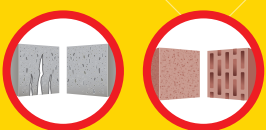


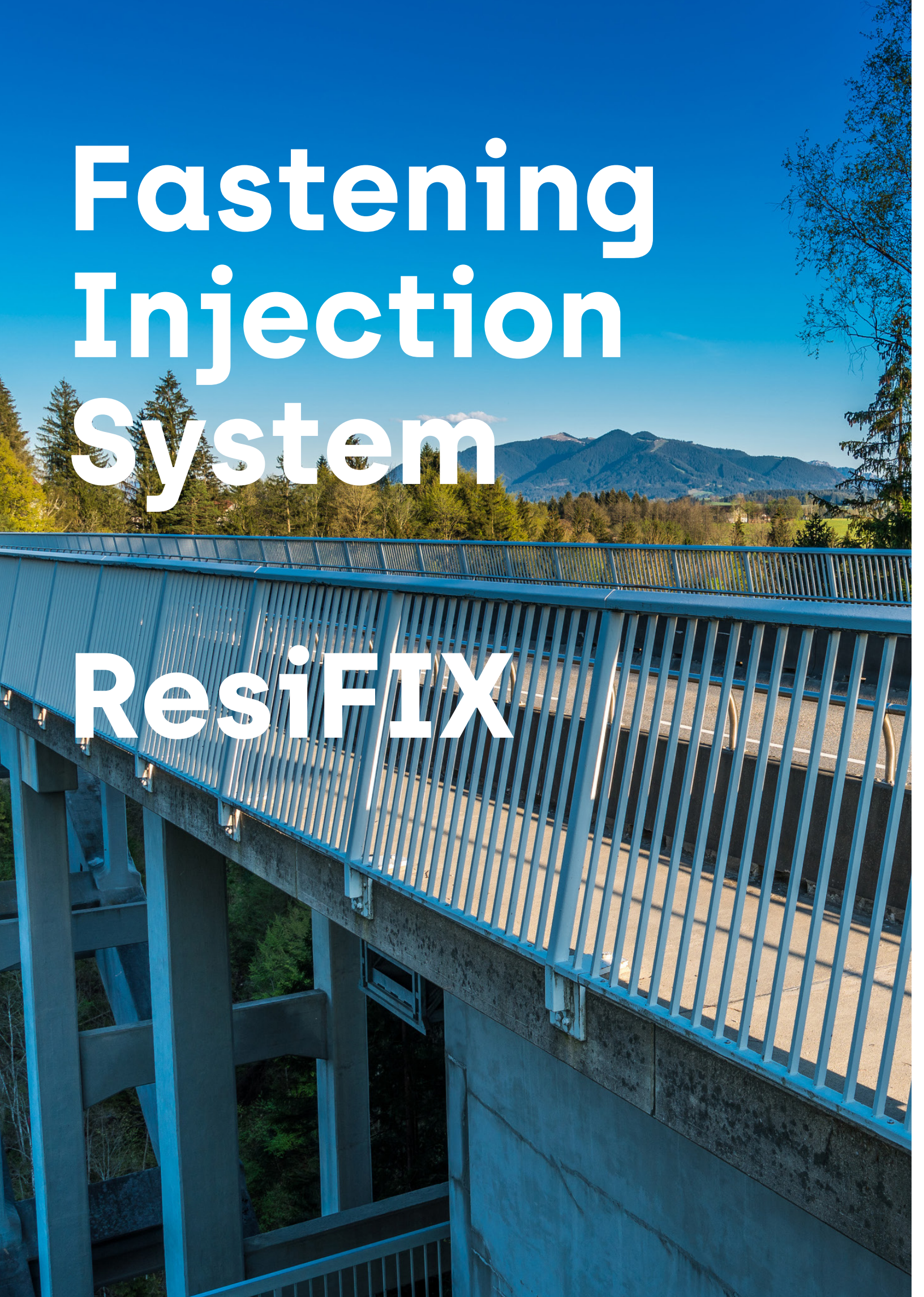
CELO

Fastening injection system ResiFIX












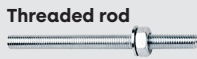














































Fastening Injection System

ResiFIX



ResiFIX Systems in Comparison

	ResiFIX VYSF				ResiFIX VY ECO SF	ResiFIX PYSF				ResiFIX Pure Epoxy		
	300	345	410	300	300	165	300	345	410	385	585	
Content [ml]	280ml	345 ml	410 ml	300 ml	300 ml	165 ml	300 ml	345 ml	410 ml	385	585	
Nozzles included	 2	 2	 1	 2	 2	 2	 1	 1	 1	 1	 1	
Types	Standard			Cool	Standard	Standard				Standard		
Shelf life*	18 months			12 mon.	12 months	12 months	18 months		24 months			
A4 STAINLESS STEEL 	steel 4.6, 5.8, 8.8 stainless steel				steel 4.6, 5.8, 8.8 stainless steel	steel 4.6, 5.8, 8.8 stainless steel				steel 4.6, 5.8, 8.8 stainless steel		
Reinforcing bars 	✓				✓ (only Option 7)	✗				✓		
Option 1  Approval for cracked concrete (Option 1)	 M8 - M30, Ø8 - Ø32				 M8 - M16	 ✗				 M8 - M30, Ø8 - Ø32		
Option 7  Approval for non-cracked concrete (Option 7)	 M8 - M30, Ø8 - Ø32				 M8 - M24, Ø8 - Ø25	 M8 - M16				 M8 - M30, Ø8 - Ø32		
Rebar  Approval for post-installed rebar connections	 Ø8 - Ø32				 ✗		 ✗				 Ø8 - Ø25	
Masonry  Approval for masonry	 M8 - M16				 M8 - M16		 M8 - M16				 ✗	
R 120  Fire test certification [R 120]					 ✗		 ✗					
FIXING seismic  Usage under seismic action							 ✗					
LEED tested  EMISSIONS DANS L'AIR INTERIEUR A+ A B C Emissions in closed spaces	✓				✓		✓				✓	
STYRENE FREE  Styrene free	✓				✓		✓				✓	
Performance in non-cracked concrete C20/25 [M10-90]	 1350 Kg				 900 Kg		 900 Kg				 1380 Kg	
Performance in hollow brick HLz 12 [M10-130]	 140 Kg				 100 Kg		 100 Kg				 ✗	
Wet drill holes	✓				✓		✓				✓	
Waterfilled drill holes 	✓				✓		✓				✓	
Suitable for contact with drinking water	✓				 ✗		 ✗				✓	
Min. temperature of concrete	≥ -10°C		≥ -20°C		≥ -5°C		≥ -5°C		≥ +5°C			
Temperature range after curing	-40°C to +120°C				-40°C to +80°C		-40°C to +80°C				-40°C to +72°C	
Chemical resistance	very high				high		high				excellent	
Odour	marginal				medium		medium				marginal	

Risk of staining in natural stone! Before use, we recommend a 5-days test (there is no risk with Pure Epoxy BRSF).
*All cartridges can be used until the expiration date by resealing with the cap or by replacing the static mixer.

Fastening injection system

ResiFIX



Advantages



Injection mortar ResiFIX VYSF (styrene free)



Injection mortar ResiFIX VY ECO SF (styrene free)

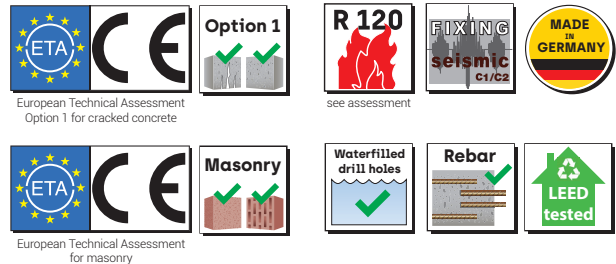


Injection mortar ResiFIX PYSF (styrene free)



Injection mortar ResiFIX Pure Epoxy (styrene free)

Approvals and certificates



Suitable building materials

Very suitable



- Concrete
- Solid brick
- Solid sand-lime brick
- Lightweight solid concrete blocks
- Aerated concrete
- Hollow brick
- Hollow sand-lime brick
- Lightweight hollow concrete blocks
- Natural stone (risk of discolouration)

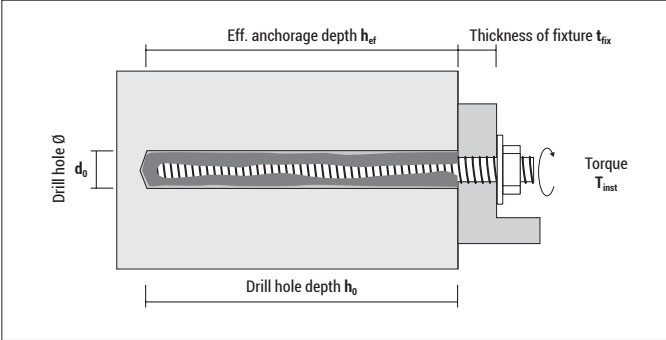
Typical applications

- Steel constructions
- Cantilevers
- Facade substructures
- Machines
- Guard rails
- Canopies
- Distance mountings
- Door and window frames
- Stairways
- Wood constructions
- Cable trays
- Pipe installations

