

Injection mortar UPM 22

Load table

Permissible loads of a single anchor^{1) 2)} in normal concrete of strength class C20/25.

For the design the complete current assessment ETA-18/0385 has to be considered.

Type	Material / surface ³⁾	Effective anchor- age depth	Minimum member thickness	Maximum installation- torque	Recommended tension (N_{rec}) and shear loads (V_{rec}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
		h_{ef} [mm]	h_{min} [mm]	$T_{inst,max}$ [Nm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]
UPM-A/ASTA M8	5.8	60	100	10	3.9	5.1	40	40
UPM-A/ASTA M8	5.8	80	110	10	5.2	5.1	40	40
UPM-A/ASTA M8	5.8	160	190	10	9	5.1	40	40
UPM-A/ASTA M8	R-70	60	100	10	3.9	6	40	40
UPM-A/ASTA M8	R-70	80	110	10	5.2	6	40	40
UPM-A/ASTA M8	R-70	160	190	10	9.9	6	40	40
UPM-A/ASTA M10	5.8	60	100	20	4.9	8.6	45	45
UPM-A/ASTA M10	5.8	90	120	20	7.3	8.6	45	45
UPM-A/ASTA M10	5.8	200	230	20	13.8	8.6	45	45
UPM-A/ASTA M10	R-70	60	100	20	4.9	9.2	45	45
UPM-A/ASTA M10	R-70	90	120	20	7.3	9.2	45	45
UPM-A/ASTA M10	R-70	200	230	20	15.7	9.2	45	45
UPM-A/ASTA M12	5.8	70	100	40	6.8	12	55	55
UPM-A/ASTA M12	5.8	110	140	40	10.7	12	55	55
UPM-A/ASTA M12	5.8	240	270	40	20.5	12	55	55
UPM-A/ASTA M12	R-70	70	100	40	6.8	13.7	55	55
UPM-A/ASTA M12	R-70	110	140	40	10.7	13.7	55	55
UPM-A/ASTA M12	R-70	240	270	40	22.5	13.7	55	55
UPM-A/ASTA M16	5.8	80	120	60	10.4	22.3	65	65
UPM-A/ASTA M16	5.8	125	170	60	16.2	22.3	65	65
UPM-A/ASTA M16	5.8	320	360	60	37.6	22.3	65	65
UPM-A/ASTA M16	R-70	80	120	60	10.4	24.9	65	65
UPM-A/ASTA M16	R-70	125	170	60	16.2	25.2	65	65
UPM-A/ASTA M16	R-70	320	360	60	41.5	25.2	65	65
UPM-A/ASTA M20	5.8	90	140	120	13.5	32.3	85	85
UPM-A/ASTA M20	5.8	170	220	120	25.4	34.9	85	85
UPM-A/ASTA M20	5.8	400	450	120	58.6	34.9	85	85
UPM-A/ASTA M20	R-70	90	140	120	13.5	32.3	85	85
UPM-A/ASTA M20	R-70	170	220	120	25.4	39.4	85	85
UPM-A/ASTA M20	R-70	400	450	120	59.8	39.4	85	85
UPM-A/ASTA M24	5.8	96	160	150	17.2	41.4	105	105
UPM-A/ASTA M24	5.8	210	270	150	37.7	50.9	105	105
UPM-A/ASTA M24	5.8	480	540	150	84.3	50.9	105	105
UPM-A/ASTA M24	R-70	96	160	150	17.2	41.4	105	105
UPM-A/ASTA M24	R-70	210	270	150	37.7	56.8	105	105
UPM-A/ASTA M24	R-70	480	540	150	86.2	56.8	105	105

¹⁾ Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 80 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} for sustained load was taken into account with 1.0.

³⁾ Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (zp/gvz); for damp interiors and for outdoor use, stainless steel (R).

⁴⁾ In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software DesignFIX.

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Load table

Permissible loads of a single anchor^{1) 2)} in normal concrete of strength class C20/25.

For the design the complete current assessment ETA-18/0385 has to be considered.

Type	Screw Material ³⁾	Effective anchor- age depth	Minimum member thickness	Maximum installation torque	Permissible tension (N_{perm}) and shear loads (V_{perm}); minimum spacing (s_{min}) and edge distances (c_{min}) with reduced loads			
		h_{ef} [mm]	h_{min} [mm]	$T_{inst,max}$ [Nm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	$s_{min}^{4)}$ [mm]	$c_{min}^{4)}$ [mm]
IST M8	5.8	90	120	10	9	5.3	55	55
IST M8	8.8	90	120	10	13.8	8.3	55	55
IST M8	R-70	90	120	10	9.9	5.9	55	55
IST M10	5.8	90	130	20	13.8	8.3	65	65
IST M10	8.8	90	130	20	16.7	13.3	65	65
IST M10	R-70	90	130	20	15.7	9.3	65	65
IST M12	5.8	125	170	40	20.5	12.1	75	75
IST M12	8.8	125	170	40	26.6	19.3	75	75
IST M12	R-70	125	170	40	22.5	13.5	75	75
IST M16	5.8	160	210	80	37.6	22.4	95	95
IST M16	8.8	160	210	80	39.5	30.9	95	95
IST M16	R-70	160	210	80	39.5	25.1	95	95
IST M20	5.8	200	260	120	55.2	35.4	125	125
IST M20	8.8	200	260	120	55.2	42.9	125	125
IST M20	R-70	200	260	120	55.2	39.4	125	125

¹⁾ Design according to EN 1992-4:2018 (for static resp. quasi-static loads). The partial safety factors for material resistance as regulated in the ETA as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. As a single anchor counts e.g. an anchor with a spacing $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.

