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Technical Assessment of Nylon Anchors

According to ETA EAD 330284-00-0604

General Part

Technical Assessment Body issuing the Technical Assessment Report :	Walchand College of Engineering, Sangli, Maharashtra, Kolhapur
Trade Name of the construction Product	ICFS Nylon Frame Anchor NFP and NHF
Product Family	Plastic Anchor for redundant non-structural systems in concrete and masonry
Manufacturer	Manufacturing Unit of ICFS Avani Industry W-38, MIDC, Shiroli, Kolhapur 416122, Maharashtra, india
Manufacturing Plant	Avani Industry
This Technical Assessment Report Contains	13 pages including 3 annexes which form an integral part of this assessment
Basis of Technical Assessment Report	EAD 330284-00-0604 edition 12/2020

07 MAY 2026

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Specific Part

1) Technical description of the product

The ICFS frame anchor NFP in the sizes NHF 8 (Nylon Hammer Fix) and NFP 10 (Nylon Frame Plug) is a plastic anchor consisting of a plastic sleeve made of polyamide and an accompanying specific screw of electro galvanised steel, hot-dip galvanised steel, zinc flake plating or 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 product description is given in Annexure A.

2) Specification of the intended use :

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

The verifications and assessment methods on which this Technical Assessment Report is based lead to the assumption of a working life of the anchors of at least 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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 Mechanical resistance and stability

The essential characteristics regarding mechanical resistance and stability are included under the Basic Works Requirement **(BWR)** Safety in use.

3.2 Safety in case of fire

Essential characteristic	**Performance**
Reaction to fire	The steel element shall be classified as Non-combustible according to IS 3808-1991. Material shall meet requirements for Type 1 Construction as per NBC 2016, Part 4 ensuring zero flame spread and non-combustibility
Resistance to fire	See Annexure C2

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3.3 Safety and accessibility

Essential characteristic	Performance
Characteristic resistance to Steel Failure in tension	See Annexure C1
Characteristic resistance to Steel Failure in shear	See Annexure C1
Characteristic resistance for bending moments	See Annexure C1
Resistance to pull-out or concrete failure under tension loading (base material group a)	See Annexure C2
Edge distance and spacing (base material group a)	See Annexure B3

3.4 General aspects

The verification of durability is part of testing the essential characteristics. Durability is only ensured if the specifications of intended use according to Annex B are taken into account.

4) Technical details necessary for the implementation of the Assessment and Verification of Consistency of Performance system

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Walchand College of Engineering, Sangli, Maharashtra, India.

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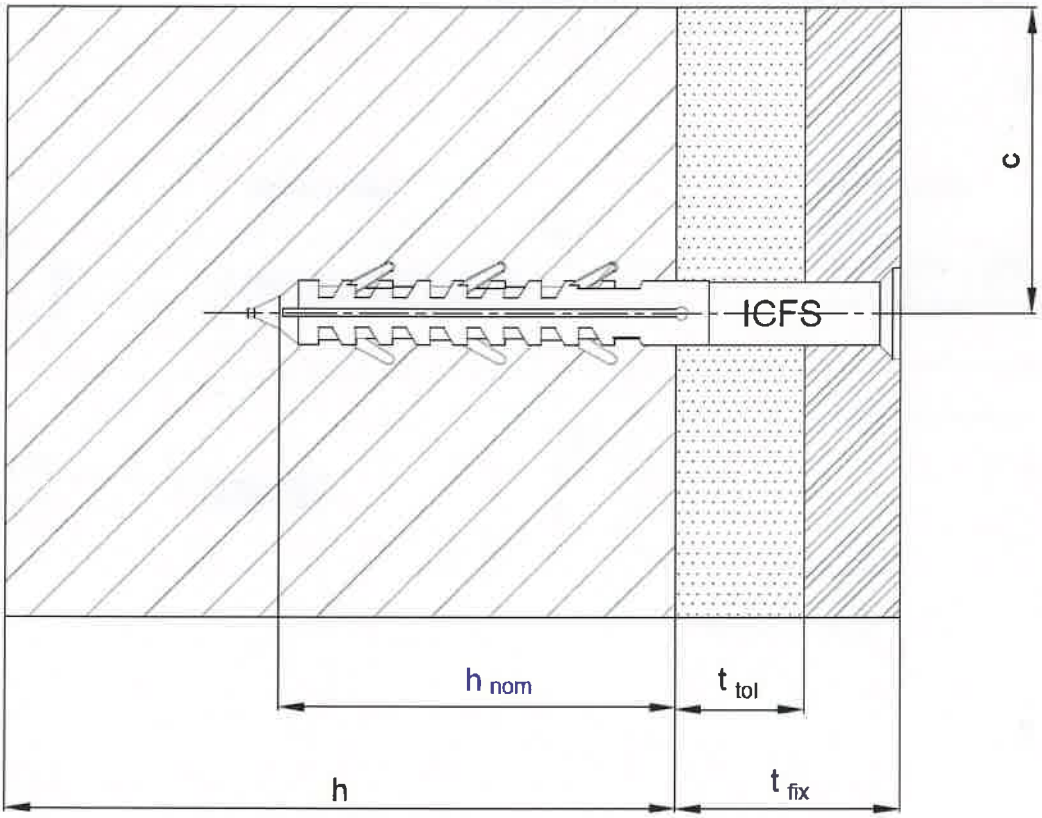

