SP Sveriges Tekniska
Forskningsinstitut
SP Certifiering
Box 553
SE-371 23 Karlskrona
SWEDEN

Tel: +46 10 516 63 00
Web: www.sp.se
Mail: eta-se@sp.se

Designated according to Article 29 of Regulation (EU) No 305/2011

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www.eota.eu

European Technical Assessment ETA 14/0075
of 14/04/2014

General Part

Technical Assessment Body issuing the ETA	SP Sveriges Tekniska Forskningsinstitut
Trade name of the construction product	Paroc XFR 300 and XFR 200
Product family to which the construction product belongs	Plastic anchors for fixing of external thermal insulation composite systems with rendering in concrete and masonry
Manufacturer	SFS intec AB Olivehällsvägen 10 645 42 Strängnäs, Sweden
Manufacturing plant	SFS intec AB, Olivehällsvägen 10, 645 42 Strängnäs, Sweden
This European Technical Assessment contains	14 pages including 10 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	ETAG 014, edition February 2011, used as European Assessment Document (EAD) according to Article 66 Paragraph 3 of regulation (EU) No 305/2011.

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific part

1 Technical description of the product

The insulation anchor Paroc XFR is a nailed-in anchor which consists of a plastic part (head, sleeve and expansion section) made of modified polyamide and an accompanying internal expander pin of zinc alloy or thermoplastic polymer.

The anchor is fastened by driving the internal expander pin down with a hammer.

Illustrations and description of the product are given in Annex A.

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

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 verification and assessment methods on which this European Technical Assessment is based lead to the assumption of a 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, 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 Essential characteristics and their performance

		Characteristic	**Performance**
BWR 3	Hygiene, health and the environment	Content and/or release of dangerous substances	Regarding dangerous substances contained in this European technical assessment, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.
BWR 4	Safety and accessibility in use	Characteristic resistance to tension loading. Displacement for serviceability limit state.	See Annex C1 See Annex C2

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

According to the decision 97/463/EG, the system of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011) given in the folowing table apply:

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Plastic anchors for fixing of external thermal insulation composite systems with rendering	For fixing of external thermal insulation composite systems with rendering	Use category A, B, C, D and E.	2+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at SP Sveriges Tekniska Forkningsinstitut.

Issued in Borås on 14.04.2014
By SP Sveriges Tekniska Forskningsinstitut

Lennart Månsson
Certification Manager

Paroc XFR 300

Dimensions

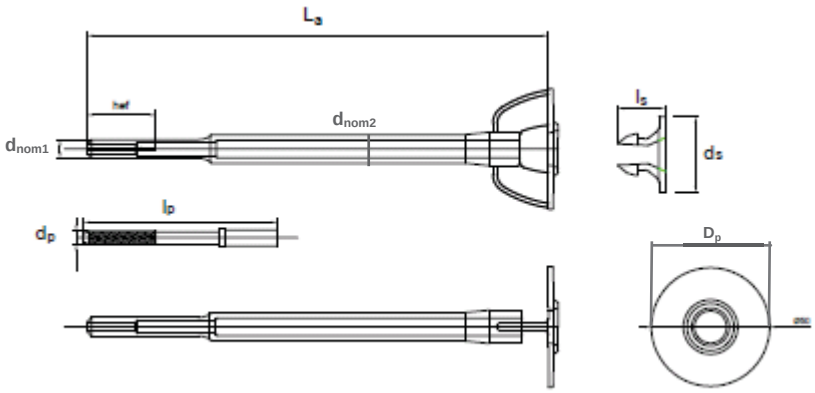


Table A-1: Dimensions

Anchor type	Anchor sleeve					Expander pin		Net fastener	
	d_{nom1}	d_{nom2}	L_a	D_p	h_{ef}	d_p	l_p	d_s	l_s
XFR 300-140	8	12	140	50	40	5,5	82	32	20
XFR 300-L	8	12	90-260	50	40	5,5	82		

Materials

Table A-2: Materials

Member	Material
Anchor sleeve	Polyamid, toughened PA 66
Expander pin	Zinc, ZL 0410 according to EN 1774

Marking

Each anchor is to be marked with the identifying mark of the producer, the type and the length of the anchor or the minimum effective anchorage depth.

