INSTYTUT TECHNIKI BUDOWLANEJ

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European Technical Assessment

ETA-12/0457 of 19/12/2024

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	FX-N
Product family to which the construction product belongs	Nailed-in plastic anchors for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	RAWLPLUG S.A. ul. Kwidzyńska 6 51-416 Wrocław, Poland
Manufacturing plants	Manufacturing plants: no. 3 and no. 29
This European Technical Assessment contains	11 pages including 3 Annexes which form an integral part of this Assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document (EAD) 330196-01-0604 "Plastic anchors made of virgin or non-virgin material for fixing of external thermal insulation composite systems with rendering"
This version replaces	ETA-12/0457 issued on 20/03/2018

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Specific Part

1 Technical description of the product

The FX-N nailed-in plastic anchors consists of a plastic expansion sleeve with a collar and a steel nail as an expansion pin. The anchor sleeve is made of polyamide (PA) - virgin material. The nail is made of galvanized steel.

The collar is made in three versions (FX-N-..L.., FX-N-..K.. and FX-N-..C..).

The plastic anchor sleeve is expanded by hammering in a nail, which press the sleeve against the wall of the drilled hole.

The drawings and the description of the products are given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The performances given in clause 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annex B.

The provisions made in this European Technical Assessment are based on an assumed working life of the anchor of 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer or Technical Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Performance of the product

3.1.1 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance	Annex C1
Displacements	Annex C1
Edge distances and spacings	Annex B2

3.1.2. Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Point thermal transmittance	No performance assessed

3.2 Methods used for the assessment

The assessment has been made in accordance with 330196-01-0604.

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to Decision 97/463/EC, amended by 2001/596/EC, of the European Commission the system 2+ of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011).

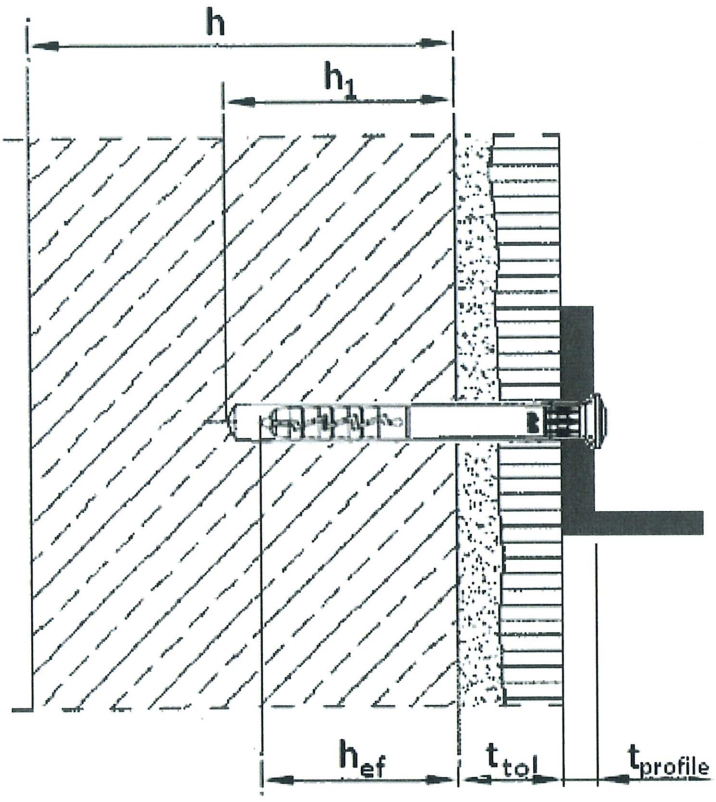
5 Technical details necessary for the implementation of the AVCP system, as provided in the applicable European Assessment Document (EAD)

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 19/12/2024 by Instytut Techniki Budowlanej

Anna Panek, MSc
Deputy Director of ITB



Intended Use

Multiple fixing of profiles for external thermal insulation composite systems (ETICS) according to EAD 040083-00-0404 or prefabricated units for external wall insulation (Veture Kits) according to EAD 040914-00-0404, in concrete and masonry

