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European Technical Assessment

ETA-12/0388
of 26.02.2015

English version prepared by ZAG

I GENERAL PART

Komercialno ime

Trade name

Imetnik tehnične ocene

Holder of Technical Assessment

Družina proizvoda

Product family

Proizvodni obrat

Manufacturing plant

Ta Evropska tehnična ocena vsebuje

This European Technical Assessment contains

Ta Evropska tehnična ocena je izdana na podlagi Uredbe (EU) št. 305/2011 na osnovi

This European Technical Assessment is issued in according to Regulation (EU) No 305/2011, on the basis of

Ta ocena zamenjuje

This Assessment replaces

FM-TXT

FRIULSIDER S.p.A.

via Trieste, 1

33048 San Giovanni al Natisone (UD)

Italy

Plastično sidro za skupinsko nekonstrukcijsko uporabo v betonu

Plastic anchor for multiple use in concrete for non-structural applications

FRIULSIDER S.p.A.

via Trieste, 1

33048 San Giovanni al Natisone (UD)

Italy

10 strani vključno s 7 prilogami, ki so sestavni del te ocene

10 pages including 7 annexes, which form an integral part of the document

Smernice za evropska tehnična soglasja ETAG 020, izdaja 2012, ki se uporablja kot EAD

Guideline for European Technical Approval ETA 020, edition 2012, used as EAD

ETA-12/0388 izdano dne 06.11.2012

ETA-12/0388 issued on 06.11.2012

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of the product

The FM-TXT is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of galvanized steel or of stainless steel.

The plastic sleeve is expanded by screwing in the specific screw which presses the sleeve against the wall of the drilled hole.

The installed anchor is shown in Annex A1.

2 Specification of the intended use

The performances given in Chapter 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 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, 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 this assessment

3.1 Mechanical resistance and stability (BWR 1)

Requirements with respect to the mechanical resistance and stability of non-load bearing parts of the works are not included in this basic work requirement but are under basic work requirement safety in use.

3.2 Safety in case of fire (BWR 2)

According to the Technical Report TR 020 "Evaluation of anchorages in concrete concerning resistance to fire" it can be assumed that for fastening of facade systems the load bearing behaviour of the Plastic anchor FM-TXT has a sufficient resistance to fire at least 90 minutes (R90) if the admissible load $[F_{Rk}/(\gamma_M \times \gamma_F)]$ is $\leq 0,8$ kN (no permanent centric tension load).

3.3 Hygiene, health and environment (BWR 3)

Regarding dangerous substances contained in this European Technical Assessment, there may be requirements applicable to the products falling within its scope (e.g. transported European legislation and national laws, regulations and administrative provisions). In order to meet provisions of the regulation (EU) No 305/2011, these requirements need also to be complied with, when they apply.

3.4 Safety in use (BWR 4)

The basic work requirements for safety in use are listed in Annexes C1 and C2.

3.5 Protection against noise (BWR 5)

Not relevant.

3.6 Energy economy and heat retention (BWR 6)

Not relevant.

3.7 Sustainable use of natural resources (BWR 7)

No performance determined.

3.8 General aspects relating to fitness for use

Durability and serviceability are only ensured if specifications of intended use according to Annexes B are kept.

4 Assessment and verification of constancy of performance (AVCP)

According to the decision 97/463/EC of the European Commission¹ the system of assessment and verification of constancy of performance (see Annex V to regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level of class	System
Plastic anchors for use in concrete and masonry	For use in systems, such as façade systems, for fixing or supporting elements which contribute to the stability of the systems	-	2+

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

Technical details necessary for the implementation of the AVCP system are laid down in the Control plan deposited at the Slovenian National Building and Civil Engineering Institute (ZAG).

