BUFFALO - XP

Features and Benefits

Version: 25/09/2017

- *Good bond strength with High load resistance*
- *Used with all grades of threaded rod*
- *Used in concrete and masonry*
- *Fast gelling and curing*
- *Used in dry and wet conditions*
- *Also suitable as a filler for gap and crack filling*
- *Economical fixing resin*
- *Extremely versatile*
- *Close edge distance and small spacing*
- *Manual cleaning up to 20mm diameter and embedment depths of 240mm*
- *Independently tested and approved (ITB Approval / Socotec Approval)*

Contents

Shelf Life and Storage

This product should be stored between +5˚C & +25˚C.
The Shelf life of the product is 12 months from the manufacture date.

IMPORTANT The information and data given is based on our own experience, research and testing and is believed to be reliable and accurate. However, as we cannot know the varied uses to which its products may be applied, or the methods of application used, no warranty as to the fitness or suitability of its products is given or implied. It is the users responsibility to determine suitability of use. For further information please contact Our Technical Department.

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Product Description

XP is a 2 component high strength 10:1 ratio chemical anchoring resin system. It is designed as a fast curing high strength resin fixing anchor for medium loads and is particularly suitable for lower strength substrates and lower load fixings due to its excellent value.

Available in sizes : 300ml and 410ml Foil Bag 10:1 Cartridges

Specific Benefits

- High loads possible
- Studs and other fixings
- Crack and gap filling
- Economical fixing resin

Approvals

- ITB approved AT-15-6895:2011 - ITB-973/W
- ETA 16/0907 - ETAG 029 Hollow Wall / Masonry Installations
- Tested according to LEED 2009 EQ c4.1, SCAQMD rule 1168 (2005).
- A+ Rating VOC content

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)		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}	Nominal Embedment (mm)			
8	14.85		6.87		4.91						60	10	9	10
	19.00	9.00	9.17	7.20	6.55	5.14	80	160	80	40	80			
	19.00		12.70		9.07						160			
10	16.57		7.67		5.48						60	12	12	20
	24.85	15.00	11.50	12.00	8.22	8.57	100	200	90	50	90			
	30.20		20.10		14.36						200			
12	21.82		10.10		7.22						70	14	14	40
	34.29	21.00	15.88	16.80	11.34	12.00	120	240	110	60	110			
	43.80		29.20		20.86						240			
16	31.54		14.60		10.43						80	18	18	80
	49.28	39.00	22.81	31.20	16.30	22.29	160	320	125	80	125			
	81.60		54.40		38.86						320			
20	41.20		19.07		13.62						90	24	22	120
	77.82	61.00	36.03	48.80	25.73	34.86	200	400	180	100	170			
	127.40		84.90		60.64						400			
24	46.31		21.44		15.31						100	28	26	160
	97.26	88.00	45.03	70.40	32.16	50.29	225	450	220	120	210			
	183.60		122.40		87.43						480			
30	57.70		26.71		19.08						120	35	32	200
	134.66	142.50	62.34	114.00	44.53	81.43	260	520	280	150	280			
	292.00		194.50		138.93						600			

= steel failure Partial safety factor = 1.5

A StongFast Product.

For more information call 0844 887 1401. Or log on to www.strongfast-uk.com

BUFFALO - XP

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

5.8 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	6.9	8.1	9.2	10.4	11.5	12.7															110	12.7
10	12	7.7	9.0	10.3	11.6	12.9	14.2	15.5	16.7	18.0	20.1											156	20.1
12	14		10.8	12.4	13.9	15.5	17.0	18.6	20.1	21.6	24.7	29.2										189	29.2
16	18			15.5	17.4	19.4	21.3	23.2	25.2	27.1	31.0	38.7	46.5	54.2	54.4							281	54.4
20	24			17.1	19.2	21.4	23.5	25.6	27.8	29.9	34.2	42.7	51.3	59.8	68.4	84.9						398	84.9
24	28					21.5	23.6	25.8	27.9	30.1	34.4	43.0	51.6	60.2	68.8	86.0	103.2					569	122.4
27	32						25.2	27.5	29.8	32.1	36.6	45.8	55.0	64.1	73.3	91.6	109.9	123.7				695	159.1
30	35							27.1	29.4	31.7	36.2	45.2	54.3	63.3	72.4	90.5	108.6	122.2	135.7			860	194.5
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

