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DE LA CONSTRUCCIÓN
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European Technical Assessment

ETA-13/0347 of 28/05/2018

General Part

Technical Assessment Body issuing the European Technical Assessment:

Instituto de ciencias de la construcción Eduardo Torroja (IETcc)

Trade name of the construction product

TERMOKLINKER®

Product family to which the construction product belongs

Veture kits- Prefabricated Units for external wall insulation.

Manufacturer

CERÁMICA ELU, S.L. (GRUPO LA PALOMA)
C/ Arrabal s/n
45240 PANTOJA (Toledo) - Spain.
<https://ceramica-lapaloma.com>

Manufacturing plant(s)

CERÁMICA ELU, S.L. (GRUPO LA PALOMA)
Camino del ferrocarril s/n. 45290
Pantoja (Toledo). Spain

This European Technical Assessment contains

17 pages including 2 Annex(es) which form an integral part of this assessment.

Annex 2 contains confidential information and is/are not included in the European Technical Assessment when that assessment is publicly disseminated

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

ETAG 017 Veture kits – Prefabricated units for external wall insulation, edition 2005 used as EAD

English translation prepared by IETcc

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Specific parts

1. Technical description of the product

The veture kit “*TERMOKLINKER*” is designed and installed in accordance with the ETA-holder instructions, deposited at the *Instituto de Ciencias de la Construcción Eduardo Torroja*, (from now IETcc). The kit comprises prefabricated panels, profiles (if necessary), mechanical fixings and ancillary items. The components may be produced by the ETA-holder or supplied to him. The ETA holder is the ultimately responsible for the kit. This kit is classified as type B (veture unit fixed through insulation layer). The prefabricated veture units (panels) are made of an insulation material (XPS) bonded in factory to an external discontinuous skin of ceramic slips, with a grouting mortar applied on-site. The panels are fixed with mechanical fixings and ancillary items. They will be sealed with a sealant and grouted with a grouting cement-based mortar. These components are described below.

1.1 Definition of the kit

Table 1

| Components | Material | Thickness (mm) |
|---|--|----------------|
| Prefabricated veture units (panels). Standard size (Length x Height): 1240 x 600 mm**. | Insulation layer: Extruded polystyrene (XPS) boards, according to EN 13164 ⁽¹⁾ , without skin and straight-edged. - Dimensions: <ul style="list-style-type: none"> Length: 1240 mm (+0/-2mm) Width: 600 mm (+0/-2mm) Thickness: variable, one single piece (± 0.5 mm) - Nominal density: 35 kg/m ³ . | 30-80 mm |
| | Skin: Ceramic brick slips, type All _{a-2} UGL, according to Standard EN 14411 ⁽²⁾ , with absorption lower than 6%. Dimensions: 236x51x18**. | -- |
| | Adhesive: Type C2TES2, according to EN 12004-1 ⁽³⁾ , cement-based adhesive (C), with high performance (2), reduced slippery feature (T), longer open holding time (E), and very flexible (S2). | -- |
| | Ancillary items for fixing (included from factory): Fixing discs, included in the panel (5 per unit)** in factory, with distributive function. Dimensions: Outer ring: \varnothing 60mm, inner ring: \varnothing 8.5mm, truncated-cone. Height: 7.5 mm | -- |
| Profiles and mechanical fixings | Starting profile: Angle-shaped aluminium starting profile to place the bottom row of panels. | -- |
| | Mechanical fixing devices: Fixing \varnothing 8 mm (with CE marking and admissible load 0.58 kN) with disc (described above, for distribution function, and assessed in point. 2.2.3.2.2 in this ETA), which can be substituted by a plastic anchor, according to ETAG 014 or EAD 330196-00-0604 ⁽⁴⁾ . | |
| Ancillary items | Sealant among panels One-component sealant based on silicone rubber with neutral crosslinking. Grouting mortar Applied on-site, type CG2 according to EN 13888 ⁽⁵⁾ (CG: cement-based mortar, class 2: for improved quality joints). Joint size: 5-30 mm (according to the supplier). | -- |

** Remark: Different sizes, if required, to be asked to the ETA-Holder.

1 EN 13164:2012+A1:2015 Thermal insulation products for buildings. Factory made products of extruded polystyrene foam. (XPS). Specification

2 EN 14411:2016. Ceramic tiles. Definitions, classification, characteristics, assessment and verification of constancy of performance and marking

3 EN 12004:2017-1: Adhesives for ceramic tiles - Part 1: Requirements, assessment and verification of constancy of performance, classification and marking

4 ETAG 014: Plastic Anchors for ETICS, superseded by EAD 330196-00-0604 and EOTA TR051

5 EN 13888: 2009. Grout for tiles - Requirements, evaluation of conformity, classification and designation

English translation prepared by IETcc

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

This veture kit TERMOKLINKER® is intended to be used as a satisfactory external thermal insulation for building walls. The walls may be made of masonry (e.g. bricks, blocks, stones) or concrete (cast on site or as prefabricated panels). This kit is made of non load-bearing construction elements. It does not contribute to the stability of the wall on which is installed, and neither to ensure the air tightness of the building structure but it can contribute its durability by providing enhanced protection from the effects of outdoor.

