

## Allrounderen for betong



### BYGGEMATERIALER

#### Godkjent for forankring i :

- Betong C20/25 til C50/60, sprukket og ikke-sprukket

#### Også egnet for:

- Naturstein med tett struktur

### GODKJENNINGER



### FORDELER

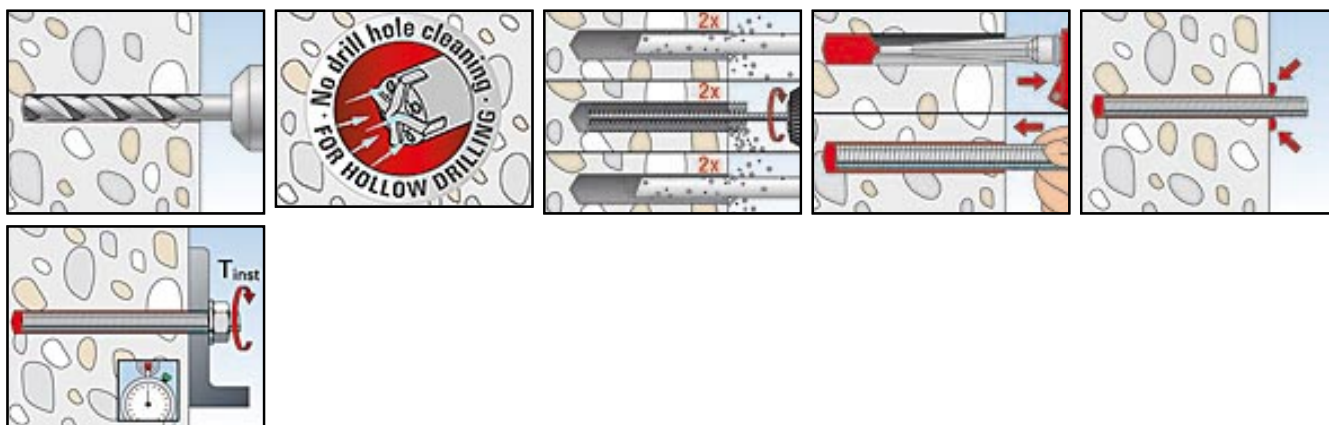
- Superbond-mørtelen FIS SB oppnår på grunn av sin forbindelsesspenning et svært høyt lastnivå.
- Variable forankringsdybder på 4 x ds til 20 x ds gjør det mulig med ideell tilpasning til den innledende lasten og sørger dermed for optimert monterings- og materialbruk.
- Høyeste anvendelsestemperaturer opptil +150 °C åpner nye bruksområder for forbindelsesankeret.
- En bearbeiding av mørtelen er dessuten godkjent ved frost -15 °C.
- Kombinasjonen med det innvendige gjengeankeret RG M I gjør det mulig med demontering i flukt med overflaten, samt gjenbruk av festepunktet. Det gis dermed optimal fleksibilitet.
- Superbond-systemet er et kombinert patron- og injeksjonssystem for revnet og urevnet betong.
- For hurtig montering uten ventetid, arbeidsbetingelser ned til -30 °C, montering over hodet, vannfylte borehull og diamantborede borehull tilbyr systemet alternativt reaksjonspatronen RSB.

### APPLIKASJONER

- Tunge stålkonstruksjoner
- Siloanlegg
- Høye hyller
- Støyvernsvegger
- Gelender
- Trapper

### FUNKSJONSMÅTE

- Superbond er et forbindelsesankersystem på vinylester-hybrid-basis med Silanteknologi.
- Ankerstangen FIS A kan kun settes med Superbond-mørtel FIS SB (Standard og HIGH SPEED), ankerstangen RG M med takskråning kan settes valgfritt med Superbond-mørtel FIS SB (Standard og HIGH SPEED) eller reaksjonspatron RSB.
- Harpiks og herdemidler er lagret i to separate kammerer og blir først blandet og aktivert ved utpressing av injeksjonspatronen i den statiske mikseren hhv. ved ødeleggelse av patronen under settforløpet.
- Mørtelen kleber det festeelementet helflatet med borehullveggen og tetter igjen borehullet.