= steel failure

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	6.9	8.1	9.2	10.4	11.5	12.7	13.8	15.0	16.1	18.4	19.5										170	19.5
10	12	7.7	9.0	10.3	11.6	12.9	14.2	15.5	16.7	18.0	20.6	25.8										240	30.9
12	14		10.8	12.4	13.9	15.5	17.0	18.6	20.1	21.6	24.7	30.9	37.1									291	45.0
16	18			15.5	17.4	19.4	21.3	23.2	25.2	27.1	31.0	38.7	46.5	54.2	61.9							433	83.7
20	24			17.1	19.2	21.4	23.5	25.6	27.8	29.9	34.2	42.7	51.3	59.8	68.4	85.5						612	130.7
24	28					21.5	23.6	25.8	27.9	30.1	34.4	43.0	51.6	60.2	68.8	86.0	103.2					876	188.3
27	32						25.2	27.5	29.8	32.1	36.6	45.8	55.0	64.1	73.3	91.6	109.9	123.7				1069	244.8
30	35							27.1	29.4	31.7	36.2	45.2	54.3	63.3	72.4	90.5	108.6	122.2	135.7			1323	299.2
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	480	540	600	660	720		

= steel failure

cont.

BUFFALO - XP

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

10.9 Grade Steel Studding

10.9 grade 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	6.9	8.1	9.2	10.4	11.5	12.7	13.8	15.0	16.1	18.4											236	27.2
10	12	7.7	9.0	10.3	11.6	12.9	14.2	15.5	16.7	18.0	20.6	25.8										334	43.1
12	14		10.8	12.4	13.9	15.5	17.0	18.6	20.1	21.6	24.7	30.9	37.1									405	62.6
16	18			15.5	17.4	19.4	21.3	23.2	25.2	27.1	31.0	38.7	46.5	54.2	61.9							603	116.6
20	24			17.1	19.2	21.4	23.5	25.6	27.8	29.9	34.2	42.7	51.3	59.8	68.4	85.5						852	182.0
24	28					21.5	23.6	25.8	27.9	30.1	34.4	43.0	51.6	60.2	68.8	86.0	103.2					1220	262.2
27	32						25.2	27.5	29.8	32.1	36.6	45.8	55.0	64.1	73.3	91.6	109.9	123.7				1489	341.0
30	35							27.1	29.4	31.7	36.2	45.2	54.3	63.3	72.4	90.5	108.6	122.2	135.7			1842	416.7
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	6.9	8.1	9.2	10.4	11.5	12.7	13.7														119	13.7
10	12	7.7	9.0	10.3	11.6	12.9	14.2	15.5	16.7	18.0	20.6	21.7										169	21.7
12	14		10.8	12.4	13.9	15.5	17.0	18.6	20.1	21.6	24.7	30.9	31.6									204	31.6
16	18			15.5	17.4	19.4	21.3	23.2	25.2	27.1	31.0	38.7	46.5	54.2	58.8							304	58.8
20	24			17.1	19.2	21.4	23.5	25.6	27.8	29.9	34.2	42.7	51.3	59.8	68.4	85.5						429	91.7
24	28					21.5	23.6	25.8	27.9	30.1	34.4	43.0	51.6	60.2	68.8	86.0	103.2					615	132.1
27	32						25.2	27.5	29.8	32.1	36.6	45.8	55.0	64.1	73.3	80.2					1	350	80.2
30	35							27.1	29.4	31.7	36.2	45.2	54.3	63.3	72.4	90.5	98.1				1	434	98.1
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

cont.

BUFFALO - XP

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	6.9	8.1	9.2	10.4	11.5	12.7	13.8	15.0	15.7												136	15.7
10	12		9.0	10.3	11.6	12.9	14.2	15.5	16.7	18.0	20.6	24.8										193	24.8
12	14		10.8	12.4	13.9	15.5	17.0	18.6	20.1	21.6	24.7	30.9	36.1									233	36.1
16	18			15.5	17.4	19.4	21.3	23.2	25.2	27.1	31.0	38.7	46.5	54.2	61.9							347	67.2
20	24			17.1	19.2	21.4	23.5	25.6	27.8	29.9	34.2	42.7	51.3	59.8	68.4	85.5						491	104.8
24	28					21.5	23.6	25.8	27.9	30.1	34.4	43.0	51.6	60.2	68.8	86.0	103.2					615	132.1
27	32						25.2	27.5	29.8	32.1	36.6	45.8	55.0	64.1	73.3	80.2					2	350	80.2
30	35							27.1	29.4	31.7	36.2	45.2	54.3	63.3	72.4	90.5	98.1				2	434	98.1
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	12	6.1	7.1	8.1	9.1	10.1	11.1	12.2	13.2	14.2	16.2											216	21.9
10	14	7.3	8.5	9.7	10.9	12.1	13.3	14.6	15.8	17.0	19.4	24.3										281	34.1
12	16		9.1	10.4	11.7	13.0	14.3	15.6	16.9	18.2	20.8	25.9	31.1									379	49.2
16	20			12.7	14.3	15.9	17.5	19.1	20.7	22.3	25.5	31.9	38.2	44.6	51.0							549	87.4
20	25			13.6	15.3	17.0	18.7	20.4	22.1	23.8	27.1	33.9	40.7	47.5	54.3	67.9						805	136.6
25	30					17.8	19.5	21.3	23.1	24.9	28.4	35.5	42.6	49.7	56.8	71.0	88.8					1107	196.5
28	35						20.6	22.5	24.4	26.2	30.0	37.5	45.0	52.5	60.0	75.0	93.7	104.9				1429	267.8
32	40								25.5	27.4	31.4	39.2	47.1	54.9	62.7	78.4	98.0	109.8	125.5			1783	349.7
Depth (mm)		60	70	80	90	100	110	120	130	140	160	200	240	280	320	400	500	560	640	720	800		