The provisions made in this European Technical Assessment are based on an assumed working life of 25 years as minimum, provided that the conditions laid down in section 5 for the packaging, transport, storage, installation as well as appropriate use, maintenance and repair are met. 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 product according to the expected working life of the works in an economically reasonable way.

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

3.1 General

The identification tests and the assessment of this kit were carried out according to the Basic Work Requirements in compliance with the ETA Guidance n. 017: VETURE Kits – Prefabricated units for external wall insulation (from now on “ETAG 017”) used as EAD. The characteristic values (of the components as well as the kit) not mentioned in this ETA nor in its annexes shall correspond to the respective ones laid down in the technical documentation of this ETA, checked by IETcc.

3.2 Characteristics of the kit

3.2.1 Reaction to fire

The tests have been carried out by the AFITI-LICOF laboratory. The obtained Euroclass (according to EN 13501-1) ⁽⁶⁾ was B-s1,d0. The tests were carried out on a sample according to the Annex E of the ETAG 017, using the configuration to cover the influence of the above parameters (thickest insulation: 80 mm).

Furthermore, an Extended Application report (so-called EXAP) on the fire performance of construction products and building elements, according to EN 15725 ⁽⁷⁾, which has been carried out to cover with this Euroclass all the variations of the kit given in this ETA. An additional assessment of the system according to the national provision (e.g. on the basis of a large scale test) might be necessary to comply with Member State Regulations, as long as the harmonized system is not available.

(6) EN 13501-1: Fire classification of construction products and building elements-Part 1: Classification using data from reaction to fire tests.

(7) EN 15725:2011/AC:2012: Extended application reports on the fire performance of construction products and building elements

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3.2.2 Hygiene, health and environment

3.2.2.1 Watertightness (resistance to driving rain) and water permeability

These characteristics have been assessed taking in to account:

- Visual appraisal of veture units/joints (design and geometry) and the nature of the materials.
- Visual appraisal of available experience on site.
- Tests on a rig size (length x width: 1800 mm x 2400 mm) without retaining device, since the kit does not include it (according to method A of EN 12865)⁽⁸⁾.

Following results were obtained:

Table 2

| | | |
|--|----------------|--|
| Panel TERMOKLINKER® (L x H x T = 1240 x 600 x variable mm) + sealant among panels+ grouting mortar. | Type II (9) | - No water penetration - No water diffusion - No damages |
|--|----------------|--|

3.2.2.2 Water vapour permeability (resistance to water vapour diffusion)

No performance assessed (without tests, since no condensation risk was defined)

3.2.2.3 Capillarity

Capillarity tests have been carried out according to 5.3.4.1 of the ETAG 017. The results are less than 1 kg/m² for one hour, and less than 0.5 kg/m², so the freeze/thaw test is not necessary.

3.2.2.4 Resistance to hygrothermal cycles

These tests are carried out according to 5.7.1.1 “hygrothermal behaviour” of ETAG 017, obtaining an acceptable result: None of the defects specified at ETAG 017 were observed: blistering, detachment, loss of adhesion, bowing, formation of cracks, efflorescence, or colour changes.

3.2.2.5 Resistance to freeze-thaw cycles

Since in capillarity test have been obtained satisfactory results, this test is not necessary.

3.2.2.6 Content, emission and/or release of dangerous substances

The manufacturer has declared to be in conformity to the Directive 67/548/EEC ⁽¹⁰⁾ and its amendments. The manufacturer declares that in the core material there is an amount above 0.1% on weight of Hexabrome Cyclodecane (HBCD, CAS NUMBER: 2563-99-4) contained as Masterbach and used as flame retardant. In addition to the specific clauses relating to dangerous substances contained in this ETA, there may be other requirements applicable to the product falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Regulation UE 305/2011, these requirements need also to be complied with, when and where they apply.

(8) EN 12865:2001. Hygrothermal performance of building components and building elements. Determination of the resistance of external wall systems to driving rain under pulsating air pressure.

(9) No amount of water can reach the substrate.

(10) Directive on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances, published OJ 196 , 16.8.1967 superseded by Regulation CE n°. 1272/2008

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3.2.3 Safety in use

3.2.3.1 Wind load resistance

As the insulation material (XPS) of panel *TERMOKLINKER*[®] is a cellular plastic, test has been carried out according to § 5.4.1.1 of ETAG 017 carrying out only a static test. Therefore wind fatigue test was not relevant. As there is no gap between skin and insulation material, wind pressure tests were also not relevant.

This veture kit has not been assessed for non vertical applications.

3.2.3.1.1 Wind suction

Acceptable behaviour is considered according to Table 3.

Table 3

| System Composition | Failure value Q (Pa) |
|---|---|
| Panel <i>TERMOKLINKER</i> [®] (L x H x T = 600 x 1240 x thickness variable mm) | Reached the maximum applicable load (4000 Pa) without failure |

3.2.3.2 Mechanical resistance

As this veture kit belongs to family type B, the following characteristics have been assessed:

3.2.3.2.1 Bond strength between skin and insulation product

Tests were carried out at initial state according to § 5.4.2.1. of ETAG 017.

