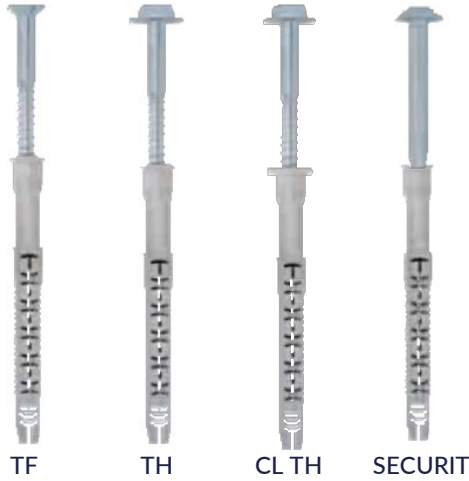


## MARCOVIS FM-X5 ZINC PLATED TF - TH - CL TH - SECURIT Ø8xL - Ø10xL



ETA-10/0425  
EAD 330284



FIRE R90  
TR 020

### PRODUCT DEFINITION

- Long multi-expansion metalloplastic anchor with three possible implantation depths.
- Soft clamping (low tightening torque).
- Extra-flexible high-quality nylon.
- Delivered assembly (plug + screw).

### SCOPE OF APPLICATION

- Anchor for uncracked concrete, aerated concrete, solid masonry and hollow masonry.
- Application for light load and multiple use in non-structural (static or quasi-static).
- Structure subjected to dry internal conditions.

### MATERIAL & FINISH

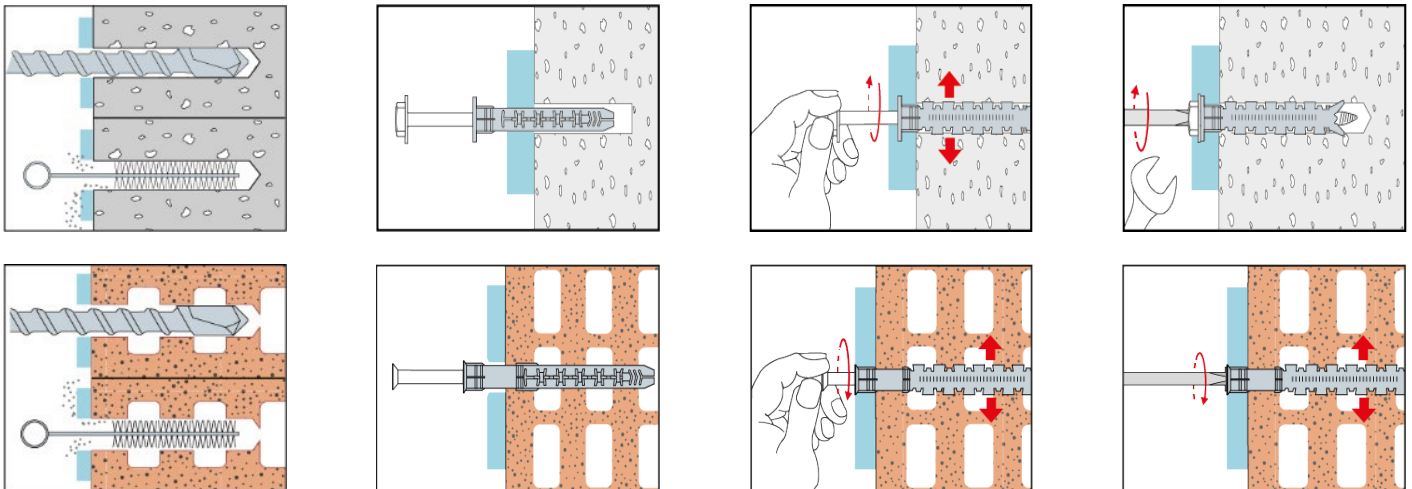
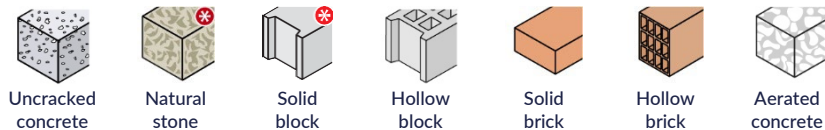
#### Material:

- Screw: Steel class 5.8 for Ø6 and 6.8 for Ø7.
- Plug: Polyamide PA6 according to ISO 1874.