Fastening injection system ResiFIX

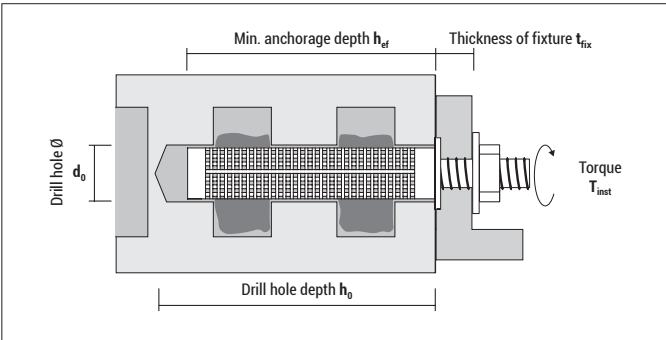
Mounting in concrete and solid brick

1. Drill hole
2. Clean hole (blow 4x, brush 4x)
3. Discard first 10 cm. Inject necessary amount of chemical mortar, (min. 2/3 of hole)
4. Push the anchor rod into the hole while turning
5. Respect curing time before applying any load or torque



Mounting in hollow brick

1. Drill hole
2. Clean hole (blow 2x, brush 2x)
3. Insert anchor sleeve
4. Discard first 10 cm. Inject necessary amount of chemical mortar (fill sleeve completely)
5. Push the anchor rod into the hole while turning
6. Respect curing time before applying any load or torque



Fastening injection system

ResiFIX VYSF



Approvals and certificates



Approved for anchor rods and reinforced steel bars

- **Various applications**



Class A+: Lowest emissions of critical substances in closed spaces

- **Harmless to health after curing**



Sustainability certification LEED

- **Environmentally friendly, low-pollutant, low-emission and sustainable construction product**



Usage under seismic conditions

- **Tested for use in areas with high risk of earthquakes**



European Technical Assessment Option 1 for cracked and non-cracked concrete (M8 - M30)

- **For a wide range of safety critical applications**



Apart from the 410 ml cartridge, two mixing nozzles are included

- **You can continue working immediately after an interruption**



Very high load values

- **Heavy-duty usage**



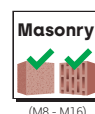
Usage also in water-filled drill holes and suitable for contact with drinking water

- **Extended range of applications**



Fire resistance test R120

- **Fulfills fire protection requirements**



European Technical Assessment for masonry (M8 - M16)

- **For more application flexibility**



Styrene free

- **Reduced odour exposure**

Fastening injection system ResiFIX VYSF



Vinylester VYSF (styrene free)

Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]		[pcs]
VY 300 SF	300VSF	280	2	18	●	12
VY 345 SF	345VSF	345	2	18	●	12
VY 410 SF	410VYSF	410	1	18	●	12



Vinylester VYSF Cool (styrene free)

for -20°C to +10°C



Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]		[pcs]
VY 300 SF Cool	300VCSF	300	2	12	●	12

Seasonal article



30 x 40 x 23 cm

Universal box with ResiFIX VY 300 SF, VY 345 SF

Type	Art-No	Content [cartridges]	Mixings nozzles included [pcs]	Shelf life [months]		[pcs]
VY 300 SF in universal box	SYS300VSF20	20	40	18	●	1
VY 345 SF in universal box	SYS345VSF20	20	40	18	●	1

Curing times ResiFIX Vinylester VYSF

Temperature of building material	[°C]	> -10 ¹⁾	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Max. working time	[min]	90	90	45	25	15	6	4	1,5
Min. curing time ²⁾	[min]	24h	14h	7h	2h	80	45	25	15

¹⁾ Cartridge temperature min. 15 °C

²⁾ Double curing time in wet concrete

Curing times ResiFIX Vinylester VYSF Cool

Temperature of building material	[°C]	> -20	> -15	> -10	> -5	> 0	> +5	+10	> +10
Max. working time	[min]	75	55	35	20	10	6	6	
Min. curing time ¹⁾	[min]	24h	16h	10h	5h	2,5h	80	60	

¹⁾ Double curing time in wet concrete

Fastening injection system ResiFIX VYSF



Fastening in concrete (Standard and Cool)

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 (Option 7) and cracked concrete C20/25 (Option 1) without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M and γ_p). Design according to TR029. See ETA assessment for design and calculations.

Anchor studs RESI AST, VA AST	M8	M10	M12	M16	M20	M24	M 27	M30
Drill hole \varnothing d_0 [mm]	10	12	14	18	24	28	30	35
Anchorage depth $h_{ef,min}/h_{ef,stand}/h_{ef,max}$ [mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320	90 / 170 / 400	96 / 210 / 480	108 / 240 / 540	120 / 280 / 600

Permissible tension load ¹⁾²⁾ [24 °C / 40 °C] ³⁾ in non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	7,2/8,7/8,7	9,0/13,5/13,8	11,7/19,7/20,0	14,3/28,0/37,3	17,1/44,4/58,3	18,8/61,0/83,9	23,1/74,5/109,4	26,3/93,9/133,5
Stainless steel A4	N_{per} [kN]	7,2/9,6/9,8	9,0/13,5/15,5	11,7/19,7/22,5	14,3/28,0/41,9	17,1/44,4/65,5	18,8/61,0/94,3	23,1/57,3/57,4	26,3/70,0/70,0

Permissible tension load ¹⁾²⁾ [24 °C / 40 °C] ³⁾ in cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	2,9/3,8/7,7	3,7/5,6/12,5	5,8/9,1/19,7	8,8/13,7/35,1	12,2/23,3/54,9	13,4/34,6/79,0	16,5/52,5/109,4	18,8/66,9/133,5
Stainless steel A4	N_{per} [kN]	2,9/3,8/7,7	3,7/5,6/12,5	5,8/9,1/19,7	8,8/13,7/35,1	12,2/23,3/54,9	13,4/34,6/79,0	16,5/52,5/57,4	18,8/66,9/70,0

Permissible tension load ¹⁾²⁾ [50 °C / 80 °C] ³⁾ in non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	5,4/7,2/8,7	6,7/10,1/13,8	9,4/14,8/20,0	14,3/22,4/37,3	17,1/38,1/58,3	18,8/53,4/83,9	23,1/60,6/109,4	26,3/68,1/133,5
Stainless steel A4	N_{per} [kN]	5,4/7,2/9,8	6,7/10,1/15,5	9,4/14,8/22,5	14,3/22,4/41,9	17,1/38,1/65,5	18,8/53,4/94,3	23,1/57,4/57,4	26,3/68,1/70,0

Permissible tension load ¹⁾²⁾ [50 °C / 80 °C] ³⁾ in cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	1,8/2,4/4,8	2,6/3,9/8,7	4,2/6,6/14,4	6,4/10,0/25,5	9,0/17,0/39,9	11,5/25,1/57,4	16,5/36,4/78,8	18,8/47,1/101,0
Stainless steel A4	N_{per} [kN]	1,8/2,4/4,8	2,6/3,9/8,7	4,2/6,6/14,4	6,4/10,0/25,5	9,0/17,0/39,9	11,5/25,1/57,4	16,5/36,4/57,4	18,8/47,1/70,0

Permissible shear load ¹⁾ in non-cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,2	8,3	12,0	22,4	35,0	45,2/50,4/50,4	55,5/65,6/65,6	63,2/80,1/80,1
Stainless steel A4	V_{per} [kN]	5,9	9,3	13,5	25,1	39,2	45,2/56,5/56,5	34,5/34,5/34,5	42,1/42,1/42,1

Permissible shear load ¹⁾ in cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,2/5,2/5,2	8,3	12,0	21,1/22,4/22,4	29,3/35,0/35,0	32,2/50,4/50,4	39,6/65,6/65,6	45,1/80,1/80,1
Stainless steel A4	V_{per} [kN]	5,7/5,9/5,9	9,0/9,3/9,3	13,5	21,1/25,1/25,1	29,3/39,2/39,2	32,2/56,5/56,5	34,5/34,5/34,5	42,1/42,1/42,1

Permissible bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,7	21,4	37,4	94,9	185,2	320,0	476,2	642,1
Permissible bending moment (Stainless steel A4)	M_{per} [Nm]	12,0	24,0	41,9	106,4	207,8	359,0	250,1	337,2