The average value of this veture unit was 0.366 N/mm². The characteristic value was 0.083 N/mm², greater than the required 0.08 N/mm².

3.2.3.2.2 Resistance of fixing through insulation layer.

It has been assessed following § 5.4.2.2.1 of ETAG 017. The average failure value was 940.2 N, and the characteristic value was 836.9 N. The failure was fixing punching.

3.2.3.2.3 Dead load test

It has been assessed following § 5.4.2.3 of ETAG 017. The samples are panels *TERMOKLINKER*[®] 1240 x 600 x (30 and 80) mm. The results obtained were:

Table 4

| Time (h) | Deflection for thickness 30 (mm) | Deflection for thickness 80 (mm) |
|----------|----------------------------------|----------------------------------|
| Initial | 0 | 0 |
| 0.25 | 0 | 0 |
| 0.50 | 0 | 0 |
| 0.75 | 0 | 0 |
| 1.00 | 0 | 0 |

3.2.3.2.4 Displacement test

No displacement test was required, since Exd <50000 N/mm for the skin (grouting mortar), according to art. 5.4.2.4. from ETAG 017.

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3.2.3.3 Resistance to horizontal point load

During the test, no permanent deflection, failure or perforation of the skin is noted. The veture kit is capable of accommodating the horizontally applied loads acting on its surface arising from maintenance, without any reduction of its performances.

3.2.3.4 Impact resistance

It has been assessed following § 5.4.5 of ETAG 017. The results lead to the following class:

Table 5

| Sample composition | Use category |
|---|-------------------|
| Panel <i>TERMOKLINKER</i> [®] (L x H x T): 1240 x 600 x 30 mm. | I ⁽¹¹⁾ |

3.2.3.5 Shatter properties

Before and after the impacts, kit did not present sharpened or cutting edges and their surface do not cause bodily injury to the occupants or people nearby.

3.2.4 Protection against noise

No performance assessed

3.2.5. Energy economy and heat retention

The thermal resistance of the substrate wall, covered by the kit, is calculated following the formulae described below (according to EN ISO 6946, EN ISO 10211-1, and EN ISO 10211-2) ⁽¹²⁾.

$$R_{\text{façade}} = R_{\text{se}} + R_{\text{system}} + R_{\text{subs}} + R_{\text{si}}$$

Where

R_{system} : Thermal resistance of the system, depending on the XPS thickness:

$$R_{\text{system}(30,60)} = R_{\text{skin}} + R_{\text{adh}} + R_{\text{XPS}(30,60)}$$

| | | |
|---|---------|--|
| $R_{\text{system}(30)} = R_{\text{skin}} + R_{\text{adh}} + R_{\text{XPS}(30)}$ | =0.9073 | >0.5 m ² .K/W (requirement from ETAG 017) |
| $R_{\text{system}(60)} = R_{\text{skin}} + R_{\text{adh}} + R_{\text{XPS}(60)}$ | =1.7897 | |

R_{skin} : Thermal resistance of the skin:

(The skin-layer surface is composed by stoneware at 76.6% and mortar at 23.4%, obtaining the following $R_{\text{t}_{\text{skin}}}$ value:

$$R_{\text{t}_{\text{skin}}} = R_{\text{tile}} \times 0.766 + R_{\text{mortar}} \times 0.234 = 0.0263 \times 0.766 + 0.0138 \times 0.234 = 0.0234 \text{ K.m}^2/\text{K}$$

R_{adh} : Thermal resistance of the adhesive:

$$R_{\text{adh}} = 0.0015 \text{ m}^2.\text{K/W}$$

(11) A zone readily accessible at ground level to the public and vulnerable to hard body impacts but not subjected to abnormally rough use.

(12) EN ISO 6946: 996. Building components and building elements. thermal resistance and thermal transmittance. Calculation method.

EN ISO 10211-1:1995. Thermal bridges in building construction. Heat flows and surface temperatures. Part 1: General calculation methods.

EN-ISO 10211-2:2001 Thermal bridges in building construction. Heat flows and surface temperatures. Part 2: Linear thermal bridges.

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R_{XPS} : Declared thermal resistance ⁽¹³⁾ of XPS insulation $m^2.K/W$:
 $R_{XPS,30}=0.8824$, for XPS with 30 mm of thickness
 $R_{XPS,60}=1.7648$, for XPS with 60 mm of thickness

R_{subs} : Thermal resistance of the substrate of the wall.

R_{se} : External superficial thermal resistance.

R_{si} : Internal superficial thermal resistance.

The action of thermal bridges (screws covered by plastic plugs and discs) is considered as not relevant.

3.2.6 Durability and serviceability

3.2.6.1 Temperature, humidity and shrinkage

According to 2.2.2.4 this kit has an acceptable behaviour. None of the defects described at ETAG 017 was observed. The average value of this veture unit was 0.27 N/mm². The characteristic value was 0.23 N/mm².