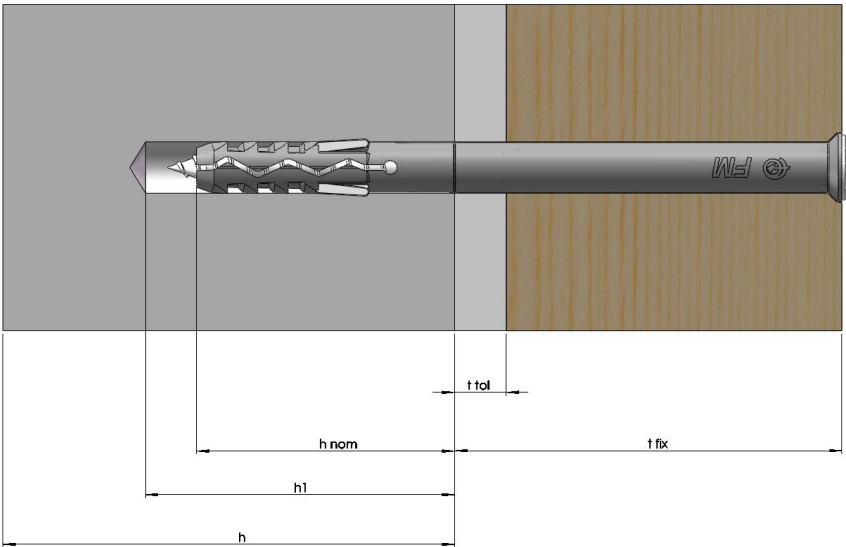
Issued in Ljubljana on 26.02.2015

Signed by:

Franč Capuder, M.Sc., Research Engineer

Head of Service of TAB

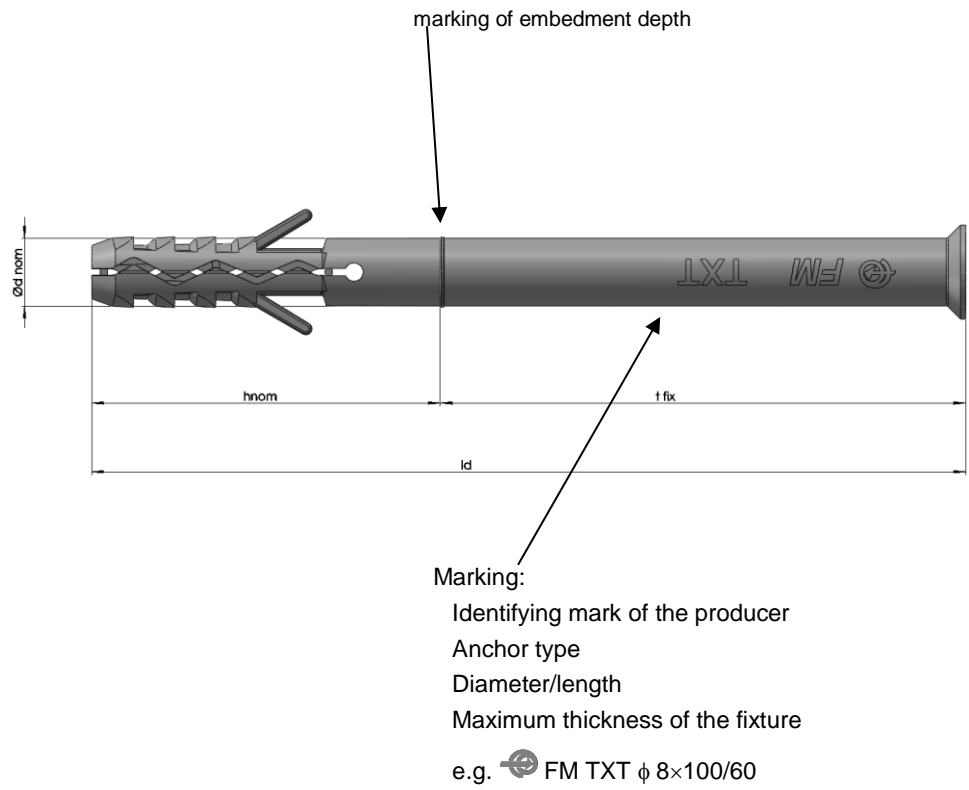
¹



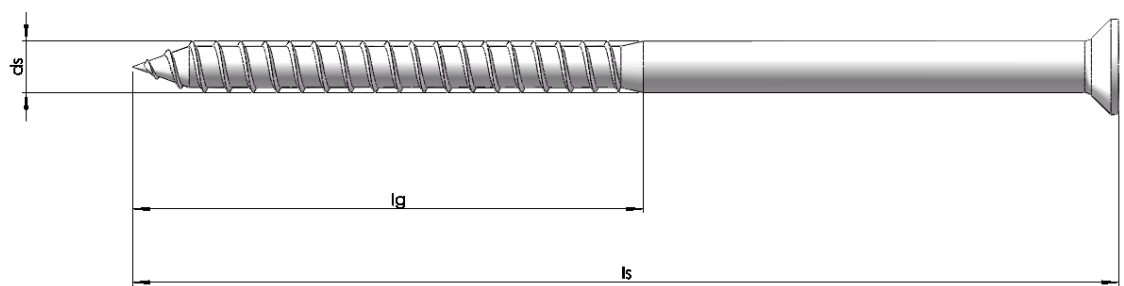
- h_1 = depth of drill hole to deepest point
- h_{nom} = overall plastic anchor embedment depth in base material
- h = thickness of member
- t_{tol} = thickness of non-structural layer
- t_{fix} = thickness of fixture