Legend

h_{ef} = effective anchorage depth

h_1 = depth of drill hole in base material

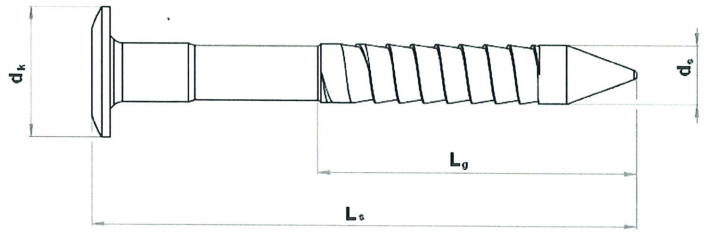
h = thickness of base material

t_{tol} = thickness of equalizing and/or non-load-bearing layer

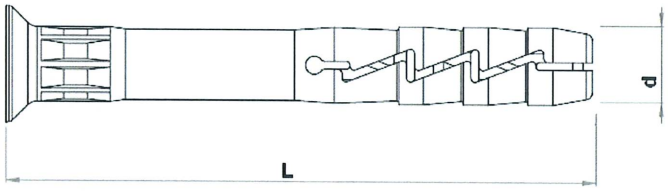
$t_{profile}$ = thickness of profile

t_{fix} = thickness of fixture (t_{tol} + $t_{profile}$)

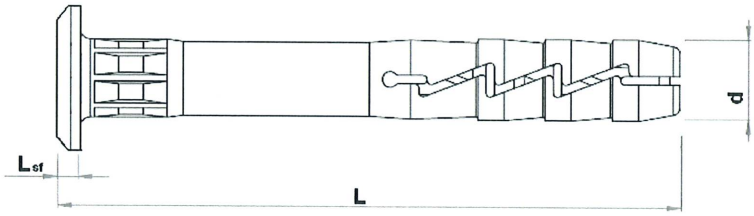
FX-N	**Annex A1** of European Technical Assessment ETA-12/0457
Product description Installation conditions	



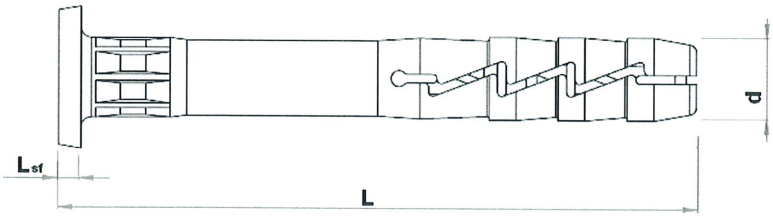
FX-N expansion nail



FX-N-..L.. sleeve



FX-N-..K.. sleeve



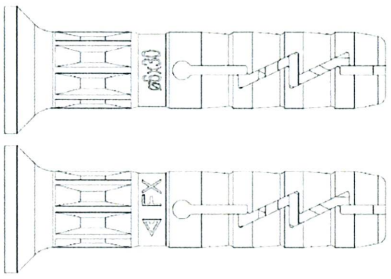
FX-N-..C.. sleeve

FX-N	Annex A2
Product description Types of expansion pins and expansion sleeves	of European Technical Assessment ETA-12/0457

