



Declaration of Performance nr.X5

FM-X5

Plastic anchor for multiple use in Concrete and Masonry



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Intended use or uses of the construction product according to ETAG 020 parts 1, 2, 3 and 4	
Generic type	Plastic anchor for multiple use in concrete and masonry
Base material (use category)	> A: Normal Weight Concrete acc. to EN 206-1:2003 > B: Solid Masonry acc. to EN 771-1 > C: Hollow or Perforated Masonry acc. to EN 771-1 and EN 771-3 > D: Autoclaved Aerated Concrete acc. to EN 771-4
Material	> Sleeve: Polyamide Pa 6 acc. to ISO 1874 > Screw: Steel zinc galvanised 5µm acc. to EN ISO 4042 cl. 5.8-Ø6 and cl.6.8-Ø7 Steel grey galvanised 10µm acc. to EN ISO 4042 cl. 5.8-Ø6 and cl.6.8-Ø7 (1000 ^h NSS acc.to ISO9227) Stainless steel AISI316 A4-70 acc.to ISO 3506-1
Durability (use category)	> Zinc galvanised or grey galvanised steel for dry internal conditions > Stainless Steel AISI316 A4-70 for other environmental conditions
Loading	multiple use for non-structural applications (static or quasi-static load).
Fire Resistance	F90 for X5 Ø10 in the admissible load [$F_{rk} / (\gamma_m \times \gamma_f)$] is $\leq 0,8$ kN
Fire Reaction	A1 acc. to EN 13501-1 for metal screw (for sleeve part see ETAG020 p.1 sect.5.2.1.)
ETA-10/0425 issued by	ZAG approval body nr.1404
On the basis of	ETAG020
Certificate of Conformity 1404-CPD-1675 issued by	ZAG notified body nr.1404
Under System	2+

Declared performances according to ETAG 020 parts 1, 2, 3 and 4 - Design method ETAG 020 Annex C					
Essential Characteristics			Performance		
Installation parameters			FM-X5 Ø8	FM-X5 Ø10	
d_0	Nominal diameter of drill bit	[mm]	8	10	
h_{nom}	Minimum installation depth	[mm]	70	70	
h_{min}	Minimum thickness of the concrete member C12/15 - C16/20	[mm]	100	100	
s_{min}	Minimum spacing C12/15	[mm]	80	80	
c_{min}	Minimum edge distance C12/15	[mm]	80	80	
$c_{cr,N}$	Characteristic Edge distance C12/15	[mm]	140	140	
s_{min}	Minimum spacing C16/20	[mm]	60	60	
c_{min}	Minimum edge distance C16/20	[mm]	60	60	
$c_{cr,N}$	Characteristic Edge distance C16/20	[mm]	100	100	
h_{min}	Minimum thickness of the masonry member and AAC	[mm]	≥ 106 see under		
s_{min}	Minimum spacing in masonry and AAC - single anchor	[mm]	250	250	
c_{min}	Minimum edge distance in masonry and AAC - single anchor	[mm]	100	100	
s_{1min}	Spacing perpendicular to free edge in masonry and AAC - anchor group	[mm]	200	200	
s_{2min}	Spacing parallel to free edge in masonry and AAC - anchor group	[mm]	400	400	
c_{min}	Minimum edge distance in masonry and AAC - anchor group	[mm]	100	100	
Characteristic Bending resistance screw in Concrete, masonry and Autoclaved Aerated Concrete (AAC)					
$M_{Rk,s}$	Characteristic bending resistance	Galvanised Steel	[Nm]	8,6	16,8
$M_{Rk,s}$	Characteristic bending resistance	Stainless Steel A4-70	[Nm]	13,6	24,8
$\gamma_{Ms}^{1)}$	Partial safety factor	Galvanised Steel	[-]	1,25	
$\gamma_{Ms}^{1)}$	Partial safety factor	Stainless Steel A4-70	[-]	1,56	
Characteristic Tension Resistance failure of screw for use in Concrete					
$N_{Rk,s}$	Tension Steel characteristic failure	Galvanised Steel	[kN]	11,0	18,1
$N_{Rk,s}$	Tension Steel characteristic failure	Stainless Steel A4-70	[kN]	16,5	25,0
$\gamma_{ms}^{1)}$	Partial safety factor for tension steel failure	Galvanised Steel	[-]	1,5	
$\gamma_{ms}^{1)}$	Partial safety factor for tension steel failure	Stainless Steel A4-70	[-]	1,9	
Characteristic Shear Resistance failure of screw for use in Concrete					
$V_{Rk,s}$	Shear Steel characteristic failure	Galvanised Steel	[kN]	5,5	9,0
$V_{Rk,s}$	Shear Steel characteristic failure	Stainless Steel A4-70	[kN]	8,2	12,5
$\gamma_{ms}^{1)}$	Partial safety factor for shear steel failure	Galvanised Steel	[-]	1,25	
$\gamma_{ms}^{1)}$	Partial safety factor for shear steel failure	Stainless Steel A4-70	[-]	1,56	

