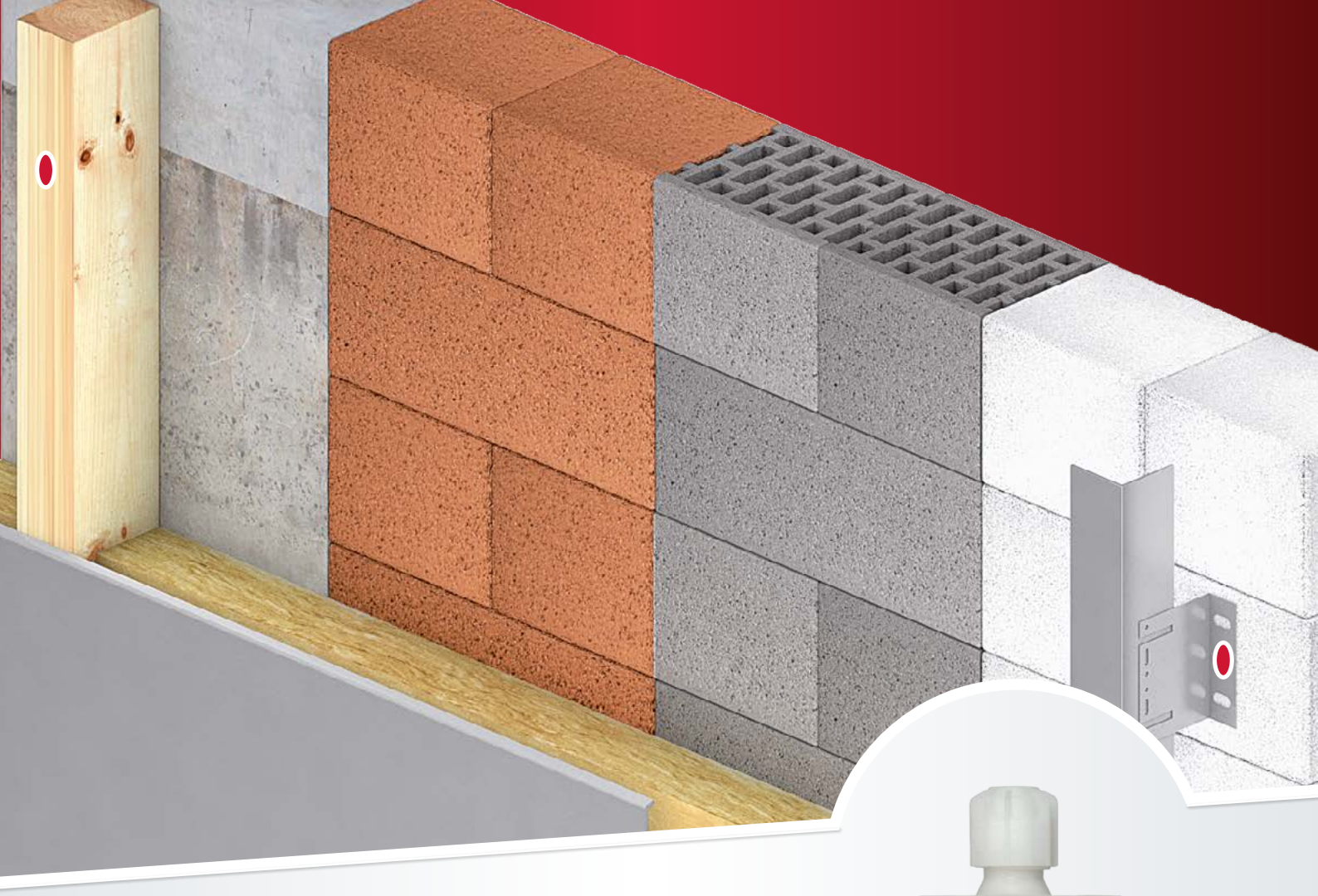
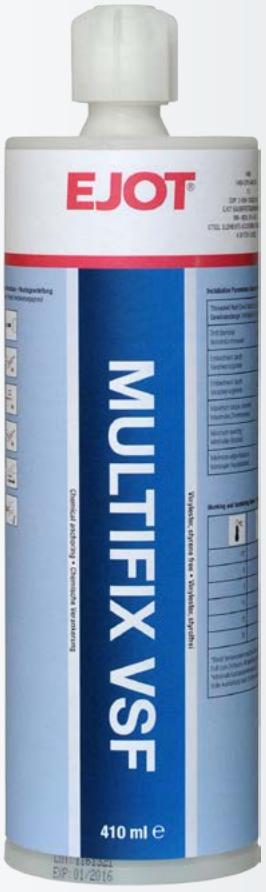




EJOT® Multifix VSF

Styrene free low-odour anchor mortar.
Two-component chemical anchoring system based on a ‘high reactivity’ vinylester resin.