#### Finish:

- Coating: Electrogalvanized.
- Thickness  $\geq 5 \mu\text{m}$  according to EN ISO 4042.

### INSTALLATION



- Minimal temperature of installation:  $\geq -20 \text{ }^\circ\text{C}$  / Maximal temperature of installation:  $\leq +40 \text{ }^\circ\text{C}$

\* On-site testing

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78231 Le Pecq Cedex - France - [www.etanco.eu](http://www.etanco.eu)

Tel : +33 (0)1 34 80 52 00 - [commercial.france@etanco.fr](mailto:commercial.france@etanco.fr)

## PERFORMANCES

Technical data according to ETA (daN):

- The technical data allowing the precise calculation of anchor MARCOVIS FM-X5 are available in the European Technical Assessment of this anchor. To obtain the European technical Assessment or for precise calculation, you can use the SPECIF Anchors software or contact our anchor Department.
- MARCOVIS FM-X5: ETA n° 10/0425 according to EAD 330284-00-0604.
- We are communicating in this technical data sheet, on the following pages, some examples of pre-calculated loads according to this ETA allowing you to assess the main performance of the anchors.
- To obtain the European Technical Assessment or for precise calculation, you can use the SPECIF Anchors software or contact our Anchor Department.

Recommended load  $F^{(\#)}$ :

MARCOVIS FM-X5 IN CONCRETE			Ø8	Ø10
(Hammer drilling)	$h_{nom}$	(mm)	70	70
Concrete $\geq$ C16/20 - 24 °C / 40 °C	F	(daN)	99	139
Concrete $\geq$ C16/20 - 50 °C / 80 °C	F	(daN)	48	99
Concrete C12/15 - 24 °C / 40 °C	F	(daN)	60	99
Concrete C12/15 - 50 °C / 80 °C	F	(daN)	30	60

MARCOVIS FM-X5 IN AERATED CONCRETE			Ø8	Ø10
(Hammer drilling)	$h_{nom}$	(mm)	70	70
Aerated concrete ACC - 24 °C / 40 °C	F	(daN)	21	21
Aerated concrete ACC - 50 °C / 80 °C	F	(daN)	21	18

MARCOVIS FM-X5 IN HOLLOW BLOCK			Ø8	Ø10
(Drilling without percussion)	$h_{nom}$	(mm)	70	70
Hollow concrete block BC 203 - 24 °C / 40 °C - $f_b \geq 3,0$ MPa - $\rho \geq 0,95$ kg/dm <sup>3</sup>	F	(daN)	21	17
Hollow concrete block BC 203 - 50 °C / 80 °C - $f_b \geq 3,0$ MPa - $\rho \geq 0,95$ kg/dm <sup>3</sup>	F	(daN)	9	17

MARCOVIS FM-X5 IN SOLID BRICK			Ø8	Ø10
(Hammer drilling)	$h_{nom}$	(mm)	70	70
MZ2,0/20 TOOTHED 3DF - 24 °C / 40 °C - $f_b \geq 20$ MPa - $\rho \geq 1,8$ kg/dm <sup>3</sup>	F	(daN)	100	100
MZ2,0/20 TOOTHED 3DF - 50 °C / 80 °C - $f_b \geq 20$ MPa - $\rho \geq 1,8$ kg/dm <sup>3</sup>	F	(daN)	57	71

(#)  $F = F_{Rd} / \gamma_M$  avec  $\gamma_M = 1,4$  -  $F_{Rd} = N_{Rk,c} / \gamma_{Mc}$  avec  $\gamma_{Mc} = 1,8$  for concrete -  $F_{Rd} = F_{Rk} / \gamma_{Mm}$  avec  $\gamma_{Mm} = 2,0$  for aerated concrete et  $\gamma_{Mm} = 2,5$  for other masonry