Pull-out failure (plastic sleeve) in Concrete			FM-X5 Ø8	FM-X5 Ø10	
$N_{Rk,p}$	Tension characteristic load in cracked concrete C12/15	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	1,5	2,5
$N_{Rk,p}$	Tension characteristic load in cracked concrete C12/15	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,75	1,5
$N_{Rk,p}$	Tension characteristic load in cracked concrete C16/20	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	2,5	3,5
$N_{Rk,p}$	Tension characteristic load in cracked concrete C16/20	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	1,2	2,5
$\gamma_{m,c}^{1)}$	Partial safety factor			1,8	
Displacement under Tension and Shear loading in Concrete					
N	Service tension load in concrete C16/20		[kN]	1,0	1,4
δ_{N0}	Short term displacement under tension load		[mm]	3,8	1,7
$\delta_{N\infty}$	Long term displacement under tension load		[mm]	7,5	3,6
V	Service shear load in concrete		[kN]	1,0	1,4
δ_{V0}	Short term displacement under shear load		[mm]	1,6	0,9
$\delta_{V\infty}$	Long term displacement under tension load		[mm]	2,4	1,35
Characteristic Resistance for single anchor in Solid clay Brick $f_b \geq 43,8$ [MPa] $\rho \geq 1,8$ [kg/dm³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	3,5	3,5
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	2,0	2,5
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Hammer drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Bimattone $f_b \geq 27,3$ [MPa] $\rho \geq 0,9$ [kg/dm³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	1,5	1,5
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,9	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Alveolater Swiss heavy $f_b \geq 13,8$ [MPa] $\rho \geq 0,9$ [kg/dm³] $h_{min} \geq 250$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	1,5	1,5
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,6	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Alveolater Incastro 35 $f_b \geq 10,9$ [MPa] $\rho \geq 0,8$ [kg/dm³] $h_{min} \geq 350$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	1,5	1,5
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,75	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Blocco Leggero $f_b \geq 7$ [MPa] $\rho \geq 0,5$ [kg/dm³] $h_{min} \geq 120$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	0,9	0,9
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,4	0,6
$\gamma_{Mm}^{4)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Poroton $f_b \geq 22$ [MPa] $\rho \geq 0,9$ [kg/dm³] $h_{min} \geq 250$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	1,5	2,0
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,9	1,2
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow clay Brick - Leopard BP category 1HD $f_b \geq 30$ [MPa] $\rho \geq 1,3$ [kg/dm³] $h_{min} \geq 106$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	2,0	1,5
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,9	0,9
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Hollow Brick light weight concrete BC 203 $f_b \geq 4$ [MPa] $\rho \geq 0,95$ [kg/dm³] $h_{min} \geq 200$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	0,75	0,6
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,3	0,6
$\gamma_{Mm}^{1)}$	Partial safety factor			2,5	
	Drill Method			Rotary drilling	
Characteristic Resistance for single anchor in Autoclaved Aerated Concrete (AAC) $f_b \geq 2,5$ [MPa] $\rho \geq 0,5$ [kg/dm³] $h_{min} \geq 200$ mm					
F_{Rk}	Characteristic Resistance	$24^{\circ}C^{21} / 40^{\circ}C^{31}$	[kN]	0,6	0,6
F_{Rk}	Characteristic Resistance	$50^{\circ}C^{21} / 80^{\circ}C^{31}$	[kN]	0,6	0,5
$\gamma_{Mm}^{1)}$	Partial safety factor			2,0	
	Drill Method			Hammer drilling	

¹⁾ In absence of other national regulations; ²⁾ Maximum long term temperature; ³⁾ Maximum short term temperature.

