

Vinylestoner

Vinylestoner Injection System with ETA Assessment Option 1 for Cracked & Non-Cracked Concrete

Rebar Ø8 - 32 mm

- Rebar EN 1992-1-1:2004 + AC:2010 Annex C
Bars and de-coiled rods class B or C with f_{yk} and k acc. to NDP or NCL of EN 1992-1-1/NA
 $f_{tk} = f_{tk} = k \cdot f_{yk}$



Use Conditions

- Installation in Cracked & Non-Cracked Concrete C20/25 to C50/60 according to EN 206-1:2000
- For Static and quasi static loading & Seismic Action C1
- In Dry, Wet and Flooded Holes
- Structures subject to dry internal and permanent damp internal conditions.
- Structures subject to external atmospheric exposure.
- Overhead Installation allowed.

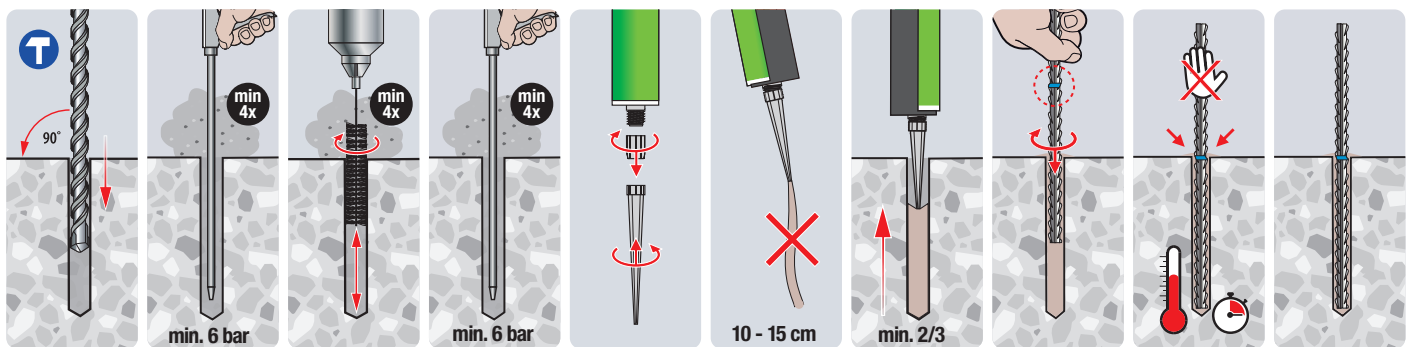
Typical Applications

- Infrastructure Construction (Roads, Viaducts, Sound Barriers, Crash Barriers, Harbours, High Rise Construction, Steel Construction)
- Production Facilities (Installation of Cranes, Robots, Conveyer Lines etc.)

Approvals & Test Reports



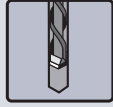
Installation Procedures



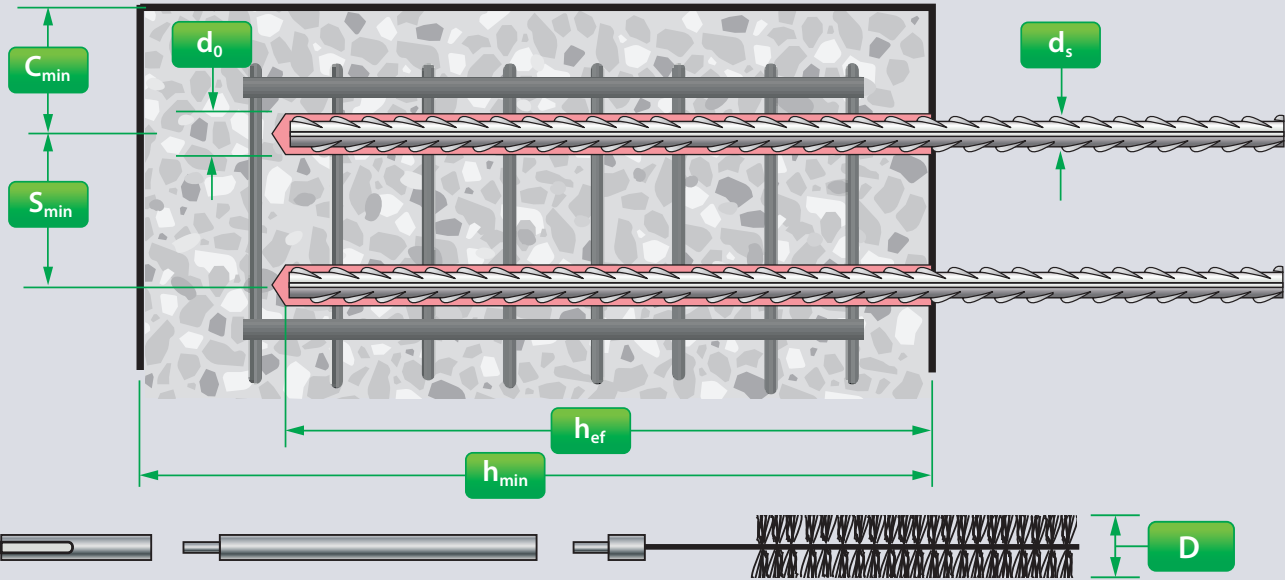
Curing Times

Temperature ¹⁾	°C	-10 ²⁾	-5	0	+5	+10	+20	+30 ³⁾	+35 ³⁾	+40 ³⁾
Processing Time		90 min	90 min	45 min	25 min	15 min	6 min	4 min	2 min	1,5 min
Curing Time Dry Holes		24 h	14 h	7 h	2 h	80 min	45 min	25 min	20 min	15 min
Curing Time Wet Holes		48 h	28 h	14 h	4 h	160 min	90 min	50 min	40 min	30 min

1) Concrete Temperature 2) Cartridge Temperature must be min. +15°C. 3) Cartridge Temperature **must** be under +20°C.