3.2.6.2 Freeze-thaw resistance

This test is not relevant, since with capillarity test satisfactory results have been obtained (see apt. 2.2.2.3.).

3.2.6.3 Dimensional stability

This characteristic has been assessed taking into account:

- Skin: Acceptable behaviour as ceramic slip has a linear thermal expansion coefficient of $7-10 \times 10^{-6} K^{-1}$ (obtained according to EN ISO 10545-8)⁽¹⁴⁾.
- Insulation product: Acceptable behaviour as XPS insulation has 0.07 mm/m.K (see table 9) as dimension stability under specified temperature and humidity conditions (obtained according to EN 1604)⁽¹⁵⁾.

3.2.6.4 Resistance to thermal shock cycles

According to ETAG 017 § 5.7.3.3 this kit is not necessary since the kit has already been subjected to the test described in 5.7.1.1. (see apt. 2.2.6.1. in this ETA).

3.2.6.5 Chemical and biological resistance

According to ETAG 017 § 5.7.4 this kit has an acceptable behaviour without testing as its skin of ceramic slip and grouting mortar, is not sensitive to these attacks.

(13) $R_0 = \text{insulation thickness (m)} / \lambda_0 \text{ (W/mK)} = e / 0,034$.

(14) EN ISO 10545-8:2014. Ceramic tiles. Part 8: Determination of linear thermal expansion.

(15) EN 1604:2013 Thermal insulating products for building applications determination of dimensional stability under specified temperature and humidity conditions.

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3.2.6.6 Corrosion resistance

The stainless steel fixations foreseen for this kit have an acceptable behaviour without testing, according to requirements specified at EN ISO 3506-1 ⁽¹⁶⁾: Type A2 are foreseen for general environment and Type A4 for marine environments.

3.2.6.7 UVA radiation resistance

According to ETAG 017 § 5.7.6 this kit has an acceptable behaviour without testing as its skin of ceramic slip is not sensitive to this attack.

3.2.7 Sustainable use of natural resources

No performance assessed.

3.3 Characteristics of the components

Detailed information on the chemical composition and other identifying characteristics of the main following components, according to Annex C of ETAG 017, has been deposited at IETcc. Further information can be observed from the product data sheets, which are part of the Technical Documentation for this ETA.

3.3.1 Insulation product

CE marked (according to Annex ZA of EN 13164 ⁽¹⁾) and factory – prefabricated, uncoated (without skins) boards made of extruded polystyrene (XPS), having the description, characteristics and performances (as minimum) defined in the Table 6:

Table 6

| Characteristics | Procedure | Value |
|--|---------------------------|----------------|
| Reaction to fire (euroclass) | EN 13501-1 ⁽⁶⁾ | E |
| Squareness (mm) | EN 824 ⁽¹⁷⁾ | < 2 |
| Compression strength (N/mm ²) at 10% deformation | EN 826 ⁽¹⁸⁾ | 0.30 |
| Compression modulus (N/mm ²) | EN 826 ⁽¹⁸⁾ | 14 |
| Nominal density (kg/m ³) | EN 1602 ⁽¹⁹⁾ | 35 (±15%) |
| Thermal conductivity (declared value) λ_D at 10 °C (W/m.K) | EN 13164 ⁽¹⁾ | 0.034 |
| Tensile strength (N/mm ²) | EN 1607 ⁽²⁰⁾ | 0.50 |
| Tensile modulus (N/mm ²) | EN 1607 ⁽²⁰⁾ | 12 |
| Shear strength (N/mm ²) | EN 12090 ⁽²¹⁾ | 0.25 |
| Shear modulus (N/mm ²) | EN 12090 ⁽²¹⁾ | 8 |
| Water vapour resistance (ng/Pa.m.s) | EN 12086 ⁽²²⁾ | 1.2 - 3.5 |
| Water absorption (% vol) | EN 12087 ⁽²³⁾ | <1.5 |
| Thickness (mm) | EN 823 ⁽²⁴⁾ | 30-60 ± 0.5 |
| Length (mm) | EN 822 ⁽²⁵⁾ | 2500 ±10 |
| Width (mm) | EN 822 ⁽²⁶⁾ | 600/1200 +3/-0 |
| Dimensional stability | EN 1604 ⁽¹⁵⁾ | 0.07 mm/mK |

(16) EN ISO 3506-1:2009. Mechanical properties of corrosion-resistant stainless steel fasteners. Part 1: Bolts, screws and studs.

(17) EN 824:2013. Thermal insulating products for building applications. Determination of squareness.

(18) EN 826:2013. Thermal insulating products for building applications. Determination of compression behaviour.

(19) EN 1602:2013. Thermal insulating products for building applications. Determination of the apparent density.

(20) EN 1607:2013. Thermal insulating products for building applications. Determination of tensile strength of tensile strength perpendicular to faces.

(21) EN 12090:2013. Thermal insulating products for building applications. Determination of shear behaviour.