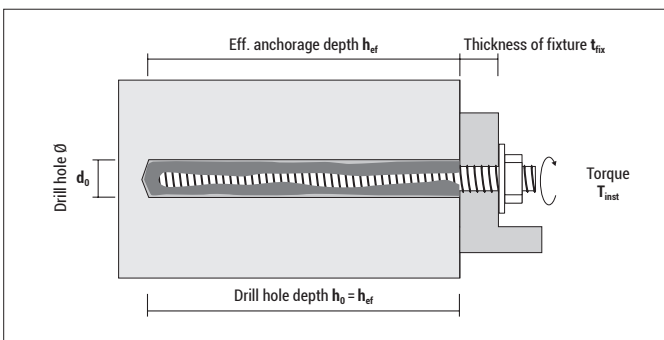
Spacing and edge distance

Spacing	$S_{cr,N}$ [mm]	180 / 240 / 480	180 / 270 / 600	210 / 330 / 720	240 / 375 / 960	270 / 510 / 1200	288 / 630 / 1440	324 / 720 / 1620	360 / 840 / 1800
Edge distance	$C_{cr,N}$ [mm]	90 / 120 / 240	90 / 135 / 300	105 / 165 / 360	120 / 188 / 480	135 / 255 / 600	144 / 315 / 720	162 / 360 / 810	180 / 420 / 900
Minimum spacing	S_{min} [mm]	40	50	60	80	100	120	135	150
Minimum edge distance	C_{min} [mm]	40	50	60	80	100	120	135	150
Min. thickness of structural part	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$			
Max. installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80	120	160	180	200

¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$

²⁾ For higher concrete strengths up to C50/60 the values increase by max. 10%.

³⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 72°C/120°C please see ETA assessment
If underrun the char. spacing or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.



Fastening injection system ResiFIX VYSF



Fastening in masonry (Solid and hollow brick) Standard and Cool

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions please see ETA assessment.

Suitable building materials	Density ρ [kg/dm ³]	Compressive strength f_b [N/mm ²]	Anchor studs RESI AST, VA AST Size	Sleeve Size	Min. Anchorage depth h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾		
						Tension load N_{per} [kN]	Shear load V_{per} [kN]	
Solid sand-lime brick KS (NF)		$\geq 2,0$	≥ 20	M8	without / SH 12-80	80 / 80	1,71 / 1,57	1,14 / 1,14
				M10	without / SH 16-85	90 / 85	1,71 / 1,43	1,29 / 1,14
				M12	without / SH 20-85	100 / 85	1,71 / 1,14	1,14 / 1,14
				M16	without / SH 20-85	100 / 85	1,43 / 1,14	1,14 / 1,14
Solid brick Mz (DF)		$\geq 1,6$	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,29	1,43 / 1,43
				M10	without / SH 16-85	90 / 85	1,57 / 1,43	1,43 / 1,43
				M12	without / SH 20-85	100 / 85	1,71 / 1,43	1,43 / 1,43
				M16	without / SH 20-85	100 / 85	1,71 / 1,43	2,29 / 1,43
Aerated concrete AAC6		$\geq 0,6$	≥ 6	M8	without	80	0,89	2,14
				M10	without	90	1,43	3,57
				M12	without	100	1,79	3,57
				M16	without	100	2,32	3,57
Hollow sand-lime brick KSL (KSL 3DF)		$\geq 1,4$	≥ 12	M8	SH 12-80	80	0,57	0,86
				M10	SH 16-85	85	0,57	1,29
				M10	SH 16-130	130	0,71	1,29
				M12	SH 20-85	85	1,71	1,29
Hollow brick HLZ (16DF)		$\geq 0,8$	≥ 12	M8	SH 12-80	80	1,00	1,14
				M10	SH 16-85	85	1,00	1,86
				M10	SH 16-130	130	1,43	1,86
				M12	SH 20-85	85	1,00	2,00
				M16	SH 20-85	85	1,00	2,00

N_{per}, V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

Drilling method: KS and Mz: hammer drilling; Aerated concrete, KSL and HLZ: rotary drilling

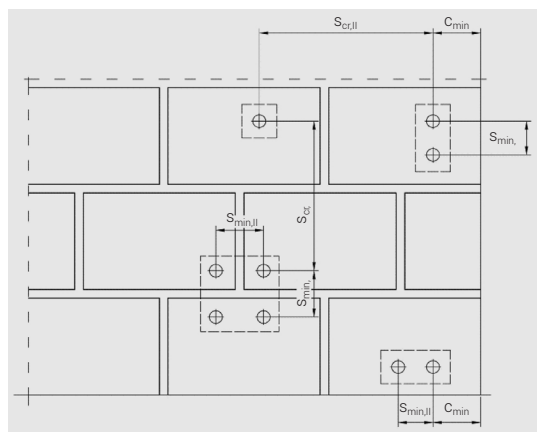
¹⁾ Max. long term temperature / max. short term temperature. Long-term temperature is constant over a longer period of time. The short-term temperature is only present for a short time (day/night change).

Spacing and edge distance

Suitable building materials	Anchor stud	Sleeve	Char. Edge distance c_{cr} [mm]	Min. Edge distance c_{min} [mm]	Char. Spacing parallel to the bearing joint $s_{cr, }$ [mm]	Char. Spacing perpendicular to the bearing joint $s_{cr,\perp}$ [mm]	Min. Spacing s_{min} [mm]	Max. Torque T_{inst} [Nm]
Solid sand-lime brick KS (NF)	M8	without	120	60	240	240	120	10
	M10	without	135	60	270	270	120	20
	M12	without	150	60	300	300	120	20
	M16	without	150	60	300	300	120	20
Solid brick Mz (DF)	M8	without	120	60	240	240	120	6
	M10	without	135	60	270	270	120	10
	M12	without	150	60	300	300	120	10
	M16	without	150	60	300	300	120	10
Aerated concrete AAC6	M8	without	120	75*	240	240	100	2
	M10	without	135	75*	270	270	100	2
	M12	without	150	75*	300	300	100	2
	M16	without	150	75*	300	300	100	2
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	100	60	240	120	120	8
	M10	SH 16-85	100	60	240	120	120	8
	M10	SH 16-130	100	60	240	120	120	8
	M12,M16	SH 20-85	120	60	240	120	120	8
Hollow brick HLZ (16DF)	M8	SH 12-80	100	100	497	238	100	6
	M10	SH 16-85	100	100	497	238	100	6
	M10	SH 16-130	100	100	497	238	100	6
	M12,M16	SH 20-85	120	120	497	238	100	6

Permissible bending moment

Steel		Anchor stud			
		M8	M10	M12	M16
Zinc plated 5.8	M_{per} [Nm]	10,9	21,1	37,7	94,4
Stainless steel A4	M_{per} [Nm]	11,9	23,8	42,1	106,7



* Values are valid for pull-out load; for shear load parallel to the free edge: 75 mm, for shear load perpendicular to the free edge: $1,5 \times h_{ef}$

Group factors for anchor groups under tension, shear load parallel or perpendicular to the free edge: please see ETA assessment

Fastening injection system

ResiFIX VY ECO SF



Approvals and certificates



Class A+: Lowest emissions of critical substances in closed spaces

- Harmless to health after curing



Sustainability certification LEED

- Environmentally friendly, low-pollutant, low-emission and sustainable construction product



European Technical Assessment Option 1 for cracked (M8 - M16) and non-cracked concrete (M8 - M24)

- For a wide range of safety critical applications



Usage under seismic conditions

- Tested for use in areas with high risk of earthquakes



Two mixing nozzles are included with every cartridge

- You can continue working immediately after an interruption



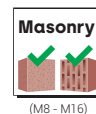
Usage also in water-filled drill holes

- Extended range of applications



Good load values in concrete and masonry

- Multi-material usage



European Technical Assessment for masonry (M8 - M16)



- For more application flexibility



Styrene free

- Reduced odour exposure

Vynylester VY ECO SF (styrene free)

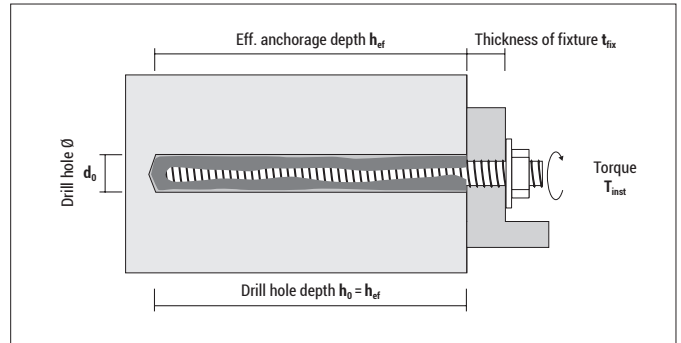
Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]		 [pcs]
VY ECO 300 SF	300VYECOSF	300	2	12	●	12

Fastening injection system ResiFIX VY ECO SF

Curing times ResiFIX Vynylester VY ECO SF

Temperature of building material		> -5	> 0	> +5	> +10	> +20	> +30	> +40
Max. working time	[min]	90	45	25	20	6	4	2
Min. curing time ²⁾	[min]	6h	3h	2h	100	45	25	20

¹⁾ Cartridge temperature min. 15 °C
²⁾ Double curing time in wet concrete



Fastening in concrete

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 (Option 7) and cracked concrete C20/25 (Option 1) without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M and γ_F). Design according to TR029. See ETA assessment for design and calculations.