Specification Data for the use in Cracked & Uncracked Concrete and Carbide/Air Drilled Holes according to ETAG TR029 and CEN/TS 1992-4



Installation Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Min. Eff. Anchorage Depth	$h_{ef, min}$	[mm]	60	60	70	75	80	90	100	112	128
Max. Eff. Anchorage Depth	$h_{ef, max}$	[mm]	160	200	240	280	320	400	480	540	640
Hole Diameter	d_0	[mm]	12	14	16	18	20	24	32	35	40
Required Volume per cm Embedment Depth	V_s	[ml/cm]	0,76	0,91	1,06	1,21	1,36	2,12	3,76	4,20	5,50

Member Thickness, Edge Distance & Spacing

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Min. Member Thickness	h_{min}	[mm]	$h_{ef} + 30 \text{ mm}$ $\geq 100 \text{ mm}$			$h_{ef} + 2d_0$					
Min. Edge Distance	C_{min}	[mm]	40	50	60	70	80	100	125	140	160
Min. Spacing	S_{min}	[mm]	40	50	60	70	80	100	125	140	160

Steel Brush Dimensions

Rebar Size	d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
Brush Diameter	D	[mm]	14	16	18	20	22	26	34	37	41,5
Min. Brush Diameter	D_{min}	[mm]	12,5	14,5	16,5	18,5	20,5	24,5	32,5	35,5	40,5
Piston Plug	#	--	no plug required					24	32	35	38

Performance Data ¹⁾

- Performance Data:** Loads in kN for a single Rebar Dowel in Concrete C20/C25*. Temperature 24°C/40°C for long/short term.
No influence of Edge- or Center to Center Distances. Increasing factors for concrete ψ_c : **C30/37:** 1,04 **C40/50:** 1,08 **C50/60:** 1,10
- Shear Loads:** Steel strength in kN without bending moment.
- Recommended Loads** incl. Safety factor $\gamma_G = 1,4$.

Design Resistance Dry/Wet Holes

Steel Failure

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{Rd,min}	[kN]	10,1	12,6	16,4	18,2	20,1	24,0	28,1	33,3	40,6
	Tensile Max.	N _{Rd,max}	[kN]	19,7	30,9	44,4	60,5	79,0	123,4	192,8	241,9	303,8
	Shear ²⁾	V _{Rd,max}	[kN]	9,2	14,4	20,7	28,2	36,9	57,6	90,0	112,9	147,4
Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{Rd,min}	[kN]			8,1	10,1	12,3	17,1	20,0	23,7	29,0
	Tensile Max.	N _{Rd,max}	[kN]			27,6	37,6	49,1	76,8	115,2	171,5	232,3
	Shear ²⁾	V _{Rd,max}	[kN]			20,7	28,2	36,9	57,6	90,0	112,9	147,4

Design Resistance Flooded Holes

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{Rd,min}	[kN]	5,4	7,6	10,7	13,4	16,3				
	Tensile Max.	N _{Rd,max}	[kN]	14,4	25,4	36,6	49,8	65,1				
	Shear ²⁾	V _{Rd,max}	[kN]	9,2	14,4	20,7	28,2	36,9				
Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{Rd,min}	[kN]			6,9	8,6	10,5				
	Tensile Max.	N _{Rd,max}	[kN]			23,7	32,3	42,1				
	Shear ²⁾	V _{Rd,max}	[kN]			20,7	28,2	36,9				

Recommended Loads Dry/Wet Holes

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{rec,min}	[kN]	7,2	9,0	11,7	13,0	14,3	17,1	20,0	23,8	29,0
	Tensile Max.	N _{rec,max}	[kN]	14,1	22,0	31,7	43,2	56,4	88,2	137,7	172,8	217,0
	Shear ²⁾	V _{rec,max}	[kN]	6,6	10,3	14,8	20,2	26,3	41,1	64,3	80,6	105,3
Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{rec,min}	[kN]			5,8	7,2	8,8	12,2	14,3	16,9	20,7
	Tensile Max.	N _{rec,max}	[kN]			19,7	26,9	35,1	54,9	82,3	122,5	166,0
	Shear ²⁾	V _{rec,max}	[kN]			14,8	20,2	26,3	41,1	64,3	80,6	105,3

Recommended Loads Flooded Holes

Non-Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{rec,min}	[kN]	3,8	5,4	7,6	9,5	11,6				
	Tensile Max.	N _{rec,max}	[kN]	10,3	18,2	26,2	35,6	46,5				
	Shear ²⁾	V _{rec,max}	[kN]	6,6	10,3	14,8	20,2	26,3				
Cracked Concrete		d _{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø28	Ø32
B500B	Tensile, Min.	N _{rec,min}	[kN]			4,9	6,2	7,5				
	Tensile Max.	N _{rec,max}	[kN]			16,9	23,0	30,1				
	Shear ²⁾	V _{rec,max}	[kN]			14,8	20,2	26,3				