*1 = Tensile strength 500N/mm2

*2 = Tensile strength 700N/mm2

BUFFALO - XP

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

Size (mm)	Non Cracked Concrete						Cracked Concrete						Nominal Embed-ment (mm)
	Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		Characteristic Resistance (kN)		Design Resistance (kN)		Recommended Load (kN)		
	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}	
8	14.85	9.00	6.87	7.20	4.91	5.14	Not Applicable		Not Applicable		Not Applicable		60
	19.80		9.17		6.55								**80**
	39.60		18.33		13.10								160
10	16.57	15.00	7.67	12.00	5.48	8.57	Not Applicable		Not Applicable		Not Applicable		60
	24.85		11.50		8.22								**90**
	55.22		25.56		18.26								200
12	21.82	21.00	10.10	16.80	7.22	12.00	Not Applicable		Not Applicable		Not Applicable		70
	34.29		15.88		11.34								**110**
	74.82		34.64		24.74								240
16	31.54	39.00	14.60	31.20	10.43	22.29	Not Applicable		Not Applicable		Not Applicable		80
	49.28		22.81		16.30								**125**
	126.17		58.41		41.72								320
20	41.20	61.00	19.07	48.80	13.62	34.86	Not Applicable		Not Applicable		Not Applicable		90
	77.82		36.03		25.73								**170**
	183.10		84.77		60.55								400
24	46.31	88.00	21.44	70.40	15.31	50.29	Not Applicable		Not Applicable		Not Applicable		100
	97.26		45.03		32.16								**210**
	222.30		102.92		73.51								480
30	57.70	142.50	26.71	114.00	19.08	81.43	Not Applicable		Not Applicable		Not Applicable		120
	134.66		62.34		44.53								**280**
	288.56		133.59		95.42								600

Table notes : see back page

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Bond Strength Factors

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

Concrete Strength N/mm2	C15/20	C20/25	C25/30	C30/37	C35/45	C40/50	C45/55	C50/60
Non-Cracked fc =	0.97	1.00	1.02	1.04	1.07	1.10	1.12	1.15

Influence of environmental conditions in non cracked concrete

		M8	M10	M12	M16	M20	M24	M30
Temp I 40°C / 24°C	Dry and Wet	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	0.82

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

BUFFALO - XP

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}	
8	12.87	13.95	6.13	9.30	4.38	6.64	Not Applicable		Not Applicable		Not Applicable		60
	17.16		8.17		5.84								**80**
	34.33		16.35		11.68								160
10	15.40	21.45	7.33	14.30	5.24	10.21							60
	23.10		11.00		7.86								**90**
	51.38		24.47		17.48								200
12	19.20	31.05	9.14	20.70	6.53	14.79							70
	30.18		14.37		10.27								**110**
	65.86		31.36		22.40								240
16	26.98	55.50	12.85	37.00	9.18	26.43							80
	42.15		20.07		14.34								**125**
	107.90		51.38		36.70								320
20	31.20	86.55	14.86	57.70	10.61	41.21							90
	58.93		28.06		20.04								**170**
	138.68		66.04		47.17								400
25	37.56	135.00	17.89	90.00	12.78	64.29							100
	78.87		37.56		26.83								**210**
	187.78		89.42		63.87								500
28	44.82	168.75	21.34	112.50	15.24	80.36							112
	112.06		53.36		38.12								**280**
	224.11		106.72		76.23								560
32	52.32	220.95	24.91	147.30	17.80	105.22							128
	130.79		62.28		44.49								**320**
	261.58		124.56		88.97								640