(22) EN 12086:2013. Thermal insulating products for building applications. Determination of water vapour transmission properties.

(23) EN 12087:2013. Thermal insulating products for building applications. Determination of long term water absorption by immersion.

(24) EN 823:2013.: Thermal insulating products for building applications. Determination of thickness.

(25) EN 822:2013 Thermal insulating products for building applications. Determination of length and width.

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3.3.2 Skin

CE marked (according to Annex ZA of EN 14411 ⁽²⁾) factory – prefabricated ceramic slips having the description, characteristics and performances (as minimum) defined in Table 7.

Table 7

| Characteristics | | Procedure | Value | |
|--|-------------------------|---------------------------------|--------------------------------|-------|
| Reaction to fire (Euroclass) | | EN 13501-1 ⁽¹⁾ | A1 | |
| Dimensions | Length deviation (%) | EN ISO 10545-2 ⁽²⁶⁾ | ≤ 2 (max. ±4mm) | |
| | Width deviation (%) | | ≤ 2 (max. ±4mm) | |
| | Thickness deviation (%) | | ≤ 10 | |
| Straightness (maximum) | Length (%) | | ≤ 1 | |
| | Width (%) | | ≤ 1 | |
| Squareness (average) | Length (%) | | ≤ 1 | |
| | Width (%) | | ≤ 1 | |
| Surface flatness | Curvature | | Central | ≤ 1.5 |
| | | | Length | ≤ 1.5 |
| | Width | | ≤ 1.5 | |
| | Warp | | | ≤ 1.5 |
| Surface appearance (presence of defects) (%) | | | | ≤ 5 |
| Flexural strength (N) | Rupture strength | | EN ISO 10545-4 ⁽²⁷⁾ | ≥ 900 |
| | Rupture module | 9 | | |
| Water absorption (%) | | EN ISO 10545-3 ⁽²⁸⁾ | ≤ 10 | |
| Thermal shock resistance | | EN ISO 10545-9 ⁽²⁹⁾ | Resistant | |
| Moisture expansion | (mm/m) | EN ISO 10545-10 ⁽³⁰⁾ | ≤ 0.2 | |
| | (%) | | ≤ 0.02 | |
| Frost resistance | | EN ISO 10545-12 ⁽³¹⁾ | Pass | |

3.3.3 Grouting Mortar

Table 8

| Characteristics | | Procedure | Value |
|------------------------------------|--|-------------------------|----------|
| Dwell time for mortar (min) | | EN 13888 ⁽⁵⁾ | 2-3 |
| Hardening time (hours) | | | 2-3 |
| Application temperature (°C) | | | +5 a +30 |
| Dust density (g/cm ³) | | | 1.3 |
| Water absorption after 30 min (g) | | | < 2 |
| Water absorption after 240 min (g) | | | < 5 |

3.3.4 Adhesive

Table 9

| Characteristics | | Procedure | Value |
|---|--|----------------------------|-----------|
| Granulometry (mm) | | EN- 12004-1 ⁽³⁾ | <0,5 |
| Bulk Density (dust) (kg/m ³) | | | 1125 ± 50 |
| Bulk Density (paste) (kg/m ³) | | | 1450 ± 50 |
| Mixing water (%) | | | 27-30 |
| Thickness of application (mm) | | | 3-6 |
| Adhesion under normal conditions (24h) (N/mm ²) | | | >0,5 |
| Adhesion under normal conditions (28d) (N/mm ²) | | | >1,0 |
| Adhesion after immersion (N/mm ²) | | | >1,0 |
| Adhesion after heat (N/mm ²) | | | >1,0 |

(26) EN ISO 10545-2:1997. Ceramic tiles. Part 2: Determination of dimensions and surface quality.

(27) EN ISO 10545-4:2014. Ceramic tiles. Part 4: Determination of modulus of rupture and breaking strength.

(28) EN ISO 10545-3:1997. Ceramic tiles. Part 3: Determination of water absorption, apparent porosity, apparent relative density and bulk density.

(29) EN ISO 10545-9:2013. Ceramic tiles, Part 9: Determination of resistance to thermal shock.

(30) EN ISO 10545-10:1997 Ceramic tiles, Part 10: Determination of moisture expansion.

(31) EN ISO 10545-12:1997 Ceramic tiles, Part 12: Determination of frost resistance.

English translation prepared by IETcc

| | | |
|---|--|---------|
| Adhesion after freeze-thaw cycles (N/mm ²) | | >1,0 |
| Adhesion on stoneware support in renovation (CSTB) (N/mm ²) | | >1,0 |
| Shear strength (CSTB) (N/mm ²) | | >2,0 |
| Racking (mm) | | 5,0-6,0 |
| Slipperiness (mm) | | <0,5 |
| Open time (min) | | >40 |
| Rectification time (min) | | 50 |
| Time to grouting (hours) | | 24 |
| Time to walkability (hours) | | 24 |
| Time to implementation (days) | | 3 |
| Paste lifetime (hours) | | 4 |
| Fire reaction (Euroclass) | | A1 |
| Dry consumption (6x6 mm trowel) (kg/m ²) | | 2,2-2,7 |

4.

