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**Institut de
Tecnologia de la Construcció
de Catalunya**

Member of EOTA

European Technical Approval

ETA 11/0420

Nombre comercial:

Ippon Panels®

Trade name:

Ippon Panels®

Titular del DITE:

Amari Metals Ibérica SLU

Holder of approval:

Polígono Industrial El Pla – Riera Can Pahissa 24 A
08750 – Molins de Rei
Barcelona, Spain

Área genérica y uso del
producto de construcción:

Paneles compuestos ligeros autoportantes para su empleo
como elementos de revestimiento en fachadas y divisorias
interiores.

*Generic type and use of
construction product:*

*Self-supporting composite lightweight panels for use as cladding
elements in external and internal walls.*

Validez:

de
from

6.02.2012

Validity:

hasta
to

5.02.2017

Planta de fabricación:

Ippon Factory Center

Manufacturing plant:

El presente Documento de
Idoneidad Técnica Europeo
contiene:

20 páginas, incluyendo 2 anexos que forman parte del
documento.

*This European Technical
Approval contains:*

*20 pages including 2 annexes which form an integral part of the
document.*



Organización Europea para la Idoneidad Técnica

European Organisation for Technical Approvals

I LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by the Catalonia Institute of Construction Technology (ITeC) in accordance with:
 - Council Directive 89/106/EEC¹ of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products modified by the Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - Real Decreto 1630/1992, de 29 de diciembre, por el que se dictan disposiciones para la libre circulación de productos de la construcción en aplicación de la Directiva 89/106/CEE⁴;
 - Real Decreto 1328/1995, de 28 de julio, por el que se modifican, en aplicación de la Directiva 93/68/CEE, las disposiciones para la libre circulación, aprobadas por el Real Decreto 1630/1992, de 29 de diciembre (BOE 19-8-95) y la Orden CTE/2276/2002 de 4 de septiembre;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC⁵;
 - Guideline for European Technical Approval ETAG 016, *Part 1: General (edition Nov2003)*, *Part 3: Specific aspects relating to self-supporting composite lightweight panels for use external walls and claddings (edition Feb2005)* and *Part 4: Specific aspects relating to Self-supporting Composite Lightweight Panels for use in internal walls and ceilings (edition July2004)*.
2. The Catalonia Institute of Construction Technology (ITeC) is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products with the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.
3. This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1; or manufacturing plants other than those indicated on page 1 of this European Technical Approval.
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6. This European Technical Approval is issued in Spanish by the Catalonia Institute of Construction Technology (ITeC). This version corresponds fully to the version circulated in EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities N° L 40, 11.2.1989, p.12.

² Official Journal of the European Communities N° L 220, 30.8.1993, p.1.

³ Official Journal of the European Union N° L 284, 31.10.2003, p.1.

⁴ Boletín Oficial del Estado n° 34 de 9 de febrero de 1993.

⁵ Official Journal of the European Communities N° L 17, 20.1.1994, p.34.

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of products and intended use

1.1 Definition of the construction product

Ippon Panels[®] are self-supporting composite lightweight panels consisting of aluminium covering layers and a non insulating core made of low density polyethylene with or without mineral filler, bonded with an adhesive by means of thermo-adhesion process.

The description of the complete range of Ippon Panels[®] and the cross-section of the panels are included in Annex 1. Each different type of Ippon Panels[®] is identified by a commercial name according to the nature of the core and the thickness of the panel. All through this ETA document, reference will be made to these panel types.

Ippon Panels[®] are produced and supplied in several dimensions. The main dimensional characteristics and intended uses of each type of panel are defined in Table 1:

Characteristic	Nominal values of Ippon Panel [®]			Tolerance
	Artec FR	Artec PE	Light	
Length (mm)	1.500 to 6.500		1.500 to 6.500	0/+5 mm
Width (mm)	1.000 / 1.250 / 1.500		1.000 / 1.250 / 1.500	0/+5 mm
Thickness [E] (mm)	4		3	± 0,3 mm
Deviation from squareness (mm)	± 5		± 5	± 1 mm
Intended use	Cladding of external walls		Cladding of internal walls	--

Table 1: Main dimensional characteristics and intended uses of Ippon Panels[®].

Cladding elements are made up from the panels to be attached to a frame of extruded aluminium alloy profiles anchored to an internal or external wall. The panels are mechanically fixed by means of rivets or self-drilling screws. There are three fixing systems of the transformed panels (see clause 1.2).

This ETA applies to Ippon Panels[®]. All other ancillary components of the cladding, which are necessary to fix the panels (rivets, screws, profiles), are not part of the product being assessed under this ETA.

These ancillary components are generally specified in chapter 1.3 of this ETA through its minimum required specifications.

1.2 Intended use

Ippon Panels[®] are used as cladding elements in internal and external walls (see intended use of each panel type in table 1). Between the cladding elements and the insulation layer or the external wall accordingly there is an air space which shall always be drained and ventilated. The waterproofing function is assumed by the substrate wall.

The panels are usually assembled according to a specific technical design for joints and construction discontinuities. According to the fixing system, the panels may be shaped into:

- Suspended cassettes: cladding elements made of bent panels, riveted corners and slots on lateral sides of panel
- Reinforced cassettes: cladding elements made of bent panels, riveted corners, reinforcement of aluminium alloy profile in upper side of panel and retaining clip in the lower side.
- Flat panels: cladding elements made of panels cut to the intended size.

The three fixing systems are described in Annex 2 of this ETA.

The provisions made in this European technical approval are based on an assumed working life 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.

The main performances of all types of Ippon Panels[®] panels are tabulated in Annex 1 and chapter 2.1.4.1.1 (mechanical resistance) of this ETA. All other properties of the panels are included in chapter 2.

This ETA covers the range of Ippon Panels[®] types listed in Annex 1, which comprises 3 types of Ippon Panels[®].

1.3 Generic auxiliary components

The auxiliary products needed for the execution of the claddings in the works are the fixing elements and subframe, which do not pertain to Ippon Panels[®]. The main specifications to be met by these components for use with Ippon Panels[®] are described below.