Table A3: Dimensions

Anchor index			Anchor sleeve		Expansion nail			t_{fix}
FX-N-..L..	FX-N-..K..	FX-N-..C..	L	d	L_s	d_s	d_k	–
			mm	mm	mm	mm	mm	mm
FX-N-05L025	–	FX-N-05C025	25	4.9	28	3.3	8.0	≤ 1
FX-N-05L030	FX-N-05K030	FX-N-05C030	30	4.9	33	3.3	8.0	≤ 5
FX-N-05L035	FX-N-05K035	FX-N-05C035	35	4.9	38	3.3	8.0	≤ 10
FX-N-05L040	FX-N-05K040	FX-N-05C040	40	4.9	43	3.3	8.0	≤ 15
FX-N-05L050	FX-N-05K050	FX-N-05C050	50	4.9	54	3.3	8.0	≤ 25
FX-N-06L030	FX-N-06K030	FX-N-06C030	30	5.9	34	3.8	9.0	≤ 1
FX-N-06L035	FX-N-06K035	FX-N-06C035	35	5.9	39	3.8	9.0	≤ 6
FX-N-06L040	FX-N-06K040	FX-N-06C040	40	5.9	44	3.8	9.0	≤ 11
FX-N-06L045	FX-N-06K045	FX-N-06C045	45	5.9	49	3.8	9.0	≤ 16
FX-N-06L050	FX-N-06K050	FX-N-06C050	50	5.9	54	3.8	9.0	≤ 21
FX-N-06L055	FX-N-06K055	FX-N-06C055	55	5.9	59	3.8	9.0	≤ 26
FX-N-06L060	FX-N-06K060	FX-N-06C060	60	5.9	64	3.8	9.0	≤ 31
FX-N-06L070	FX-N-06K070	FX-N-06C070	70	5.9	74	3.8	9.0	≤ 41
FX-N-06L080	FX-N-06K080	FX-N-06C080	80	5.9	84	3.8	9.0	≤ 51
FX-N-08L045	FX-N-08K045	FX-N-08C045	45	7.9	51	4.8	11.0	≤ 5
FX-N-08L060	FX-N-08K060	FX-N-08C060	60	7.9	66	4.8	11.0	≤ 20
FX-N-08L080	FX-N-08K080	FX-N-08C080	80	7.9	86	4.8	11.0	≤ 40
FX-N-08L100	FX-N-08K100	FX-N-08C100	100	7.9	106	4.8	11.0	≤ 60
FX-N-08L120	FX-N-08K120	FX-N-08C120	120	7.9	126	4.8	11.0	≤ 80
FX-N-08L140	FX-N-08K140	FX-N-08C140	140	7.9	146	4.8	11.0	≤ 100
FX-N-08L160	FX-N-08K160	FX-N-08C160	160	7.9	166	4.8	11.0	≤ 120

Marking:



KOELNER identifying mark

FX anchor trade name

ø6x30 diameter x length (e.g. ø6 x 30 mm)

FX-N	Annex A3
Product description Dimensions and marking	of European Technical Assessment ETA-12/0457

Table A4: Materials

Designation	Material
Anchor sleeve	Polyamide (PA6), grey or blue, virgin material
Expansion pin made of steel	Carbon steel ($f_{y,k} \geq 285$ MPa, $f_{u,k} \geq 330$ MPa) galvanized ≥ 5 µm according to EN ISO 4042

Specification of intended use

Anchorages subject to:

- Wind suction loads.

Note: The anchor shall not be used for the transmission of dead loads of the external thermal insulation composite system (ETICS) or prefabricated units for external wall insulation (Veture Kits).

Base materials:

- Normal weight concrete (base material group A), according to Annex C1.
- Solid masonry (base material group B), according to Annex C1.
- Hollow or perforated masonry (base material group C), according to Annex C1.
- Lightweight aggregate concrete (base material group D), according to Annex C1.
- Autoclaved aerated concrete (base material group E), according to Annex C1.
- For other base materials of the base material group A, B, C, D or E, the characteristic resistance of the anchor may be determined by job site tests according to EOTA Technical Report TR 051, edition April 2018.

Temperature range:

- 0°C to +40°C (max. short term temperature +40°C and max. long term temperature +24°C).

Design:

- The anchorages are designed under the responsibility of an engineer experiences in anchorages and masonry work with the partial safety factors γ_M = 2.0 and γ_F = 1.5, if there are no other national regulations.
- Verifiable calculation notes and drawings with anchor positions are prepared taking into account of the loads to be anchored.
- Fasteners are only to be used for multiple fixings of profiles for external thermal insulation composite system (ETICS) according to EAD 040083-00-0404 or prefabricated units for external wall insulation (Veture Kits) according to EAD 040914-00-0404.

Installation:

- Hole shall be drilled modes according to Annex C1.
- Anchor installation shall be carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Installation shall be executed in temperature from 0°C to +40°C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering by the mortar shall not exceed 6 weeks.

