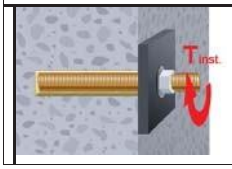
Due to the range of substrates on the market recommend preliminary compatibility tests prior to commencement of application.

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

9. Cautions

- If gel time expires use spare static mixer
- If used on natural stone, stone may discolour, should be checked prior to application.
- Not designed for underwater use
- Do not shorten or cut nozzle
- Do not apply to uncured concrete
- Diamond coned holes will require roughening
- Ensure hole is free of debris/ contaminants prior to application of Gorilla Soudafix® Anchoring Adhesive
- Do follow the specification detail outlined in charts 1-7

Application Instructions

	1. Drill with hammer drill mode a hole into the base material to the size and embediment depth required by the selected anchor.
 **or**	2a. Standing water must be removed bevor cleaning. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air or a hand pump a minimum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger then 20mm or deeper then 240mm, com-pressed air (min. 6 bar) must be used.
 **or**	2b. Check brush diameter acc. to table 1 and attach the brush to a drilling ma- chine or a battery screwdriver. Brush the hole with an appropriately sized wire brush of four times. If the bore hole ground is not reached with the brush, a brushextension shall be used.
 or	2c. Finally blow the hole clean again with compressed air or a hand pump a mini-mum of four times. If the bore hole ground is not reached an extension shall be used. The hand-pump can be used for anchor sizes up to bore hole diameter 20 mm. For bore holes larger then 20mm or deeper then 240mm, compressed air(min. 6 bar) must be used.
	3. Attach a supplied static-mixing nozzle to the cartridge and load the cartridgeinto the correct dispensing tool. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixershall be used.
	4. Prior to inserting the anchor rod into the mortar filled bore hole, the positionof the embedment depth shall be marked on the anchor rods.
	5. Prior to dispensing into the anchor hole, squeeze out separately a minimum ofthree full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.
	6. Starting from the bottom or back of the cleaned anchor hole fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. Observe the gel-/ workingtimes given.
	7. Push the threaded rod or reinforcing bar into the anchor hole while turningslightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor should be free of dirt, grease, oil or other foreignmaterial.
	8. Be sure that the anchor is fully seated at the bottom of the hole and that excess mortar is visible at the top of the hole. If these requirements are not maintained, the application has to be renewed.
	9. Allow the adhesive to cure to the specified time prior to applying any load ortorque. Do not move or load the anchor until it is fully cured.
	10. After full curing, the add-on part can be installed with the max. torque byusing a calibrated torque wrench.

Installation parameters threaded rods:

Diameter threaded rod	**d**	**mm**	**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Drill diameter	D0	mm	10	12	14	18	24	28	32	35
Min. anchorage depth	hef,min	mm	60	60	70	80	90	96	108	120
Max. anchorage depth	hef,max	mm	160	200	240	320	400	480	540	600
Min. edge distance	cmin	mm	40	50	60	80	100	120	135	150
Min. axial distance	smin	mm	40	50	60	80	100	120	135	150
Tightening torque	Tinst	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	D0	mm	12	14	16	18	20	24	32	35	40
Min. anchorage depth	hef,min	mm	60	60	70	75	80	90	100	112	128
Max. anchorage depth	hef,max	mm	160	200	240	280	320	400	500	580	640
Min. edge distance	cmin	mm	40	50	60	70	80	100	125	140	160
Min. axial distance	smin	mm	40	50	60	70	80	100	125	140	160

Table C1: Characteristic values for steel tension and shear resistance of threaded rods										
Diameter threaded rods			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Characteristic values for tension, steel failure										
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	-	-
Characteristic values for tension, partial factor										
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							
Characteristic shear resistance, steel failure										
Steel failure without lever arm										
Characteristic shear resistance, steel class 4.6 and 4.8	$V^0_{Rk,s}$	kN	7	12	17	31	49	71	92	112
Characteristic shear resistance, steel class 5.6 and 5.8	$V^0_{Rk,s}$	kN	9	15	21	39	61	88	115	140
Characteristic shear resistance, steel class 8.8	$V^0_{Rk,s}$	kN	15	23	34	63	98	141	184	224
Characteristic shear resistance, stainless steel A2, A4 and HCR class 50	$V^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140
Characteristic shear resistance, stainless steel A2, A4 and HCR class 70	$V^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140
Characteristic shear resistance, stainless steel A4 and HCR class 80	$V^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140
Steel failure with lever arm										
Characteristic shear resistance, steel class 4.6 and 4.8	$M^0_{Rk,s}$	kN	7	12	17	31	49	71	92	112
Characteristic shear resistance, steel class 5.6 and 5.8	$M^0_{Rk,s}$	kN	9	15	21	39	61	88	115	140
Characteristic shear resistance, steel class 8.8	$M^0_{Rk,s}$	kN	15	23	34	63	98	141	184	224
Characteristic shear resistance, stainless steel A2, A4 and HCR class 50	$M^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140
Characteristic shear resistance, stainless steel A2, A4 and HCR class 70	$M^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140