Cladding elements	Subframe	Extruded aluminium alloy profiles			Fixing system
		Ω	T	U	
Suspended cassettes	Unidirectional	Vertical	--	Vertical	Slots suspended on pins
Reinforced cassettes	Unidirectional	Vertical	--	--	Aluminium rivets or self drilling screws on holes (fixing of upper side) Retaining cramp of aluminium alloy profile (fixing of lower side)
Flat panels	Unidirectional	Vertical / Horizontal	Vertical / Horizontal	--	Aluminium rivets or self drilling screws on holes
	Bidirectional	Vertical / Horizontal	Vertical / Horizontal	--	

Table 2: Fixing elements for each cladding element.

- Slots on sides of cassettes with geometry according to figure A2.5 of Annex 2.
- Pins made of stainless steel anchors Ø10 mm x 90 mm with head, screw and washer Ø16 mm.
- Aluminium blind rivets AlMg3 with rivet body Ø5 x 14 mm, mandrel of stainless steel A2 Ø2,7 mm and protruding blind rivet head Ø14 mm.
- Retaining cramp aluminium alloy profile EN AW-6060 of 100 mm length and cross-section according to figure A2.9 of Annex 2.

2 Characteristics of products and methods of verification

The assessment of the fitness of Ippon Panels[®] for the intended use considering the essential requirements 2, 3, 4, 5 and 6 was performed following the Guideline for European Technical Approval 016 for *Self-supporting composite lightweight panels. Part 1: General (edition Nov2003), Part 3: Specific aspects relating to self-supporting composite lightweight panels for use external walls and claddings (edition Feb2005) and Part 4: Specific aspects relating to Self-supporting Composite Lightweight Panels for use in internal walls and ceilings (edition July2004).*

2.1 Characteristics of the panels

2.1.1 Mechanical resistance and stability (ER 1)

Ippon Panels[®] are non-loadbearing parts of the works, because they do not contribute to the structural action of the structure. The self-supporting mechanical properties of the cladding are considered under ER4 Safety in use (see chapter 2.1.4).

2.1.2 Safety in case of fire (ER 2)

2.1.2.1 Reaction to fire

The reaction to fire classification of Ippon Panels[®] is declared in Annex 1 of this ETA.

Tests have been conducted on a cladding made of reinforced cassettes of Ippon Panels[®] Artec FR with a back air space, open joints and no jointing material.

Note: A European fire scenario for façades has not been laid down. In some Member States, the classification of the self supporting composite lightweight panels according to EN 13501-1 might not be sufficient for the use in façades. An additional assessment of the self supporting lightweight panels according to national provisions (e.g. on the basis of a large-scale test) might be necessary to comply with Member States' regulation until the existing European classification system has been completed.

2.1.2.2 Fire resistance

The resistance to fire of Ippon Panels[®] cladding has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.2.3 External fire performance

The external fire performance of Ippon Panels[®] cladding has not been determined (NPD).

2.1.3 Hygiene, health and the environment (ER 3)

2.1.3.1 Water permeability

The water permeability of Ippon Panels[®] has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.3.2 Vapour permeability

The vapour permeability of Ippon Panels[®] has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.3.3 Release of dangerous substances

This performance has not been determined (NPD).

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other 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 EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.1.3.4 Dimensional variations (related to water penetration)

The dimensional variations of Ippon Panels[®] related to water penetration have not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.4 Safety in use (ER 4)

2.1.4.1 Mechanical resistance

2.1.4.1.1 Mechanical resistance of panels

The ultimate loads and the loads which produce different levels of deflection (L/150, L/200 and L/300) of Ippon Panels[®] tested on different types of panels in form of suspended cassettes (maximum and minimum span on 2 supports) are specified in table 3.

The values given in table 3 are characteristic⁶ values for ultimate loads and mean values for serviceability states, and they always correspond to:

- Laboratory conditions: instantaneous loading and dry interior conditions
- The load is uniformly distributed over the panel.

Ippon Panel [®]	Span (mm)	Load for L/300 (kN/m ²)	Load for L/200 (kN/m ²)	Load for L/150 (kN/m ²)	Ultimate load (kN/m ²)
Artec FR	400	2,78	4,14	5,45	69,93
	800	0,78	1,18	1,58	18,34
	1.400	0,53	0,75	0,82	3,15
Artec PE	400	2,44	3,45	4,38	48,00
	800	0,57	0,88	1,26	17,23
	1.400	0,38	0,52	0,67	3,08
Light	400	1,30	1,91	2,47	24,04
	800	0,34	0,49	0,64	8,60

Table 3: Nominal resistance values of Ippon Panels[®] on 2 supports.

2.1.4.1.2 Fixed panel subject to negative load

The resistance of the panel fixed on its supports and subject to negative loads (wind suction loads) is limited by the pull through resistance of the panel, i.e. the local resistance of the panel around the fixings. Therefore, the resistance of the panels subject to negative loads mainly depends on the number and type of fixing elements and secondly, on the panel type.

Tests have been conducted on the panels with the minimum number of fixings specified by the applicant according to the shape of the panel (see specifications of fixings in clause 1.3):

- Suspended cassettes with 3 slots on each support profile.
- Reinforced cassettes with 1 blind rivet on upper corners of the panel and a central retaining cramp in the middle of lower side.
- Flat panels with 4 blind rivets in each support profile.

The characteristic failure loads are the following:

- In suspended cassettes made of Ippon Panel Artec FR: 0,21 kN/fixing point.
- In reinforced cassettes made of Ippon Panel Artec FR: 0,85 kN/fixing point.
- In flat panels made of Ippon Panel Artec FR: 1,15 kN/fixing point.

⁶ Calculated according to ISO 12491 for $p=0,95$ (5% lower fractile), a 75% confidence level ($\gamma=0,75$) and a population with unknown standard deviation.

- In flat panels made of Ippon Panel Light: 0,88 kN/fixing point.