## TEKNISK DATA



Superbond-system FSB

Produktnavn	Art nr.	ETA-godkjenning	Språk på patron	Innhold	Salgsenhet [pcs]
FIS SB 390 S	519451	■	D, F, NL	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	520557	■	D, SLO, SRB, BG	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	518831	■	GB, E, P	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	519450	■	I, GB, D	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	520559	■	DK, SE, NO, FIN	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	520555	■	CZ, SK, RO	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 390 S	520595	■	PL, RUS, H	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB HIGH SPEED 390 S	523301	■	GB, E, P	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB HIGH SPEED 390 S	523302	■	CZ, SK, RO	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB HIGH SPEED 390 S	523303	■	PL, RUS, HU	1 cartridge 390 ml, 2 x FIS MR	6
FIS SB 585 S	519452	■	GB, E, P	1 cartridge 585 ml + 2 x FIS UMR	6
FIS SB 585 S	520526	■	I, GB, D	1 cartridge 585 ml + 2 x FIS UMR	6
FIS SB 1500 S	519453	■	D, GB, F, NL, E, P	1 cartridge 1500 ml, 2 x FIS UMR	4
FIS SB 1500 S	520528	■	I, PL, RUS, CZ, SK, GB	1 cartridge 1500 ml, 2 x FIS UMR	4

## LOADS

### Superbond Resin Anchor RSB<sup>7)</sup> with internal threaded anchor RG MI (screw property class 8.8)

#### Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/0258 has to be considered.

Typ	effective anchorage depth $h_{ef}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	
<b>RG M 8 I</b>	90	120	10,0	8,1	8,3	55	55	13,8	8,3	55	
<b>RG M 10 I</b>	90	125	20,0	10,8	13,3	65	65	20,5	13,3	65	
<b>RG M 12 I</b>	125	165	40,0	16,8	19,3	75	75	32,4	19,3	75	
<b>RG M 16 I</b>	160	208	80,0	26,3	30,9	95	95	48,7	30,9	95	
<b>RG M 20 I</b>	200	264	120,0	41,9	51,4	125	125	68,0	51,4	125	

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

## LOADS

### Superbond Resin Anchor RSB with internal threaded anchor RG MI A4 (screw property class A4-70)

#### Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/0258 has to be considered.

Typ	effective anchorage depth $h_{ef}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	
<b>RG M 8 I A4</b>	90	120	10,0	8,1	5,9	55	55	9,9	5,9	55	
<b>RG M 10 I A4</b>	90	125	20,0	10,8	9,3	65	65	15,7	9,3	65	
<b>RG M 12 I A4</b>	125	165	40,0	16,8	13,5	75	75	22,5	13,5	75	
<b>RG M 16 I A4</b>	160	208	80,0	26,3	25,1	95	95	42,0	25,1	95	
<b>RG M 20 I A4</b>	200	264	120,0	41,9	39,4	125	125	65,7	39,4	125	

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

## LOADS

### Superbond Resin capsule RSB with threaded rod RG M (property class 8.8)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/O258 has to be considered.

Typ	Effective anchorage depth $h_{ef}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	
<b>RG M 8 (8.8)</b>	80	110	10,0	5,7	8,6	40	40	11,5	8,6	40	
<b>RG M 10 (8.8)</b>	75	105	20,0	7,3	13,1	45	45	13,5	13,1	45	
	90	120	20,0	8,8	13,1	45	45	16,2	13,1	45	
<b>RG M 12 (8.8)</b>	150	180	20,0	14,6	13,1	45	45	22,4	13,1	45	
	75	105	40,0	10,1	19,4	55	55	15,6	19,4	55	
	110	140	40,0	14,8	19,4	55	55	23,7	19,4	55	
<b>RG M 16 (8.8)</b>	150	180	40,0	20,2	19,4	55	55	32,3	19,4	55	
	95	131	60,0	15,9	31,7	65	65	22,3	36,0	65	
	125	161	60,0	22,4	36,0	65	65	33,6	36,0	65	
<b>RG M 20 (8.8)</b>	190	226	60,0	34,1	36,0	65	65	59,1	36,0	65	
	170	218	120,0	38,0	56,0	85	85	53,3	56,0	85	
<b>RG M 24 (8.8)</b>	210	258	120,0	47,1	56,0	85	85	73,2	56,0	85	
	210	266	150,0	52,2	80,6	105	105	73,2	80,6	105	
<b>RG M 30 (8.8)</b>	280	350	300,0	80,3	128,6	140	140	112,7	128,6	140	

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

## LOADS

### Superbond Resin capsule RSB with threaded rod RG M A4 (property class A4-70)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/O258 has to be considered.

