Performance data

		M8		M10		M12		M16		M20	M24
Anchor diameter [in mm]		**M8**		**M10**		**M12**		**M16**		**M20**	**M24**
Standard anchoring depth/ Reduced anchoring depth	$h_{ef}/h_{ef,red}$ [mm]	46	35[3]	60	40	70	50	85	65	100	125
Perm. centered tensile load[1] of a single anchor with no edge influence — Tensile zone (cracked concrete C20/25[2], $s \geq 3\,h_{ef}$, $c \geq 1.5\,h_{ef}$)	N_{perm} [kN] = C20/25[2]	2.4	2.4	4.3	3.6	7.6	6.1	11.9	9.0	17.1	19.0
Pressure zone (uncracked concrete C20/25[2], $s_{cr,sp}$ and $c_{cr,sp}$ see approval		5.7	3.6	7.6	4.3	11.9	8.5	16.7	12.6	24.0	33.6
Perm. transverse load[1] of one individual anchor with no edge influence — Tensile zone (cracked concrete C20/25[2], $c \geq 10\,h_{ef}$)	V_{perm} [kN] = C20/25[2]	7.4	7.4	11.4	10.4	17.1	14.5	31.4	21.6	43.9	67.1
Pressure zone (uncracked concrete C20/25[2], $c \geq 10\,h_{ef}$)		7.4	7.4	11.4	11.4	17.1	17.1	31.4	30.2	43.9	70.6
Permissible bending torque	M_{perm} [Nm]	14.9	14.9	29.7	29.7	52.6	–	114.3	–	231.6	448.8
Permissible load under fire load (R30, R60, R90, R120) see European Technical Approval ETA-99/0011											
Fire resistance	F30 [kN]	9.0	–	15.0	–	19.0	–	30.0	–	–	–
	F60 [kN]	5.0	–	9.0	–	12.0	–	15.0	–	–	–
	F90 [kN]	1.8	–	4.0	–	5.0	–	7.5	–	–	–
	F120 [kN]	1.0	–	2.0	–	3.0	–	6.0	–	–	–

Characteristic values

		M8		M10		M12		M16		M20	M24
Anchor diameter [mm]		**M8**		**M10**		**M12**		**M16**		**M20**	**M24**
Standard anchoring depth/ Reduced anchoring depth	$h_{ef}/h_{ef,red}$ [mm]	46	35[3]	60	40	70	50	85	65	100	125
Setting depth	h_{nom} [mm]	52	41	68	48	80	60	97	77	114	140
Axial spacing	$s_{cr,N}$ [mm]	138	105	180	120	210	150	255	195	300	375
Edge spacing	$c_{cr,N}$ [mm]	69	52.5	90	60	105	75	127.5	97.5	150	187.5
Standard component thickness	$h_{std} \geq$ [mm]	100	–	120	–	140	–	160	–	200	250

Minimum spacing — block 1

		M8				M10				M12				M16				M20		M24	
Minimum axial spacing	$s_{min} \geq$ [mm]	40	40	–	–	50	50	–	–	60	60	–	–	60	65	–	–	95	90	125	125
Cracked concrete / Uncracked concrete	for $c \geq$ [mm]	70	80	–	–	75	75	–	–	100	120	–	–	100	120	–	–	150	180	125	125
Minimum edge spacing	$c_{min} \geq$ [mm]	40	50	–	–	55	60	–	–	60	75	–	–	60	80	–	–	95	130	125	125
Cracked concrete / Uncracked concrete	for $s \geq$ [mm]	80	100	–	–	90	120	–	–	140	150	–	–	180	150	–	–	200	240	125	125

		M8		M10		M12		M16		M20	M24
Minimum component thickness	$h_{min} \geq$ [mm]	80	80	100	80	120	100	140	140	–	–

Minimum spacing — block 2

		M8				M10				M12				M16				M20				M24			
Minimum axial spacing	$s_{min} \geq$ [mm]	40	40	50	50	45	60	50	50	60	60	50	50	70	80	65	65	–	–	–	–	–	–	–	–
Cracked concrete / Uncracked concrete	for $c \geq$ [mm]	70	80	60	60	90	140	100	100	100	120	160	160	160	180	170	170	–	–	–	–	–	–	–	–
Minimum edge spacing	$c_{min} \geq$ [mm]	40	50	40	40	50	90	65	65	60	75	65	100	80	90	100	170	–	–	–	–	–	–	–	–
Cracked concrete / Uncracked concrete	for $s \geq$ [mm]	80	100	185	185	115	140	180	180	140	150	250	185	180	200	250	65	–	–	–	–	–	–	–	–

		M8	M10	M12	M16	M20	M24
Nom. drill dia.	d_0 [mm]	8	10	12	16	20	24
Drill cutting edge dia.	$d_{cut} \leq$ [mm]	8.45	10.45	12.5	16.5	20.55	24.55
Drill hole depth	h_1 [mm]	60 / 49	75 / 55	90 / 70	110 / 90	125	155
Through-hole in the component being connected	$d_f \leq$ [mm]	9	12	14	18	22	26
Torque for anchoring	$T_{inst} =$ [Nm]	20	35	50	110	200	290

Würth system components

[1] The part-safety coefficients of the resistances regulated in the approval and a part-safety coefficient of the effects of γ_F = 1.4 have been taken into account. For the combination of tensile and transverse loads, for edge influence and anchor groups, please refer to the Guideline for European Technical Approval (ETAG), Appendix C.
[2] The concrete has normal reinforcement. Higher values are possible for higher concrete strengths.
[3] Use is limited to the anchoring of statically undefined systems.