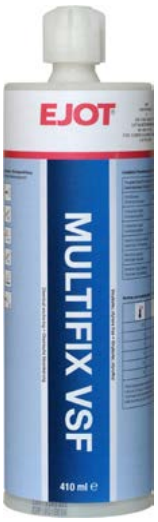
EJOT®

RJ www.rjfacades.com
Tel: +44 (0) 1483 898125

EJOT® Injection resin Multifix VSF

Vinylester, styrene free

Content [ml]	Composite mortar	PU	Price/1 [EUR]	Order description	Article number
300	Vinylester, styrene free			EJOT Multifix VSF 300	9 571 002 300
410	Vinylester, styrene free			EJOT Multifix VSF 410	9 571 000 410



Application area

- Suitable to anchor threaded rods and rebar in cracked and non-cracked concrete.
- Approval for threaded rods M8, M10, M12, M16, M20, M24
- Approval for rebar Ø 8, 10, 12, 14, 16, 20, 25 mm

Description

Two-component injection chemical anchor based on vinylester resin without styrene and low odor.

Characteristics

- For high and critical loads
- High durability
- Without styrene, low odor
- Ideal for indoor and outdoor applications
- Fast curing
- Suitable for underwater applications
- Dynamic resistance
- Fire rated
- For use with potable water

Certification

- ETA 15/0282 for Concrete Option 1 and Rebar
- VOC classification A+
- BS6920 Approved

Handling and Storage

- This product should be stored between + 5 °C and + 25 °C.
- Avoid Direct Sunlight
- The shelf life of the product is 12 months from the manufacture date.

Note

For details/questions please check with technical department. For details please consult valid ETA document as mentioned above.

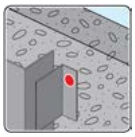
Working and hardening times

°C			
-10*	50'	4h	8h
-5	40'	3h	6h
5	20'	1h30'	3h
15	9'	1h	2h
25	5'	30'	1h
35	3'	20'	40'

*Resin temperature must be at least 20 °C
Full cure 24 hours
All specifications based on supplied mixer

WARNING

Contains: DIBENZOYL PEROXIDE; ETHYL-VINYLBENZENE. May cause an allergic skin reaction. Causes serious eye irritation. Harmful tu aquatic life with long lasting effects. Wash skin thoroughly after handling. Contaminated work clothig should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves / protective clothing / eye protection / face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN: Wash with plenty of soap and water.



Approval
ETA 15/0282

Cross reference
Anchor rod
Mesh sleeve
Cleaning brush
Blow-out pump
Applicator gun

FIRE RATED R240

EJOT® Injection resin Multifix VSF

Vinylester based Injection resin, styrene free

Loads, Edge and Spacings based on Characteristic bond strengths - Showing steel failure

	Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Characteristic distances (mm)			Min Edge and Spacing (mm)	Nominal Embedment (mm)	Hole Diameter concrete (mm)	Hole Diameter fixture (mm)	Max Torque (Nm)
Size (mm)	Tension N_{rk}	Shear V_{rk}	Tension N_{rd}	Shear V_{rd}	Tension N_{rec}	Shear V_{rec}	Edge $C_{cr,N}$	Spacing $S_{cr,N}$	Edge $C_{cr,V}$	C_{min}, S_{min}				
8	19,00		12,70		9,07						60	10	9	10
	19,00	9,00	12,70	7,20	9,07	5,14	80	160	80	40	80			
	19,00		12,70		9,07						160			
10	22,62		15,08		10,77						60	12	12	20
	30,20	15,00	20,10	12,00	14,36	8,57	100	200	90	50	90			
	30,20		20,10		14,36						200			
12	29,82		19,88		14,20						70	14	14	40
	43,80	21,00	29,20	16,80	20,86	12,00	120	240	110	60	110			
	43,80		29,20		20,86						240			
16	43,43		28,95		20,68						80	18	18	80
	67,86	39,00	45,24	31,20	32,31	22,29	160	320	125	80	125			
	81,60		54,40		38,86						320			
20	55,42		36,95		26,39						90	24	22	120
	104,68	61,00	69,79	48,80	49,85	34,86	200	400	180	100	170			
	127,40		84,90		60,64						400			
24	63,33		42,22		30,16						100	28	26	160
	133,00	88,00	88,67	70,40	63,33	50,29	230	460	220	120	210			
	183,60		122,40		87,43						480			
27	70,91		47,27		33,77						110	32	30	180
	154,72	115,00	103,15	92,00	73,68	65,71	270	540	240	135	240			
	238,00		159,10		113,64						540			
30	78,04		52,02		37,16						120	35	32	200
	182,09	142,50	121,39	114,00	86,71	81,43	280	560	280	150	280			
	292,00		194,50		138,93						600			
33	88,95		59,30		42,36						130	37	36	250
	205,27	173,50	136,85	138,80	97,75	121,43	310	620	310	165	300			
	360,00		240,60		171,86						660			
36	108,57		72,38		51,70						150	40	38	300
	246,10	212,50	164,07	170,00	117,19	121,43	330	660	330	180	340			
	425,00		283,33		202,38						720			

= steel failure

Table notes : see back page

Design Resistance used with various stud strengths, material and rebar.