- Company logo: SFS intec
- Anchor type: XFR
- Anchoring depth: (40 mm)
- Use category: A,B,C

Product description Paroc XFR 300	**Annex A1** **of European Technical Assessment** **ETA-14/0075**

Paroc XFR 200

Dimensions

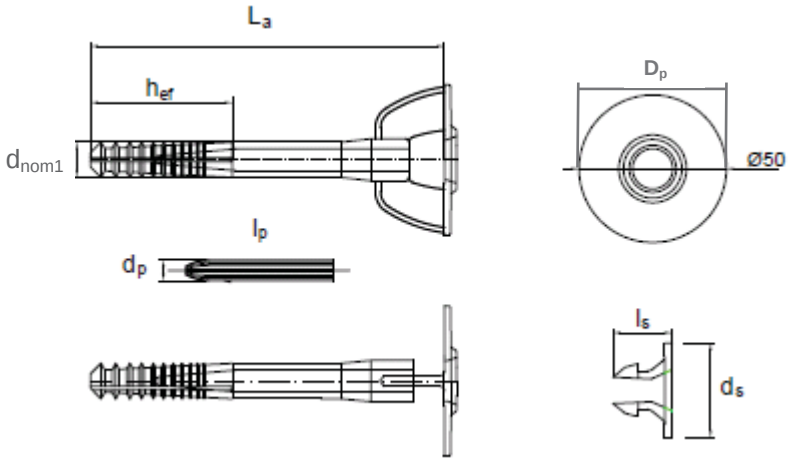


Table A-3: Dimensions

Anchor type	Anchor sleeve					Expander pin		Net fastener	
	d_{nom1}	d_{nom2}	L_a	D_p	h_{ef}	d_p	l_p	d_s	l_s
XFR 200-170	12	12	170	50	70	6,9	50	32	20
XFR 200-L	12	12	80-350	50	70	6,9	50		

Materials

Table A-4: Materials

Member	Material
Anchor sleeve	Polyamid, toughened PA 66
Expander pin	Polyoxymethylene, POM

Marking

- Company logo: SFS intec
- Anchor type: XFR
- Anchoring depth (40 mm)
- Use category: D,E

Product description Paroc XFR 200	**Annex A2** **of European** **Technical Assessment** **ETA-14/0075**

Specifications of intended use

General

The anchor is intended to be used for anchorages for which requirements for safety in use in the sense of the Basic Work Requirement 4 of Regulation (EU) No 305/2011 shall be fulfilled and failure of anchorages made with these products would cause low risk to human life. The anchor is to be used only as multiple fixing for the anchorage of bonded or mechanically fastened thermal insulation composite systems (ETICS) in concrete and masonry.

Base material

The base material shall consist of reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according to EN 206-1:2000-12 or of masonry walls according to Annex C.

Installation

- Anchor installation carried out by appropriately qualified personnel under the supervision of the person responsible for technical matters on site.
- Use of the anchor only as supplied by the manufacturer without exchanging any component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the tools indicated in this European Technical Assessment.
- 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.
- Observation of the drill method (Drill holes in masonry made of hollow or perforated bricks may only be drilled using the rotary drill. Other drilling methods may also be used if job-site tests according to Annex B5 evaluate the influence of hammer or impact drilling.)
- Placing drill holes without damaging the reinforcement.
- Temperature during installation of the anchor ≥ 0°C.
- Exposure to UV due to solar radiation of the anchor not protected by rendering ≤ 6 weeks.

Packaging, transport and storage

The anchor shall only be packaged and supplied as a complete unit.

The anchor shall be stored under normal climatic conditions. Before installation, it shall not be extremely dried nor frozen and not exposed to sun radiation.

Intended use Specifications	**Annex B1** **of European Technical Assessment** **ETA-14/0075**

Installation characteristics

XFR 300

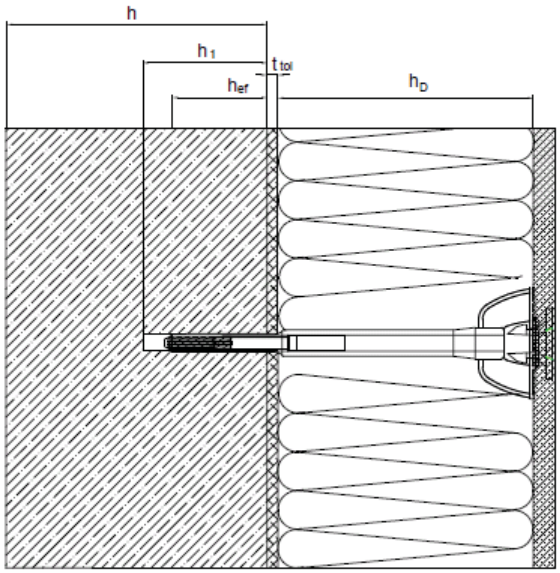
Anchorage of ETICS in concrete or masonry.