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

According to the decision 97/556/EC of the European Commission ⁽³²⁾ amended by 2001/596/EC⁽³³⁾ the system 1, 3 or 4 of the AVCP applies depending on reaction to fire. Considering the Class B-s1,d0 (with testing) for the reaction to fire of the kit, the system of AVCP is 1.

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

5.1 Manufacturing

The components of the veture kit are manufactured in accordance with the provisions of the European Technical Assessment following the manufacturing process identified by IETcc during the inspection of the plant, and laid down in the technical documentation.

5.2 Installation

5.2.1 General

The kit is installed on site. It is the responsibility of the ETA-holder to guarantee that the information about design and installation of this kit is effectively communicated to the concerned people. This information can be given using this European Technical Assessment. Besides, all the data concerning the execution shall be clearly indicated on the packaging and/or the enclosed instruction sheets using one or several illustrations. Only components described in section 1.1 with characteristics according to chapter 3 can be used.

In any case, it is suitable to comply with the national regulations and particularly concerning fire and wind load resistance. The wall on which the kit is applied shall be sufficiently stable and airtight. Its stiffness shall be large enough to ensure that kit is not subjected to deformations, which could lead to damage. The requirements given in ETAG 017, chapter 7 have to be considered.

(32) Official Journal of the European Communities L229/14 of 20.08.1997.

(33) Official Journal of the European Communities L209/33 of 02.08.2001.

English translation prepared by IETcc

5.2.2 Design

The choice and the rate of the fixings shall be determined considering:

- The design wind load suction and the national regulations (taking into account the national safety factors, design rules, etc...)
- The characteristic resistance of the anchors into the considered substrate.
- Safety in use of the veture kit (as it is has been assessed at § 2.2.3).

5.2.3 Execution

The recognition and preparation of the substrate as well as the generalities about the execution of the kit shall be carried out in compliance with:

- Chapter 7 of the ETAG. 017.
- National regulations applicable.

The particularities in execution linked to the method of installation shall be handled in accordance with ETA holder prescriptions.

5.3. Packaging, transport and storage

Packaging of the components has to be such that the products are protected from moisture during transport and storage. Components can be stored closed and protected from weather. All of the components must be protected against damage, paying attention to the corners, since they are the weakest points, to prevent any damage and/or deterioration by hits.

The stacking of panels is not a problem, but it is not advisable to stick pallets, to avoid panel damage. For transporting, it is recommended not to submit the panels to pressures above the XPS resistance, which is 0.30 N/mm².

5.4. Use, maintenance and repair of the works

It is accepted that the veture kit shall normally be maintained in order to fully preserve its performances. Maintenance includes:

- The repairing of localised damaged areas due to accidents.
- The application of adequate products, possibly after washing or ad hoc preparation.

Necessary repairs should be done rapidly. Care should be taken using compatible products with veture kit.



Instituto de Ciencias de la Construcción Eduardo Torroja
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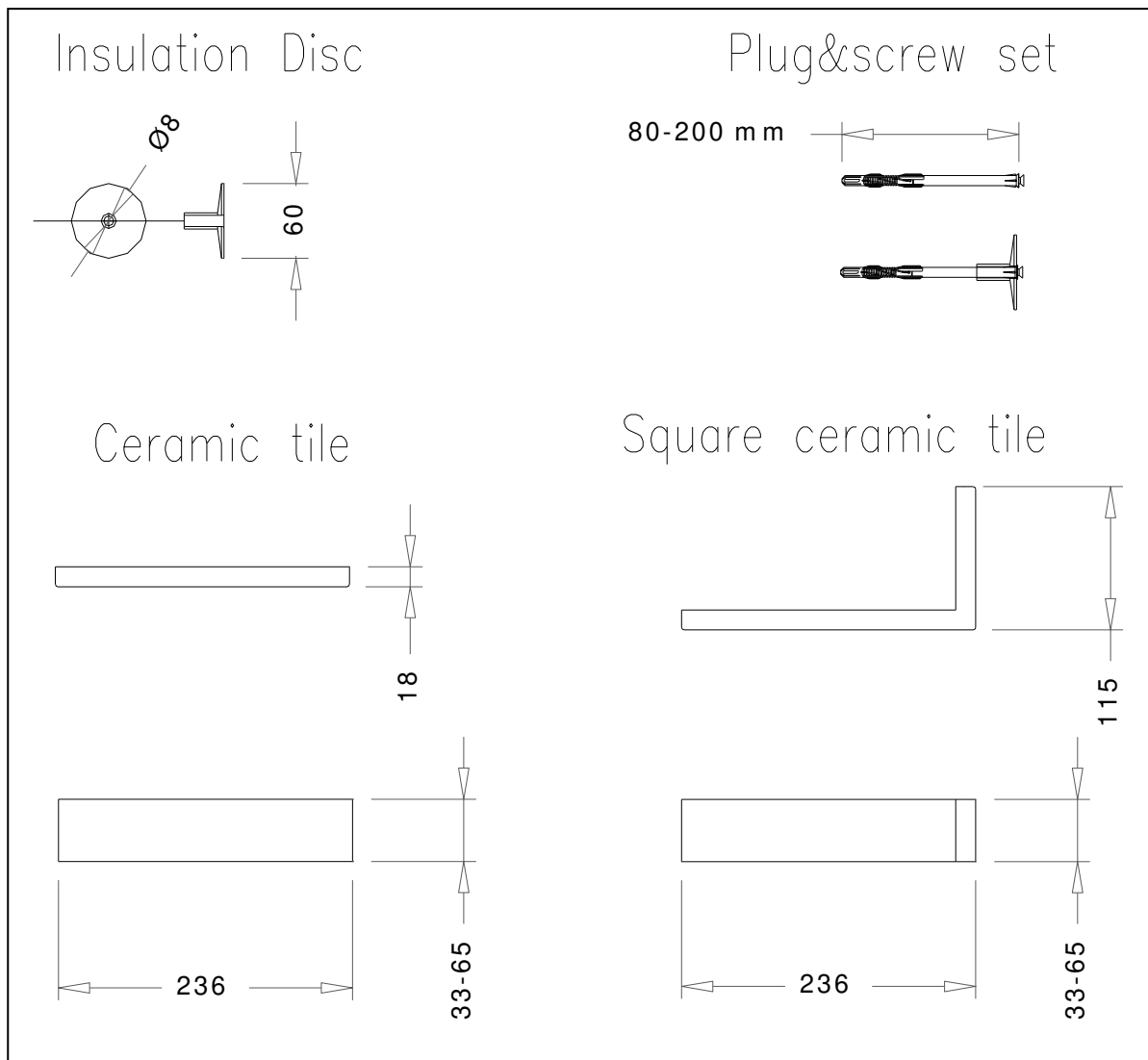