The values correspond to the worst case fixing solution for each panel, and they can be enhanced by increasing the density of fixings. Some important fastening criteria should be observed, especially when high suction loads are expected (see design and installation criteria on chapters 4.2 and 4.3, respectively).

2.1.4.1.3 Thermal effect

The thermal effect of Ippon Panels[®] has been tested in flat panels intended for external uses. The tests have been conducted under the following conditions:

- Dark color coatings of Ippon Panels[®]: t_e mode (iii) in annex C4 of ETAG 016-3.
- Riveted flat panels with dimensions 300 x 1.500 mm.
- 50 mm Ω profiles as supports
- Blind rivets as fixings (see specifications in clause 1.3)
- 6 fixing points per panel (1 hole of \varnothing 5 mm and 5 holes of \varnothing 6 mm to loosen the panel).

Ippon Panel [®]	Deflection in intermediate support after t _e is reached (mm)	Radius of curvature (mm)	Force H on the intermediate support (daN/m)
Artec FR	15,45	15.857	3,95
Artec PE	19,93	12.293	2,80

Table 4: Test results of thermal effect on Ippon Panels[®].

2.1.4.1.4 Impact resistance

Impact tests on Ippon Panels[®] have been conducted according to EOTA TR 001. Tests have been done on specimens of the three intended cladding uses fixed to a subframe of 50 mm aluminium alloy Ω profiles attached to a rigid substrate, using the minimum number of fixings and the maximum span for the intended impact use (see specifications of fixings in clause 1.3 and figures in Annex 2 of this ETA).

Ippon Panels[®] resist the hard body impacts corresponding to the most severe use category, even if craters are done.

Ippon Panels[®] resist the soft body impacts with energies indicated in table 5. All deflections have been $< L/150$ except in safety in use tests of suspended cassettes and reinforced cassettes of Artec FR in which there has been a deflection $< L/50$.

The resistance to impact from soft body for Ippon Panel[®] Light in form of riveted flat panels for cladding of internal walls is for zone I according to TR 001.

Type of panel and cladding elements	Impact test	Characteristic	Mass (kg)	Impact energy (J)	Núm.	Comments	Assessment	
Artec FR Suspended cassettes 2.840 x 900 mm	Hard body	Serviceability	0,5	6	3	No penetration No degradation Crater Ø < 6,25 mm	Pass	
		Safety in use	1,0	10	1	No collapse No penetration No projection Crater Ø = 10,15 mm.	Pass	
	Soft body	Serviceability	50	300	3	No penetration No degradation No remnant deflection	Pass	
		Safety in use	50	700	1	No collapse No penetration No projection Deflection < L/50	Pass	
	Artec FR Reinforced cassettes 900 x 2.840 mm	Hard body	Serviceability	0,5	6	3	No penetration No degradation Crater Ø < 6,10 mm	Pass
			Safety in use	1,0	10	1	No collapse No penetration No projection Crater Ø = 10,63 mm.	Pass
Soft body		Serviceability	50	300	3	No penetration No degradation No remnant deflection	Pass	
		Safety in use	50	700	1	No collapse No penetration No projection Deflection < L/50	Pass	
Artec FR Riveted flat panels 900 x 2.840 mm	Hard body	Serviceability	0,5	6	3	No penetration No degradation Crater Ø < 11,55 mm.	Pass	
		Safety in use	1,0	10	1	No collapse No penetration No projection Crater Ø = 11,65 mm.	Pass	
	Soft body	Serviceability	50	400	3	No penetration No degradation Deflection < L/150	Pass	
		Safety in use	50	700	1	No collapse No penetration No projection Deflection < L/150	Pass	
Light Riveted flat panels 900 x 2.840 mm	Hard body	Serviceability	0,5	6	3	No penetration No projection Crater Ø < 6,0 mm.	Zone IV	
		Safety in use	1,0	10	1	No collapse No penetration No projection Crater Ø = 13,14 mm.	Pass	
	Soft body	Serviceability	50	60	3	No penetration No projection Deflection < L/150	Pass	
		Safety in use	50	100	1	No collapse No penetration No projection Deflection < L/150	Zone I	

Table 5: Results of impact tests on Ippon Panels®.

2.1.5 Protection against noise (ER 5)

2.1.5.1 Direct airborne sound insulation

The direct airborne sound insulation of Ippon Panels[®] cladding has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.5.2 Sound absorption

The sound absorption behaviour of Ippon Panels[®] has not been determined (NPD).

2.1.6 Energy economy and heat retention (ER 6)

2.1.6.1 Thermal insulation properties

The thermal transmittance U of Ippon Panels[®] has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.6.2 Air permeability

The air permeability of the different types of Ippon Panels[®] has not been determined (NPD), since it is not relevant for ventilated claddings with open joints.

2.1.7 Aspects of durability, serviceability and identification of the products

2.1.7.1 Durability

2.1.7.1.1 Thermal agents

2.1.7.1.1.1 Climatic testing cycles

The most unfavourable type of Ippon Panels[®] have been submitted to climatic testing (cycle 3 in ETAG 016 part 3). The tensile strength of Ippon Panels[®] is not affected by humidity and temperature conditions stated for cycle 3.

2.1.7.1.1.2 Thermal shock

Ippon Panels[®] intended to be used in external walls have been submitted to 15 cycles of thermal shocks: the mechanical properties of Ippon Panels[®] Artec FR and Artec PE (bending strength) are not affected by sudden changes of temperature (thermal shocks).

Taking into account the observed behaviour and results of thermal shock and climatic cycles tests, the declared working life for the panels is 25 years, according to table 3 in clause 6.7.1.1.2 of ETAG 016-3.

