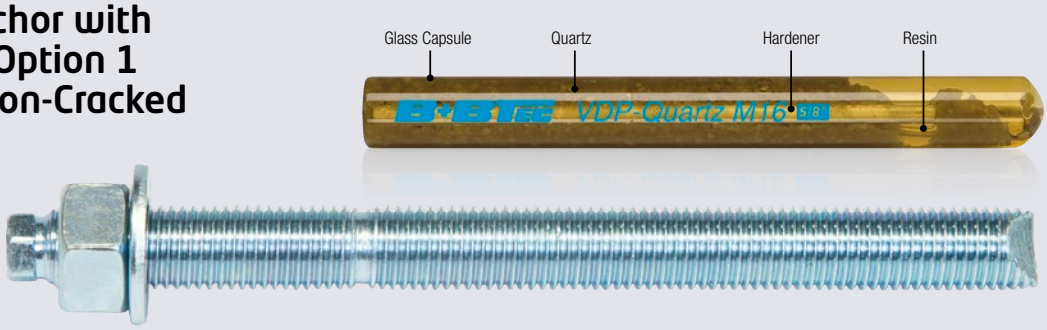
VDP-Quartz

Glass Capsule Anchor with ETA Assessment Option 1 for Cracked and Non-Cracked Concrete



Anchor Components

Glass Capsule Anchor VDP-Quartz M8 - M30

- Glass capsule containing Quartz Aggregate, Hardener and Resin.
- Components are mixed by driving in Anchor Rod.

Anchor Rods ASTA M8 - M30

- Steel 5.8 and 8.8 Zinc Plated and Hot Dip Galvanized
- Stainless Steel A4-70 and A4-80
- High Corrosion Resistant Steel 1.4529

Features

- ETA Option 1 for Cracked and Non-Cracked Concrete
- High Load Bearing Capacity
- Simplified Cleaning Procedures
- Easy Installation
- Fast Curing
- F120 Fire Rating
- VOC Assessment A+
- Absolutely NO Chemical or Plastic Waste, just a cardboard box, ready to be recycled.
- B+BTec DesignFix® Support

Use Conditions

- Installation Hammer/Air and Diamond drilled holes.
- Static and quasi static loading, in non-cracked concrete M8 - M30
- Static and quasi static loading, in cracked concrete M10 - M24
- Installation in dry, wet or flooded bore holes
- Min. Installation Temperature: Mortar +5˚C, Concrete -20˚C
- Installation in Concrete C20/25 to C50/60 according to EN 206-1:2000-12
- Overhead installations are permitted

Approvals & Test Reports

ETA OPTION 1 | FIRE F120 | A+ VOC

Temperature Range

B+BTec VDP-Quartz Glass Capsule Anchors may be applied in the temperature ranges given below. An elevated base material temperature leads to a reduction of the bond resistance.

Max. long term base material temperature: Long term elevated base material temperatures are roughly constant over significant periods of time.

Max. short term base material temperature: Short term elevated base material temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Temperature Range	Temperature Base Material	Max. Long Term Base Material Temp.	Max. Short Term Base Material Temp.
Temp. Range I	-40˚C to +40˚C	+ 24˚C	+40˚C
Temp. Range II	-40˚C to +80˚C	+50˚C	+80˚C