Characteristic shear resistance, stainless steel A4 and HCR class 80	$M^0_{Rk,s}$	kN	13	20	30	55	86	124	115	140
Characteristic shear resistance, partial factor										
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

Tabel C2: Characteristic values of tension loads under static, quasi-static and seismic action												
Diameter threaded rod				**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Characteristic values of tension loads, steel failure											
Characteristic tension resistance		$N_{Rk,s}$	kN	**See table C1**							
		$N_{Rk,s,eq}$	kN	**1,0 * $N_{Rk,s}$**							
Partial factor		$\gamma_{Ms,N}$	-	**See table C1**							
Combined pull-out and concrete failure											
Characteristic bond resistance in non-cracked concrete C20/25											
Dry and wet concrete	Temperature range I: 40°C to 24°C	$\tau_{Rk,ucr}$	N/mm²	10	12	12	12	12	11	10	9
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr}$	N/mm²	7.5	9	9	9	9	8.5	7.5	6.5
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr}$	N/mm²	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	$\tau_{Rk,ucr}$	N/mm²	7.5	8.5	8.5	8.5	No performance declared			
	Temperature range II: 80°C tot 50°C	$\tau_{Rk,ucr}$	N/mm²	5.5	6.5	6.5	65				
	Temperature range III: 120°C tot 72°C	$\tau_{Rk,ucr}$	N/mm²	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	$\tau_{Rk,cr}$	N/mm²	4,0	5,0	5,5	5,5	5,5	5,5	6,5	6,5
		$\tau_{Rk,cr,eq}$	N/mm²	2,5	3,1	3,7	3,7	3,7	3,8	4,5	4,5
	Temperature range II: 80°C to 50°C	$\tau_{Rk,cr}$	N/mm²	2,5	3,5	4,0	4,0	4,0	4,0	4,5	4,5
		$\tau_{Rk,cr,eq}$	N/mm²	1,6	2,2	2,7	2,7	2,7	2,8	3,1	3,1
	Temperature range III: 120°C to 72°C	$\tau_{Rk,cr}$	N/mm²	2,0	2,5	3,0	3,0	3,0	3,0	3,5	3,5
		$\tau_{Rk,cr,eq}$	N/mm²	1,3	1,6	2,0	2,0	2,0	2,1	2,4	2,4
Flooded bore hole	Temperature range I: 40°C to 24°C	$\tau_{Rk,cr}$	N/mm²	4,0	4,0	5,5	5,5	No performance declared			
		$\tau_{Rk,cr,eq}$	N/mm²	2,5	2,5	3,7	3,7				
	Temperature range II: 80°C to 50°C	$\tau_{Rk,cr}$	N/mm²	2,5	3,0	4,0	4,0				
		$\tau_{Rk,cr,eq}$	N/mm²	1,6	1,9	2,7	2,7				
	Temperature range III: 120°C to 72°C	$\tau_{Rk,cr}$	N/mm²	2,0	2,5	3,0	3,0				
		$\tau_{Rk,cr,eq}$	N/mm²	1,3	1,6	2,0	2,0				
Increasing factors for concrete (only static and quasi-static action) Ψ_c		C25/30		1.02							
		C30/37		1.04							
		C35/45		1.07							
		C40/50		1.08							
		C45/55		1.09							
		C50/60		1.10							
Concrete conce failure											
Non-cracked concrete		$k_{ucr,N}$	-	11,0							
Cracked concrete		$k_{cr,N}$	-	7,7							
Edge distance		$c_{cr,N}$	mm	$1,5 \cdot h_{ef}$							
Axial distance		$s_{cr,N}$	mm	$2 \cdot c_{cr,N}$							
Splitting											
Edge distance	$h/h_{ef} \geq 2,0$	$c_{cr,sp}$	mm	$1,0 \cdot h_{ef}$							
	$2,0 > h/h_{ef} > 1,3$	$c_{cr,sp}$	mm	$2 \cdot h_{ef} (2,5 - h/h_{ef})$							
	$h/h_{ef} \leq 3,0$	$c_{cr,sp}$	mm	$2,4 \cdot h_{ef}$							
Axial distance		$s_{cr,sp}$	mm	$2 \cdot c_{cr,sp}$							
Installation factor (dry and wet concrete)		γ_{inst}		1.0	1.2						
Installation factor (flooded bore hole)		γ_{inst}		1,4	No performance declared						