2.1.7.1.2 Finishes

Ippon Panels[®] have been submitted to test methods related to durability of finishes according to its intended use. The results are stated in table 6:

Characteristic	Test method	Ippon Panels® (external face finish)	Results
Salt spray test	EN 13523-8 24 / 48 / 96 hours	Artec FR (<i>Smoke</i>)	After 96 hours there is no sign of variation regarding the initial state.
		Artec PE (<i>Burgundy</i>)	
Resistance to humidity	EN 13523-10	Artec FR (<i>Smoke</i>)	Gloss variation: -2,6 % Total colour variation ΔE^* : 0,94
		Light (<i>Red and Blue</i>)	Gloss variation: -97,0 % ⁷ Total colour variation ΔE^* : 8,14
Resistance to immersion in water	Clause 2.16 in <i>Qualicoat</i>	Artec FR (<i>Smoke</i>)	After immersion of 2 hours in boiling water there are no defects, detachments or blistering in excess of 2(S2) according to EN ISO 4628-2.
	EN ISO 4628-2	Light (<i>Red and Blue</i>)	
Resistance to aging	EN 13523-13	Artec FR (<i>Smoke</i>)	Gloss variation: +2,6 % Total colour variation ΔE^* : 0,34
		Light (<i>Red and Blue</i>)	Gloss variation: -2,1 % Total colour variation ΔE^* : 0,30

Table 6: Results of durability tests in finishes.

2.1.7.2 Serviceability

2.1.7.2.1 Resistance to impact from hard body

The resistance of different types and shapes of Ippon Panels® has been tested and it is satisfactory: the behavior of the panels in face of hard body impacts is firm.

The deflections occurred affect only the appearance of the panels. The diameter and maximum indentions after each impact are reported in table 5.

The resistance to impact from hard body for Ippon Panel® Light in form of riveted flat panels for cladding of internal walls is for zone IV according to TR 001.

2.1.7.2.2 Resistance to impact from soft body

The resistance to soft body impacts of different types and shapes of Ippon Panels® was tested.

All tested types of Ippon Panels® resisted soft body impacts indicated in table 5 with deflections < L/150.

2.1.7.2.3 Finishes

Ippon Panels® have been submitted to test methods related to serviceability of finishes according to its intended use. The results are stated in table 7:

⁷ The organic coating of external face in Ippon Panels® Light is polyester (see description in table A1.1).

Characteristic	Test method	Ippon Panels® (external face finish)	Results
Coating hardness	EN ISO 2815	Artec PE (<i>Umbra</i>)	No trace of penetration after applying a 500 g load with Buchholz indentation hardness tester. Length of trace L = 0 mm.
		Artec FR (<i>Burgundi</i>)	
		Artec FR (<i>Grey</i>)	
		Artec FR (<i>Dark grey</i>)	
Resistance to cracking on bending	EN ISO 1519	Artec PE (<i>Umbra</i>)	There is no sign of cracking or detachments in the specimens after bending them along the milled axis.
		Artec FR (<i>Burgundi</i>)	
		Artec FR (<i>Grey</i>)	
		Artec FR (<i>Dark grey</i>)	
Adhesion of coating	EN ISO 2409	Artec PE (<i>Umbra</i>)	After scratching a cross and peeling it with adhesive tape, no quadrants of the cross have been detached. The coating is classified with a degree of 0 according to EN ISO 2409.
		Artec FR (<i>Burgundi</i>)	
		Artec FR (<i>Grey</i>)	
		Artec FR (<i>Dark grey</i>)	

Table 7: Results of serviceability tests in finishes.

2.1.7.3 Identification of products

The ETA is issued for the product on the basis of agreed data/information, deposited with the Catalonia Institute of Construction Technology which identifies the panels that have been assessed and judged. Identification tests have been carried out on components, which confirm that the product under assessment conforms to its declared characteristics.

The basic description of Ippon Panels® and its components are given in chapter 1.1 and Annex 1 of this ETA. Tests have been conducted that confirm this identification.

3 Evaluation of Conformity and CE marking

3.1 Attestation of Conformity

According to the systems of attestation of conformity specified by the European Commission in mandate Construct 97/354 Rev.1, (amended with the EC Decision 2000/447/EC) and the characteristics of the manufacturing process of Ippon Panels®, the systems which apply to the attestation of conformity of this product are:

System 1 for panels (Ippon Panels® Artec FR).

- In uses subject to reaction to fire regulations with Euroclass B*

* Products/materials for which a clearly identified stage in the production, results in an improvement of the reaction to fire classification.

System 4 for uses other than those specified above (Ippon Panels® Artec FR, Artec PE and Light):

- In uses subject to reaction to fire regulations with Euroclass F

The tasks for the involved parties under system 1 are as follows:

Tasks of the manufacturer:

- Factory production control.
- Further testing of samples taken at the factory in accordance with a prescribed test plan.

Tasks of the approved body:

- Initial type testing of the product.

- Initial inspection of the factory and of factory production control.
- Continuous surveillance, assessment and approval of factory production control.

The tasks for the involved parties under system 4 are as follows:

Tasks of the manufacturer:

- Factory production control.
- Initial type testing of the product.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed in accordance with the *Control Plan*. This production control system shall ensure that the product is in conformity with this European technical approval (ETA).

Only the raw materials and materials stated in the technical documentation of this European technical approval may be used in the production of the products.

The factory production control shall be in accordance with the *Control Plan* (May 2010) relating to this European technical approval ETA, which is part of the technical documentation of this European technical approval. The *Control Plan* is laid down in the context of the factory production control system operated by the manufacturer and deposited with the ITeC.⁸

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the *Control Plan*. On request they shall be presented to the ITeC.

The personnel involved in the production process shall be identified, sufficiently qualified and trained to operate and maintain the production equipment. Machinery and equipment shall be regularly maintained and this shall be documented. All processes and production procedures shall be recorded at regular intervals.

All testing equipment is maintained, calibrated and/or verified against measurement standards traceable to relevant international or national measurement standards.

The manufacturer ensures that handling, preservation and storage of test equipment is such that its accuracy and fitness for purpose is maintained. The calibration of all test equipment shall be repeated if any repair or failure occurs which could upset the calibration of the test equipment.

The manufacturer shall maintain a traceable documentation of the production process from purchasing or delivery of raw or basic raw materials up to the storage and delivery of finished products.

Products that do not comply with requirements as specified in the ETA shall be separated from the conforming products and marked as such. The manufacturer shall register non-compliant production and action(s) taken to prevent further non-conformities. External complaints shall also be documented, as well as actions taken.