5.8 Grade Steel Studding

Stud Diameter	Hole Diameter	Embedment Depth hef													steel failure							h_{ef} failure	$F_{d,s}$ design load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720	(mm)	(kN)
8	10	12,7																				59	12,7
10	12	15,1	17,6	20,1																		80	20,1
12	14		19,9	22,7	25,6	28,4	29,2															103	29,2
16	18			29,0	32,6	36,2	39,8	43,4	47,1	50,7	54,4											150	54,4
20	24			32,8	36,9	41,1	45,2	49,3	53,4	57,5	65,7	82,1	84,9									207	84,9
24	28					42,2	46,5	50,7	54,9	59,1	67,6	84,5	101,3	118,2	122,4							290	122,4
27	32						47,3	51,6	55,9	60,2	68,8	86,0	103,2	120,3	137,5	159,1						370	159,1
30	35							52,0	56,4	60,7	69,4	86,7	104,1	121,4	138,8	173,4	194,5					449	194,5
33	38								59,3	63,9	73,0	91,2	109,5	127,7	146,0	182,5	219,0	240,6				527	240,6
36	40									67,6	77,2	96,5	115,8	135,1	154,4	193,0	231,6	260,6	283,2			587	283,2
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

8.8 Grade Steel Studding

Stud Diameter	Hole Diameter	Embedment Depth hef																				h_{ef} failure	$F_{d,s}$ design load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720	(mm)	(kN)
8	10	12,9	15,0	17,2	19,3	19,5																91	19,5
10	12	15,1	17,6	20,1	22,6	25,1	27,6	30,2	30,9													123	30,9
12	14		19,9	22,7	25,6	28,4	31,2	34,1	36,9	39,8	45,0											158	45,0
16	18			29,0	32,6	36,2	39,8	43,4	47,1	50,7	57,9	72,4	83,7									231	83,7
20	24			32,8	36,9	41,1	45,2	49,3	53,4	57,5	65,7	82,1	98,5	114,9	130,7							318	130,7
24	28					42,2	46,5	50,7	54,9	59,1	67,6	84,5	101,3	118,2	135,1	168,9	188,3					446	188,3
27	32						47,3	51,6	55,9	60,2	68,8	86,0	103,2	120,3	137,5	171,9	206,3	232,1				570	244,8
30	35							52,0	56,4	60,7	69,4	86,7	104,1	121,4	138,8	173,4	208,1	234,1	260,2			690	299,2
33	38								59,3	63,9	73,0	91,2	109,5	127,7	146,0	182,5	219,0	246,4	273,7	301,1		811	370,1
36	40									67,6	77,2	96,5	115,8	135,1	154,4	193,0	231,6	260,6	289,5	318,5	347,4	903	435,7
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

Design Resistance used with various stud strengths, material and rebar.

10.9 Grade Steel Studding

Stud Diameter	Hole Diameter	Embedment Depth hef																				h_{ef} failure	$F_{d,s}$ design load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720	(mm)	(kN)
8	10	12,9	15,0	17,2	19,3	21,4	23,6	25,7	27,2													127	27,2
10	12	15,1	17,6	20,1	22,6	25,1	27,6	30,2	32,7	35,2	40,2	43,1										171	43,1
12	14		19,9	22,7	25,6	28,4	31,2	34,1	36,9	39,8	45,4	56,8	62,6									220	62,6
16	18			29,0	32,6	36,2	39,8	43,4	47,1	50,7	57,9	72,4	86,9	101,3	115,8	116,6						322	116,6
20	24			32,8	36,9	41,1	45,2	49,3	53,4	57,5	65,7	82,1	98,5	114,9	131,4	164,2						443	182,0
24	28					42,2	46,5	50,7	54,9	59,1	67,6	84,5	101,3	118,2	135,1	168,9	202,7					621	262,2
27	32						47,3	51,6	55,9	60,2	68,8	86,0	103,2	120,3	137,5	171,9	206,3	232,1				793	341,0
30	35							52,0	56,4	60,7	69,4	86,7	104,1	121,4	138,8	173,4	208,1	234,1	260,2			961	416,7
33	38								59,3	63,9	73,0	91,2	109,5	127,7	146,0	182,5	219,0	246,4	273,7	301,1		1130	515,5
36	40									67,6	77,2	96,5	115,8	135,1	154,4	193,0	231,6	260,6	289,5	318,5	347,4	1258	606,9
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

A4-70 Stainless Steel Studding

Stud Diameter	Hole Diameter	Embedment Depth hef														steel failure						h_{ef} failure	$F_{d,s}$ design load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720	(mm)	(kN)
8	10	12,9	13,7																			64	13,7
10	12	15,1	17,6	20,1	21,7																	86	21,7
12	14		19,9	22,7	25,6	28,4	31,2	31,6														111	31,6
16	18			29,0	32,6	36,2	39,8	43,4	47,1	50,7	57,9	58,8										162	58,8
20	24			32,8	36,9	41,1	45,2	49,3	53,4	57,5	65,7	82,1	91,7									223	91,7
24	28					42,2	46,5	50,7	54,9	59,1	67,6	84,5	101,3	118,2	132,1							313	132,1
27	32						47,3	51,6	55,9	60,2	68,8	80,2										187	80,2
30	35							52,0	56,4	60,7	69,4	86,7	98,1									226	98,1
33	38								59,3	63,9	73,0	91,2	109,5	121								266	121,3
36	40									67,6	77,2	96,5	115,8	135,1	143							296	142,8
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

*1 = Tensile strength 500N/mm2

Design Resistance used with various stud strengths, material and rebar.