Table C3: Characteristic values of shear loads under static, quasi-static and seismic action										
Diameter threaded rod			**M8**	**M10**	**M12**	**M16**	**M20**	**M24**	**M27**	**M30**
Steel failure without lever arm										
Characteristic shear resistance	$V^0_{Rk,s}$	kN	See table C1							
	$V_{Rk,s,eq}$	kN	$0,70 \cdot V^0_{Rk,s}$							
Partial factor	$\gamma_{Ms,V}$	-	See table C1							
Ductility factor	k_7	-	1,0							
Steel failure with lever arm										
Characteristic bending moment	$M^0_{k,s}$	Nm	See table C1							
	$M^0_{k,s,eq}$	Nm	No performance declared							
Partial factor	$\gamma_{Ms,V}$		See table C1							
Concrete pry-out failure										
Factor	k_8	-	2.0							
Installation factor	γ_{inst}	-	1.0							
Concrete edge failure										
Effective length of fastener	l_f	mm	$l_f = \min(h_{ef}; 8\ d_{nom})$							
Outside diameter of fastener	d_{nom}	mm	8	10	12	16	20	24	27	30
Installation factor	γ_{inst}	-	1.0							
Factor for annular gap	α_{gap}	-	0,5 (1,0)[1)]							

[1)] Value between brackets: see ETA-10/0167

Table C6: Characteristic values of tension loads under static, quasi-static and seismic action													
Diameter reinforcing bar				**Ø 8**	**Ø 10**	**Ø 12**	**Ø 14**	**Ø 16**	**Ø 20**	**Ø 25**	**Ø 28**	**Ø 32**
Steel failure													
Characteristic tension resistance		$N_{Rk,s}$	kN	$A_s \cdot f_{uk}$ [1]								
		$N_{Rk,s,eq}$	kN	$1,0 \cdot A_s \cdot f_{uk}$ [1]								
Cross section area		A_s	mm^2	50	79	113	154	201	314	491	616	804
Partiële veiligheidsfaktor		$\gamma_{Ms,N}$		1,4 [2]								
Combined pull-out and concrete failure													
Characteristic bond resistance in non-cracked concrete C20/25													
Dry and wet concrete	Temperature range I: 40°C to 24°C	$\tau_{Rk,ucr}$	N/mm^2	10	12	12	12	12	12	11	10	8.5
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr}$	N/mm^2	7.5	9	9	9	9	9	8.0	7.0	6.0
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr}$	N/mm^2	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	$\tau_{Rk,ucr}$	N/mm^2	7.5	8.5	8.5	8.5	8.5	No performance declared			
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr}$	N/mm^2	5.5	6.5	6.5	6.5	6.5				
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr}$	N/mm^2	4.0	5.0	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	$\tau_{Rk,ucr}$	N/mm^2	4,0	5,0	5,5	5,5	5,5	5,5	5,5	6,5	6,5
	Temperature range I: 40°C to 24°C	$\tau_{Rk,ucr,eq}$	N/mm^2	2,5	3,1	3,7	3,7	3,7	3,7	3,8	4,5	4,5
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr}$	N/mm^2	2,5	3,5	4,0	4,0	4,0	4,0	4,0	4,5	4,5
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr,eq}$	N/mm^2	1,6	2,2	2,7	2,7	2,7	2,7	2,8	3,1	3,1
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr}$	N/mm^2	2,0	2,5	3,0	3,0	3,0	3,0	3,0	3,5	3,5
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr,eq}$	N/mm^2	1,3	1,6	2,0	2,0	2,0	2,0	2,1	2,4	2,4
Flooded bore hole	Temperature range I: 40°C to 24°C	$\tau_{Rk,ucr}$	N/mm^2	4,0	4,0	5,5	5,5	5,5	No performance declared			
	Temperature range I: 40°C to 24°C	$\tau_{Rk,ucr,eq}$	N/mm^2	2,5	2,5	3,7	3,7	3,7				
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr}$	N/mm^2	2,5	3,0	4,0	4,0	4,0				
	Temperature range II: 80°C to 50°C	$\tau_{Rk,ucr,eq}$	N/mm^2	1,6	1,9	2,7	2,7	2,7				
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr}$	N/mm^2	2,0	2,5	3,0	3,0	3,0				
	Temperature range III: 120°C to 72°C	$\tau_{Rk,ucr,eq}$	N/mm^2	1,3	1,6	2,0	2,0	2,0				
Increasing factors for concrete (only static or quasi- static actions) Ψ_c		C25/30		1.02								
		C30/37		1.04								
		C35/45		1.07								
		C40/50		1.08								
		C45/55		1.09								
		C50/60		1.10								
Concrete cone failure													
Non-cracked concrete		$k_{ucr,N}$	-	11,0								
Cracked concrete		$k_{cr,N}$	-	7,7								
Edge distance		$C_{cr,N}$	mm	$1,5 \cdot h_{ef}$								
Axial distance		$S_{cr,N}$	mm	$2 \cdot c_{cr,N}$								
Splitting													
Edge distance	$h/h_{ef} \geq 2,0$	$C_{cr,sp}$	mm	$1,0 \cdot h_{ef}$								
	$2,0 > h/h_{ef} > 1,3$	$C_{cr,sp}$	mm	$2 \cdot h_{ef} (2,5 - h/h_{ef})$								
	$h/h_{ef} \leq 3,0$	$C_{cr,sp}$	mm	$2,4 \cdot h_{ef}$								
Axial distance		$S_{cr,sp}$	mm	$2 \cdot c_{cr,sp}$								
Installation factor (dry and wet concrete)		γ_{inst}		1.0	1.2							
Installation factor (flooded bore hole)		γ_{inst}		1,4					No performance declared			