$F_{Rd}$ : Ultimate load or design -  $N_{Rk,c}$  et  $F_{Rk}$ : characteristic resistance -  $\gamma_M$ ,  $\gamma_{Mc}$  et  $\gamma_{Mm}$ : partial safety factors -  $\rho$ : density -  $f_b$ : compressive strength

MARCOVIS FM-X5 IN HOLLOW BRICK			Ø8	Ø10
(Drilling without percussion)	$h_{nom}$	(mm)	70	70
BIMATTONE - 24 °C / 40 °C - fb ≥ 27,3 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	43	43
BIMATTONE - 50 °C / 80 °C - fb ≥ 27,3 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	26	34
ALVEOLATER SIVZZERO PESANTE - 24 °C / 40 °C - fb ≥ 13,83 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	43	43
ALVEOLATER SIVZZERO PESANTE - 50 °C / 80 °C - fb ≥ 13,83 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	17	34
ALVEOLATER INCASTRO 35 - 24 °C / 40 °C - fb ≥ 10,93 MPa - ρ ≥ 0,8 kg/dm <sup>3</sup>	F	(daN)	43	43
ALVEOLATER INCASTRO 35 - 50 °C / 80 °C - fb ≥ 10,93 MPa - ρ ≥ 0,8 kg/dm <sup>3</sup>	F	(daN)	21	34
BLOCO LEGGERO - 24 °C / 40 °C - fb ≥ 7 MPa - ρ ≥ 0,5kg/dm <sup>3</sup>	F	(daN)	26	26
BLOCO LEGGERO - 50 °C / 80 °C - fb ≥ 7 MPa - ρ ≥ 0,5kg/dm <sup>3</sup>	F	(daN)	11	17
POROTON - 24 °C / 40 °C - fb ≥ 22 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	43	57
POROTON - 50 °C / 80 °C - fb ≥ 22 MPa - ρ ≥ 0,9 kg/dm <sup>3</sup>	F	(daN)	26	34
LEOPARD BRIQUE PERFORÉE - 24 °C / 40 °C - fb ≥ 30 MPa - ρ ≥ 1,3 kg/dm <sup>3</sup>	F	(daN)	57	43
LEOPARD BRIQUE PERFORÉE - 50 °C / 80 °C - fb ≥ 30 MPa - ρ ≥ 1,3 kg/dm <sup>3</sup>	F	(daN)	26	26

(#)  $F = F_{Rd} / \gamma_M$  avec  $\gamma_M = 1,4$  -  $F_{Rd} = N_{Rk,c} / \gamma_{Mc}$  avec  $\gamma_{Mc} = 1,8$  for concrete -  $F_{Rd} = F_{Rk} / \gamma_{Mm}$  avec  $\gamma_{Mm} = 2,0$  for aerated concrete et  $\gamma_{Mm} = 2,5$  for other masonry

$F_{Rd}$ : Ultimate load or design -  $N_{Rk,c}$  et  $F_{Rk}$ : characteristic resistance -  $\gamma_M$ ,  $\gamma_{Mc}$  et  $\gamma_{Mm}$ : partial safety factors -  $\rho$ : density - fb: compressive strength

Minimum edge distance  $C_{min}$  and minimum spacing  $S_{min}$ :

MARCOVIS FM-X5 IN CONCRETE			Ø8 and Ø10
	$h_{nom}$	(mm)	70
Concrete ≥ C16/20	$S_{min}$	(mm)	60
Concrete ≥ C16/20	$C_{min}$	(mm)	60
Concrete C12/15	$S_{min}$	(mm)	80
Concrete C12/15	$C_{min}$	(mm)	80

MARCOVIS FM-X5 IN MASONRY			Ø8 and Ø10
	$h_{nom}$	(mm)	70
Hollow and solid masonry	$S_{min}$	(mm)	250
Hollow and solid masonry	$C_{min}$	(mm)	100

Recommended bending moment  $M^{(##)}$ :

SPECIAL SCREW MARCOVIS FM-X5			Ø8	Ø10
Concrete, aerated concrete, solid masonry and hollow masonry	M	(N.m)	5,00	9,62