A4-80 Stainless Steel Studding

Stud Diameter	Hole Diameter	Embedment Depth hef																				h_{ef} failure	$F_{d,s}$ design load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720	(mm)	(kN)
8	10	12,9	15,0	15,7																		73	15,7
10	12		17,6	20,1	22,6	24,8																99	24,8
12	14		19,9	22,7	25,6	28,4	31,2	34,1	36,1													127	36,1
16	18			29,0	32,6	36,2	39,8	43,4	47,1	50,7	57,9	67,2										186	67,2
20	24			32,8	36,9	41,1	45,2	49,3	53,4	57,5	65,7	82,1	98,5	104,8								255	104,8
24	28					42,2	46,5	50,7	54,9	59,1	67,6	84,5	101,3	118,2	132,1							313	132,1
27	32						47,3	51,6	55,9	60,2	68,8	80,2										187	80,2
30	35							52,0	56,4	60,7	69,4	86,7	98,1									226	98,1
33	38								59,3	63,9	73,0	91,2	109,5	121,3								266	121,3
36	40									67,6	77,2	96,5	115,8	135,1	142,8							296	142,8
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

High bond reinforcing bars Fyk=500N/mm2

Rebar Diameter	Hole Diameter	Embedment Depth hef																				h_{ef} failure	$F_{d,s}$ yield load
(mm)	(mm)	60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	500	560	640	720	800	(mm)	(kN)
8	10	8,7	10,2	11,7	13,1	14,6	16,0	17,5	19,0	20,4	21,9											150	21,9
10	12	10,4	12,1	13,8	15,6	17,3	19,0	20,7	22,5	24,2	27,6	34,1										198	34,1
12	15		13,7	15,7	17,6	19,6	21,6	23,5	25,5	27,4	31,4	39,2	47,1	49,2								251	49,2
16	18			19,3	21,7	24,1	26,5	29,0	31,4	33,8	38,6	48,3	57,9	67,6	77,2							362	87,4
20	25			21,0	23,6	26,2	28,9	31,5	34,1	36,7	42,0	52,5	63,0	73,5	84,0	105,0						521	136,6
25	30					28,3	31,1	33,9	36,8	39,6	45,2	56,6	67,9	79,2	90,5	113,1	141,4					695	196,5
28	35						33,4	36,4	39,5	42,5	48,6	60,7	72,8	85,0	97,1	121,4	151,8	170,0				882	267,8
32	40								43,1	46,5	53,1	66,4	79,6	92,9	106,2	132,7	165,9	185,8	212,3			1054	349,7
36	44									52,3	59,7	74,7	89,6	104,5	119,4	149,3	186,6	209,0	238,9	268,8		1188	443,5
40	50										66,4	82,9	99,5	116,1	132,7	165,9	207,4	232,3	265,4	298,6	331,8	1317	546,3
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	500	560	640	720	800		

Characteristic and Design Load resistances based on characteristic bond strengths for hef 4d (minimum embedment) to 20d

	Non Cracked Concrete						Cracked Concrete						
	Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Nominal Embed-ment
Size (mm)	Tension N_{rk}	Shear V_{rk}	Tension N_{rd}	Shear V_{rd}	Tension N_{rec}	Shear V_{rec}	Tension N_{rk}	Shear V_{rk}	Tension N_{rd}	Shear V_{rd}	Tension N_{rec}	Shear V_{rec}	(mm)
8	19,30	9,00	12,87	7,20	9,19	5,14	Not Applicable		Not Applicable		Not Applicable		60
	25,74		17,16		12,26								**80**
	51,47		34,31		24,51								160
10	22,62	15,00	15,08	12,00	10,77	8,57	10,40	15,00	6,94	12,00	4,96	8,57	60
	33,93		22,62		16,16		15,60		10,40		7,43		**90**
	75,40		50,27		35,90		34,68		23,12		16,52		200
12	29,82	21,00	19,88	16,80	14,20	12,00	13,12	21,00	8,75	16,80	6,24	12,00	70
	46,86		31,24		22,31		20,62		13,75		9,82		**110**
	102,24		68,16		48,69		44,98		29,98		21,42		240
16	43,43	39,00	28,95	31,20	20,68	22,29	17,37	39,00	11,58	31,20	8,27	22,29	80
	67,86		45,24		32,31		27,14		18,10		12,93		**125**
	173,72		115,81		82,72		69,50		46,33		33,10		320
20	55,42	61,00	36,95	48,80	26,39	34,86	21,06	61,00	14,04	48,80	10,00	34,86	90
	104,68		69,79		49,85		39,78		26,52		18,94		**170**
	246,30		164,20		117,29		93,60		62,40		44,59		400
24	63,33	88,00	42,22	70,40	30,16	50,29	Not Applicable		Not Applicable		Not Applicable		100
	133,00		88,67		63,33								**210**
	304,01		202,67		144,76								480
27	70,91	115,00	47,27	92,00	33,77	65,71							110
	154,72		103,15		73,68								**240**
	348,11		232,08		165,77								540
30	78,04	142,50	52,02	114,00	37,16	81,43	Not Applicable		Not Applicable		Not Applicable		120
	182,09		121,39		86,71								**280**
	390,19		260,12		185,80								600
33	88,95	173,50	59,30	138,80	42,36	99,14							130
	205,27		136,85		97,75								**300**
	451,60		301,07		215,05								660
36	108,57	212,50	72,38	170,00	51,70	121,43	Not Applicable		Not Applicable		Not Applicable		150
	246,10		164,07		117,19								**340**
	521,15		347,44		248,17								720