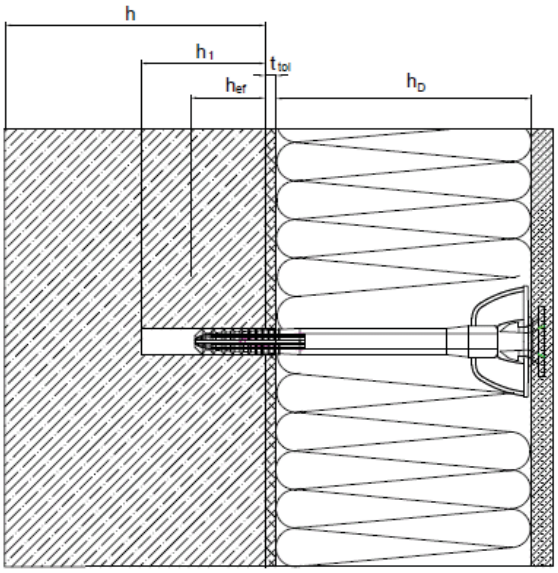
Use category A, B and C.

XFR 200

Anchorage of ETICS in lightweight aggregate concrete and autoclaved aerated concrete.

Use category D and E.





Legend:

h_D = thickness of insulation material
h_{ef} = effective anchorage depth
h = thickness of member (wall)
h_1 = depth of drilled hole to deepest point
t_{tol} = thickness of equalizing layer or non-load-bearing coating

Table B-1: Installation characteristics

Anchor type		XFR 300	XFR 200
Drill hole diameter	d_o [mm]	8	12
Cutting diameter of drill bit	d_{cut} [mm]	≤ 8,45	≤ 12,45
Depth of drill hole	h_1 [m]	≥ 60	≥ 90
Effective anchorage depth	h_{ef} [mm]	≥ 40	≥ 70

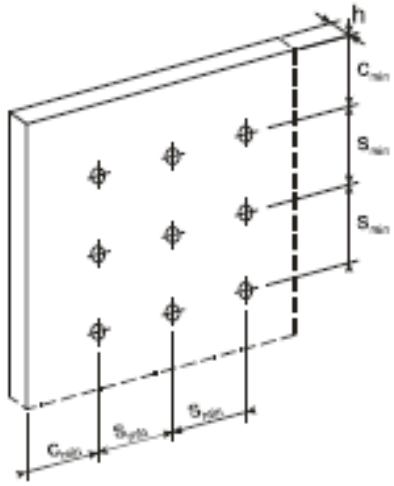
The anchor is fastened by driving the internal expansion pin down with a hammer.

Intended use Installation characteristics	**Annex B2** **of European** **Technical Assessment** **ETA-14/0075**

Spacing and edge distance

Table B-2: Minimum distances and thickness of member

Anchor type		XFR 300, XFR 200
Minimum thickness of base material	h [mm]	100
Minimum spacing	s_{min} [mm]	100
Minimum edge distance	c_{min} [mm]	100



Intended use Spacing and edge distance	**Annex B3** **of European Technical Assessment ETA-14/0075**

Design of anchorages

General

The ETA only applies to the manufacture and use of the anchor. Verification of stability of the external thermal insulation composite system including application of loads on the anchor and on the additional insulation disc is not subject of this European technical assessment.

Fitness for the intended use of the anchor is given under the following conditions:

- The design of anchorages is carried out in compliance with ETAG 014, edition February 2011, used as European Assessment Document (EAD) 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, the thickness of insulation and the dimensions of the anchorage members as well as of the relevant tolerances.

Characteristic values, spacing and dimensions of anchorage member

The minimum spacing and dimensions of anchorage member according to Annex B3 shall be observed.

Resistance

The characteristic values of the tension resistance of the anchor are given in Annex C1. If there is a difference in the characteristic values of the base material or a similar base material of category A, B, C, D or E is supposed to be used; job-site tests according to Annex B5 shall be carried out and the characteristic tension resistance shall be determined.

Displacement behaviour

The displacements are given in the Annex C2.

Intended use Design	**Annex B4** **of European Technical Assessment** **ETA-14/0075**

Job site tests

General

The characteristic tension resistance of the anchor may be determined by means of job site pull-out tests carried out on the material actually used, if a characteristic resistance of the base material does not exist (for example masonry made of other solid masonry units, hollow or perforated bricks).

The characteristic resistance of the anchor shall be determined by carrying out at least 15 centric tension load pull-out tests on site. These tests are also possible under the same conditions in a laboratory.