Type	Effective anchorage depth $h_{ef}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]
<b>RG M 8 (A4-70)</b>	80	110	10,0	5,7	6,0	40	40	9,9	6,0	40	40
<b>RG M 10 (A4-70)</b>	75	105	20,0	7,3	9,2	45	45	13,5	9,2	45	45
	90	120	20,0	8,8	9,2	45	45	15,7	9,2	45	45
	150	180	20,0	14,6	9,2	45	45	15,7	9,2	45	45
<b>RG M 12 (A4-70)</b>	75	105	40,0	10,1	13,7	55	55	15,6	13,7	55	55
	110	140	40,0	14,8	13,7	55	55	22,5	13,7	55	55
	150	180	40,0	20,2	13,7	55	55	22,5	13,7	55	55
<b>RG M 16 (A4-70)</b>	95	131	60,0	15,9	25,2	65	65	22,3	25,2	65	65
	125	161	60,0	22,4	25,2	65	65	33,6	25,2	65	65
	190	226	60,0	34,1	25,2	65	65	42,0	25,2	65	65
<b>RG M 20 (A4-70)</b>	170	218	120,0	38,0	39,4	85	85	53,3	39,4	85	85
	210	258	120,0	47,1	39,4	85	85	65,7	39,4	85	85
<b>RG M 24 (A4-70)</b>	210	266	150,0	52,2	56,8	105	105	73,2	56,8	105	105
<b>RG M 30 (A4-70)</b>	280	350	300,0	80,3	90,2	140	140	112,7	90,2	140	140

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term up to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

## LOADS

### Superbond Resin capsule RSB with threaded rod RG M C (property class C-70)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/O258 has to be considered.

Typ	Effective anchorage depth $h_{ef}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
				Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]
<b>RG M 8 (C-70)</b>	80	110	10,0	5,7	7,4	40	40	11,5	7,4	40	40
<b>RG M 10 (C-70)</b>	75	105	20,0	7,3	11,4	45	45	13,5	11,4	45	45
	90	120	20,0	8,8	11,4	45	45	16,2	11,4	45	45
	150	180	20,0	14,6	11,4	45	45	19,5	11,4	45	45
<b>RG M 12 (C-70)</b>	75	105	40,0	10,1	17,1	55	55	15,6	17,1	55	55
	110	140	40,0	14,8	17,1	55	55	23,7	17,1	55	55
	150	180	40,0	20,2	17,1	55	55	28,1	17,1	55	55
<b>RG M 16 (C-70)</b>	95	131	60,0	15,9	31,4	65	65	22,3	31,4	65	65
	125	161	60,0	22,4	31,4	65	65	33,6	31,4	65	65
	190	226	60,0	34,1	31,4	65	65	52,4	31,4	65	65
<b>RG M 20 (C-70)</b>	170	218	120,0	38,0	49,1	85	85	53,3	49,1	85	85
	210	258	120,0	47,1	49,1	85	85	73,2	49,1	85	85
<b>RG M 24 (C-70)</b>	210	266	150,0	52,2	70,9	105	105	73,2	70,9	105	105
<b>RG M 30 (C-70)</b>	280	350	300,0	80,3	112,6	140	140	112,7	112,6	140	140

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term up to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

## LOADS

### Superbond Injection mortar FIS SB with threaded rod FIS A<sup>7)</sup> (property class 8.8)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/0258 has to be considered.

Typ	Min. effective anchorage depth $h_{ef,min}$ [mm]	Max. effective anchorage depth $h_{ef,max}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete		
					Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]
<b>FIS A M8 (8.8)</b>	60		100	10,0	4,3	8,6	40	40	8,6	8,6	40
		160	190	10,0	11,5	8,6	40	40	14,3	8,6	40
<b>FIS A M10 (8.8)</b>	60		100	20,0	5,8	11,7	45	45	10,8	13,1	45
		200	230	20,0	19,4	13,1	45	45	22,4	13,1	45
<b>FIS A M12 (8.8)</b>	70		100	40,0	9,4	18,8	55	55	14,1	19,4	55
		240	270	40,0	32,3	19,4	55	55	32,4	19,4	55
<b>FIS A M16 (8.8)</b>	80		116	60,0	12,3	24,5	65	65	17,2	34,4	65
		320	356	60,0	57,4	36,0	65	65	60,0	36,0	65
<b>FIS A M20 (8.8)</b>	90		138	120,0	14,6	29,3	85	85	20,5	41,1	85
		400	448	120,0	89,8	56,0	85	85	93,3	56,0	85
<b>FIS A M24 (8.8)</b>	96		152	150,0	16,1	32,2	105	105	22,6	45,2	105
		480	536	150,0	129,3	80,6	105	105	134,3	80,6	105
<b>FIS A M27 (8.8)</b>	108		168	200,0	19,2	38,5	120	120	27,0	54,0	120
		540	600	200,0	152,7	105,1	120	120	175,2	105,1	120
<b>FIS A M30 (8.8)</b>	120		190	300,0	22,5	45,1	140	140	31,6	63,2	140
		600	670	300,0	188,5	128,6	140	140	213,8	128,6	140

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleanliness according approval. The anchor may be installed in dry or wet concrete.

<sup>7)</sup> The given values apply as well to the threaded rod RGM in the same property class.

## LOADS

Superbond Injection mortar FIS SB with threaded rod FIS A A4<sup>7)</sup> (property class A4-70)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/0258 has to be considered.

