Epoxy Injection System with ETA Assessment Option 1 for Cracked & Non-Cracked Concrete. SA TS 101:2015 Compliant

ETAG TR029

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 and C2
- 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

1343
B+BTec
Munterij 8, NL 4762AH, Zevenbergen
14
1343-CPR-M 529-1
ETA-14/0351
ETAG 001-5 Option 1
M8 - M30/Ø8 - 32 mm
European Technical Assessement
Option 1 for cracked concrete

F120 MPA BRAUNSCHWEIG 3785/695/14

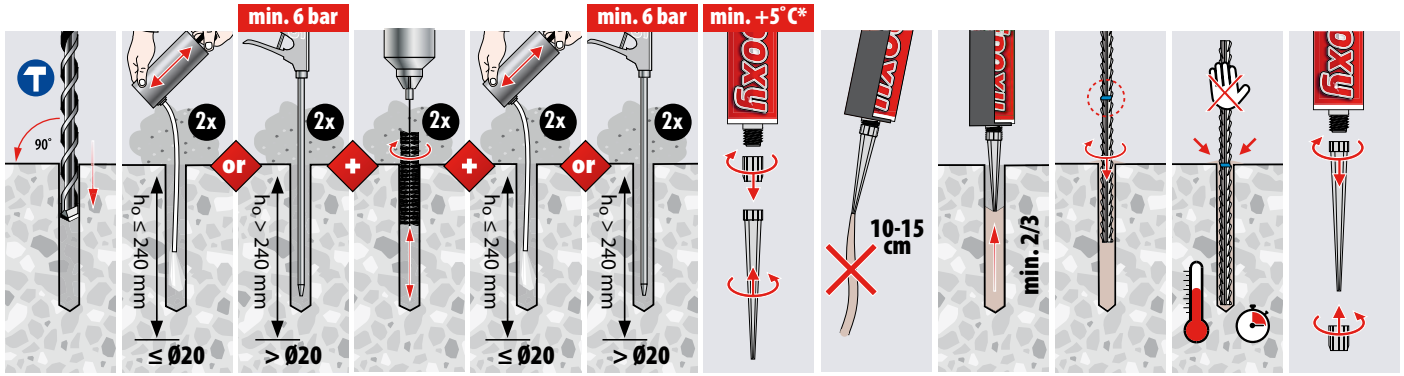
C1 C2 SEISMIC
C1: M12 - M30/Ø12- 32
C2: M12 - M16

NCC NATIONAL CODE COMPLIANT

LEED Tested

ÉMISSIONS DANS L'AIR INTÉRIEUR A+ A+ A B C

Installation Procedures



*Cartridge Temperature **must** be min. +5°C. Optimal Cartridge Temperature +20°C.