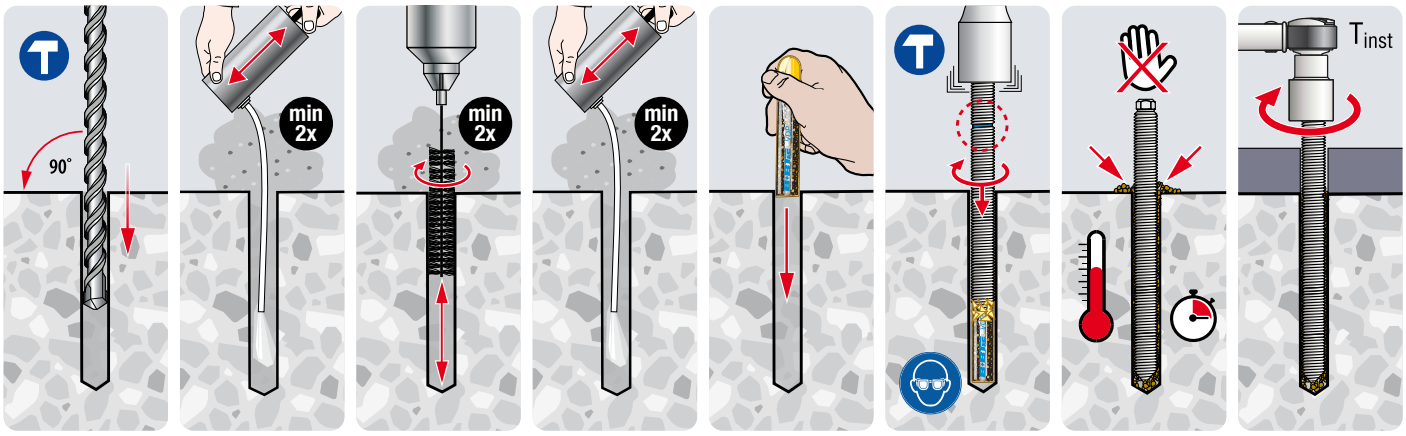
NO WASTE

Glass Capsule Anchors & the Environment

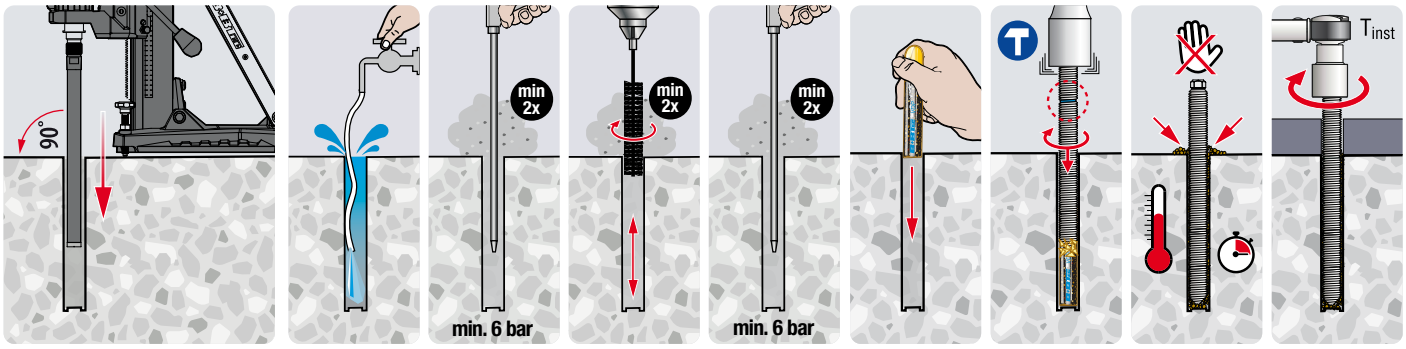
Because the total volume of these Glass Capsules is engineered to completely fill the Anchor Bore Hole, absolutely **NO CHEMICAL OR PLASTIC WASTE** remains after Installation. All that is left is a cardboard box ready to be recycled.