h_{nom} = Overall Plastic anchor embedment depth in the base material

c = Edge distance

h = Thickness of member

t_{tol} = Thickness of non-load bearing layer

t_{fix} = Thickness of fixture

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ICFS Nylon Frame Anchors	
Product Description Installed Condition	**ANNEX A1**

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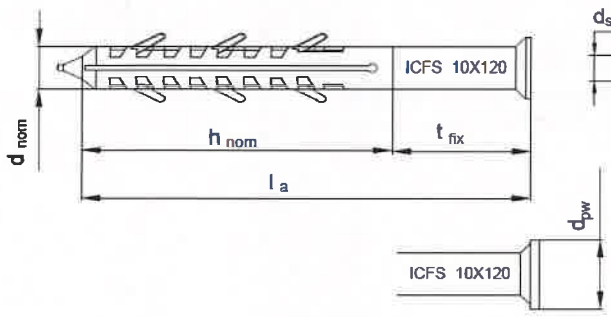
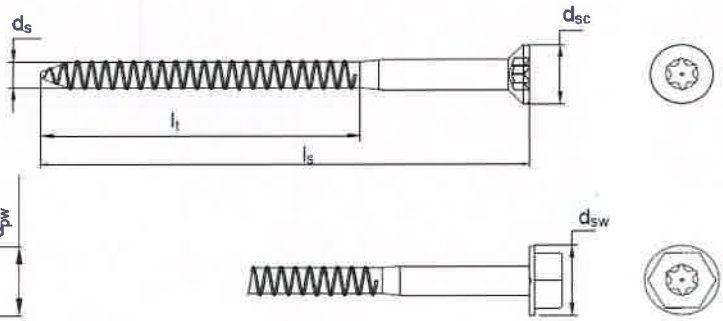
Anchor Types, Marking and Identification

NFP 10

Anchor Sleeve



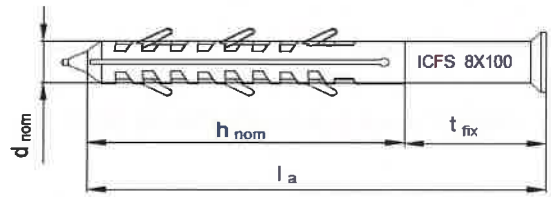
Special Screw



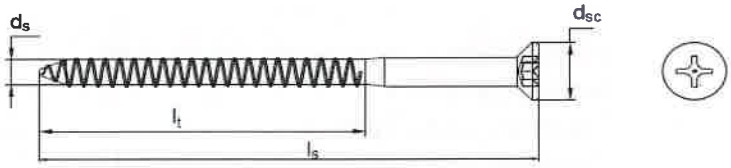
MARKING :
Producer, Size
e.g ICFS 10X120

NHF 8

Anchor Sleeve



Special Screw



MARKING :
Producer, Size
e.g ICFS 8X100

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ICFS Nylon Frame Anchors	ANNEX A2
Product Description Anchor Types and Identification	

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Table A1: Dimensions

			NHF 08	NFP 10
Plastic Sleeve	Sleeve Diameter	d_{nom} (mm)	8	10
	Length of Sleeve	min l_a (mm)	60	100
		max l_a (mm)	100	160
Special Screw	Screw diameter	d_s (mm)	4.85	7.0
	Length of screw	l_s (mm)	L_a+5	L_a+5
	Length of thread	l_t (mm)	50	70
Head diameter	Countersunk screw	d_{sc} (mm)	11	14
	Hex head screw	d_{sw} (mm)	-	18

Table A2: Materials

	NHF 08	NFP 10
Plastic Sleeve	Polyamide, PA6 , Colour Grey	
	Steel, electro galvanised ≥5µm according to EN ISO 4042:2022, blue passivated OR zinc flake coating, fyk = 300N/ mm², fuk = 420 N/ mm²	
Special screw	Stainless steel A2 (material number 1.4301 / 1.4567) fyk = 450 N/mm², fuk = 580 N/mm²	
	Stainless steel A4 or Duplex stainless steel (material number 1.4362 / 1.4401 / 1.4404 /1.4571 / 1.4578) fyk = 450 N/mm², fuk = 580 N/mm²	

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Specifications of intended use

Anchorages subject to:

- Static and quasi-static loads
- Redundant non-structural systems

Base materials:

- Reinforced or unreinforced compacted normal weight concrete without fibres with strength classes ≥ M12/15 (base material group a), according to IS 456:2000.