[1] f_{uk} shell be taken from the specifications of reinforcing bars

[2] In absence of national regulation

Tabel C7: Characteristic values of shear loads under static, quasi-static and seismic action											
Diameter reinforcing bar			**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	$V_{Rk,s}$	kN	$0,50 \times A_s \cdot f_{uk}$ [1]								
	$V_{Rk,s,eq}$	kN	$0,35 \times A_s \cdot f_{uk}$ [1]								
Cross section area	A_s	mm^2	50	79	113	154	201	214	491	616	804
Partial factor	$\gamma_{Ms,V}$	-	1,5 [2]								

Ductility factor	k_7	-	1,0									
Steel failure with lever arm												
Characteristic bending moment	$M^0_{Rk,s}$	Nm	$1,2 \times W_{el} \times f_{uk}$ [1)]									
	$M^0_{Rk,s,eq}$	Nm	No performance declared									
Elastic section modulus	W_{el}	mm^3	50	98	170	269	402	785	1534	2155	3217	
Partial factor	$\gamma_{Ms,V}$		1,5 [2)]									
Concrete pry-out failure												
Factor	k_8	-	2.0									
Installation factor	γ_{inst}	-	1,0									
Concrete edge failure												
Effective length of fastener	l_f	mm	$l_f = \min(h_{ef}; 8\ d_{nom})$									
Outside diameter of fastener	d_{nom}	mm	8	10	12	14	16	20	25	28	32	
Installation factor	γ_{inst}	-	1.0									
Factor for annular gap	α_{gap}	-	0,5 (1,0) [3)]									

Warning: Product has limitations. Please ensure when using this product that you read the instructions carefully. Soudal recommends testing prior due to the diversity of substrates and applications that are out of Soudal's control. Soudal cannot accept accountability for adverse results.

10. Health and Safety Recommendation

- Apply the usual industrial hygiene.
- Please refer to MSDS for more detailed information

Remark
The directives and data contained in this documentation is provided in good faith and accurately reflect Soudal's knowledge when its products are properly stored, handled and applied under normal conditions in accordance with Soudal's recommendations. In practice, the diversity of the materials, substrates, environments, site conditions, product storage, handling and application are such that no warranty can be given in respect to the merchantability or fit for purpose, of any product. All users must determine the product suitability for their purposes through testing. This technical data sheet and product properties may change without notice so users, suppliers and retailers of Soudal products should always check that the data sheets they have are the latest. To the maximum extent permitted by law, Soudal disclaims all warranties in relation to either the manufacture, storage and end use of the product. All orders are accepted subject to our current terms of trade. ***If any clarification is required, please contact Soudal Technical Services or email info@soudal.co.nz.***

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