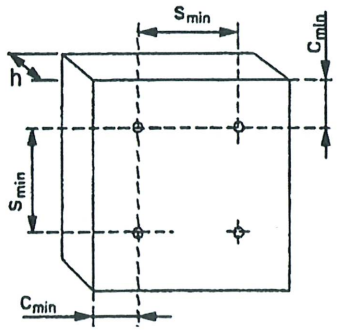
Table B1: Installation characteristics

Anchor type		FX-N-05	FX-N-06	FX-N-08
Drill hole diameter	d_o [mm]	5,0	6,0	8,0
Cutting diameter of drill bit	d_{cut} [mm]	≤ 5.40	≤ 6.40	≤ 8.45
Depth of drill hole for base material group A, B, C, D, E	h_1 [mm]	≥ 35	≥ 40	≥ 50
Effective anchorage depth for base material group A, B, C, D, E	h_{ef} [mm]	25	29	40

Table B2: Minimum thickness of base material, edge distance and anchor spacing

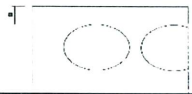
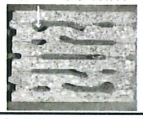
Anchor type		FX-N
Minimum thickness of base material	h_{min} [mm]	100
Minimum spacing	s_{min} [mm]	100
Minimum edge distance	c_{min} [mm]	100

Diagram of spacing



FX-N	Annex B2
Intended use Installation characteristics, minimum thickness of base material, edge distance and spacing	of European Technical Assessment ETA-12/0457

Table C1: Characteristic resistance under tension loads, N_{Rk}, in concrete and in masonry for single anchor

Base material	Reffering standard	Bulk density [kg/dm³]	Compressive strength [N/mm²]	Drill method	N_{Rk} [kN]		
					FX-N-05	FX-N-06	FX-N-08
Concrete C12/15	EN 206-1	–	–	hammer drilling	0.2	0.2	0.3
Concrete C20/25 - C50/60	EN 206-1	–	–		0.3	0.3	0.5
Solid clay brick 	EN 771-1	≥ 1.7	≥ 30.0	hammer drilling	0.2	0.2	0.5
Solid calcium silicate brick (e.g. KS NF 20-2.0)	EN 771-2	≥ 2.0	≥ 20.0	hammer drilling	0.2	0.4	0.4
Calcium silicate hollow block (eg. KS L-R(P) 8 DF) a[1] = 30 mm 	EN 771-2	≥ 1.6	≥ 12.0	rotary drilling	0.3	0.3	–
Lightweight concrete hollow block Hbl a[1] = 30 mm 	DIN 18151	≥ 0.8	≥ 2.0	rotary drilling	0.2	0.3	0.3
Lightweight concrete block LAC 20	EN 771-3	≥ 1.56	≥ 20.0	rotary drilling	0.2	0.3	0.5
Autoclaved aerated concrete block AAC 2	EN 771-4	≥ 0.35	≥ 2.0	rotary drilling	–	0.1	0.1
Partial safety factor γ_M[2]	2.0						

[1] Minimum values "a". for elements with lower value of "a" the load tests on the construction site are required
[2] Valid in absence of other national regulations

Table C2: Displacements behavior

Base material	$\frac{N_{Rk}}{3}$ [kN]			δ (for $\frac{N_{Rk}}{3}$) [mm]		
	FX-N-05	FX-N-06	FX-N-08	FX-N-05	FX-N-06	FX-N-08
Concrete C12/15	0.07	0.07	0.10	0.20	0.13	0.27
Concrete C20/25 - C50/60	0.10	0.10	0.17	0.26	0.26	0.40
Solid clay brick	0.07	0.07	0.17	0.19	0.32	0.70
Solid calcium silicate brick	0.07	0.13	0.13	0.30	0.21	0.16
Calcium silicate hollow block	0.10	0.10	–	0.28	0.32	–
Lightweight concrete hollow block	0.07	0.10	0.10	0.36	0.35	0.73
Lightweight concrete block LAC 20	0.07	0.10	0.17	0.21	0.42	0.14
Autoclaved aerated concrete block AAC 2	–	0.03	0.03	–	0.08	0.08

FX-N	Annex C1 of European Technical Assessment ETA-12/0457
Performances Characteristic resistance and displacements	