VDP-Quartz

Installation Procedures Hammer/Air Drilled Holes



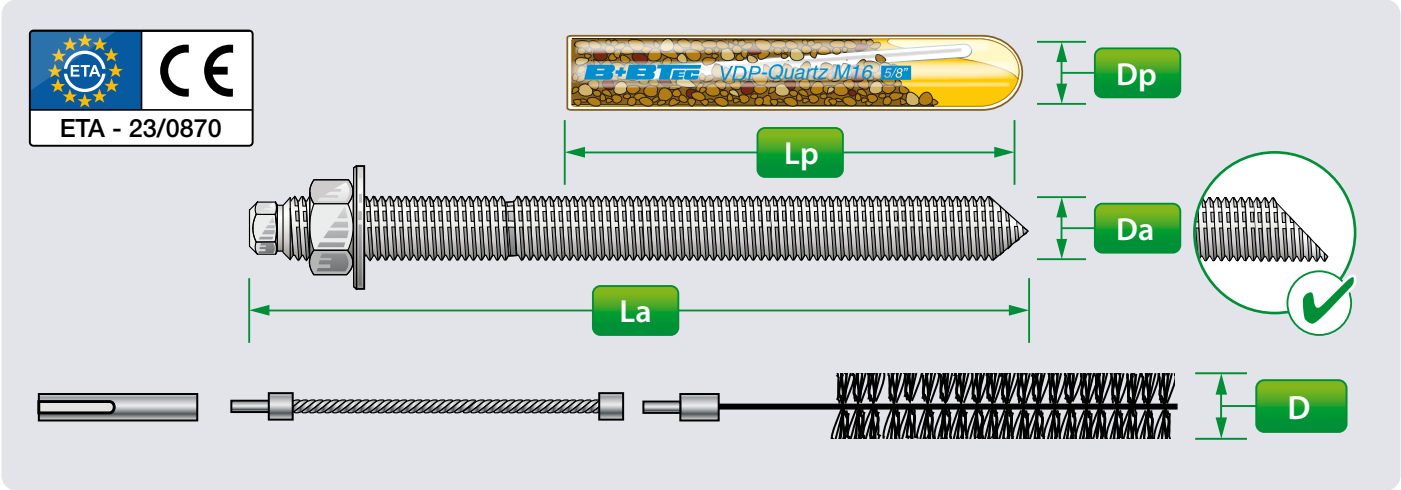
Installation Procedures Diamond Drilled Holes



Minimum Curing Times

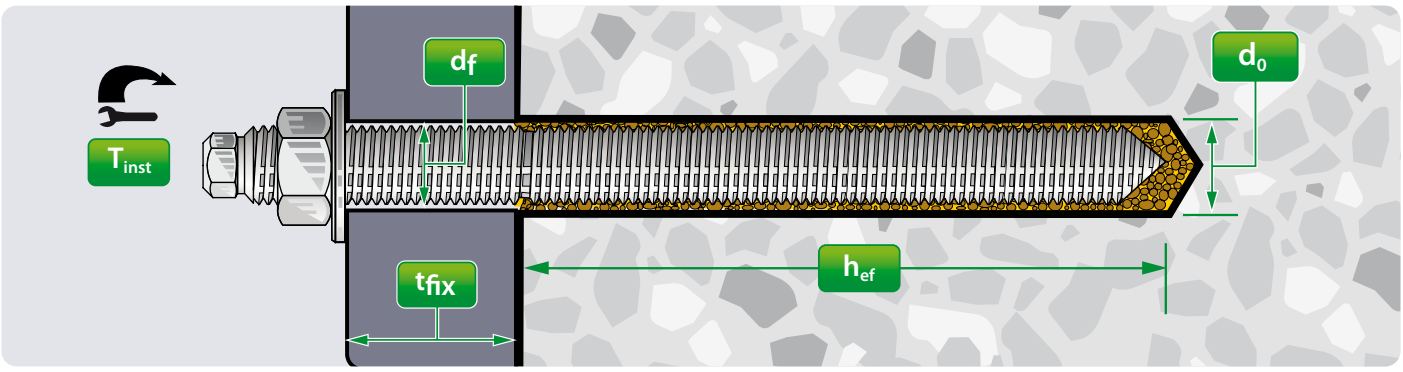
Temperature[1)]	°C	≥ -20	≥ -10	≥ +0	≥ +5	≥ +20	≥ +30
Min. Curing Time Dry Holes		30 h	10 h	5 h	1 h	20 min	10 min
Min. Curing Time Wet Holes		60 h	20 h	10 h	2 h	40 min	20 min