Table notes : see back page

Bond Strength Factors

Influence of concrete strength on combined pull out and concrete cone resistance

Concrete Strength N/mm2 (Mpa)	C15/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
non cracked fc =	0,94	1,00	1,06	1,12	1,17	1,23	1,26	1,30
cracked fc =	0,96	1,00	1,03	1,05	1,06	1,07	1,08	1,09

Influence of environmental conditions in non cracked concrete

		M8	M10	M12	M16	M20	M24	M27	M30	M33	M36
Temp I 40°C / 24°C	Dry and Wet	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Temp II 80°C / 50°C	Dry and Wet	0,90	0,88	0,87	0,86	0,85	0,84	0,83	0,82	0,81	0,80

Influence of environmental conditions in cracked concrete

		M8	M10	M12	M16	M20	M24	M27	M30
Temp I 40°C / 24°C	Dry and Wet	n/a	0,46	0,44	0,40	0,38	n/a	n/a	n/a
Temp II 80°C / 50°C	Dry and Wet	n/a	0,45	0,43	0,40	0,38	n/a	n/a	n/a

Table notes : see back page

Characteristic and Design Load resistances for REBAR based on characteristic bond strengths for hef 4d (min embedment) to 20d

	Non Cracked Concrete						Cracked Concrete						
	Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Nominal Embed-ment
Rebar	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	(mm)
Ø	N_{rk}	V_{rk}	N_{rd}	V_{rd}	N_{rec}	V_{rec}	N_{rk}	V_{rk}	N_{rd}	V_{rd}	N_{rec}	V_{rec}	
	15,68		8,71		6,22								60
8	20,91	13,95	11,62	9,30	8,30	6,64							**80**
	41,82		23,23		16,60								160
	18,66		10,37		7,41								60
10	27,99	21,45	15,55	14,30	11,11	10,21							**90**
	62,20		34,56		24,68								200
	24,70		13,72		9,80		10,56		5,86		4,19		70
12	38,82	31,05	21,56	20,70	15,40	14,79	16,59	31,05	9,22	20,70	6,58	14,79	**110**
	84,69		47,05		33,61		36,19		20,11		14,36		240
	31,67		17,59		12,57		13,72		7,62		5,45		80
14	45,52	42,45	25,29	28,30	18,06	20,21	19,73	42,45	10,96	28,10	7,83	20,07	**115**
	110,84		61,58		43,98		48,03		26,68		19,06		280
	34,74		19,30		13,79		15,28		8,49		6,06		80
16	54,29	55,50	30,16	37,00	21,54	26,43	23,88	55,50	13,26	37,00	9,47	26,43	**125**
	138,97		77,21		55,15		61,12		33,96		24,26		320
	37,55		20,86		14,90		16,51		9,17		6,55		80
18	70,40	69,66	39,11	46,44	27,94	33,17	30,96	69,66	17,20	46,44	12,29	33,17	**150**
	168,97		93,87		67,05		74,31		41,28		29,49		360
	36,76		20,42		14,59		19,79		11,00		7,85		90
20	69,43	86,55	38,57	57,70	27,55	41,21	37,39	86,55	20,77	57,70	14,84	41,21	**170**
	163,36		90,76		64,83		87,96		48,87		34,91		400
	44,92		24,96		17,83		24,19		13,44		9,60		100
22	85,36	104,01	47,42	69,34	33,87	49,53	45,96	104,00	25,53	69,34	18,24	49,53	**190**
	197,67		109,82		78,44		106,44		59,13		42,24		440
	51,05		28,36		20,26		27,49		15,27		10,91		100
25	107,21	135,00	59,56	90,00	42,54	64,29	57,73	135,00	32,07	90,00	22,91	64,29	**210**
	255,26		141,81		101,29		137,45		76,36		54,54		500
	61,08		33,93		24,24								112
28	152,71	168,75	84,84	112,50	60,60	80,36							**280**
	305,41		169,67		121,20								560
	77,21		42,89		30,64								128
32	193,02	220,95	107,23	147,30	76,60	105,21							**320**
	386,04		214,47		153,19								640

Not Applicable | Not Applicable | Not Applicable

Table notes : see back page

Bond Strength Factors - REBAR

Influence of concrete strength on combined pull out and concrete cone resistance

Concrete Strength N/mm2 (MPa)	C15/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
non cracked fc =	0,94	1,00	1,06	1,12	1,17	1,23	1,26	1,30
cracked fc =	0,96	1,00	1,03	1,05	1,06	1,07	1,08	1,09

Influence of environmental conditions in non cracked concrete

		Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20	Ø 22	Ø 25	Ø 28	Ø 32
Temp I 40°C / 24°C	Dry and Wet	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Temp II 80°C / 50°C	Dry and Wet	0,90	0,90	0,88	0,88	0,88	0,86	0,86	0,86	0,86	0,84	0,84