3.2.1.2 Testing of samples taken at the factory

The testing of samples taken at the factory shall be carried out in accordance with the *Control Plan*.

⁸ The *Control Plan* is a confidential part of the European technical approval and only handed over to the approved body or bodies involved in the procedure of attestation of conformity.

3.2.1.3 Other tasks of the manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 in the field of self supporting composite lightweight panels in order to undertake the actions laid down in section 3.2.2. For this purpose, the *Control Plan* referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of the European technical approval ETA 11/0420 issued on 6.02.2012.

3.2.2 Tasks of approved bodies

The approved body shall perform the activities referred to above according to the specific conditions, in accordance with the provisions laid down in the *Control Plan* relating to this ETA.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

3.2.2.1 Initial type testing

The verifications on which this ETA is based have been carried out on representative samples from the current production. The results of the tests performed as part of the assessment shall be used for initial type-testing (ITT) unless changes in the manufacturing procedure affect the product properties.

Any change in the manufacturing procedure which may affect the properties of the product shall be notified and the necessary type-testing revised according to the *Control Plan*.

3.2.2.2 Initial inspection of factory and the factory production control

The approved body shall assess the factory production control system to check that the factory production control is in conformity with this European Technical Approval and any subsidiary information. The approved body shall ensure that the manufacturer has acceptable premises, technical equipment and competent staff to produce the product as described in this European Technical Approval.

3.2.2.3 Continuous surveillance, assessment and approval of factory production control

Continuous surveillance of the factory production control is necessary to ensure continuing conformity with the ETA. It is recommended that surveillance inspections be conducted at least twice per year.

3.2.2.4 Certification

Once the ITT, the initial inspection and surveillance of the FPC have been performed and whether a favourable conclusion can be drawn on the basis of available information, the notified certification body shall issue an EC Certificate of product Conformity, permitting the manufacturer to issue an EC Declaration of Conformity, enabling CE Marking of the product.

In cases where the provisions of this European Technical Approval and its *Control Plan* are no longer fulfilled, the certification body shall withdraw the certificate and inform the Catalonia Institute of Construction Technology (ITeC) without delay.

3.3 CE marking


3.3.1 General

The CE marking shall be affixed on each panel, on a label attached to the packaging of panels or on the accompanying documents. The letters “CE” shall be followed by the identification number of the approved certification body, where relevant, and be accompanied by the following additional information:

- The name and address of the ETA-holder.
- The last two digits of year in which the CE marking was affixed.
- The number of the EC Certificate of Conformity for the product.
- The number of the European Technical Approval.
- The reference of ETA-Guideline 016 part 3 or 4
- Panel commercial code: this code identifies the panel type and correlates it with its declared performances in ETA.

3.3.2 Example of CE marking

Example of CE marking and accompanying information for panels:

 nnnn	Letters “CE”
nnnn	Identification number of notified certification body
Amari Metals SLU Polígono industrial El Pla-Riera Can Pahissa 08750 Molins de Rei Barcelona-Spain YY	Name and address of the ETA-holder
YY	Two last digits of year of affixing the CE marking
ETA-11/0420 ETAG 016	Number of European technical approval
Parts 1 & 3 Self-supporting composite lightweight panels for use in external walls and claddings	Number of guideline for European technical approval
Ippon Panel® Artec FR	Product commercial code

4 Assumptions under which the fitness of the product(s) for the intended use was favourably assessed

The European Technical Approval is issued for the products on the basis of agreed data/information deposited with the ITeC, which identifies the products that have been assessed and judged. Changes to the products or production processes, which could result in this deposited data/information being incorrect, should be notified to ITeC before they are introduced. ITeC will decide whether such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and, if so, whether further assessment or alterations to the ETA shall be necessary.

The detailed description and conditions of the manufacturing process of Ippon Panels®, and all the relevant design and installation criteria of Ippon Panels® cladding are specified in the technical documentation of the manufacturer deposited with the ITeC. The main aspects of this information are specified in the following chapters.

4.1 Manufacturing

Ippon Panels[®] are manufactured in the factory by bonding the layers which constitute each panel, by means of thermal adhesion. The manufacturing process comprises basic production stages: pre-treating of coils, lacquer-coating of coils, panel assembling and final cutting. The panels are supplied in different sizes as stated in table 1 of ETA.

The European Technical Approval is issued for the product on the basis of agreed data/information, deposited with the ITeC, which identifies the product that has been assessed and judged. Changes to the panels or production process, which could result in this deposited data/information being incorrect, should be notified to the ITeC before they are introduced. The ITeC will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so, whether further assessment or alterations to the ETA shall be necessary.

4.2 Design

Ippon Panels[®] are fit for use as cladding elements in internal and external walls. The specific fitness of each type of panel type and configuration to each specific application will depend upon the fulfilment of all the exact requirements of the work.

- Fire requirements: reaction to fire and external fire performance
- Dangerous substances requirements
- Safety in use requirements (mechanical resistance, impact resistance, resistance to fixings, resistance to eccentric loads)
- Durability and serviceability requirements

This ETA gives all the performance data of Ippon Panels[®], for each of the above requirements, necessary to decide which type/s of panels meets all the requirements of the work.

The design of the cladding using Ippon Panels[®] should observe the following criteria:

- Ippon Panels[®] are conceived to be cladding elements (decorative finishing of a wall). Thus thermal and acoustical insulation as well as air and water tightness requirements have to be performed by the substrate.
- A ventilated air space will be required between the cladding and the substrate to prevent water condensation accumulation as well as high temperatures in the cladding due to direct solar radiation.
- The cladding elements should be designed so as to prevent permanent deflections or collapse in Ippon Panels[®]. The mechanical resistance of the cladding elements depends on its dimensions, shape and fixing system. Characteristic values for minimum fixing solutions are given in clause 2.1.4.1.2. When high suction loads are expected (in coastline locations or any other high wind location, or in the eaves, gable ends and ridges, at any location), the use of more fixing points per support, more robust fixings and a revision of panels size and shape is needed.
- The thermal expansion of every type of panel is to be taken into account for designing the shape and fixing system of the cladding elements. Values of thermal expansion coefficient of Ippon Panels[®] are given in Annex 1.