1) Concrete Temperature



Product Dimensions

Anchor Size	Da		M8	M10	M12	M14	M16	M20	M22	M24	M30
Rod Length	**La**	[mm]	110	130	160	170	190	260	280	300	360
Capsule Type	**VDP-Q**	--	M8	M10	M12	M14	M16	M20	M22	M24	M30
Capsule Diameter	**Dp**	[mm]	9	11	13	15	17	17	22	22	25
Capsule Length	**Lp**	[mm]	80	80	95	95	95	160	160	175	230
Capsule Volume	**Vp**	[cc]	4,4	5,7	9,4	12,8	16,5	29,5	43,6	52,6	98,2
Required Volume per cm Embedment Depth	**Vs**	[cc/cm]	0,44	0,59	0,75	0,94	1,09	1,52	1,70	2,01	2,77
Brush Diameter	**D**	[mm]	11	13	16	18	20	24	26	28	34
Min. Brush Diameter	**Dmin**	[mm]	10,5	11,5	14,5	16,5	18,5	18,5	24,5	26,5	32,5

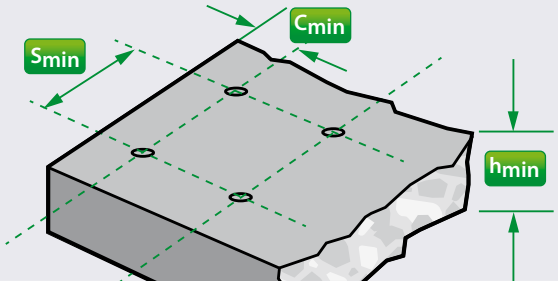


Installation Dimensions

Anchor Size	Da		M8	M10	M12	M14	M16	M20	M22	M24	M30
Hole Diameter	**do**	[mm]	10	12	14	16	18	22	24	26	32
Embedment Depth	**ho=hef**	[mm]	80	90	110	120	125	170	190	210	280
Diameter Fixture Hole	**df**	[mm]	9	12	14	16	18	22	24	26	33
Fixture Thickness	**tfix≤**	[mm]	15	23	30	39	41	62	69	56	52
Recommended Torque	**Tinst**	[Nm]	10	20	40	60	80	120	135	180	300

VDP-Quartz

Member Thickness, Edge Distance & Spacing



Anchor Size	Da		M8	M10	M12	M14	M16	M20	M22	M24	M30
Min. Member Thickness	h_{min}	[mm]	110	120	140	150	160	220	240	260	340
Min. Edge Distance	c_{min}	[mm]	40	45	55	60	65	85	95	105	140
Min. Spacing	s_{min}	[mm]	40	45	55	60	65	85	95	105	140

Performance Data[1)] Hammer/Air Drilled Holes

Design Resistance

Steel Failure

Non-Cracked Concrete		Da		M8	M10	M12	M14	M16	M20	M22	M24	M30
Steel 5.8	Tensile	N_{Rd}	[kN]	12,0	18,8	27,6	35,2	41,9	67,6	83,2	100,3	131,4
	Shear[2)]	V_{Rd}	[kN]	7,2	12,0	16,8	23,2	31,2	48,8	60,8	70,4	112,0
Steel 8.8	Tensile	N_{Rd}	[kN]	13,4	18,8	27,6	35,2	41,9	67,6	83,2	100,3	131,4
	Shear[2)]	V_{Rd}	[kN]	12,0	18,4	27,2	36,8	50,4	78,4	96,8	112,8	179,2
A4-70	Tensile	N_{Rd}	[kN]	13,4	18,8	27,6	35,2	41,9	67,6	83,2	100,3	131,4
	Shear[2)]	V_{Rd}	[kN]	8,3	12,8	19,2	25,6	35,3	55,1	67,9	79,5	125,6
A4-80	Tensile	N_{Rd}	[kN]	13,4	18,8	27,6	35,2	41,9	67,6	83,2	100,3	131,4
	Shear[2)]	V_{Rd}	[kN]	11,3	17,3	25,6	34,6	47,4	73,7	91,0	106,0	168,4