Table notes : see back page

BUFFALO - XP

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 =	0.97	1.00	1.02	1.04	1.07	1.10	1.12	1.15

Influence of environmental conditions in non cracked concrete

		Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	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
Temp II 80°C / 50°C	Dry and Wet	0.90	0.90	0.88	0.88	0.86	0.86	0.84	0.84

Table notes : see back page

BUFFALO - XP

Material Properties for grades of threaded rod

	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
M30	448.8	299.2	583.0	416.4	280.5	150.0	392.7	210.0

	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
M30	224.4	179.5	291.5	215.9	140.3	89.9	196.4	125.9

	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	21.9	16.6	11.1
10	43.0	34.1	25.9	17.3
12	62.0	49.2	37.3	24.9
14	85.0	60.7	50.8	33.9
16	111.0	87.4	66.4	44.3
20	173.0	136.6	103.9	69.3
25	270.0	196.5	162.0	108.0
32	442	349.7	265.1	176.7

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Effect of Anchor Spacing - Tension

Anchor Spacing	Stud / Rebar Diameter						
(mm)	8	10	12	16	20	24	30
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	0.63
160	1.00	0.88	0.82	0.74	0.70	0.66	0.64
175		0.92	0.85	0.76	0.71	0.68	0.65
200		1.00	0.90	0.80	0.74	0.71	0.68
225			0.95	0.84	0.77	0.74	0.70
240			1.00	0.86	0.79	0.76	0.72
250				0.87	0.80	0.77	0.73
275				0.91	0.83	0.80	0.75
280				0.92	0.84	0.80	0.76
300				0.95	0.86	0.82	0.78
320				1.00	0.88	0.85	0.80
350					0.92	0.88	0.83
400					1.00	0.94	0.88
425						0.97	0.90
450						1.00	0.93
480							0.96
520							1.00

Effect of Edge Distance - Tension

Edge Distance	Stud / Rebar Diameter						
(mm)	8	10	12	16	20	24	30
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	0.68	0.63
160				1.00	0.84	0.76	0.66
180					0.91	0.84	0.72
200					1.00	0.92	0.78
225						1.00	0.86
250							0.94
260							1.00

Effect of Edge Distance - Shear

Edge Distance	Stud / Rebar Diameter						
(mm)	8	10	12	16	20	24	30
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	0.45	0.30
160					0.91	0.58	0.36
180					1.00	0.71	0.47
200						0.84	0.59
225						1.00	0.74
250							0.88
280							1.00

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Minimum Curing Time

Concrete Temperature	Gel - Working Time	Minimum curing time in dry concrete	Minimum curing time in wet concrete
- 10°C *	50 min	240 min	x2
-5°C *	40 min	180 min	x2
5°C	20 min	90 min	x2
15°C	9 min	60 min	x2
25°C	5 min	30 min	x2
35°C	3 min	20 min	x2

* Resin temperature must be at least 20°C

- Full cure 24 hours

- All specifications based on supplied mixer

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.

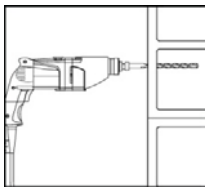
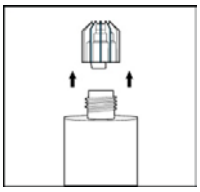
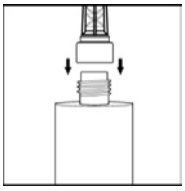
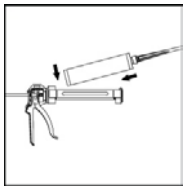
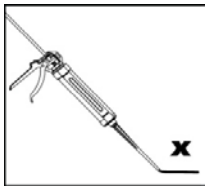
Long term temperatures will include constant or near constant temperatures, such as those experienced in cold stores or next to heating installations.

Physical Properties

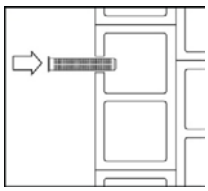
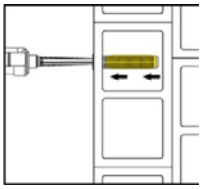
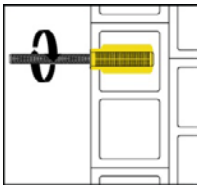
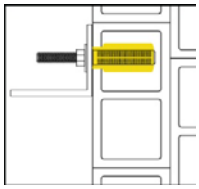
	N/mm2	Test Method
Compressive Strength	41.8	EN ISO 604 / ASTM 695
Flexural Strength	14.1	EN ISO 178 / ASTM 790
Flexural Modulus	2589.6	EN ISO 178 / ASTM 790
Tensile Strength	7.4	EN ISO 527 / ASTM 638
E Modulus	4365.5	EN ISO 527 / ASTM 638
VOC Content	A+ Rating	-

BUFFALO - XP

Installation parameters: drilling hole cleaning and installation HOLLOW WALL

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. 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.