Execution and evaluation of the tests as well as the issue of the test report and the determination of the characteristic resistance should be under the responsibility of approved testing laboratories or the supervision of the person responsible for the execution of the works on site.

Number and position of the anchors to be tested shall be adapted to the relevant special conditions of the site and, for example, to be increased in the case of hidden and larger areas, such that reliable information about the characteristic resistance of the anchor in the base material in question can be derived. The tests shall take into account the most unfavourable conditions of the practical execution.

Assembly

The anchor to be tested shall be installed (e.g. preparation of drill hole, drilling tool to be used, drill bit) and the spacing and the edge distances shall be in the same way as planned for the fixing of the external thermal insulation composite system.

Depending on the drilling tool and according to ISO 5468, hard metal hammer-drill bits or hard metal percussion drill bits, respectively, shall be used. The cutting diameter shall be at the upper tolerance limit.

Execution of test

The test rig used for the pull-out tests shall provide a continuous slow increase of the load, controlled by a calibrated load cell. The load shall apply perpendicular to the surface of the base material and shall be transmitted to the anchor via a hinge. The reaction forces shall be transmitted into the base material at a distance of at least 15 cm from the anchor. The load shall be increased continuously in a way that the ultimate load is reached after about 1 minute. The load is measured when the ultimate load (N_1) is achieved.

Intended use Job site tests	**Annex B5-1** **of European** **Technical Assessment** **ETA-14/0075**

Test report

The test report shall include all information necessary to assess the resistance of the tested anchor. It shall be included in the construction dossier.

The minimum data required are:

- Construction site, owner of building; date and location of the tests, air temperature; type of member (ETICS) to be fixed,
- Masonry (type of brick, strength class, all dimensions of bricks, mortar group); visual assessment of masonry (flush joints, joint clearance, regularity),
- Plastic anchor and expander pin; value of the cutting diameter of hard metal hammer-drill bits, measured before and after drilling,
- Test rig; results of tests including the indication of value N_1,
- Tests carried out or supervised by; signature.

Evaluation of test results

The characteristic resistance N_{Rk1} is derived from the measured values N_1 as follows

$N_{Rk1} = 0.6 \bullet N_1 \leq 1{,}5$ kN

N_1 = mean value of the five smallest measured values at ultimate load

Intended use Job site tests	**Annex B5-2** **of European** **Technical Assessment** **ETA-14/0075**

Characteristic resistance

Table C-1: Characteristic resistance to tension loads N_{Rk} in concrete and masonry for a single anchor in kN.

Anchor type				**XFR 300**	**XFR 200**
Base material	**Bulk density class** ρ **[kg/dm³]**	**Minimum compressive strength** f_b **[N/mm²]**	**Drill method**	N_{Rk} **[kN]**	N_{Rk} **[kN]**
Normal weight concrete C20/25, EN 206-1			Hammer drilling	1,6	
Normal weight concrete C50/60, EN 206-1			Hammer drilling	1,6	
Solid clay bricks HD, EN 771-1	≥ 1,69	36	Hammer drilling	1,6	
Hollow clay bricks HD, vertically perforated, EN 771-1	≥ 1,36	36	Rotary drilling	1,6	
Lightweight aggregate concrete, LAC 3, EN 1520	≥ 0,64	3,0	Hammer drilling		0,5
Autoclaved aerated concrete, AAC 3, EN 771-4	≥ 0,43	4,5	Hammer drilling		0,6

Performances Characteristic resistance	**Annex C1** **of European Technical Assessment ETA-14/0075**

Displacement behaviour

Table C-2: Displacements, XFR 300 (Category A, B and C)

Base material	Bulk density class ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	Tension load N kN]	Displacement δ_m(N) [mm]
Normal weight concrete C20/25, EN 206-1			0,55	0,8
Normal weight concrete C50/60, EN 206-1			0,55	0,8
Solid clay bricks HD, EN 771-1	≥ 1,69	36	0,55	0,8
Hollow clay bricks HD, vertically perforated, EN 771-1	≥ 1,36	36	0,55	0,8

Table C-3: Displacements, XFR 200 (Category D and E)

Base material	Bulk density class ρ [kg/dm³]	Minimum compressive strength f_b [N/mm²]	Tension load N [kN]	Displacement δ_m(N) [mm]
Lightweight aggregate concrete, LAC 3, EN 1520	≥ 0,64	3,0	0,18	0,35
Autoclaved aerated concrete, AAC 3, EN 771-4	≥ 0,43	4,5	0,21	0,5

Performances Displacement behaviour	**Annex C2** **of European Technical Assessment ETA-14/0075**