²⁾ The specified loads are valid for anchorages in dry and damp concrete. For temperatures in the anchoring substrate up to 50 °C (resp. short term up to 80 °C). Drill hole cleaning as per specification in the ETA. The factor Ψ_{sus} for sustained load was taken into account with 1.0.

³⁾ Further steel grades, versions and technical data see ETA, e.g. for dry internal conditions, galvanised steel (zp/gvz); for damp interiors and for outdoor use, stainless steel (R).

⁴⁾ In the case of combinations of tension and shear loads, bending moments with reduced or minimum spacing and edge distances (anchor groups), the design must be carried out in accordance with the provisions of the complete ETA and the provisions of the EN 1992-4:2018. We recommend using our anchor design software DesignFix.

Load table

Permissible loads^{1) 2)} for a single anchor in masonry for pre-positioned installation.

For the design the complete current assessment ETA-15/0555 has to be considered.

Type	Compressive brick strength	Brick row density	Minimum brick di- mensions ³⁾	Effective anchor- age depth	Minimum mem- ber thickness	Maximum instal- lation torque	Permissible tensile load ⁴⁾	Permissible shear load ⁴⁾	Minimum spacing ⁵⁾	Characteristic resp. min- imum edge distance ⁵⁾
	f_b [N/mm ²]	r [kg/dm ²]	(L x B x H) [mm]	h_{ef} [mm]	h_{min} [mm]	$T_{inst,max}$ [Nm]	N_{perm} [kN]	V_{perm} [kN]	$s_{min} \parallel / s_{min} \perp$ [mm]	$c_{cr} = c_{min}$ [mm]
Solid sand-lime brick KS, acc. to EN 771-2										
M8	≥ 12	$\geq 1,8$	240 x 115 x 71	50	115	5	1,14	0,42	80 / 150	60
M8	≥ 12	$\geq 1,8$	240 x 115 x 71	100	240	5	2,29	0,89	80 / 300	60
M10	≥ 12	$\geq 1,8$	240 x 115 x 71	100	240	15	1,57	0,57	80 / 300	60
M10	≥ 12	$\geq 1,8$	240 x 115 x 71	200	240	15	3,42	0,57	80 / 600	60
M12	≥ 12	$\geq 1,8$	240 x 115 x 71	100	240	15	1,28	0,57	80 / 300	60
M12	≥ 12	$\geq 1,8$	240 x 115 x 71	200	240	15	3,42	0,57	80 / 600	60
Vertically perforated brick Hlz, acc. to EN 771-1³⁾										
M8 with UPM-SH 12x85 K	≥ 12	$\geq 0,9$	240 x 175 x 113	85	175	2	0,34	0,43	100 / 100	100
		$\geq 0,9$	240 x 175 x 113	85	175	2				
		$\geq 0,9$	240 x 175 x 113	85	175	2				
M8 / M10 with UPM-SH 16x130 K	≥ 12	$\geq 0,9$	240 x 175 x 113	130	175	2	0,86	0,57	100 / 100	100
M12 with UPM-SH 20x130 K	≥ 12	$\geq 0,9$	240 x 175 x 113	130	175	2	1,14	0,57	100 / 100	100
Perforated sand-lime brick KSL, acc. to EN 771-2³⁾										
M8 with UPM-SH 12x85 K	≥ 12	$\geq 1,4$	240 x 175 x 113	85	175	2	0,71	0,71	100 / 115	60
		$\geq 1,4$	240 x 175 x 113	85	175	2	0,86			
M8 / M10 with UPM-SH 16x130 K	≥ 12	$\geq 1,4$	240 x 175 x 113	130	175	2	0,86	1,29	100 / 115	80
M12 with UPM-SH 20x85 K	≥ 12	$\geq 1,4$	240 x 175 x 113	85	175	2	0,86	1,14	100 / 115	80
Aerated concrete acc. to EN 7714-4⁶⁾										
M8	≥ 2	$\geq 0,35$	-	100	130	1	0,54	0,43	250 / 250	100
M8	≥ 4	$\geq 0,50$	-	200	230	8	1,07	0,71	80 / 80	100
M10	≥ 2	$\geq 0,35$	-	100	130	2	0,54	0,43	250 / 250	100
M10	≥ 4	$\geq 0,50$	-	200	230	12	1,79	0,71	80 / 80	100
M12	≥ 2	$\geq 0,35$	-	100	130	2	0,71	0,54	250 / 250	100
M12	≥ 4	$\geq 0,50$	-	200	230	16	1,79	0,71	80 / 80	100

¹⁾ The required partial safety factors for material resistance as well as a partial safety factor for load actions of $\gamma_L = 1.4$ are considered. Load values are valid for zinc-plated steel, stainless steel R and highly corrosion resistant steel HCR. In perforated bricks and hollow blocks threaded rod UPM-A/ASTA in combination with perforated sleeve UPM-SH.

²⁾ The given loads are valid for installation and use of fixations in dry masonry - use category d/d - for temperatures in the substrate up to 50 °C (resp. short term up to 80 °C) and drill hole cleaning according to assessment. The given brick types in combination with the permissible loads are an extract of the assessment.

³⁾ More information about, e.g. hole patterns, assortment of perforated sleeves UPM-SH see assessment.

⁴⁾ In the case of combinations of tensile and shear loads, bending moments and reduced edge and axial spacings (anchor groups), the design must be carried out in accordance with the provisions of the complete assessment.

⁵⁾ Minimum feasible spacing resp. edge distance. Details as well as to the distances to joints see assessment.

⁶⁾ Cylindrical drill hole.