FM-TXT	Annex A1
Product description	
Installed condition	

Plastic sleeve



Special screw



FM-TXT

Product description

Sleeve and special screw

Annex A2

Table A1: Anchor dimensions

Anchor type			FM-TXT
Overall plastic anchor embedment depth	$h_{nom} \geq$	[mm]	40
Plastic sleeve			
Plastic sleeve diameter	d_{nom}	[mm]	8
Length of plastic sleeve	l_d	[mm]	60-260
Thickness of fixture	t_{fix}	[mm]	20-220
Special screw			
Screw diameter	d_s	[mm]	5,5
Length of screw	l_s	[mm]	65-265
Minimum length of thread	l_g	[mm]	35 for sleeve 60/80 50 for sleeve ≥ 100

Table A2: Materials

Part	Material
Anchor sleeve	Polyamide PA 6 acc. ISO 1874
Special screw	Steel class 5.8 acc. to ISO 898-1, zinc plated A2K according to EN ISO 4042, Nautilus grey opaque galvanic coating 10 μm acc. to EN ISO 4042 Stainless steel AISI316 (A4) wr.nr. 1.4401 or 1.4404 or 1.4571 or 1.4578, $f_{uk} \geq 580 \text{ MPa}$, $f_{yk} \geq 470 \text{ MPa}$

FM-TXT	Annex A3
Product description Dimensions and materials	

Specifications of intended use

Anchorage subject to:

- Static and quasi static load
- Multiple fixing for non-structural applications

Base materials:

- Reinforced and non-reinforced normal weight concrete C12/15 to C50/60 (use category A) according EN 206-1: 2003.

Temperature range:

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

Use conditions (Environmental conditions):

- The specific screw made of galvanized steel may only be used in structures subject to dry internal conditions.
- The specific screw made of stainless steel may be used in structures subject to dry internal conditions and also in structures subject to external atmospheric exposure (including industrial and marine environment), or exposure in permanently damp internal conditions, if no particular aggressive conditions exist. Such particular aggressive conditions are e. g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor swimming pools or atmosphere with extreme chemical pollution (e. g. in desulphurization plants or road tunnels where de-icing materials are used).

Design:

- The design of anchorages is carried out in compliance with ETAG 020, Guideline for European Technical Approval of "Plastic Anchors for Multiple Use in Concrete and Masonry for Non-structural Applications", Annex C under the responsibility of an engineer experienced in anchorages.
- Verifiable calculation notes and drawings shall be prepared taking account of the loads to be anchored, the nature and strength of the base materials and the dimensions of the anchorage members as well as of the relevant tolerances.

Installation:

- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the tools indicated in this European Technical Approval.
- Use of hammer drilling method.
- Temperature during installation of the anchor ≥ -20 °C (plastic sleeve and base material).
- Checks before placing the anchor, to ensure that the characteristic values of the base material in which the anchor is to be placed, is identical with the values, which the characteristic loads apply for.
- Placing drill holes without damaging the reinforcement.
- Holes to be cleaned of drilling dust.
- In case of aborted hole: New drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar.
- The plastic sleeve is inserted through the fixture by slight hammer blows and the special screw is screwed in until the head of the screw touches the sleeve. The anchor is correct mounted, if there is no turn-through of the plastic sleeve in the drill hole and if slightly move on turning of the screw is impossible after the complete turn-in of the screw.

FM-TXT	Annex B1
Intended use Specification	

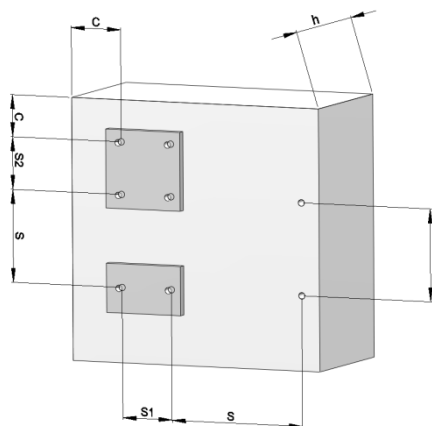
Table B1: Installation parameters

Anchor type			FM-TXT
Drill hole diameter	d_0	[mm]	8
Cutting diameter of drill bit	$d_{cut} \leq$	[mm]	8,45
Depth of frill hole to deepest point	$h_1 \geq$	[mm]	50
Overall plastic anchor embedment depth ¹⁾	h_{nom}	[mm]	40
Diameter of clearance hole in the fixture	d_f	[mm]	8,5