Anchor studs RESI AST, VA AST		M8	M10	M12	M16	M20	M24
Drill hole \varnothing	d_0 [mm]	10	12	14	18	24	28
Anchorage depth	$h_{ef,min} / h_{ef,stand} / h_{ef,max}$ [mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320	90 / 170 / 400	96 / 210 / 480

Permissible tension load ^{1) 2)} [24 °C / 40 °C] ³⁾ in non-cracked concrete (dry or wet)

	N_{per} [kN]	5,1 / 6,8 / 8,7	6,0 / 9,0 / 13,8	8,4 / 13,2 / 20,0	12,8 / 19,9 / 37,3	17,1 / 33,9 / 58,3	18,8 / 50,3 / 83,9
Zinc plated 5.8	N_{per} [kN]	5,1 / 6,8 / 8,7	6,0 / 9,0 / 13,8	8,4 / 13,2 / 20,0	12,8 / 19,9 / 37,3	17,1 / 33,9 / 58,3	18,8 / 50,3 / 83,9
Stainless steel A4	N_{per} [kN]	5,1 / 6,8 / 9,8	6,0 / 9,0 / 15,5	8,4 / 13,2 / 22,5	12,8 / 19,9 / 41,9	17,1 / 33,9 / 65,5	18,8 / 50,3 / 94,3

Permissible tension load ^{1) 2)} [24 °C / 40 °C] ³⁾ in cracked concrete (dry or wet)

	N_{per} [kN]	2,7 / 3,6 / 7,2	3,4 / 5,0 / 11,2	4,7 / 7,4 / 16,2	7,2 / 11,2 / 28,7	–	–
Zinc plated 5.8	N_{per} [kN]	2,7 / 3,6 / 7,2	3,4 / 5,0 / 11,2	4,7 / 7,4 / 16,2	7,2 / 11,2 / 28,7	–	–
Stainless steel A4	N_{per} [kN]	2,7 / 3,6 / 7,2	3,4 / 5,0 / 11,2	4,7 / 7,4 / 16,2	7,2 / 11,2 / 28,7	–	–

Permissible tension load ^{1) 2)} [50 °C / 80 °C] ³⁾ in non-cracked concrete (dry or wet)

	N_{per} [kN]	3,9 / 5,2 / 8,7	4,5 / 6,7 / 13,8	6,3 / 9,9 / 20,0	9,6 / 15,0 / 37,3	13,5 / 25,4 / 58,3	17,2 / 37,7 / 83,9
Zinc plated 5.8	N_{per} [kN]	3,9 / 5,2 / 8,7	4,5 / 6,7 / 13,8	6,3 / 9,9 / 20,0	9,6 / 15,0 / 37,3	13,5 / 25,4 / 58,3	17,2 / 37,7 / 83,9
Stainless steel A4	N_{per} [kN]	3,9 / 5,2 / 9,8	4,5 / 6,7 / 15,0	6,3 / 9,9 / 21,5	9,6 / 15,0 / 38,3	13,5 / 25,4 / 59,8	17,2 / 37,7 / 86,2

Permissible tension load ^{1) 2)} [50 °C / 80 °C] ³⁾ in cracked concrete (dry or wet)

	N_{per} [kN]	2,1 / 2,8 / 5,6	2,6 / 3,9 / 8,7	3,7 / 5,8 / 12,6	5,6 / 8,7 / 22,3	–	–
Zinc plated 5.8	N_{per} [kN]	2,1 / 2,8 / 5,6	2,6 / 3,9 / 8,7	3,7 / 5,8 / 12,6	5,6 / 8,7 / 22,3	–	–
Stainless steel A4	N_{per} [kN]	2,1 / 2,8 / 5,6	2,6 / 3,9 / 8,7	3,7 / 5,8 / 12,6	5,6 / 8,7 / 22,3	–	–

Permissible shear load ¹⁾ in non-cracked concrete

	V_{per} [kN]	5,2	8,3	12,0	22,4	35,0	45,2 / 50,4 / 50,4
Zinc plated 5.8	V_{per} [kN]	5,2	8,3	12,0	22,4	35,0	45,2 / 50,4 / 50,4
Stainless steel A4	V_{per} [kN]	5,9	9,3	13,5	25,1	39,2	45,2 / 56,5 / 56,5

Permissible shear load ¹⁾ in cracked concrete

	V_{per} [kN]	5,2 / 5,2 / 5,2	8,1 / 8,3 / 8,3	11,3 / 12,0 / 12,0	17,2 / 22,4 / 22,4	–	–
Zinc plated 5.8	V_{per} [kN]	5,2 / 5,2 / 5,2	8,1 / 8,3 / 8,3	11,3 / 12,0 / 12,0	17,2 / 22,4 / 22,4	–	–
Stainless steel A4	V_{per} [kN]	5,9 / 5,9 / 5,9	8,1 / 9,3 / 9,3	11,3 / 13,5 / 13,5	17,2 / 25,1 / 25,1	–	–

Permissible bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,7	21,4	37,4	94,9	185,2	320,0
Permissible bending moment (Stainless steel A4)	M_{per} [Nm]	12,0	24,0	41,9	106,4	207,8	359,0

Spacing and edge distance

Spacing	$s_{cr,N}$ [mm]	180 / 240 / 480	180 / 270 / 600	210 / 330 / 720	240 / 375 / 960	270 / 510 / 1200	288 / 630 / 1440
Edge distance	$c_{cr,N}$ [mm]	90 / 120 / 240	90 / 135 / 300	105 / 165 / 360	120 / 188 / 480	135 / 255 / 600	144 / 315 / 720
Minimum spacing	s_{min} [mm]	40	50	60	80	100	120
Minimum edge distance	c_{min} [mm]	40	50	60	80	100	120
Min. thickness of structural part	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$	
Max. installation torque	$T_{inst \leq}$ [Nm]	10	20	40	80	120	160

¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$

²⁾ For higher concrete strengths up to C50/60 the values increase by max. 19%.

³⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 72°C/120°C please see ETA assessment
 If underrun the char. spacing or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , s_{min} and c_{min} must be observed.

Fastening injection system ResiFIX VY ECO SF



Fastening in masonry (Solid and hollow brick)

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions please see ETA assessment.

Suitable building materials	Density ρ [kg/dm ³]	Compressive strength f_b [N/mm ²]	Anchor studs RESI AST, VA AST		Min. Anchorage depth h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾		
			Size	Sleeve Size		Tension load N_{per} [kN]	Shear load V_{per} [kN]	
Solid sand-lime brick KS (NF)		$\geq 2,0$	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,14	1,29 / 1,14
				M10	without / SH 16-85	90 / 85	1,29 / 1,14	1,29 / 1,29
				M12	without / SH 20-85	100 / 85	1,57 / 1,14	1,43 / 1,43
				M16	without / SH 20-85	100 / 85	1,29 / 1,14	1,43 / 1,43
Solid brick Mz (DF)		$\geq 1,6$	≥ 20	M8	without / SH 12-80	80 / 80	0,71 / 0,86	1,29 / 1,14
				M10	without / SH 16-85	90 / 85	0,71 / 0,86	1,57 / 1,43
				M12	without / SH 20-85	100 / 85	0,57 / 0,86	2,14 / 1,43
				M16	without / SH 20-85	100 / 85	1,00 / 0,86	2,14 / 1,43
Aerated concrete AAC4		$\geq 0,50$	≥ 4	M8	without	80	0,32	0,54
				M10	without	90	0,89	0,71
				M12	without	100	0,89	0,89
				M16	without	100	1,25	1,25
Hollow sand-lime brick KSL (KSL 3DF)		$\geq 1,4$	≥ 12	M8	SH 12-80	80	0,57	0,71
				M10	SH 16-85	85	0,57	1,00
				M10	SH 16-130	130	1,00	1,29
				M12	SH 20-85	85	0,57	1,00
Hollow brick HLz (16DF)		$\geq 0,8$	≥ 12	M8	SH 12-80	80	0,43	1,00
				M10	SH 16-85	85	0,71	1,71
				M10	SH 16-130	130	1,00	2,29
				M12	SH 20-85	85	1,00	1,71
				M16	SH 20-85	85	1,00	1,71

N_{per} , V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

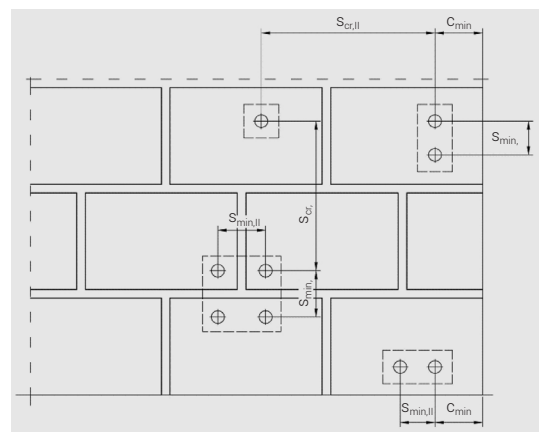
Drilling method: KS and Mz: hammer drilling; Aerated concrete, KSL and HLz: rotary drilling

¹⁾ Max. long term temperature / max. short term temperature. Long-term temperature is constant over a longer period of time. The short-term temperature is only present for a short time (day/night change).