Cracked Concrete		Da		M10	M12	M16	M20	M24
Steel 5.8	Tensile	N_{Rd}	[kN]	9,4	13,8	20,9	42,7	68,5
	Shear[2)]	V_{Rd}	[kN]	12	16,8	31,2	48,8	70,4
Steel 8.8	Tensile	N_{Rd}	[kN]	9,4	13,8	20,9	42,7	68,5
	Shear[2)]	V_{Rd}	[kN]	18,4	27,2	50,4	78,4	112,8
A4-70	Tensile	N_{Rd}	[kN]	9,4	13,8	20,9	42,7	68,5
	Shear[2)]	V_{Rd}	[kN]	12,8	19,2	35,3	55,1	79,5
A4-80	Tensile	N_{Rd}	[kN]	9,4	13,8	20,9	42,7	68,5
	Shear[2)]	V_{Rd}	[kN]	17,3	25,6	47,4	73,7	106,0

Recommended Loads[3)]

Steel Failure

Non-Cracked Concrete	Da			M8	M10	M12	M14	M16	M20	M22	M24	M30
Steel 5.8	Tensile	N_{rec}	[kN]	8,6	13,5	19,7	25,1	29,9	48,3	59,4	71,6	93,9
	Shear[2)]	V_{rec}	[kN]	5,1	8,0	12,0	16,6	22,3	34,9	43,4	50,3	80,0
Steel 8.8	Tensile	N_{rec}	[kN]	9,6	13,5	19,7	25,1	29,9	48,3	59,4	71,6	93,9
	Shear[2)]	V_{rec}	[kN]	8,6	13,1	19,4	26,3	36,0	56,0	69,1	80,6	128,0
A4-70	Tensile	N_{rec}	[kN]	9,6	13,5	19,7	25,1	29,9	48,3	59,4	71,6	93,9
	Shear[2)]	V_{rec}	[kN]	6,0	9,2	13,7	18,3	25,2	39,4	48,5	56,8	89,7
A4-80	Tensile	N_{rec}	[kN]	9,6	13,5	19,7	25,1	29,9	48,3	59,4	71,6	93,9
	Shear[2)]	V_{rec}	[kN]	8,1	12,4	18,3	24,7	33,8	52,6	65,0	75,7	120,3

Cracked Concrete	Da			M10	M12	M16	M20	M24
Steel 5.8	Tensile	N_{rec}	[kN]	6,7	9,9	14,9	30,5	48,9
	Shear[2)]	V_{rec}	[kN]	8,6	12,0	22,3	34,9	50,3
Steel 8.8	Tensile	N_{rec}	[kN]	6,7	9,9	14,9	30,5	48,9
	Shear[2)]	V_{rec}	[kN]	13,1	19,4	36,0	56,0	80,6
A4-70	Tensile	N_{rec}	[kN]	6,7	9,9	14,9	30,5	48,9
	Shear[2)]	V_{rec}	[kN]	9,1	13,7	25,2	39,4	56,8
A4-80	Tensile	N_{rec}	[kN]	6,7	9,9	14,9	30,5	48,9
	Shear[2)]	V_{rec}	[kN]	12,4	18,3	33,9	52,6	75,7

1) All Loads in kN for a Single anchor in Dry/Wet, Non-Cracked/Cracked Concrete C20/25 without edge or spacing influences. Temperature Range 50°C/80°C for long/short term.
2) Steel strength in kN without bending moment.
3) Incl. Safety factor $\gamma G = 1,4$