Introduce the sleeve of suitable dimensions. Insert the nozzle to the end of the sleeve and inject the resin so long till the sleeve will fill into 100%. Insert the anchor, slowly with a slight twisting motion into the sleeve. Remove excess resin and leave the fixing until minimum couring (loading) times has elapsed.

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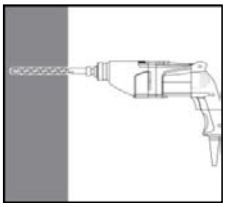
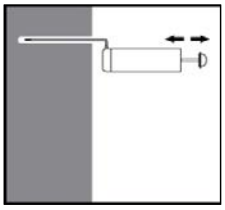
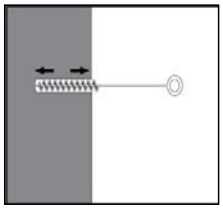
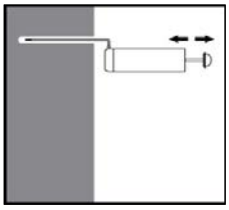
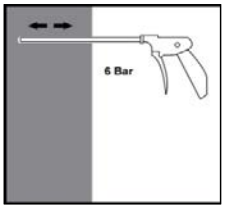
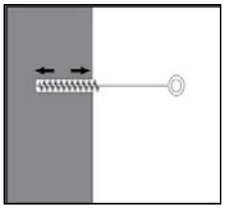
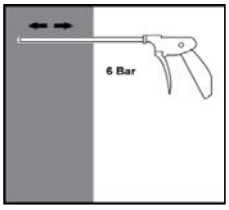
Installation parameters: drilling hole cleaning and installation

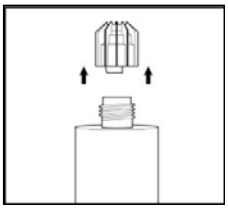
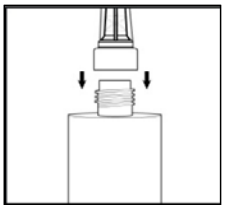
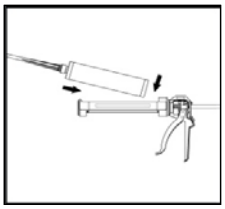
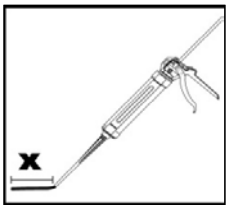
Drill hole in the substrate to the required embedment depth using the appropriately sized carbide drill bit. Bore hole cleaning Just before setting an anchor, the bore hole must be free of dust and debris. The manual pump shall be used for blowing out bore holes up to diameters do ≤ 24mm and embedment 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 (see Table 6) 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.

Compressed air cleaning (CAC) for all bore hole diameters do and all bore hole depths

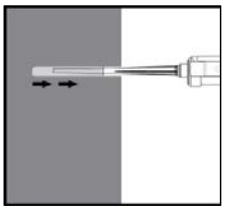
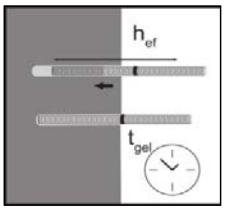


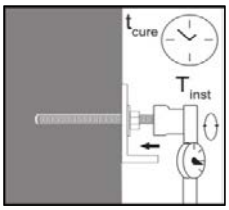



Blow 2 times from the back of the hole (if needed with a nozzle extension) over the whole length with oil-free compressed air (min. 6 bar at 6 m³/h). Brush 2 times with the specified brush size (see Table 6) by inserting the steel brush to the back of the hole (if needed with an extension) in a twisting motion and removing it.
X 2 Blow out again with compressed air at least 2 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.



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 during the open gel time tgel has elapsed. The working time tgel is given in Table 7. The anchor can be loaded after the required curing time tcure (see Table 7). The applied torque shall not exceed the values Tmax given in Table 1.

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Notes

PAGE 2 :

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^{o}C

PAGE 3 :

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 manufacturer for advice.

PAGE 4 and 6 :

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^{o}C

PAGE 5 & 7 :

Bond Strength Factors

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

PAGE 8 :

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

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 1.56 for stainless steel, up to M24, M30 and M36 is 2.0

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

Partial Safety Factors for pages 2,3,4,5,6,7 :

1.8 for all sizes studs

1.8 for all sizes rebar