4.3 Installation

The fitness for use of the cladding can be assumed only if the installation is carried out according to the instructions stated in the technical documentation of the manufacturer, in particular taking the following main points into account:

- Prior to installation, panels must be transformed into cladding elements according to the design criteria of the cladding and the final expected service conditions.
- Appropriate means must be used to cut the panels to the required geometry, handle and fix the panels onto the subframe.
- The installation and fastening of panels on the subframe must respect the layout defined in the project: election of support profiles, minimum number of cladding fixings, minimum number of subframe fixing devices, air space, cavity barriers, etc.

- A joint is needed between consecutive cladding elements in order to permit the dimensional variations of the panel caused by thermal expansion. The width of the joint depends on the dimensions of the panel and shall be done according to the design criteria of the cladding.
- The reaction to fire class of Ippon Panels[®] Artec FR depends on the installing conditions stated in Annex 1.

4.4 Manufacturer's responsibilities

It is the manufacturer responsibility to make sure that all those who use the product are appropriately informed of the specific conditions according to sections 1, 2, 4 and 5, including the annexes to this ETA.

5 Recommendations

5.1 Recommendations on packaging, transport and storage

The panels are piled up forming horizontal beds and secured with metal or plastic strips and wrapped with a plastic foil. The panels must rest on 3 wooden laths to prevent the contact of panels with wet floors and are wrapped up with metal strips and a wooden panel on the top.

It is recommended that the panels are protected from direct sunlight and rain during their transport and storage.

The panels and the pallets must be handled with care to avoid sudden drops which might damage the panels, their edges and their finishing faces.

The storage of the product is subject to the following conditions:

- The pallets should be stored protected from sun and rain to avoid the aging of the protective foil. They should not be unwrapped nor the protective foil be removed before their use.
- The maximum amount of piled wooden laths is 7 (on a sound base).
- Temperature conditions of the panels at installation must be as close as possible to their expected service conditions.

5.2 Recommendations on use, maintenance and repair

Adequate durability of Ippon Panels[®] cladding depends on an adequate maintenance of the cladding, which needs to be regularly cleaned and checked for possible corrosion or blistering in panels, especially in edges and at any point of the cladding where water and dust leak or accumulate.

It is the responsibility of the manufacturer to ensure that the information on these provisions is given to those concerned.

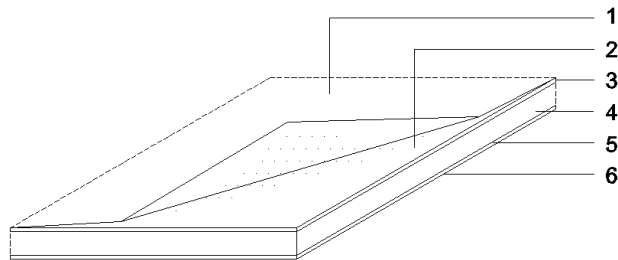
On behalf of the Catalonia Institute of Construction Technology.

Barcelona, 6th February 2012

Anton Maria Checa Torres

General Manager, ITeC

ANNEX 1: Description of products



- | | |
|---|-------------------------|
| 1. Protective film (to be retired once installed) | 4. Core (e3). |
| 2. Organic coating (e1) | 5. Aluminium face (e4) |
| 3. Aluminium face (e2) | 6. Organic coating (e5) |

Figure A1: Generic view of Ippon Panels®.

(*) The values for e1 to e5 are defined in table A1.1 in this annex 1.

Range of Ippon Panels® covered by ETA

Panel characteristic	Ippon Panel®			Tolerance
	Artec FR	Artec PE	Light	
Surface mass (kg/m ²)	7,00	5,50	4,00	± 5 %
Reaction to fire classification of the panel	B-s1,d0 ⁹	F ¹⁰	F ¹⁰	--
Linear thermal expansion coefficient (10 ⁻⁶ /°C)	< 19,4	< 26,0	--	--
Layer characteristic				
e1 - Organic coating of external face and thickness (µm)	PVDF ¹¹ > 25	PVDF ¹¹ > 25	Polyester > 15	--
e2 / e4 - Thickness of aluminum faces (mm)	0,50	0,50	0,30	± 0,04 mm
e2 / e4 - Aluminum alloy of faces	EN AW-3003-H42	EN AW-3003-H42	EN AW-1100-H18	--
e3 - Thickness of core (mm)	3,0	3,0	2,4	± 0,5%
e3 - Core	LDPE ¹² with mineral filler	LDPE ¹²	LDPE ¹²	--
e5 - Organic coating of internal face and thickness (µm)	Polyester > 15	Polyester > 15	Polyester > 15	--

Table A1.1: Declared characteristics of Ippon Panels®.

⁹ The reaction to fire class of Ippon Panels® Artec FR corresponds to reinforced cassettes in end use conditions as specified by the manufacturer: riveted to a frame, with horizontal and vertical open joints of 10 mm between panels, an air space > 50 mm and open side, bottom and top edges. This reaction to fire class is not given for granted if additional layers, insulation layer or other cladding elements are installed.

¹⁰ The reaction to fire performance of this type of Ippon Panels® has not been determined (NPD) and thus they are classified as Euroclass F.

¹¹ Polyvinylidene fluoride.

¹² Low density polyethylene.

ANNEX 2: Ippon Panels[®] as cladding elements

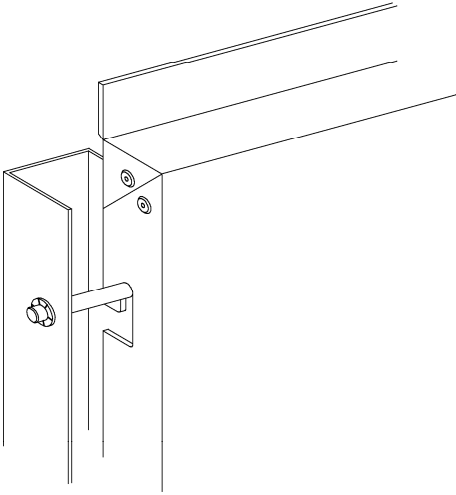


Figure A2.1: Layout of suspended cassettes.