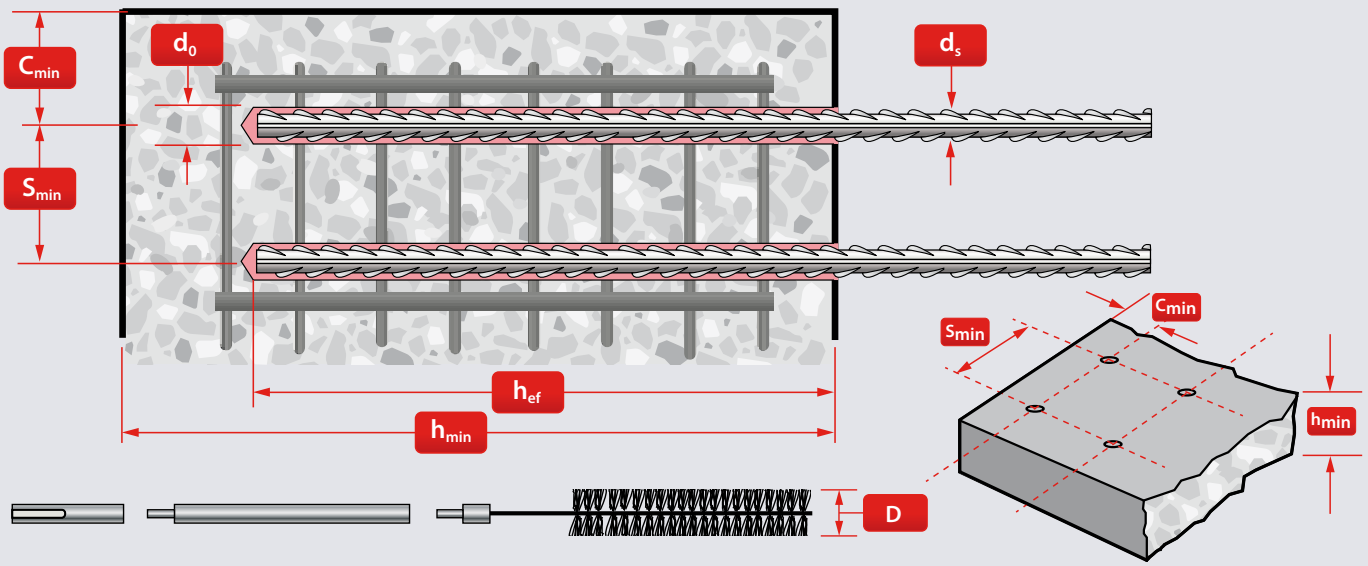
Curing Times

Temperature*	°C	+5	+10	+20	+30	+40
Processing Time		2 h	1,5 h	30 min	20 min	12 min
Curing Time Dry Holes		50 h	30 h	10 h	6 h	4 h
Curing Time Wet Holes		100 h	60 h	20 h	12 h	8 h

* Concrete Temperature

ETA - 14/0351

Specification Data for the use in Cracked & Uncracked Concrete and Hammer/Air Drilled Holes according to ETAG TR029,CEN/TS 1992-4 and SA TS 101: 2015



Installation Dimensions

2

Dowel Size	ds		8	10	12	14	16	20	24	28	32
Hole Diameter	d_0	[mm]	12	14	16	18	20	24	32	35	40
Min. Eff. Anchorage Depth	$h_{ef,min}$	[mm]	60	60	70	75	80	90	96	112	128
Max. Eff. Anchorage Depth	$h_{ef,max}$	[mm]	96	120	144	168	192	240	288	336	384
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

Dowel Size	ds		8	10	12	14	16	20	24	28	32
Min. Member Thickness	h_{min}	[mm]	hef + 30 mm ≥100 mm		hef + 2d0						
Min. Edge Distance	C_{min}	[mm]	40	50	60	70	80	100	120	140	160
Min. Spacing	S_{min}	[mm]	40	50	60	70	80	100	120	140	160

Steel Brush & Piston Plug Dimensions

Dowel Size	ds		8	10	12	14	16	20	24	28	32
Brush Diameter	D	[mm]	14	16	18	20	22	26	34	37	41,5
Min. Brush Diameter	D_{bmin}	[mm]	12,5	14,5	16,5	18,5	20,5	24,5	32,5	35,5	40,5
Piston Plug #		[#]	no piston plug required					24	32	35	38

Performance Data[1)]

Steel Failure

1) **Performance Data:** Loads in kN for a single anchor in Concrete C20/C25*. Temperature 24°C/40°C for long/short term. No influence of Edge- or Center to Center Distances.
2) **Shear Loads**: Steel strength in kN without bending moment.
3) **Recommended Loads** incl. Safety factor $\gamma_G = 1,4$.

Design Resistance Dry/Wet Holes

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{Rd,min}$	[kN]	11,7	13,0	16,4	18,2	20,1	20,5	22,6	28,5	34,8
	Tensile Max.	$N_{Rd,max}$	[kN]	18,8	29,3	39,2	53,4	64,3	86,2	113,7	148,1	181,0
	Shear[2)]	$V_{Rd,max}$	[kN]	9,2	14,4	20,7	28,2	36,9	57,6	82,9	112,9	147,4
Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{Rd,min}$	[kN]			11,0	12,8	14,3	14,6	16,1	20,3	24,8
	Tensile Max.	$N_{Rd,max}$	[kN]			22,6	28,7	34,9	43,1	56,9	77,4	101,1
	Shear[2)]	$V_{Rd,max}$	[kN]			20,7	28,2	36,9	57,6	82,9	112,9	147,4