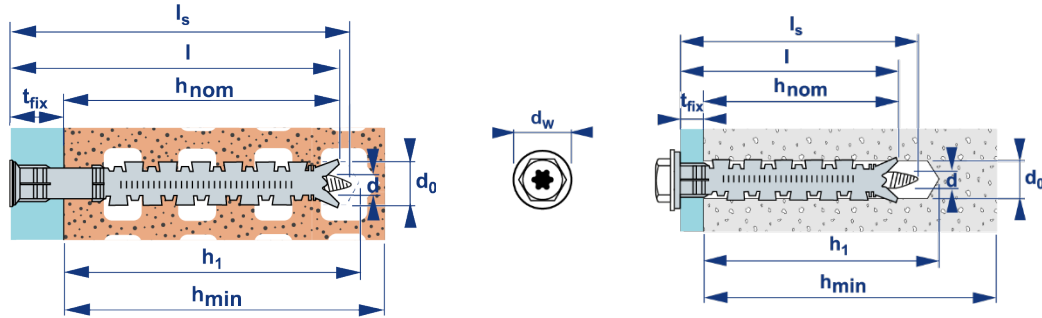
(##)  $M = M_{Rd} / \gamma_M$  with  $\gamma_M = 1,4$  -  $M_{Rd} = M_{Rk,s} / \gamma_{Ms}$  with  $\gamma_{Ms} = 1,25$

$M_{Rd}$ : ultimate moment or design -  $M_{Rk,s}$ : characteristic moment -  $\gamma_M$  et  $\gamma_{Ms}$ : partial safety factors

Max torque  $T_{max}$ :

MARCOVIS FM-X5			Ø8	Ø10
Concrete	$T_{max}$	(N.m)	9	15

## DIMENSIONS & CODES



MARCOVIS FM-X5 TF	d <sub>0</sub> (mm)	t <sub>fix</sub> (mm)	l (mm)	h <sub>1</sub> (mm)	h <sub>nom</sub> (mm)	h <sub>min</sub> (mm)	d <sub>f</sub> (mm)	d <sub>w</sub> (mm)	d (mm)	L <sub>s</sub> (mm°)	Torx	Code
Ø8x80	8	10	80	80	70	120	8,5	11,5	6	85	TX50	360 500
Ø8x100		30	100							105		360 502
Ø8x120		50	120							125		360 504
Ø8x150		80	150							155		360 505
Ø8x170		100	170							175		360 507
Ø10x85	10	15	85	80	70	120	10,5	14	7	90	Tx40	360 506
Ø10x100		30	100							105		360 508
Ø10x115		45	115							120		360 510
Ø10x135		65	135							140		360 512
Ø10x160		90	160							165		360 514
Ø10x200		130	200							205		360 516
Ø10x230		160	230							235		360 518

MARCOVIS FM-X5 TH	d <sub>0</sub> (mm)	t <sub>fix</sub> (mm)	l (mm)	h <sub>1</sub> (mm)	h <sub>nom</sub> (mm)	h <sub>min</sub> (mm)	d <sub>f</sub> (mm)	d <sub>w</sub> (mm)	d (mm)	L <sub>s</sub> (mm)	Th Torx	Code
Ø10x85	10	15	80	80	70	120	10,5	19	7	68	Th13	360 600
Ø10x100		30	100							88		360 602
Ø10x115		45	115							108	Tx40	360 604
Ø10x135		65	135							128	360 606	
Ø10x160		90	160							148	360 608	

d: diameter of screw - t<sub>fix</sub>: maximum thickness of the element to be fixed - l: anchor length - d<sub>0</sub>: diameter of drilling - h<sub>1</sub>: min depth support drilling - h<sub>nom</sub>: minimum installation depth - h<sub>min</sub>: min thickness support - d<sub>f</sub>: through hole diameter - d<sub>w</sub>: diameter of head screw - L<sub>s</sub>: screw length

<sup>(1)</sup> h<sub>min</sub>: 100 mm in concrete / 106 mm in masonry / 200 mm in aerated concrete