Typ	Min. effective anchorage depth $h_{ef,min}$ [mm]	Max. effective anchorage depth $h_{ef,max}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
					Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]
FIS A M8 (A4-70)	60		100	10,0	4,3	6,0	40	40	8,6	6,0	40	40
		160	190	10,0	9,9	6,0	40	40	9,9	6,0	40	40
FIS A M10 (A4-70)	60		100	20,0	5,8	9,2	45	45	10,8	9,2	45	45
		200	230	20,0	15,7	9,2	45	45	15,7	9,2	45	45
FIS A M12 (A4-70)	70		100	40,0	9,4	13,7	55	55	14,1	13,7	55	55
		240	270	40,0	22,5	13,7	55	55	22,5	13,7	55	55
FIS A M16 (A4-70)	80		116	60,0	12,3	24,5	65	65	17,2	25,2	65	65
		320	356	60,0	42,0	25,2	65	65	42,0	25,2	65	65
FIS A M20 (A4-70)	90		138	120,0	14,6	29,3	85	85	20,5	39,4	85	85
		400	448	120,0	65,7	39,4	85	85	65,7	39,4	85	85
FIS A M24 (A4-70)	96		152	150,0	16,1	32,2	105	105	22,6	45,2	105	105
		480	536	150,0	94,3	56,8	105	105	94,3	56,8	105	105
FIS A M27 (A4-70)	108		168	200,0	19,2	38,5	120	120	27,0	54,0	120	120
		540	600	200,0	123,0	73,7	120	120	123,0	73,7	120	120
FIS A M30 (A4-70)	120		190	300,0	22,5	45,1	140	140	31,6	63,2	140	140
		600	670	300,0	150,1	90,2	140	140	150,1	90,2	140	140

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term up to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleaning according approval. The anchor may be installed in dry or wet concrete.

<sup>7)</sup> The given values apply as well to the threaded rod RGM in the same property class.

## LOADS

### Superbond Injection mortar FIS SB with threaded rod FIS A C<sup>7)</sup> (property class C-70)

Highest permissible loads for a single anchor<sup>1) 6)</sup> in concrete C20/25<sup>4)</sup>

For the design the complete approval ETA - 12/0258 has to be considered.

Typ	Min. effective anchorage depth $h_{ef,min}$ [mm]	Max. effective anchorage depth $h_{ef,max}$ [mm]	Min. member thickness $h_{min}$ [mm]	Max. torque moment $T_{inst,max}$ [Nm]	Cracked concrete				Non-cracked concrete			
					Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	Min. edge distance $c_{min}^{2)}$ [mm]	Permissible tensile load $N_{perm}^{3)}$ [kN]	Permissible shear load $V_{perm}^{3)}$ [kN]	Min. spacing $s_{min}^{2)}$ [mm]	
FIS A M8 (C-70)	60		100	10,0	4,3	7,4	40	40	8,6	7,4	40	
		160	190	10,0	11,5	7,4	40	40	12,4	7,4	40	
FIS A M10 (C-70)	60		100	20,0	5,8	11,4	45	45	10,8	11,4	45	
		200	230	20,0	19,4	11,4	45	45	19,5	11,4	45	
FIS A M12 (C-70)	70		100	40,0	9,4	17,1	55	55	14,1	17,1	55	
		240	270	40,0	28,1	17,1	55	55	28,1	17,1	55	
FIS A M16 (C-70)	80		116	60,0	12,3	24,5	65	65	17,2	31,4	65	
		320	356	60,0	52,4	31,4	65	65	52,4	31,4	65	
FIS A M20 (C-70)	90		138	120,0	14,6	29,3	85	85	20,5	41,1	85	
		400	448	120,0	81,9	49,1	85	85	81,9	49,1	85	
FIS A M24 (C-70)	96		152	150,0	16,1	32,2	105	105	22,6	45,2	105	
		480	536	150,0	117,6	70,9	105	105	117,6	70,9	105	
FIS A M27 (C-70)	108		168	200,0	19,2	38,5	120	120	27,0	54,0	120	
		540	600	200,0	152,7	92,0	120	120	153,3	92,0	120	
FIS A M30 (C-70)	120		190	300,0	22,5	45,1	140	140	31,6	63,2	140	
		600	670	300,0	187,1	112,6	140	140	187,1	112,6	140	

<sup>1)</sup> The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As an single anchor counts e.g. an anchor with a spacing  $s \geq 3 \times h_{ef}$  and an edge distance  $c \geq 1,5 \times h_{ef}$ .

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>6)</sup> The given loads are valid for temperatures in the substrate up to +50 °C (resp. short term to 80 °C). Erection of the drill hole by hammer drilling with best possible drill hole cleanliness according approval. The anchor may be installed in dry or wet concrete.

<sup>7)</sup> The given values apply as well to the threaded rod RGM in the same property class.