Spacing and edge distance

Suitable building materials	Anchor stud	Sleeve	Char. Edge distance c_{cr}	Min. Edge distance c_{min}	Char. Spacing parallel to the bearing joint $s_{cr, }$	Char. Spacing perpendicular to the bearing joint $s_{cr,\perp}$	Min. Spacing s_{min}	Max. Torque T_{inst}
			[mm]	[mm]	[mm]	[mm]	[mm]	[Nm]
Solid sand-lime brick KS (NF)	M8	without	120	120	240	240	240	10
	M10	without	135	135	270	270	270	20
	M12	without	150	150	300	300	300	20
	M16	without	150	150	300	300	300	20
Solid brick Mz (DF)	M8	without	120	120	240	240	240	6
	M10	without	135	135	270	270	270	10
	M12	without	150	150	300	300	300	10
	M16	without	150	150	300	300	300	10
Aerated concrete AAC4	M8	without	120	120	240	240	240	2
	M10	without	135	135	270	270	270	2
	M12	without	150	150	300	300	300	2
	M16	without	150	150	300	300	300	2
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	100	100	240	240	113*	8
	M10	SH 16-85	100	100	240	240	113*	8
	M10	SH 16-130	100	100	240	240	113*	8
	M12,M16	SH 20-85	120	120	240	240	113*	8
Hollow brick HLz (16DF)	M8	SH 12-80	100	100	497	497	238**	6
	M10	SH 16-85	100	100	497	497	238**	6
	M10	SH 16-130	100	100	497	497	238**	6
	M12,M16	SH 20-85	120	120	497	497	238**	6

Permissible bending moment		Anchor stud			
Steel		M8	M10	M12	M16
Zinc plated 5.8	M_{per} [Nm]	10,8	21,2	37,7	94,9
Stainless steel A4	M_{per} [Nm]	11,9	23,8	42,1	106,2



* Values are valid for $s_{min,\perp}$. For $s_{min,||}$ 240 mm is valid.

** Values are valid for $s_{min,\perp}$. For $s_{min,||}$ 497 mm is valid.

Fastening injection system

ResiFIX PYSF



Approvals and certificates



Class A+: Lowest emissions of critical substances in closed spaces

- Harmless to health after curing



Sustainability certification LEED

- Environmentally friendly, low-pollutant, low-emission and sustainable construction product



European Technical Assessment Option 7 for non-cracked concrete (M8 - M16)

- For standard applications in concrete

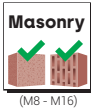


Usage also in water-filled drill holes

- Extended range of applications



Good load values at a very good **price-performance ratio**



European Technical Assessment for masonry (M8 - M16)

- For more application flexibility



Styrene free

- Reduced odour exposure

Fastening injection system ResiFIX PYSF



Polyester PYSF (styrene free)

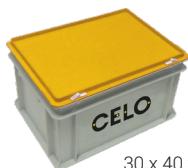
Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]		[pcs]
PY 300 SF	300PSF	300	1	12	●	12
PY 345 SF	345PSF	345	1	18	●	12
PY 410 SF	410PYSF	410	1	18	●	12



ResiFIX PYSF (styrene free)

Type	Art-No	Content [ml]		[pcs]	[Blister]
PY 165 SF	165PSF	165	●	1	12

Incl. 2 mixings nozzles MD



30 x 40 x 23 cm

Universal box with ResiFIX PY 300 SF, PY 345 SF

Type	Art-No	Content [cartridges]	Mixings nozzles included [pcs]	Shelf life [months]		[pcs]
PY 300 SF in universal box	SYS300PSF20	20	20	12	●	1
PY 345 SF in universal box	SYS345PSF20	20	20	18	●	1

Curing times ResiFIX Polyester PYSF

Temperature of building material	[°C]	> -10	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Max. working time	[min]	–	90	45	25	20	6	4	1,5
Min. curing time ¹⁾	[min]	–	6h	3h	2h	100	45	25	15

¹⁾ Double curing time in wet concrete

Fastening injection system ResiFIX PYSF



Fastening in concrete

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 for single anchor without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M and γ_F). See ETA assessment for design and calculations.

Anchor studs RESI AST, VA AST	M8	M10	M12	M16
Drill hole \varnothing d_0 [mm]	10	12	14	18
Anchorage depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$ [mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320

Permissible tension load ¹⁾²⁾ [24 °C / 40 °C] ³⁾ in non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	5,1 / 6,8 / 8,7	6,0 / 9,0 / 13,8	8,4 / 13,2 / 20,0	12,8 / 19,9 / 37,3
Stainless steel A4	N_{per} [kN]	5,1 / 6,8 / 9,8	6,0 / 9,0 / 15,5	8,4 / 13,2 / 22,5	12,8 / 19,9 / 41,9

Permissible shear load [24 °C / 40 °C] ³⁾

Zinc plated 5.8	V_{per} [kN]	5,2	8,3	12,0	22,4
Stainless steel A4	V_{per} [kN]	5,9	9,3	13,5	25,1

Permissible bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,7	21,4	37,4	94,9
Permissible bending moment (Stainless steel A4)	M_{per} [Nm]	12,0	24,0	41,9	106,4

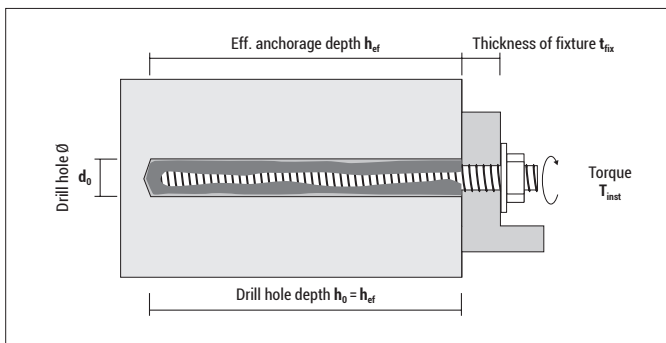
Spacing and edge distance

Spacing	$S_{cr,N}$ [mm]	180 / 240 / 480	180 / 270 / 600	210 / 330 / 720	240 / 375 / 960
Edge distance	$C_{cr,N}$ [mm]	90 / 120 / 240	90 / 135 / 300	105 / 165 / 360	120 / 188 / 480
Minimum spacing	S_{min} [mm]	40	50	60	80
Minimum edge distance	C_{min} [mm]	40	50	60	80
Min. thickness of structural part	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$			$h_{ef} + 2d_0$
Max. installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80

¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$

²⁾ For higher concrete strengths up to C50/60 the values increase by max. 19%.

³⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 50°C/80°C please see ETA assessment
If underrun the char. spacing or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.



Fastening injection system ResiFIX PYSF



Fastening in masonry (Solid and hollow brick)

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions please see ETA assessment.