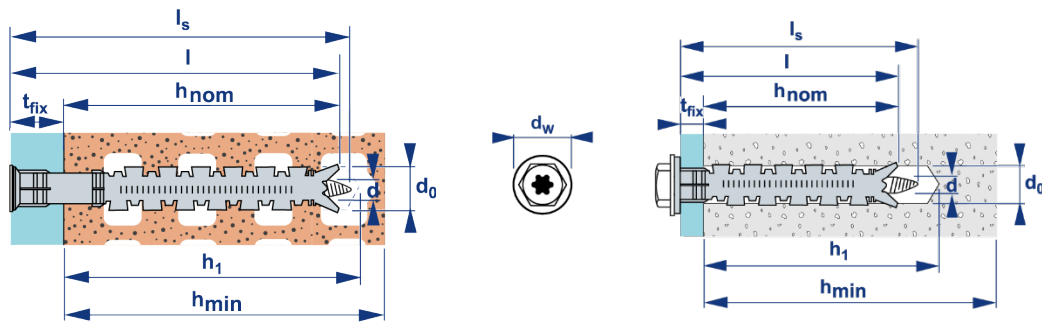
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MARCOVIS FM-X5 SECURIT	d <sub>0</sub> (mm)	t <sub>fix</sub> (mm)	l (mm)	h <sub>1</sub> (mm)	h <sub>nom</sub> (mm)	h <sub>min</sub> <sup>(3)</sup> (mm)	d <sub>f</sub>	d <sub>w</sub> (mm)	d (mm)	L <sub>s</sub> (mm)	Th Torx	Code
Ø10x85	10	15	80	80	70	120	10,5	17	7	68	Tx40	360 530

MARCOVIS FM-X5 CL TH	d <sub>0</sub> (mm)	t <sub>fix</sub> (mm)	l (mm)	h <sub>1</sub> (mm)	h <sub>nom</sub> (mm)	h <sub>min</sub> (mm)	d <sub>f</sub> (mm)	d <sub>w</sub> (mm)	d (mm)	L <sub>s</sub> (mm)	TH Torx	Code
Ø10x85	10	15	85	80	70	120	10,5	19	7	90	TH 13	360 700
Ø10x100		30	100							105		360 702
Ø10x115		45	115							120		360 704
Ø10x135		65	135							140	360 706	
Ø10x160		90	160							165	360 708	

d: diameter of screw - t<sub>fix</sub>: maximum thickness of the element to be fixed - l: anchor length - d<sub>0</sub>: diameter of drilling - h<sub>1</sub>: min depth support drilling - h<sub>nom</sub>: minimum installation depth - h<sub>min</sub>: min thickness support - d<sub>f</sub>: through hole diameter - d<sub>w</sub>: diameter of head screw - L<sub>s</sub>: screw length

<sup>(1)</sup> h<sub>min</sub>: 100 mm in concrete / 106 mm in masonry / 200 mm in aerated concrete

## CONFORMITY

- European Technical Assessment: ETA-10/0425 according to EAD 330284-00-0604.
- Fire resistance R90 according to TR 020 for MARCOVIS FM-X5 Ø10 in the case of a non-permanent axial loading permanent.
- CE marking according to the 2+ system: n°1404-CPR-2557.

## MARKING - LABELLING

- MARCOVIS FM-X5 ZN + TF or TH or CL TH or SECURIT+ Ø x Length + CODE.

## QUALITY CONTROL

- ISO 9001 certified quality management system according to the certificate in force.

## NOTA

These products are intended for professional installers landlords whose the related service includes supply and installation. In accordance with rules and normative regulation, it's their responsibility to check that the use of these products is in conformity to themselves needs and their customers. They have to insure as well the adequacy of this material with their real operating conditions. The company excludes any guarantee for the use that does not respect these conditions. His responsibility is limited to the strict compliance with the specifications stipulated on the customer's purchase order. The guarantee is limited to the replacement of defective parts acknowledged by the Company's technical service, without workforce costs and travel expenses. It excludes material damage or physical injury and others direct or indirect damages, material or immaterial, which may result from defective parts including installation that not complying with the use for which they are designed and produced.

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