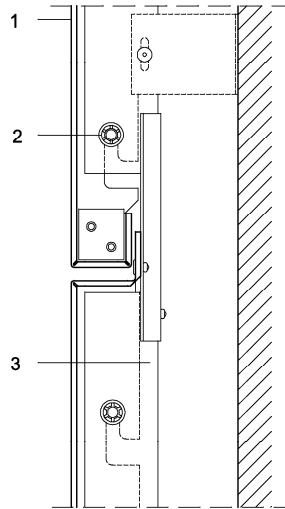


Figure A2.4: Vertical section of suspended cassettes.

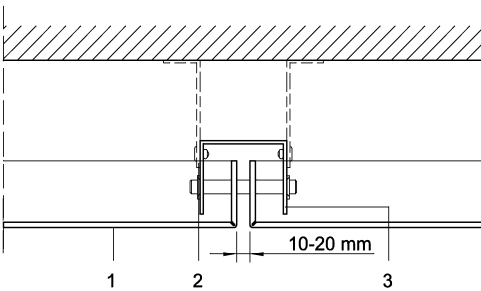


Figure A2.2: Horizontal section of suspended cassettes.

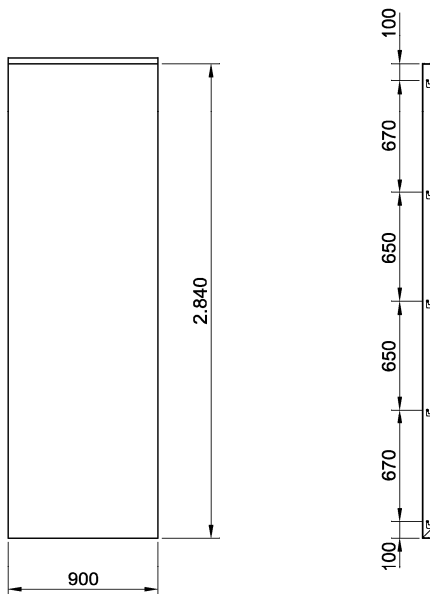


Figure A2.3: Suspended cassettes tested on impact resistance tests.

1. Ippon Panel: suspended cassettes.
 2. Fixing system: slots suspended on pins.
 3. Subframe: aluminium alloy profile.
- (dimensions in mm).

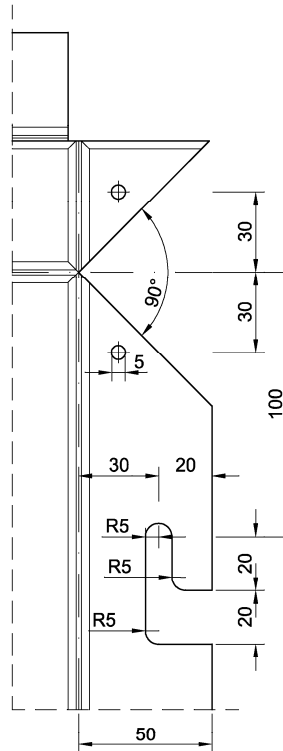


Figure A2.5: Milling of slots in suspended panels.

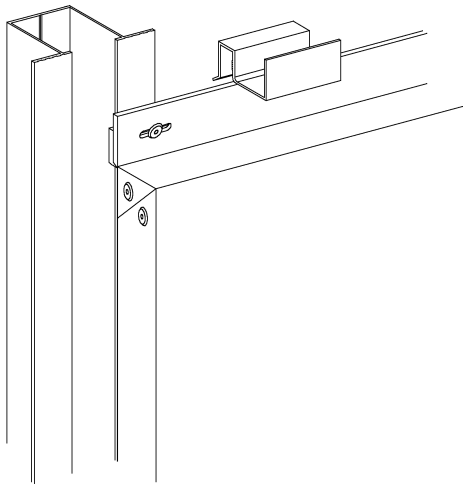


Figure A2.6: Layout of reinforced cassettes.

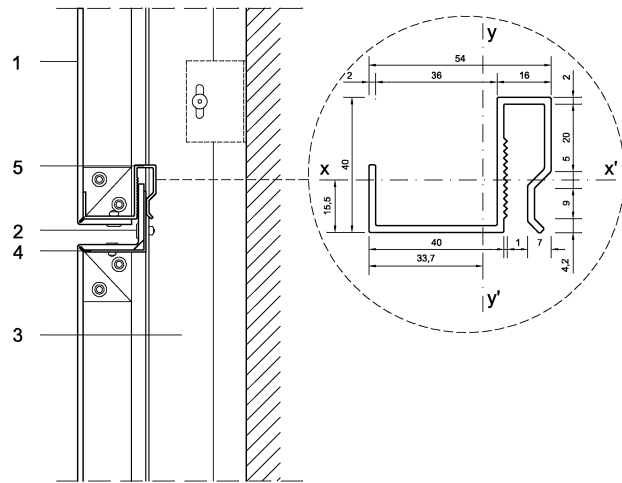


Figure A2.9: Vertical section of reinforced cassettes.

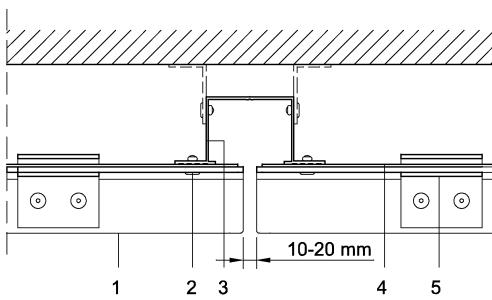


Figure A2.7: Horizontal section of reinforced cassettes.