Suitable building materials	Density ρ [kg/dm ³]	Compressive strength f_b [N/mm ²]	Anchor studs RESI AST, VA AST		Sleeve Size	Min. Anchorage depth h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾	
			Size	Size			Tension load N_{per} [kN]	Shear load V_{per} [kN]
Solid sand-lime brick KS (NF)		$\geq 2,0$	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,14	1,29 / 1,14
				M10	without / SH 16-85	90 / 85	1,29 / 1,14	1,29 / 1,29
				M12	without / SH 20-85	100 / 85	1,60 / 1,14	1,43 / 1,43
				M16	without / SH 20-85	100 / 85	1,29 / 1,14	1,43 / 1,43
Solid brick Mz (DF)		$\geq 1,64$	≥ 20	M8	without / SH 12-80	80 / 80	0,71 / 0,86	1,29 / 1,14
				M10	without / SH 16-85	90 / 85	0,71 / 0,86	1,57 / 1,43
				M12	without / SH 20-85	100 / 85	0,57 / 0,86	2,14 / 1,43
Aerated concrete AAC4		$\geq 0,50$	≥ 4	M8	without	80	0,32	0,54
				M10	without	90	0,89	0,71
				M12	without	100	0,89	0,89
				M16	without	100	1,25	1,25
Hollow sand-lime brick KSL (KSL 3DF)		$\geq 1,4$	≥ 12	M8	SH 12-80	80	0,57	0,71
				M10	SH 16-85	85	0,57	1,00
				M10	SH 16-130	130	1,00	1,29
				M12	SH 20-85	85	0,57	1,00
Hollow brick HLz (16DF)		$\geq 0,83$	≥ 12	M8	SH 12-80	80	0,43	1,00
				M10	SH 16-85	85	0,71	1,71
				M10	SH 16-130	130	1,00	2,30
				M12	SH 20-85	85	1,00	1,71
				M16	SH 20-85	85	1,00	1,71

N_{per} , V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

Drilling method: KS and Mz: hammer drilling; Aerated concrete, KSL and HLz: rotary drilling

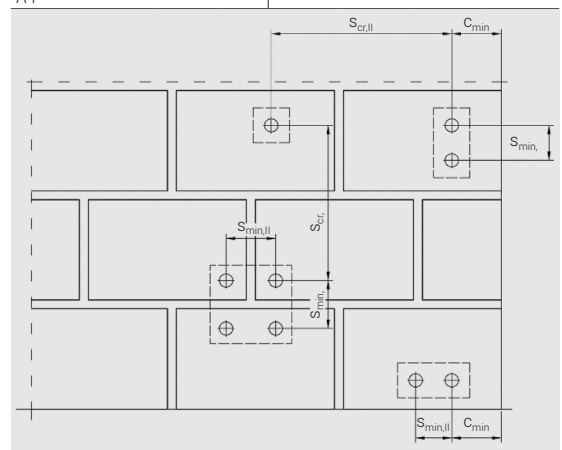
¹⁾ Max. long term temperature / max. short term temperature. Long-term temperature is constant over a longer period of time. The short-term temperature is only present for a short time (day/night change).

Spacing and edge distance

Suitable building materials	Anchor stud	Sleeve	Char. Edge distance c_{cr} [mm]	Min. Edge distance c_{min} [mm]	Char. Spacing parallel to the bearing joint $s_{cr, }$ [mm]	Char. Spacing perpendicular to the bearing joint $s_{cr,\perp}$ [mm]	Min. Spacing s_{min} [mm]	Max. Torque T_{inst} [Nm]
Solid sand-lime brick KS (NF)	M8	without	120	120	240	240	240	10
	M10	without	135	135	270	270	270	20
	M12	without	150	150	300	300	300	20
	M16	without	150	150	300	300	300	20
Solid brick Mz (DF)	M8	without	120	120	240	240	240	6
	M10	without	135	135	270	270	270	10
	M12	without	150	150	300	300	300	10
Aerated concrete AAC4	M10	without	135	135	270	270	270	2
	M12	without	150	150	300	300	300	2
	M16	without	150	150	300	300	300	2
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	100	100	240	240	113*	8
	M10	SH 16-85	100	100	240	240	113*	8
	M10	SH 16-130	100	100	240	240	113*	8
	M12,M16	SH 20-85	120	120	240	240	113*	8
Hollow brick HLz (16DF)	M8	SH 12-80	100	100	497	497	238**	6
	M10	SH 16-85	100	100	497	497	238**	6
	M10	SH 16-130	100	100	497	497	238**	6
	M12,M16	SH 20-85	120	120	497	497	238**	6

Permissible bending moment

Steel		Anchor stud			
		M8	M10	M12	M16
Zinc plated 5.8	M_{per} [Nm]	10,9	21,1	37,1	94,9
Stainless steel A4	M_{per} [Nm]	11,9	23,8	42,1	106,2



* Values are valid for $s_{min,\perp}$. For $s_{min,||}$ 240 mm is valid.

** Values are valid for $s_{min,\perp}$. For $s_{min,||}$ 497 mm is valid.

Fastening injection system ResiFIX Pure Epoxy



Approvals and certificates



European Technical Assessment Option 1 for cracked concrete (M8 - M30, Ø8 - Ø32)

European Technical Assessment for post-installed rebar connections (Ø8 - Ø25)



Class A+: Lowest emissions of critical substances in closed spaces
• Harmless to health after curing



Sustainability certification LEED
• Environmentally friendly, low-pollutant, low-emission and sustainable construction product



Usage under seismic conditions
• Tested for use in areas with high risk of earthquakes



European Technical Assessment Option 1 for cracked and non-cracked concrete (M8 - M30)
• For a wide range of safety critical applications



One mixing nozzle and one extension tube are always included
• Deeper drill holes can also be filled



Very high load values
• Heavy-duty usage



Usage also in water-filled drill holes and suitable for contact with drinking water
• Extended range of applications



Fire resistance test R120
• Fulfills fire protection requirements



European Technical Assessment post-installed rebar connections (Ø8 - Ø25)
• For more application flexibility



Styrene free
• Reduced odour exposure



Pure Epoxy BRSF [styrene free]

Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Mixings nozzle extension [200mm] incl. [pcs]	Shelf life [months]		[pcs]
BR 385 SF	385CRPE	385	1	1	24	●	12
BR 585 SF	585CRPE	585	1	1	24	●	12
BR 1400 SF	1400CRPE	1400	1	1	24	●	12

Delivery only on request

Curing times ResiFIX Pure Epoxy BRSF

Temperature of building material [°C]	> -10	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Max. working time [min]	–	–	–	120	90	30	20	12
Min. curing time ¹⁾ [min]	–	–	–	50h	30h	10h	6h	4h

¹⁾ Double curing time in wet concrete

Fastening in concrete

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 (Option 7) and cracked concrete C20/25 (Option 1) without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M and γ_F). Design according to TR029. See ETA assessment for design and calculations.

Anchor studs RESI AST, VA AST	M8	M10	M12	M16	M20	M24	M 27	M30
Drill hole \varnothing d_0 [mm]	10	12	14	18	24	28	30	35
Anchorage depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$ [mm]	60 / 80 / 96	60 / 90 / 120	70 / 110 / 144	80 / 125 / 192	90 / 170 / 240	96 / 210 / 288	108 / 240 / 324	120 / 280 / 360

Permissible tension load ¹⁾²⁾ [24 °C / 40 °C] ³⁾ in non-cracked concrete [dry or wet]

Zinc plated 5.8	N_{per} [kN]	8,7 / 8,7 / 8,7	9,3 / 13,8 / 13,8	11,7 / 20,0 / 20,0	14,3 / 28,0 / 37,3	14,7 / 38,1 / 58,3	16,2 / 52,3 / 83,9	19,8 / 63,9 / 98,8	22,6 / 80,5 / 117,3
Stainless steel A4	N_{per} [kN]	9,0 / 9,8 / 9,8	9,3 / 15,5 / 15,5	11,7 / 22,5 / 22,5	14,3 / 28,0 / 41,9	14,7 / 38,1 / 63,9	16,2 / 52,3 / 84,0	19,8 / 57,4 / 57,4	22,6 / 70,0 / 70,0

Permissible tension load ¹⁾²⁾ [24 °C / 40 °C] ³⁾ in cracked concrete [dry or wet]

Zinc plated 5.8	N_{per} [kN]	4,2 / 5,6 / 6,7	5,2 / 7,9 / 10,5	7,9 / 12,3 / 16,2	10,2 / 16,2 / 24,9	10,5 / 21,8 / 30,8	11,5 / 29,6 / 40,6	14,1 / 38,1 / 50,8	16,1 / 49,4 / 63,5
Stainless steel A4	N_{per} [kN]	4,2 / 5,6 / 6,7	5,2 / 7,9 / 10,5	7,9 / 12,3 / 16,2	10,2 / 16,2 / 24,9	10,5 / 21,8 / 30,8	11,5 / 29,6 / 40,6	14,1 / 38,1 / 50,8	16,1 / 49,4 / 63,5

Permissible tension load ¹⁾²⁾ [43 °C / 60 °C] ³⁾ in non-cracked concrete [dry or wet]

Zinc plated 5.8	N_{per} [kN]	5,7 / 7,6 / 8,7	7,1 / 10,7 / 13,8	9,4 / 14,8 / 19,4	13,6 / 21,2 / 32,6	14,7 / 29,1 / 41,0	16,2 / 40,4 / 55,4	19,8 / 51,9 / 69,2	22,6 / 67,3 / 86,6
Stainless steel A4	N_{per} [kN]	5,7 / 7,6 / 9,1	7,1 / 10,7 / 14,2	9,4 / 14,8 / 19,4	13,6 / 21,2 / 32,6	14,7 / 29,1 / 41,0	16,2 / 40,4 / 55,4	19,8 / 51,9 / 57,4	22,6 / 67,3 / 70,0

Permissible tension load ¹⁾²⁾ [43 °C / 60 °C] ³⁾ in cracked concrete [dry or wet]