We inform you that Friulsider is classified in the EC 1907/2006 Reach Directive as a Downstream - user of substances.
 The product supplied does not contain substances classified as SVHC according to the Candidate List in a concentration equal or greater than 0.1% (weight / weight). Article 31 is not applicable to the present product.

The below performances apply for the following article numbers: **FM-X5 countersunk head + screw with countersunk head**

d _{nom} ⁴⁾	L ⁵⁾ [mm]	t _{fix} ⁶⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø8	80	10	FM-X5 Ø8x80 - 10	64301b08080	64301c08080	64301008080
	100	30	FM-X5 Ø8x80 - 30	64301b08100	64301c08100	64301008100
	120	50	FM-X5 Ø8x80 - 50	64301b08120	64301c08120	64301008120
	150	70	FM-X5 Ø8x80 - 70	64301b08150	64301c08150	64301008150
	170	100	FM-X5 Ø8x80 - 100	64301b08170	64301c08170	64301008170
Ø10	85	15	FM-X5 Ø10x85 - 15	64301b10085	64301c10085	64301010085
	100	30	FM-X5 Ø10x100 - 30	64301b10100	64301c10100	64301010100
	115	45	FM-X5 Ø10x115 - 45	64301b10115	64301c10115	64301010115
	135	55	FM-X5 Ø10x135 - 55	64301b10135	64301c10135	64301010135
	160	90	FM-X5 Ø10x160 - 90	64301b10160	64301c10160	64301010160
	200	130	FM-X5 Ø10x200 - 130	64301b10200	64301c10200	64301010200
	230	160	FM-X5 Ø10x230 - 160	64301b10230	64301c10230	64301010230

The below performances apply for the following article numbers: **FM-X5 countersunk head + screw with hexagonal head**

d _{nom} ⁴⁾	L ⁵⁾ [mm]	t _{fix} ⁶⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø10	85	15	FM-X5 Ø10x85 - 15	64302b10085	64302c10085	64302010085
	100	30	FM-X5 Ø10x100 - 30	64302b10100	64302c10100	64302010100
	115	45	FM-X5 Ø10x115 - 45	64302b10115	64302c10115	64302010115
	135	55	FM-X5 Ø10x135 - 55	64302b10135	64302c10135	64302010135
	160	90	FM-X5 Ø10x160 - 90	64302b10160	64302c10160	64302010160

The below performances apply for the following article numbers: **FM-X5 with collar head + screw with hexagonal head**

d _{nom} ⁴⁾	L ⁵⁾ [mm]	t _{fix} ⁶⁾ [mm]	Marking	Cod. with screw zinc galvanised 5µm	Cod. with screw grey galvanised 10µm	Cod. with screw Stainless steel A4-70
Ø10	85	15	FM-X5 Ø10x85 - 15	64402b10085	64402c10085	64402010085
	100	30	FM-X5 Ø10x100 - 30	64402b10100	64402c10100	64402010100
	115	45	FM-X5 Ø10x115 - 45	64402b10115	64402c10115	64402010115
	135	55	FM-X5 Ø10x135 - 55	64402b10135	64402c10135	64402010135
	160	90	FM-X5 Ø10x160 - 90	64402b10160	64402c10160	64402010160

⁴⁾ Diameter of anchor sleeve; ⁵⁾ Length of anchor; ⁶⁾ Thickness fixture max.

The performances of the product identified by the above identification code are in conformity with the declared performance.

This declaration of performance is issued under the sole responsibility of Friulsider SpA.

Signed for and behalf of the manufacturer by:

Name and functions	Place and date of issue	Signature
Eng. Vittorio Pilla General Director	San Giovanni al Natisone, 01-07-2013	