¹⁾ See Annex A1

Table B2: Minimum thickness of member, edge distance and anchor spacing in concrete

UP			Concrete C12/15	Concrete \geq C 16/20
Minimum thickness of member	h_{min}	[mm]	80	80
Minimum spacing and edge distance	c_{min}	[mm]	50	50
	s_{min}	[mm]	50	50
Characteristic edge distance	$c_{cr,N}$	[mm]	70	70

**FM-TXT****Intended use**

Installation parameters, minimum thickness, edge distance and spacing

Annex B2

Table C1: Characteristic bending resistance of the special screw in concrete

FM-TXT			Galvanized steel	Stainless steel
Characteristic bending resistance	$M_{Rk,s}$	[Nm]	4,9	5,4
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,25

¹⁾ In absence of other national regulations**Table C2:** Characteristic resistance for use in concrete

Anchor type			FM-TXT	
Steel failure (special screw)			Galvanised steel	Stainless steel
Characteristic tension resistance	$N_{Rk,s}$	[kN]	7,5	8,4
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,50	1,48
Characteristic shear resistance	$V_{Rk,s}$	[kN]	3,8	4,2
Partial safety factor	$\gamma_{Ms}^{1)}$	[-]	1,25	1,25
Pull-out failure (plastic sleeve)				
Concrete \geq C16/20				
Characteristic resistance	$24^{\circ}\text{C}^{2)}/40^{\circ}\text{C}^{3)}$	$N_{Rk,p}$	[kN]	2,0
Partial safety factor		$\gamma_{MC}^{1)}$	[-]	1,8
Concrete C12/15				
Characteristic resistance	$24^{\circ}\text{C}^{2)}/40^{\circ}\text{C}^{3)}$	$N_{Rk,p}$	[kN]	1,5
Partial safety factor		$\gamma_{MC}^{1)}$	[-]	1,8
Concrete cone failure and concrete edge failure for single anchor and anchor group				
Tension load ⁴⁾				
$N_{Rk,c} = 7,2 \cdot \sqrt{f_{ck,cube}} \cdot h_{ef}^{1,5} \cdot \frac{c}{c_{cr,N}} = N_{Rk,p} \cdot \frac{c}{c_{cr,N}}$			with: $h_{ef}^{1,5} = \frac{N_{Rk,p}}{7,2 \cdot \sqrt{f_{ck,cube}}},$ $\frac{c}{c_{cr,N}} \leq 1$	
Shear load ⁴⁾				
$V_{Rk,c} = 0,45 \sqrt{d_{nom}} \cdot \left(\frac{h_{nom}}{d_{nom}} \right)^{0,2} \cdot \sqrt{f_{ck,cube}} \times c_1^{1,5} \times 0,5 \times \sqrt{\frac{c_2}{1,5c_1}} \cdot \sqrt{\frac{h}{1,5c_1}}$			with: $\sqrt{\frac{c_2}{1,5c_1}} \leq 1$ $\sqrt{\frac{h}{1,5c_1}} \leq 1$	
c_1	edge distance closest to the edge in loading direction			
c_2	edge distance perpendicular to direction 1			
$f_{ck,cube}$	nominal characteristic concrete compression strength (based on cubes), values for C50/60 at maximum			
Partial safety factor	$\gamma_{MC}^{1)}$	[-]	1,8	

¹⁾ In absence of other national regulations²⁾ Maximum long term temperature³⁾ Maximum short term temperature⁴⁾ The design method according to ETAG 020, Annex C is to be used**FM-TXT****Performance**

Characteristic resistance in concrete
(use category A)

Annex C1

Table C3: Displacements under tension and shear loading in concrete

FM-TXT	Tension load			Shear load		
	N	δ_{N0}	$\delta_{N\infty}$	V	δ_{V0}	$\delta_{V\infty}$
	[kN]	[mm]	[mm]	[kN]	[mm]	[mm]
Concrete \geq C 16/20	0,8	0,92	1,84	0,8	2,50	3,60

FM-TXT

Performance

Displacement in concrete

Annex C2