Design Resistance Flooded Holes

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{Rd,min}$	[kN]	10,1	11,2	13,8	15,6	17,2	20,5	22,6	28,5	34,8
	Tensile Max.	$N_{Rd,max}$	[kN]	16,1	23,3	28,4	35,2	43,7	61,0	77,6	98,5	110,3
	Shear[2)]	$V_{Rd,max}$	[kN]	9,2	14,4	20,7	28,2	36,9	57,6	82,9	112,9	147,4
Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{Rd,min}$	[kN]			9,4	10,2	11,5	13,5	15,5	18,8	24,5
	Tensile Max.	$N_{Rd,max}$	[kN]			19,4	22,9	27,6	35,9	46,5	56,3	73,5
	Shear[2)]	$V_{Rd,max}$	[kN]			20,7	28,2	36,9	57,6	82,9	112,9	147,4

Recommended Loads Dry/Wet Holes

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{rec,min}$	[kN]	8,4	9,3	11,7	13,0	14,3	14,7	16,2	20,4	24,9
	Tensile Max.	$N_{rec,max}$	[kN]	13,4	20,9	28,0	38,1	46,0	61,5	81,2	105,8	129,3
	Shear[2)]	$V_{rec,max}$	[kN]	6,6	10,3	14,8	20,2	26,3	41,1	59,2	80,6	105,3
Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{rec,min}$	[kN]			7,9	9,2	10,2	10,5	11,5	14,5	17,7
	Tensile Max.	$N_{rec,max}$	[kN]			16,2	20,5	24,9	30,8	40,6	55,3	72,2
	Shear[2)]	$V_{rec,max}$	[kN]			14,8	20,2	26,3	41,1	59,2	80,6	105,3

Recommended Loads Flooded Holes

Non-Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{rec,min}$	[kN]	7,2	8,0	9,9	11,2	12,3	14,7	16,2	20,4	24,9
	Tensile Max.	$N_{rec,max}$	[kN]	11,5	16,7	20,3	25,1	31,2	43,6	55,4	70,4	78,8
	Shear[2)]	$V_{rec,max}$	[kN]	6,6	10,3	14,8	20,2	26,3	41,1	59,2	80,6	105,3
Cracked Concrete		d_{nom}		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø24	Ø28	Ø32
B500B	Tensile, Min.	$N_{rec,min}$	[kN]			6,7	7,3	8,2	9,6	11,1	13,4	17,5
	Tensile Max.	$N_{rec,max}$	[kN]			13,8	16,3	19,7	25,6	33,2	40,2	52,5
	Shear[2)]	$V_{rec,max}$	[kN]			14,8	20,2	26,3	41,1	59,2	80,6	105,3

ICCONS® Serious Connections

Pure-Epoxy 3:1

INNOVATIVE SOFTWARE – ANCHOR DESIGN MADE EASY

- Innovative 3d visual user interface, ETAG-001 & SA TS 101:2015 compliant
- SEISMIC DESIGN under earthquake loads according to ETAG-001, Annex E, TR045
- Finite element analysis steel baseplate design

ICCONS® DesignFiX Software is simple, intuitive and FREE to DOWNLOAD anchor design program for Design Engineers, Project Managers, Site Engineers and End Users. Complex mechanical or chemical heavy duty anchor arrangements can be calculated in minutes. All designs are ETA based and qualify under the newly released SA TS 101:2015 now directly referenced in the 2016 National Construction Code.