Influence of environmental conditions in cracked concrete

		Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20	Ø 22	Ø 25	Ø 28	Ø 32
Temp I 40°C / 24°C	Dry and Wet	n/a	n/a	0,43	0,43	0,43	0,43	0,53	0,53	0,53	n/a	n/a
Temp II 80°C / 50°C	Dry and Wet	n/a	n/a	0,38	0,38	0,38	0,38	0,46	0,46	0,46	n/a	n/a

Table notes : see back page

Material Properties for grades of other threaded rod and rebar

	Stud Grade 8.8		Stud Grade 10.9		Stud Grade A4-70		Stud Grade A4-80		
Stud Diameter	$N_{rk,\,s}$	$N_{rd,\,s}$	$N_{rk,\,s}$	$N_{rd,\,s}$	$N_{rk,\,s}$	$N_{rd,\,s}$	$N_{rk,\,s}$	$N_{rd,\,s}$	
(mm)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)	
M8	29,2	19,5	38,1	27,2	25,6	13,7	29,2	15,6	
M10	46,4	30,9	60,3	43,1	40,6	21,7	46,4	24,8	
M12	67,4	44,9	87,7	62,6	59,0	31,6	67,4	36,0	
M16	125,6	83,7	163,0	116,4	109,9	58,8	125,7	67,2	
M20	196,1	130,7	255,0	182,1	171,5	91,7	196,0	104,8	
M24	282,5	188,3	367,0	262,1	247,1	132,1	293,0	132,1	
M27	367,0	244,7	477,4	341,0	229,4	80,2	229,4	80,2	*1
M30	448,8	299,2	583,0	416,4	280,6	98,1	280,6	98,1	*1
M36	653,6	435,7	849,7	606,9	408,4	142,8	408,4	142,8	*1

*1 = Tensile strength 500N/mm2

	Stud Grade 8.8		Stud Grade 10.9		Stud Grade A4-70		Stud Grade A4-80	
Stud Diameter	$V_{rk,\,s}$	$V_{rd,\,s}$	$V_{rk,\,s}$	$V_{rd,\,s}$	$V_{rk,\,s}$	$V_{rd,\,s}$	$V_{rk,\,s}$	$V_{rd,\,s}$
(mm)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)	(kN)
M8	14,6	11,7	19,0	15,2	12,8	8,2	14,6	9,4
M10	23,2	18,6	30,2	24,1	20,3	13,0	23,2	14,9
M12	33,7	27,0	43,8	35,1	29,5	18,9	33,7	21,6
M16	62,8	50,2	81,6	65,3	55,0	35,2	62,8	40,3
M20	98,0	78,4	127,4	101,9	85,8	55,0	98,0	62,8
M24	141,2	113,0	183,6	146,8	123,6	79,2	141,2	90,5
M27	183,5	146,8	238,7	191,0	114,7	48,4	114,7	48,4
M30	224,4	179,5	291,5	215,9	140,3	59,2	140,3	59,2
M36	326,8	261,4	424,8	283,2	204,2	86,2	204,2	86,2

	Rebar BSt 500 to DIN 488		Rebar BSt 500 to DIN 488	
Rebar Diameter	$N_{rk,\,s}$	$N_{rd,\,s}$	$V_{rk,\,s}$	$V_{rd,\,s}$
(mm)	(kN)	(kN)	(kN)	(kN)
8	28,0	20,0	14,0	9,3
10	43,0	30,7	21,5	14,3
12	62,0	44,3	31,0	20,7
14	84,4	67,0	42,5	28,3
16	111,0	79,3	55,5	37,0
18	139,5	100,0	70,0	46,7
20	173,0	123,6	86,5	57,7
22	208,3	149,3	104,5	69,7
25	270,0	192,9	135,0	90,0
28	339,0	242,1	169,0	112,7
32	442	315,7	221	147,3
36	563,2	443,5	281,6	187,7
40	693,8	546,3	346,9	231,3

More notes : see back page

Effect of Anchor Spacing - Tension

Anchor Spacing	Stud / Rebar Diameter										
(mm)	8	10	12	16	20	24	27	30	33	36	40
40	0,64										
50	0,67	0,63									
60	0,70	0,65	0,63								
70	0,73	0,67	0,64								
80	0,76	0,69	0,66	0,63							
90	0,79	0,72	0,68	0,64							
100	0,82	0,74	0,70	0,65	0,63						
120	0,87	0,79	0,74	0,68	0,65	0,63					
150	0,96	0,86	0,80	0,73	0,68	0,65	0,64	0,63			
160	1,00	0,88	0,82	0,74	0,70	0,66	0,65	0,63	0,62		0,63
180		0,93	0,86	0,77	0,72	0,68	0,65	0,65	0,64	0,64	0,64
200		1,00	0,90	0,80	0,74	0,69	0,67	0,66	0,65	0,65	0,65
225			0,95	0,84	0,77	0,72	0,69	0,68	0,67	0,67	0,66
240			1,00	0,86	0,79	0,73	0,71	0,69	0,69	0,68	0,67
250				0,87	0,80	0,74	0,72	0,70	0,70	0,68	0,68
275				0,91	0,83	0,76	0,74	0,72	0,72	0,70	0,69
280				0,92	0,84	0,77	0,75	0,73	0,72	0,70	0,69
300				0,95	0,86	0,79	0,76	0,74	0,74	0,72	0,71
320				1,00	0,88	0,81	0,78	0,76	0,75	0,73	0,72
350					0,92	0,83	0,81	0,78	0,78	0,75	0,73
400					1,00	0,88	0,86	0,82	0,82	0,78	0,76
440						0,92	0,89	0,85	0,85	0,81	0,79
460						1,00	0,91	0,87	0,87	0,82	0,80
500							0,95	0,90	0,90	0,85	0,82
540							1,00	0,93	0,93	0,88	0,84
560								1,00	0,95	0,89	0,86
620									1,00	0,93	0,89
660										1,00	0,91
720											1,00