VDP-Quartz

Performance Data[1)] Diamond Drilled Holes

Design Resistance

Steel Failure

Non-Cracked Concrete		Da		M10	M12	M16	M20	M24	M30
Steel 5.8	Tensile	N_{Rd}	[kN]	18,8	27,6	41,9	67,6	100,3	158,3
	Shear[2)]	V_{Rd}	[kN]	12	16,8	31,2	48,8	70,4	112
Steel 8.8	Tensile	N_{Rd}	[kN]	18,8	27,6	41,9	67,6	100,3	158,3
	Shear[2)]	V_{Rd}	[kN]	18,4	27,2	50,4	78,4	112,8	179,2
A4-70	Tensile	N_{Rd}	[kN]	18,8	27,6	41,9	67,6	100,3	158,3
	Shear[2)]	V_{Rd}	[kN]	12,8	19,2	35,3	55,1	79,5	125,6
A4-80	Tensile	N_{Rd}	[kN]	18,8	27,6	41,9	67,6	100,3	158,3
	Shear[2)]	V_{Rd}	[kN]	17,3	25,6	47,4	73,7	106,0	168,4

Cracked Concrete		Da		M10	M12	M16	M20	M24	
Steel 5.8	Tensile	N_{Rd}	[kN]	10,4	15,2	25,1	42,7	63,3	
	Shear[2)]	V_{Rd}	[kN]	12,0	16,8	31,2	48,8	70,4	
Steel 8.8	Tensile	N_{Rd}	[kN]	10,4	15,2	25,1	42,7	63,3	
	Shear[2)]	V_{Rd}	[kN]	18,4	27,2	50,4	78,4	112,8	
A4-70	Tensile	N_{Rd}	[kN]	10,4	15,2	25,1	42,7	63,3	
	Shear[2)]	V_{Rd}	[kN]	12,8	19,2	35,3	55,1	79,5	
A4-80	Tensile	N_{Rd}	[kN]	10,4	15,2	25,1	42,7	63,3	
	Shear[2)]	V_{Rd}	[kN]	17,3	25,6	47,4	73,7	106,0	

Recommended Loads[3)]

Steel Failure

Non-Cracked Concrete		Da		M10	M12	M16	M20	M24	M30
Steel 5.8	Tensile	N_{rec}	[kN]	13,5	19,7	29,9	48,3	71,6	113,1
	Shear[2)]	V_{rec}	[kN]	8,6	12,0	22,3	34,9	50,3	80,0
Steel 8.8	Tensile	N_{rec}	[kN]	13,5	19,7	29,9	48,3	71,6	113,1
	Shear[2)]	V_{rec}	[kN]	13,1	19,4	36,0	56,0	80,6	128,0
A4-70	Tensile	N_{rec}	[kN]	13,5	19,7	29,9	48,3	71,6	113,1
	Shear[2)]	V_{rec}	[kN]	9,1	13,7	25,2	39,4	56,8	89,7
A4-80	Tensile	N_{rec}	[kN]	13,5	19,7	29,9	48,3	71,6	113,1
	Shear[2)]	V_{rec}	[kN]	12,4	18,3	33,9	52,6	75,7	120,3

Cracked Concrete		Da		M10	M12	M16	M20	M24
Steel 5.8	Tensile	N_{rec}	[kN]	7,4	10,9	18,0	30,5	45,2
	Shear[2)]	V_{rec}	[kN]	8,6	12,0	22,3	34,9	50,3
Steel 8.8	Tensile	N_{rec}	[kN]	7,4	10,9	18,0	30,5	45,2
	Shear[2)]	V_{rec}	[kN]	13,1	19,4	36,0	56,0	80,6
A4-70	Tensile	N_{rec}	[kN]	7,4	10,9	18,0	30,5	45,2
	Shear[2)]	V_{rec}	[kN]	9,1	13,7	25,2	39,4	56,8
A4-80	Tensile	N_{rec}	[kN]	7,4	10,9	18,0	30,5	45,2
	Shear[2)]	V_{rec}	[kN]	12,4	18,3	33,9	52,6	75,7

1) All Loads in kN for a Single anchor in Dry/Wet, Non-Cracked/Cracked Concrete C20/25 without edge or spacing influences. Temperature Range 50°C/80°C for long/short term.
2) Steel strength in kN without bending moment.
3) Incl. Safety factor $\gamma G = 1,4$

Free Anchor Design Software for Structural Safety!