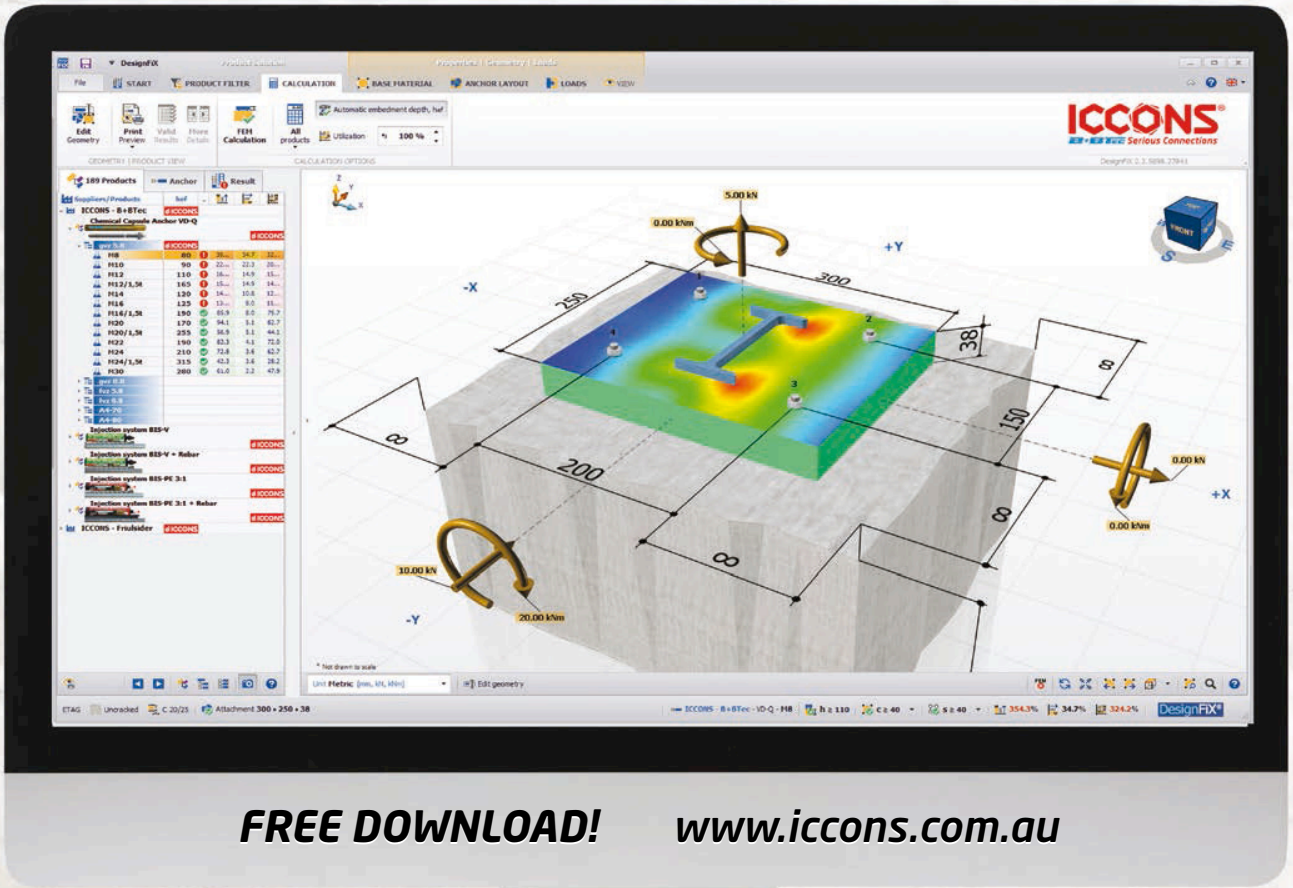
With input Freedom & 3D user Interface ICCONS® DesignFiX offers complete freedom to select an anchor pattern and base plate configuration, as well as the position and direction of load combinations. Changes are made directly into the 3D user interface.

Anchor Type Comparison

ICCONS® DesignFiX displays the usability of the various anchor types (according to ETAG-001, Annex C, TR029), including the values for each load type. This allows you to compare the calculation result of the different anchor types in a single easy to read panel.

Optimum BIS Injection System Anchorage Depth when selecting a BIS Injection Mortar.

ICCONS® DesignFiX allows for the automatic calculation of the most effective anchorage depth, taking in consideration the minimal and maximum values of the ETA.
The integrated FEM-Calculation Method (Finite Element Method) in ICCONS® DesignFiX allows you to calculate the base plate thickness based upon the stresses in the base plate combination with the base plate configuration.



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