Effect of Edge Distance - Tension

Edge Distance	Stud / Rebar Diameter										
(mm)	8	10	12	16	20	24	27	30	33	36	40
40	0,64										
50	0,73	0,63									
60	0,82	0,70	0,63								
70	0,90	0,77	0,68								
80	1,00	0,84	0,74	0,63							
90		0,91	0,80	0,67							
100		1,00	0,86	0,71	0,63						
110			0,92	0,76	0,66						
120			1,00	0,80	0,70	0,64					
140				0,89	0,77	0,67	0,63	0,63			
160				1,00	0,84	0,72	0,70	0,65	0,62		
180					0,91	0,78	0,75	0,66	0,70	0,67	0,68
200					1,00	0,84	0,81	0,76	0,76	0,78	0,71
220						0,89	0,86	0,81	0,81	0,82	0,75
240						1,00	0,92	0,86	0,86	0,87	0,78
270							1,00	0,94	0,94	0,93	0,83
280								1,00	0,97	0,96	0,85
310									1,00	0,98	0,90
330										1,00	0,93
360											1,00

Effect of Edge Distance - Shear

Edge Distance	Stud / Rebar Diameter										
(mm)	8	10	12	16	20	24	27	30	33	36	40
40	0,25										
50	0,44	0,30									
60	0,63	0,48	0,30								
70	0,81	0,65	0,44								
80	1,00	0,83	0,58	0,40							
90		1,00	0,72	0,53							
100			0,86	0,67	0,35						
110			1,00	0,80	0,44						
125				1,00	0,58	0,35					
140					0,72	0,46	0,44	0,30			
160					0,91	0,62	0,57	0,35	0,34		
180					1,00	0,77	0,69	0,46	0,41	0,33	
200						0,92	0,82	0,57	0,50	0,42	0,32
220						1,00	0,94	0,68	0,59	0,51	0,53
240							1,00	0,78	0,68	0,60	0,59
280								1,00	0,86	0,78	0,72
310									1,00	0,91	0,82
330										1,00	0,89
360											1,00

Temperature Ranges

Temperature Range	Concrete Service Temperature	Maximum Long Term Concrete Temp	Maximum Short Term Concrete Temp
Range I	-40°C to +40°C	+24°C	+40°C
Range II	-40°C to +80°C	+50°C	+80°C

Service temperature range: Range of ambient temperatures after installation and during the lifetime of the anchor.

Short term temperature: Temperatures within the service temperature range which vary over short intervals,

e.g. day/night cycles and freeze/thaw cycles.

Long term temperature: Temperature, within the service temperature range, which will be approximately constant

over significant periods of time.

Long term temperatures will include constant or near constant temperatures, such as those experienced in cold stores or next to heating installations.

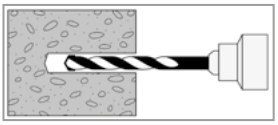
Physical Properties

	N/mm2 (MPa)	Test Method
Compressive Strength	73,0	EN ISO 604 / ASTM 695
Flexural Strength	25,0	EN ISO 178 / ASTM 790
Flexural Modulus	3850,0	EN ISO 178 / ASTM 790
Tensile Strength	14,6	EN ISO 527 / ASTM 638
E Modulus	8029,7	EN ISO 527 / ASTM 638
VOC Content	A+ Rating	-

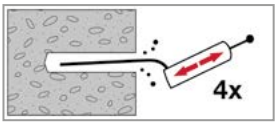
EJOT® Injection resin Multifix VSF

Vinylester based Injection resin, styrene free

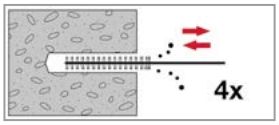
Installation instructions



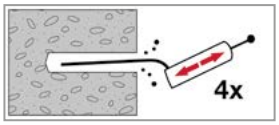
Drill hole in the substrate to the required embedment depth using the appropriately sized carbide drill bit.



Bore hole cleaning, just before setting an anchor, the bore hole must be free of dust and debris. The manual pump shall be used for blowing out bore holes up to diameters do ≤ 24mm and embedment depths up to hef ≤ 10d. Blow out at least 4 times from the back of the bore hole, using an extension if needed.

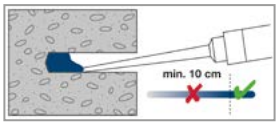


Brush 4 times with the specified brush size by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it.