B+BTec DesignFiX® Anchor Design made Easy!

Input Freedom & 3D User Interface

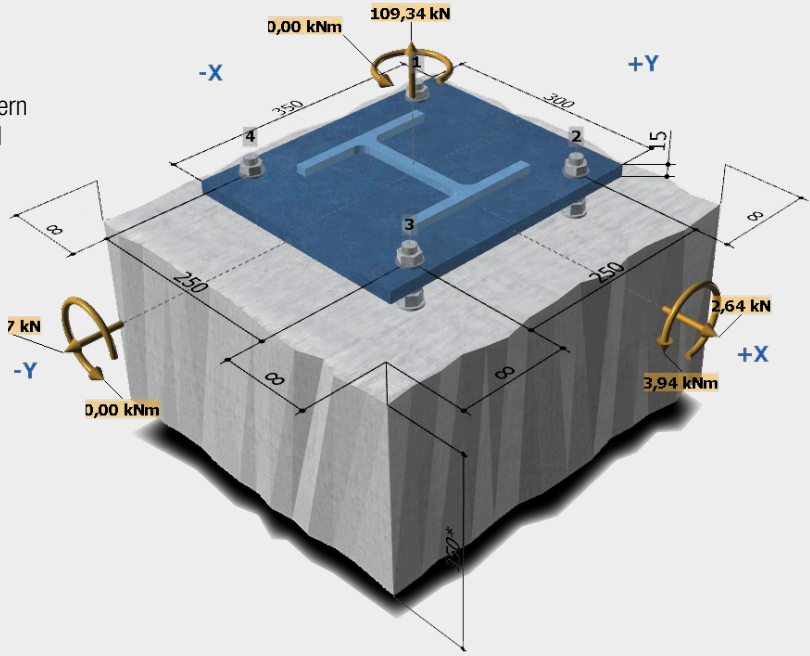
B+BTEC DesignFiX® offers complete freedom to select an anchor pattern and base plate configuration, as well as the position and direction of load combinations. Changes are made directly into the 3D user interface.

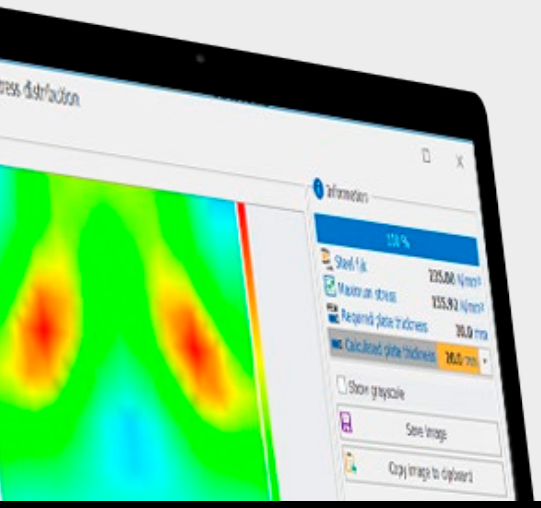
Anchor Type Comparison

B+BTEC DesignFiX® displays the usability of the various anchor types (according to European directive ETAG 001 and EN 1992-4), including the values for static loads and under seismic influence. This allows you to compare the calculation results of the different anchor types in a single easy to read panel.

Calculation Effective Anchorage Depth

When selecting an Injection Mortar **B+BTEC DesignFiX®** allows for the automatic calculation of the most effective anchorage depth, taking in consideration the minimal and maximum values of the ETA.





Calculation Base Plate Thickness

The integrated FEM-Calculation Method (Finite Element Method) in **B+BTEC DesignFiX®** allows you to calculate the base plate thickness based upon the stresses in the base plate in combination with the base plate configuration.

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