On behalf of the Instituto de Ciencias de la Construcción Eduardo Torroja.
Madrid, 28th May 2018

D^a. Marta Castellote.
Director

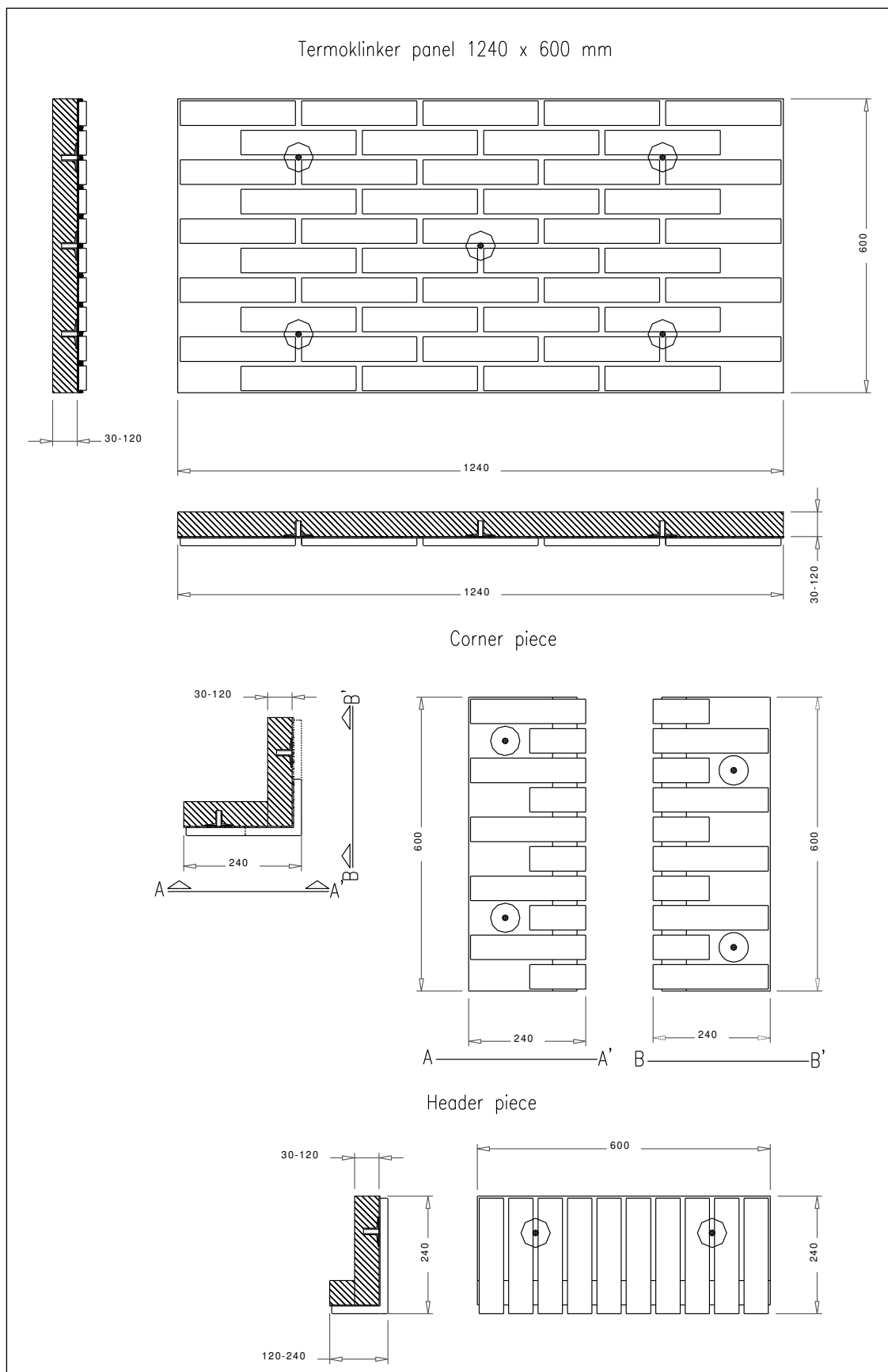
Annex 1. DETAILS