Zinc plated 5.8	N_{per} [kN]	2,7 / 3,6 / 4,3	3,4 / 5,0 / 6,7	4,7 / 7,4 / 9,7	6,4 / 10,0 / 15,3	6,7 / 12,7 / 18,0	8,6 / 18,8 / 25,9	11,1 / 24,2 / 32,3	13,5 / 31,4 / 40,4
Stainless steel A4	N_{per} [kN]	2,7 / 3,6 / 4,3	3,4 / 5,0 / 6,7	4,7 / 7,4 / 9,7	6,4 / 10,0 / 15,3	6,7 / 12,7 / 18,0	8,6 / 18,8 / 25,9	11,1 / 24,2 / 32,3	13,5 / 31,4 / 40,4

Permissible shear load ¹⁾ in non-cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,2	8,3	12,0	22,4	35,0	45,2 / 50,4 / 50,4	55,5 / 65,6 / 65,6	63,2 / 80,1 / 80,1
Stainless steel A4	V_{per} [kN]	5,9	9,3	13,5	25,1	39,2	45,2 / 56,5 / 56,5	34,5 / 34,5 / 34,5	42,1 / 42,1 / 42,1

Permissible shear load ¹⁾ in cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,2	8,3	12,0	22,4 / 22,4 / 22,4	29,3 / 35,0 / 35,0	32,2 / 50,4 / 50,4	39,6 / 65,6 / 65,6	45,1 / 80,1 / 80,1
Stainless steel A4	V_{per} [kN]	5,9	9,3	13,5	24,5 / 25,1 / 25,1	29,3 / 39,2 / 39,2	32,2 / 56,5 / 56,5	34,5 / 34,5 / 34,5	42,1 / 42,1 / 42,1

Permissible bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,7	21,4	37,4	94,9	185,2	320,0	476,2	642,1
Permissible bending moment (Stainless steel A4)	M_{per} [Nm]	12,0	24,0	41,9	106,4	207,8	359,0	250,1	337,2

Spacing and edge distance

Spacing	$s_{cr,N}$ [mm]	180 / 240 / 288	180 / 270 / 360	210 / 330 / 432	240 / 375 / 576	270 / 510 / 720	288 / 630 / 864	324 / 720 / 972	360 / 840 / 1080
Edge distance	$c_{cr,N}$ [mm]	90 / 120 / 144	90 / 135 / 180	105 / 165 / 216	120 / 188 / 288	135 / 255 / 360	144 / 315 / 432	162 / 360 / 486	180 / 420 / 540
Minimum spacing	s_{min} [mm]	40	50	60	80	100	120	135	150
Minimum edge distance	c_{min} [mm]	40	50	60	80	100	120	135	150
Min. thickness of concrete	h_{min} [mm]	$h_{ef} + 30\text{mm} \geq 100\text{mm}$				$h_{ef} + 2d_0$			
Max. installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80	120	160	180	200

¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$

²⁾ For higher concrete strengths up to C50/60 the values increase by max. 10%.

³⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 43°C/72°C please see ETA assessment

If underrun the char. spacing or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.

ResiFIX Manual dispenser



APP300



- High force transmission of 1:25 and so **noticeably reduced force expenditure**
- **Robust manual dispenser** made out of metal
- Also suitable for **all standard cartridges**, e.g. commercial adhesives and sealants (silicone, MS Polymer)
- Reduced weight - **improved working comfort**
- **The cartridge area is rotatable 360°** which facilitates the usage of sealants especially in corners

Manual dispenser APP 300

Type	Art-No	Suitable for ResiFIX Type	[pcs]
APP 300	300APP	300 / 165 / 280	1



APVM



- High force transmission of 1:25 and so **noticeably reduced force expenditure**
- **Robust manual dispenser** made out of metal
- Low weight due to the use of magnesium **only 680 g light**; therefore increased working comfort
- Suitable for **side-by-side cartridges with 345 ml content**. Also suitable for standard cartridges with 165 ml, 280 ml, 300 ml to read the scale units of ResiFIX; outer rod serves as a pointer

Manual dispenser APVM

Type	Art-No	Suitable for ResiFIX Type	[pcs]
APVM	345APVM	345 / 300 / 280 / 165	1



APP380



- High force transmission of 1:25 and so **noticeably reduced force expenditure**
- **Robust manual dispenser** made out of metal
- Suitable for **ResiFIX cartridges with 410 ml**

Manual dispenser APP 380

Type	Art-No	Suitable for ResiFIX Type	[pcs]
APP 380	380APP	410	1



OL385



Manual dispenser OL for ResiFIX Pure Epoxy

Type	Art-No	Suitable for ResiFIX Type	[pcs]
OL 385	385OL	385 / 585	1

ResiFIX Accessories



Mixing nozzle MD transparent

Type	Art-No	Suitable cartridges	[pcs]	[pcs]
MD	9MRMEA	all, except Pure Epoxy BR SF	20	-



Mixings nozzle extension MDV for MD

Type	Art-No	Outer Ø [mm]	Length [mm]	[pcs]	[pcs]
MDV 10	9MDV	10	200	10	-
MDV 7,5*	975MDV	7,5	200	10	-

* Especially suitable for metal sleeve SH 12-100 (see below)



Cleaning brush RBK made of nylon, for masonry (with wooden handle)

Type	Art-No	Length [mm]	Suitable for hole-Ø [mm]	[pcs]	[pcs]
RBK Ø20	9PLRBK	300	20	5	-

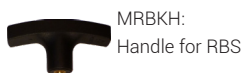


Cleaning brush RBS made of steel, for concrete

Type	Art-No	Length [mm]	Suitable for hole-Ø [mm]	Suitable for anchor stud	Connecting thread	[pcs]	[pcs]
RBS Ø12	9M12RBK	170	10	M8	M6	5	-
RBS Ø14	9M14RBK	170	12	M10	M6	5	-
RBS Ø16	9M16RBK	200	14	M12	M6	5	-
RBS Ø20	9M20RBK	200	18	M16	M6	5	-
RBS Ø26	9M26RBK	250	24	M20	M6	5	-
RBS Ø30	9M30RBK	300	28	M24	M6	5	-



MRBKV:
Extension for RBS



MRBKH:
Handle for RBS

Handle and Extension for RBS

Type	Art-No	Length [mm]	Suitable for RBS Ø	Connecting thread	[pcs]	[pcs]
MRBKV	MRBKV	140	all	M6	5	-
MRBKH	MRBKH	-	all	M6	5	-



Blow out pump AB



Type	Art-No	Tube-Ø [mm]	[pcs]	[pcs]
AB	BOP	8	1	-



Metal sleeves SH-1000 can be cut individually (length 1m)

Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	[pcs]	[pcs]
SH 12-1000	12TMRMEA	12	flexible	M6 – M8	10	-
SH 16-1000	16TMRMEA	16	flexible	M8 – M12	10	-
SH 22-1000	22TMRMEA	22	flexible	M12 – M16	8	-



Plastic sleeves SH

Type	Art-No	d ₀ [mm]	L _d [mm]	h ₀ [mm]	Suitable for thread Ø	[pcs]	[pcs]
SH 12-60 ¹⁾	91260SH	12	60	65	M6, M8	24	432
SH 12-80	91280SH	12	80	85	M6, M8	24	432
SH 16-85	91585SH	16	85	90	M8, M10	12	216
SH 16-130	915130SH	16	130	135	M8, M10	12	144
SH 20-85	92085SH	20	85	90	M12, M16	12	216
SH 20-130	920130SH	20	130	135	M12, M16	20	160
SH 20-200	920200SH	20	200	205	M12, M16	20	160

Note: The system (resin, sleeve and anchor rod) is only approved completely if approved components are used.

1) Not part of the ResiFIX ETA assessments



Blister SH with centering cap



Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	[pcs]	[Blister]
SH 12-80	51280SH4	12	85	M6, M8	4	10
SH 16-85	51685SH4	16	90	M8, M10	4	10
SH 16-130	515130SH4	16	135	M8, M10	4	10
SH 20-85	52085SH4	20	90	M12, M16	4	10

Note: The system (resin, sleeve and anchor rod) is only approved completely if approved components are used.