Temperature range:

- 5°C to 45°C

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions: Special screw made of zinc coated steel or stainless steel.
- The special screw made of zinc coated steel or stainless steel A2 may also be used in structures subject to external atmospheric exposure, if the area of the head of the screw is protected against moisture and driving rain after mounting of the fixing unit in such a way that intrusion of moisture into the anchor shaft is prevented. Therefore, there shall be an extremely cladding or a ventilated rain screen mounted in front of the head of the screw and the head of the screw itself shall be coated with a soft plastic, permanently elastic bitumen-oil-combination coating (eg. undercoating or body cavity protection for cars)
- Structures subject to external atmospheric exposure (including industrial and marine environment) and to permanently damp internal condition, if no particular aggressive conditions exist: Special screw made of stainless steel A4 or Duplex stainless steel of corrosion resistance material

  Note: Particular aggressive conditions are eg. 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 anchorages are designed in accordance with TR 064:2018-05 under the responsibility of an engineer experienced in anchorages and masonry work.
- 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. The position of the anchor is indicated on the design drawings.

Installation:

- Hole drilling by the drill modes according to Annex B4
- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site
- Installation temperature from 5°C to +45°C
- No ingress of water in the bore hole

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ICFS Nylon Frame Anchors	
Intended Use Specifications	**ANNEX B1**

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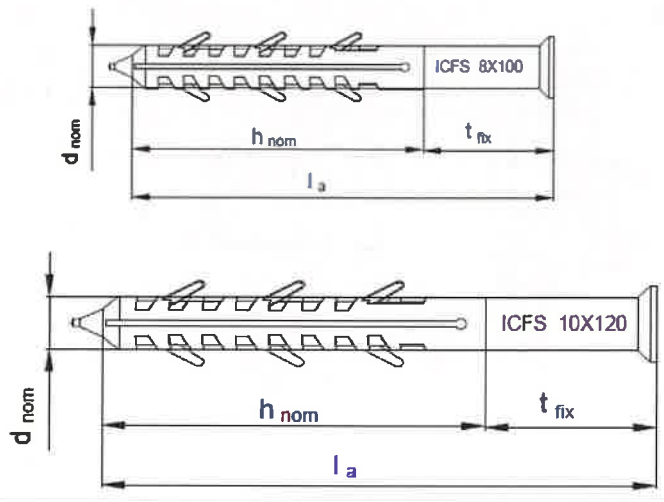
Table B1: Installation parameters

		NHF 08	NFP 10
Drill hole diameter	d_o = [mm]	8	10
Cutting diameter of drill bit	d_{cut} [mm]	8.4	10.4
Depth of drilled hole to deepest point	$h_{1,1}$ [mm] $h_{1,2}$ [mm] $h_{1,3}$ [mm] $h_{1,4}$ [mm] $h_{1,5}$ [mm]	65 85 105	85 105 125 145 165
Overall plastic anchor embedment depth in base material	h_{nom} [mm]	50	70
Diameter of clearance hole in the fixture	Countersunk screw $d_f \leq$ (mm) Hex head screw $d_f \leq$ (mm)	8.5	11 12

Table B2: Relation of h_{nom}, Ia and t_{fix} for use in concrete

		NHF 8 X l_a	NFP 10 X l_a	
Base material group a		$h_{nom} \geq 50$	$h_{nom} \geq 70$	
	l_a (mm)	t_{fix} (mm)	t_{fix} (mm)	
	60	10		
	80	30	10	
	100	50	30	
	120		50	
	140		70	
	160		90	

ICFS Nylon Frame Anchors	ANNEX B2
Intended Use Installation parameters, Relation of h_{nom}, I_a and t_{fix}	

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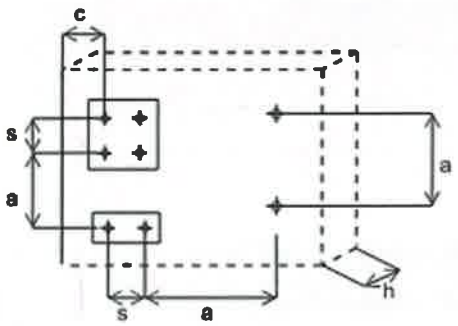
Table B3: Minimum thickness of member, edge distance and anchor spacing in concrete (base material group "a")