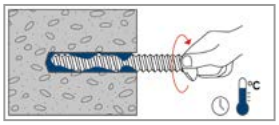
Blow out again with manual pump at least 4 times.

Remove the threaded cap from the cartridge. Tightly attach the mixing nozzle. Do not modify the mixer in any way. Made sure the mixing element is inside the mixer. Use only the supplied mixer. Insert the cartridge into the dispenser gun. Discard the initial trigger pulls of adhesive.



Discard the first 10ml of resin until an even colour is achieved. Inject the adhesive starting at the back of the hole, slowly withdrawing the mixer with each trigger pull. Fill holes approximately 2/3 full, to ensure that the annular gap between the anchor and the concrete is completely filled with adhesive along the embedment depth.

Before use, verify that the threaded rod is dry and free of contaminants.



Install the threaded rod to the required embedment depth according to the working time.
The anchor can be loaded after the required curing time shown in the same table. For recommended torque please refer to the chart.

Installation Parameters Concrete							
Threaded Rod (Steel class 5.8, 8.8, 10.9)		**M8**	**M10**	**M12**	**M16**	**M20**	**M24**
Drill diameter	d_0 [mm]	10	12	14	18	24	28
Embedment depth	$h_{ef\,min.}$ [mm]	60	60	70	80	90	100
Embedment depth	$h_{ef\,max.}$ [mm]	160	200	240	320	400	480
Maximum torque moment	$T_{max.}$ [Nm]	10	20	30	60	90	140
Minimum spacing	$S_{min.}$ [mm]	40	50	60	80	100	120
Minimum edge distance	$C_{min.}$ [mm]	40	50	60	80	100	120

Rebar installation parameters								
Rebar	**Ø [mm]**	**8**	**10**	**12**	**14**	**16**	**20**	**25**
Diameter of element	D [mm]	8	10	12	14	16	20	25
Embedment depth	$h_{ef\,min.}$ [mm]	60	60	70	75	80	90	100
Bore hole depth	$h_{0\,max}$ [mm]	160	200	240	280	320	400	500
Drill diameter	d_0 [mm]	12	14	16	18	20	25	32
Minimum thickness of concrete member	$h_{min.}$ [mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + 2d0			
Minimum spacing	$S_{min.}$ [mm]	40	50	60	70	80	100	125
Minimum edge distance	$C_{min.}$ [mm]	40	50	60	70	80	100	125

The EJOT® range of resin products

EJOT® Multifix PSF

EJOT Multifix PSF styrene free low-odour anchor mortar is a two-component chemical anchoring system based on a 'high reactivity' Polyester resin.

EJOT® Multifix VSF

EJOT Multifix VSF styrene free low-odour anchor mortar is a two-component chemical anchoring system based on a 'high reactivity' Vinylester resin.

EJOT® Super Epoxy SE 800

EJOT Super Epoxy SE 800 styrene free low-odour anchor mortar is a two-component chemical anchoring system based on a 'high reactivity' Epoxy resin.

Notes

PAGE 3 :

Typical characteristic and design resistance performance with 5.8 grade studding and associated installation data

All data is based on correct installation - see instructions

No influence of edge and spacing

Minimum base material thickness hef +30mm >100mm for M8 to M12 and for M16 to M30 hef +2 d

h_{ef} range minimum or 4d whichever is greatest to 20d

Concrete strength C20/25 - f_c cube = 25N/mm^2 (25MPa)

5.8 grade stud

Temperature range I maximum long term / short term temperature +24/40^{0}C

PAGE 4-6 :

Design Resistance with various stud strengths, material and rebar.

Note 1 for stainless steel tensile strength is 500N/mm^2 (500MPa)

Note 2 for stainless steel tensile strength is 700N/mm^2 (500MPa)

Data shown below the minimum embedment depth is for reference only. Please refer to manufacturter for advice.

PAGE 7 & 9 :

Characteristic and Design Load resistances based on characteristic bond strengths for hef 4d (minimum embedment) to 20d

All data is based on correct installation - see instructions

No influence of edge and spacing

Minimum base material thickness hef +30mm >100mm for M8 to M12 and for M16 to M30 hef +2 d

h_{ef} range minimum or 4d whichever is greatest to 20d

Concrete strength C20/25 - f_c cube = 25N/mm^2 (25MPa)

Temperature range i maximum long term / short term temperature +24/40^{0}C

PAGE 8 & 10 :

Bond Strength Factors

Select concrete strength and environmental condition and apply to bond strength table on page 4

PAGE 11 :

Material Properties for grades of other threaded rod and rebar

All grades shown for information

M30 studding is 8.8 grade instead of 5.8 grade. >M27 for A4-70 tensile strength of 500N/mm2, instead of 700N/mm2

M30 for A4-70 tensile strength of 500N/mm2 (500MPa), instead of 700N/mm2 (700MPa)

Safety factor is 1.5 tension and 1.25 shear for all carbon steel

Safety factor is 1.87 for stainless steel, up to M24, M27 to M36 is 2.86

Safety factor is 1.56 for stainless steel in shear, up to M24, M27 to M36 is 2.37

Safety factor is 1.4 tension and 1.5 shear for BSt 500 rebar

Partial Safety Factors for pages 3-10 :

1.5 for all sizes studs

1.8 for all sizes rebar