1. Ippon Panel: reinforced cassettes.
 2. Fixing system: rivets or self drilling screws.
 3. Subframe: aluminium alloy profile.
 4. Panel reinforcement of aluminium alloy profile.
 5. Retaining cramp of aluminium alloy profile.
- (dimensions in mm).

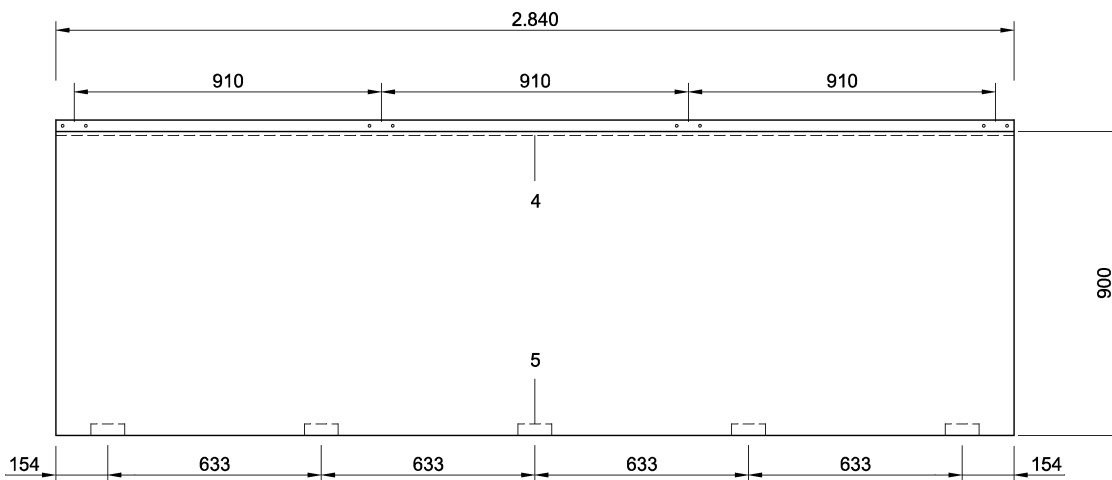


Figure A2.8: Reinforced cassettes tested on impact resistance tests.

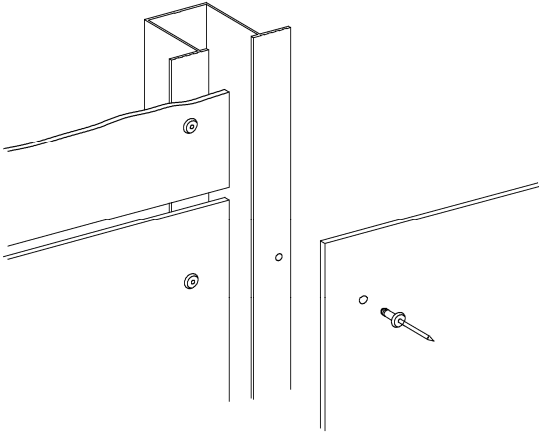


Figure A2.10: Layout of flat panels.

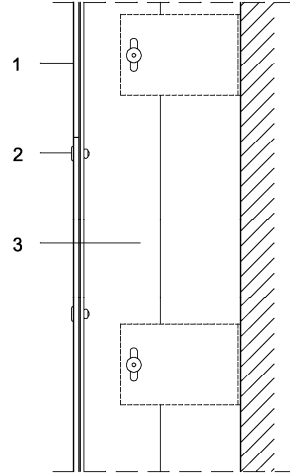


Figure A2.13: Vertical section of flat panels.

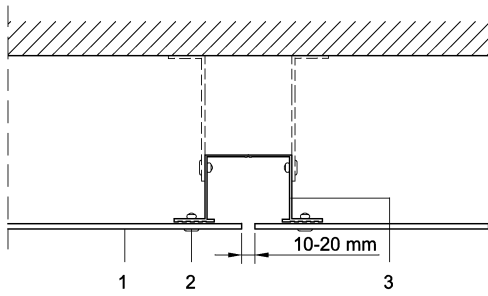


Figure A2.11: Horizontal section of flat panels.

- 1. Ippon Panel: flat panels.
 - 2. Fixing system: rivets or self drilling screws.
 - 3. Subframe: aluminium alloy profile.
- (dimensions in mm).

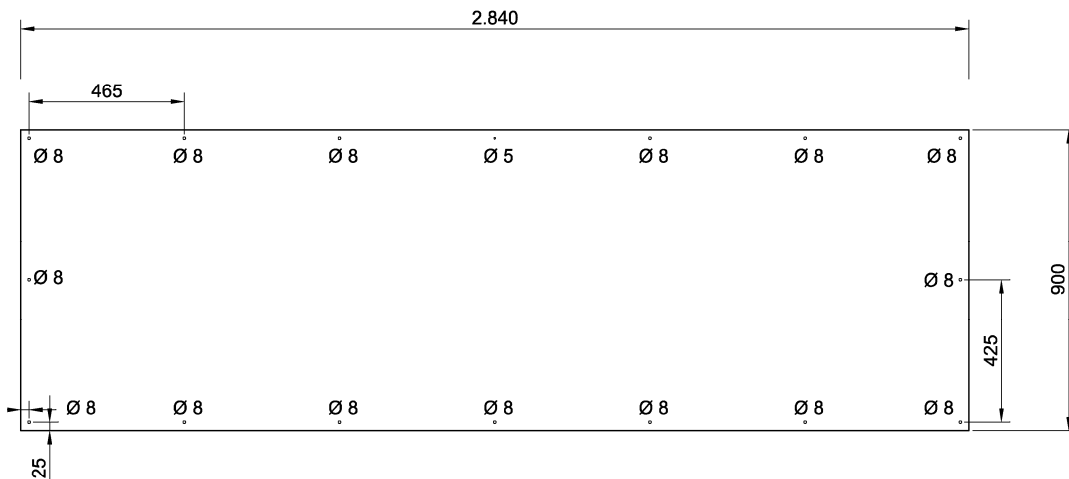


Figure A2.12: Flat panels tested on impact resistance tests.