Internal threaded sleeves IGH

Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	Thread L* [mm]	Outer Ø [mm]	Suitable for sleeve	[pcs]	[pcs]
IGH M8-80	9880IGH	14	90	M8	26	12	SH 16-85 SH 20-85	12	324
IGH M10-80	91080IGH	16	90	M10	26	14	SH 20-85	12	324
IGH M12-80	91280IGH	18	90	M12	26	16	SH 20-85	12	324

*Internal thread length

Blister IGH



Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	Outer Ø [mm]	[pcs]	[Blister]
IGH M8-80	5880IGHM4	14	90	M8	12	4	10
IGH M10-80	51080IGHM4	16	90	M10	14	4	10



Heavy-duty sleeve ResiTHERM® S Set for heavy-duty applications in hollow / perforated bricks

Type	Art-No	Set contains (packed in bag)	L [mm]	Thickness of insulation material h _p [mm]	[Set]	[Sets]
RTH S	RTHS2	2x ResiTHERM® S 2x Threaded stud M12x70 mm, Stainless steel A4 2x Washer M12 DIN 125, Stainless steel A4 2x Hexagon nut M12 DIN 934, Stainless steel A4 1x ResiFIX VY300SF	125	0	1	10

ResiFIX Anchor studs

Approvals and certificates



RESI AST, zinc plated 5.8 with nut and washer

Type d _s - L	Art-No	in concrete					in solid brick		in hollow brick		[pcs]	[pcs]
		d ₀ [mm]	h _{ef, min} [mm]	t _{fix, max} for h _{ef, min} [mm]	h _{ef, Stand} ¹⁾ [mm]	t _{fix, max} for h _{ef, stand} [mm]	d ₀ - h ₀ [mm]	t _{fix, max} [mm]	Sleeve [Type]	t _{fix, max} [mm]		
M8-110	98110RAST	10	60	40	80	20	10 - 80	20	SH 12-80	20	10	100
M8-130	98130RAST	10	60	60	80	40	10 - 80	40	SH 12-80	40	10	100
M10-110	910110RAST	12	60	40	90	10	12 - 90	10	SH 16-85	15	10	100
M10-130	910130RAST	12	60	60	90	30	12 - 90	30	SH 16-85	35	10	100
M10-170	910170RAST	12	60	100	90	70	12 - 90	70	SH 16-85	75	10	100
M10-200	910200RAST	12	60	130	90	100	12 - 90	100	SH 16-85	105	10	60
M12-130	912130RAST	14	70	45	110	5	14 - 100	15	SH 20-85	30	10	100
M12-160	912160RAST	14	70	75	110	35	14 - 100	45	SH 20-85	60	10	100
M12-210	912210RAST	14	70	125	110	85	14 - 100	95	SH 20-85	110	10	60
M16-160	916160RAST	18	80	60	125	15	18 - 100	40	SH 20-85	60	10	60
M16-190	916190RAST	18	80	90	125	45	18 - 100	70	SH 20-85	90	10	60
M16-235	916235RAST	18	80	135	125	90	18 - 100	115	SH 20-85	135	10	40
M20-240	920240RAST	24	90	130	170	50	not suitable		not suitable		5	20
M24-300	924300RAST	28	96	180	210	65	not suitable		not suitable		5	20



Blister RESI AST, zinc plated

Type	Art-No	Thread	Length L [mm]	[pcs]	[Blister]
8-110	58110VMAS4	M8	110	4	10
10-130	510130VMAS4	M10	130	4	10
12-160	512160VMAS4	M12	160	4	10

Note: The system (resin, sleeve and anchor rod) is only approved completely if approved components are used.



RESI AST, stainless steel A4 with nut and washer



Type d _s - L	Art-No	in concrete					in solid brick		in hollow brick		[pcs]	[pcs]
		d ₀ [mm]	h _{ef, min} [mm]	t _{fix, max} for h _{ef, min} [mm]	h _{ef, Stand} ¹⁾ [mm]	t _{fix, max} for h _{ef, stand} [mm]	d ₀ - h ₀ [mm]	t _{fix, max} [mm]	Sleeve [Type]	t _{fix, max} [mm]		
M8-110	9X8110RAST	10	60	40	80	20	10 - 80	20	SH 12-80	20	10	100
M8-130	9X8130RAST	10	60	60	80	40	10 - 80	40	SH 12-80	40	10	100
M10-110	9X10110RAST	12	60	40	90	10	12 - 90	10	SH 16-85	15	10	100
M10-130	9X10130RAST	12	60	60	90	30	12 - 90	30	SH 16-85	35	10	100
M10-170	9X10170RAST	12	60	100	90	70	12 - 90	70	SH 16-85	75	10	100
M10-200	9X10200RAST	12	60	130	90	100	12 - 90	100	SH 16-85	105	10	60
M12-130	9X12130RAST	14	70	45	110	5	14 - 100	15	SH 20-85	30	10	100
M12-160	9X12160RAST	14	70	75	110	35	14 - 100	45	SH 20-85	60	10	100
M12-210	9X12210RAST	14	70	125	110	85	14 - 100	95	SH 20-85	110	10	60
M16-160	9X16160RAST	18	80	60	125	15	18 - 100	40	SH 20-85	60	10	60
M16-190	9X16190RAST	18	80	90	125	45	18 - 100	70	SH 20-85	90	10	60
M16-235	9X16235RAST	18	80	135	125	90	18 - 100	115	SH 20-85	135	10	40
M20-240	9X20240RAST	24	90	130	170	50	not suitable		not suitable		5	20
M24-300	9X24300RAST	28	96	180	210	65	not suitable		not suitable		5	20

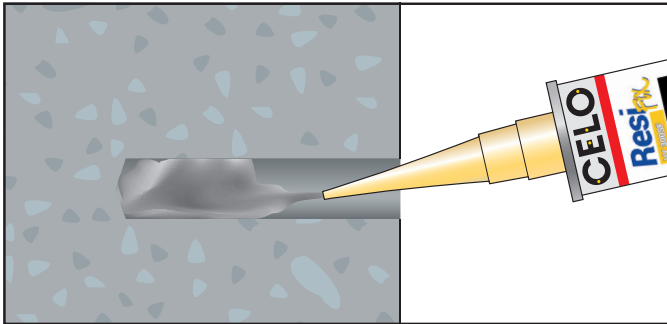
Also suitable for ResiFIX: Anchor studs VA AST for the bonded anchor (with outer hexagon)

Further lengths, steel 8.8, hot-dip galvanized steel and stainless steel HCR on request

1) Standard anchorage depth means the usually used anchorage depth. Min. anchorage depth according to ETA assessments

Fastening injection system ResiFIX

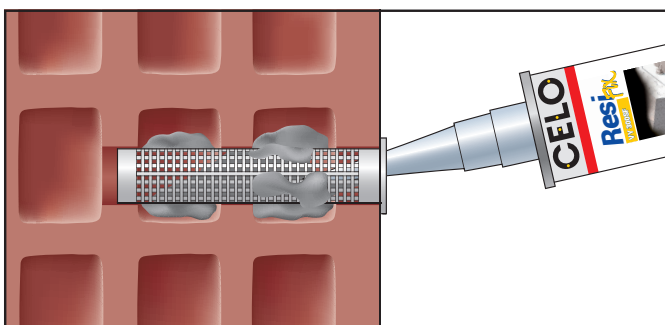
Estimation of needed volume [all types]



Consumption in solid materials Calculation method: Complete filling of the drill hole*

Anchor stud RAST or VA AST	d ₀ [mm]	Drill hole		Volume [cm ³ =ml]	Number of fixings per ResiFIX cartridge				
		h _{ef, Stand} ¹⁾ [mm]			165 ml [fixings]	280 ml [fixings]	300 ml [fixings]	345 ml [fixings]	410 ml [fixings]
M8	10	80		6,3	26,3	44,6	47,8	54,9	65,3
M10	12	90		10,2	16,2	27,5	29,5	33,9	40,3
M12	14	110		17,0	9,7	16,5	17,7	20,4	24,2
M16	18	125		31,8	5,2	8,8	9,4	10,9	12,9
M20	24	170		76,9	2,1	3,6	3,9	4,5	5,3
M24	28	210		129,2	1,3	2,2	2,3	2,7	3,2
M30	35	280		269,3	0,6	1,0	1,1	1,3	1,5

* According to the ETA assessment only 2/3 of the drill hole has to be filled with mortar. The experience shows that the user uses more, so that the filling of the complete drill hole is calculated here.



Consumption in hollow bricks with sleeve Calculation method: Complete filling of the sleeve + 15%

Sleeve	Anchor stud RAST or VA AST	Drill hole			Volume [cm ³ =ml]	Number of fixings per ResiFIX cartridge				
		d ₀ [mm]	h ₀ [mm]			165 ml [fixings]	280 ml [fixings]	300 ml [fixings]	345 ml [fixings]	410 ml [fixings]
SH 12/80	M6 / M8	12	85		9,1	15,9	26,9	28,8	33,2	39,4
SH 16/85	M8 / M10	16	90		17,1	8,4	14,3	15,3	17,6	20,9
SH 16/130	M8 / M10	16	135		26,1	5,5	9,3	10,0	11,5	13,6
SH 20/85	M12 / M16	20	90		26,7	5,4	9,1	9,8	11,2	13,4
SH 20/130	M12 / M16	20	135		40,8	3,5	6,0	6,4	7,3	8,7
SH 20/200	M12 / M16	20	205		62,8	2,3	3,9	4,2	4,8	5,7

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