LOADS

Injection system Powerbond with threaded rod FIS A (property class 8.8)
Highest permissible loads for a single anchor[1) 6)] in concrete C20/25[4)]
For the design the complete approval ETA - 12/0160 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**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]	**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]
Powerbond M10 (8.8)	60		100	20,0	8,0	13,1	50	50	11,2	13,1	55	55
		120	150	20,0	18,0	13,1	50	50	22,4	13,1	55	55
Powerbond M12 (8.8)	72		104	40,0	10,5	19,4	55	55	14,7	19,4	55	55
		144	176	40,0	25,9	19,4	55	55	32,4	19,4	55	55
Powerbond M16 (8.8)	96		136	60,0	16,1	32,2	60	60	22,6	36,0	65	65
		192	232	60,0	45,6	36,0	60	60	55,1	36,0	65	65

[1)] The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of γ_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 $c \geq 1,5 \times h_{ef}$.
[2)] Minimum possible axial spacings resp. edge distance while reducing the permissible load.
[3)] For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.
[4)] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
[6)] The given loads are valid for fixations in dry and humid concrete for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval. For hammer-drilling as well as diamond-drilling.

LOADS

Injection system Powerbond with threaded rod FIS A A4 (property class A4-70)
Highest permissible loads for a single anchor[1) 6)] in concrete C20/25[4)]
For the design the complete approval ETA - 12/0160 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**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]	**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]
Powerbond M10 (A4-70)	60		100	20,0	8,0	9,2	50	50	11,2	9,2	55	55
		120	150	20,0	15,7	9,2	50	50	15,7	9,2	55	55
Powerbond M12 (A4-70)	72		104	40,0	10,5	13,7	55	55	14,7	13,7	55	55
		144	176	40,0	22,5	13,7	55	55	22,5	13,7	55	55
Powerbond M16 (A4-70)	96		136	60,0	16,1	25,2	60	60	22,6	25,2	65	65
		192	232	60,0	42,0	25,2	60	60	42,0	25,2	65	65

[1)] The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of γ_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 $c \geq 1,5 \times h_{ef}$.
[2)] Minimum possible axial spacings resp. edge distance while reducing the permissible load.
[3)] For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.
[4)] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
[6)] The given loads are valid for fixations in dry and humid concrete for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval. For hammer-drilling as well as diamond-drilling.