		NHF 8	NFP 10
Overall plastic anchor embedment depth in the base material	$h_{nom} \geq$ [mm]	50	70
Minimum thickness of member	h_{min} [mm]	100	120
Minimum spacing	$\geq$ M20 S_{min} [mm]	50	70
Minimum edge distance	$\geq$ M20 C_{min} [mm]	50	70
Characteristic edge distance	$\geq$ M20 $C_{cr.N}$ [mm]	100	100
Characteristic spacing	$\geq$ M20 $S_{cr.N}$ [mm]	70	125

Scheme of distances and spacing



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ICFS Nylon Frame Anchors	ANNEX B3
Intended Use Minimum Spacing and Edge Distance	

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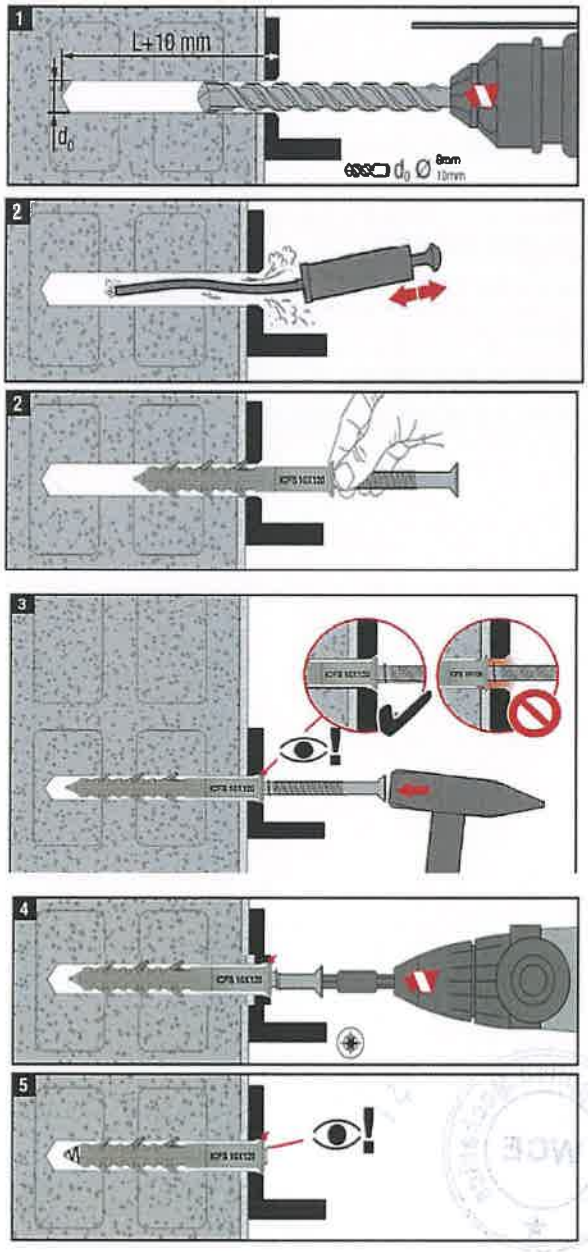
B4. Installation Instruction



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ICFS Nylon Frame Anchors **Intended Use** Installation Instructions	**ANNEX B4**

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Table C1: Characteristic resistance of the screw

		NHF 8	NFP 10
Galvanised steel			
Characteristic tension resistance	$N_{Rk,s}$ [kN]		13.5
Partial safety factor for tension	γ_{Ms}		1.5
Characteristic shear resistance	$V_{Rk,S}$ [kN]		9.0
Characteristic bending resistance	$M_{Rk,S}$ [Nm]		19.3
Partial safety factor for shear and bending	γ_{Ms}		1.25

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ICFS Frame Anchors	ANNEX C1
Performances Characteristic Resistance of Screw	

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Table C2:
Characteristic resistance for pull-out failure (plastic sleeve) for use in concrete (base material group "a")

		NHF 8	NFP 10
Embedment depth	h_{nom} [mm]	50	70
Pull-out failure in standard concrete slabs			
Characteristic resistance	$\geq$ M25 $N_{Rk,p}$ [kN]		6.5
Partial safety factor	Y_{Mc}		1.5

Table C3: Values under fire exposure in concrete M20/25to M50/60 In any load direction, no permanent centric tension load and without lever arm

	NFH 08	NFP 10
Fire resistance class: R 90 $F_{Rk.fi.90}$ kN		0.8
Partial Safety Factor $Y_{M.fi}$		1.0

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ICFS Frame Anchors	ANNEX C2
Performances Characteristic Resistance of Pull Out in concrete, values under fire exposure	