DETAIL A: FIXING DEVICES AND CERAMIC TILE PIECES (dimensions in mm).



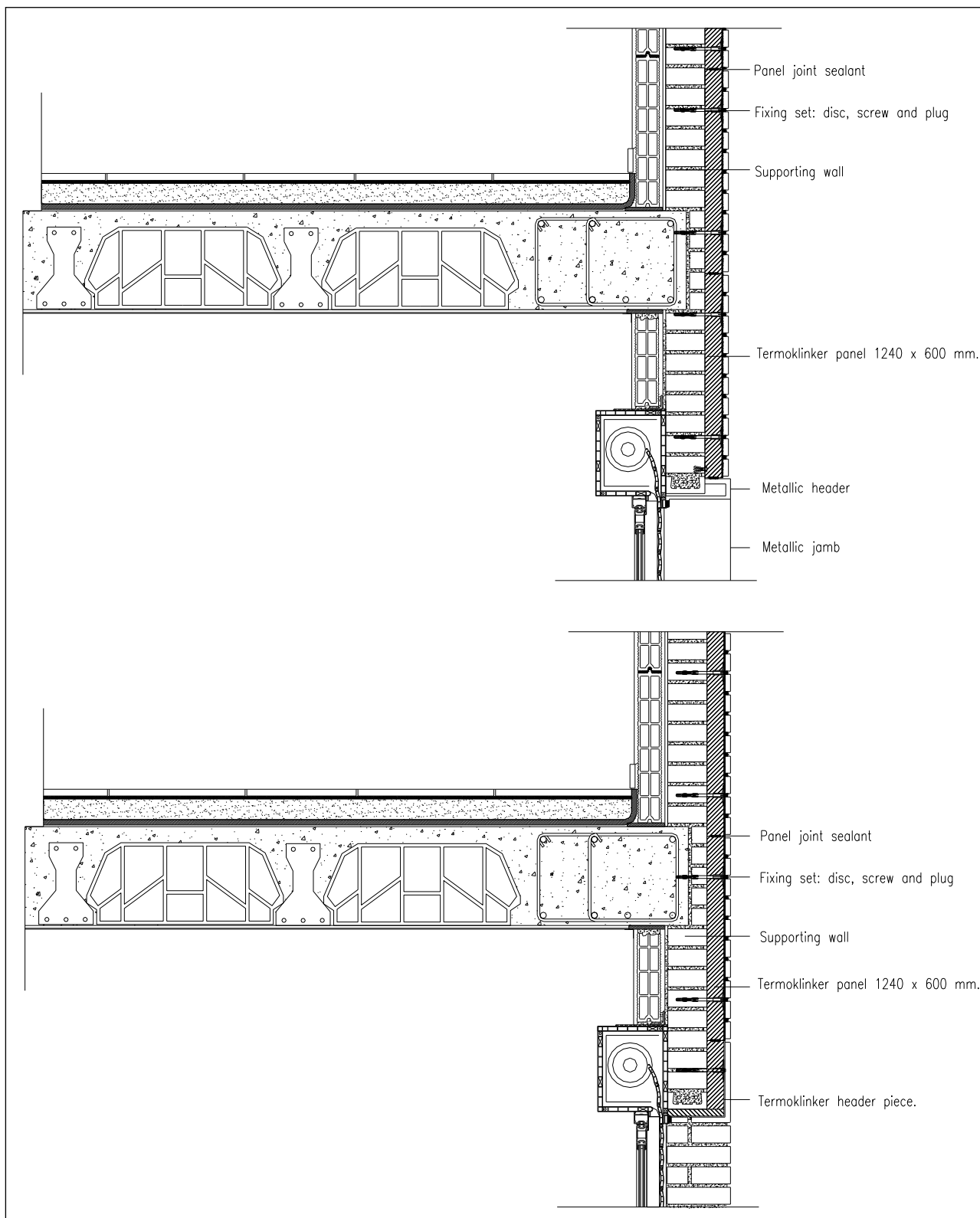
English translation prepared by IETcc

DETAIL B: DIMENSIONS OF PANELS AND ANCILLARY PIECES (dimensions in mm).



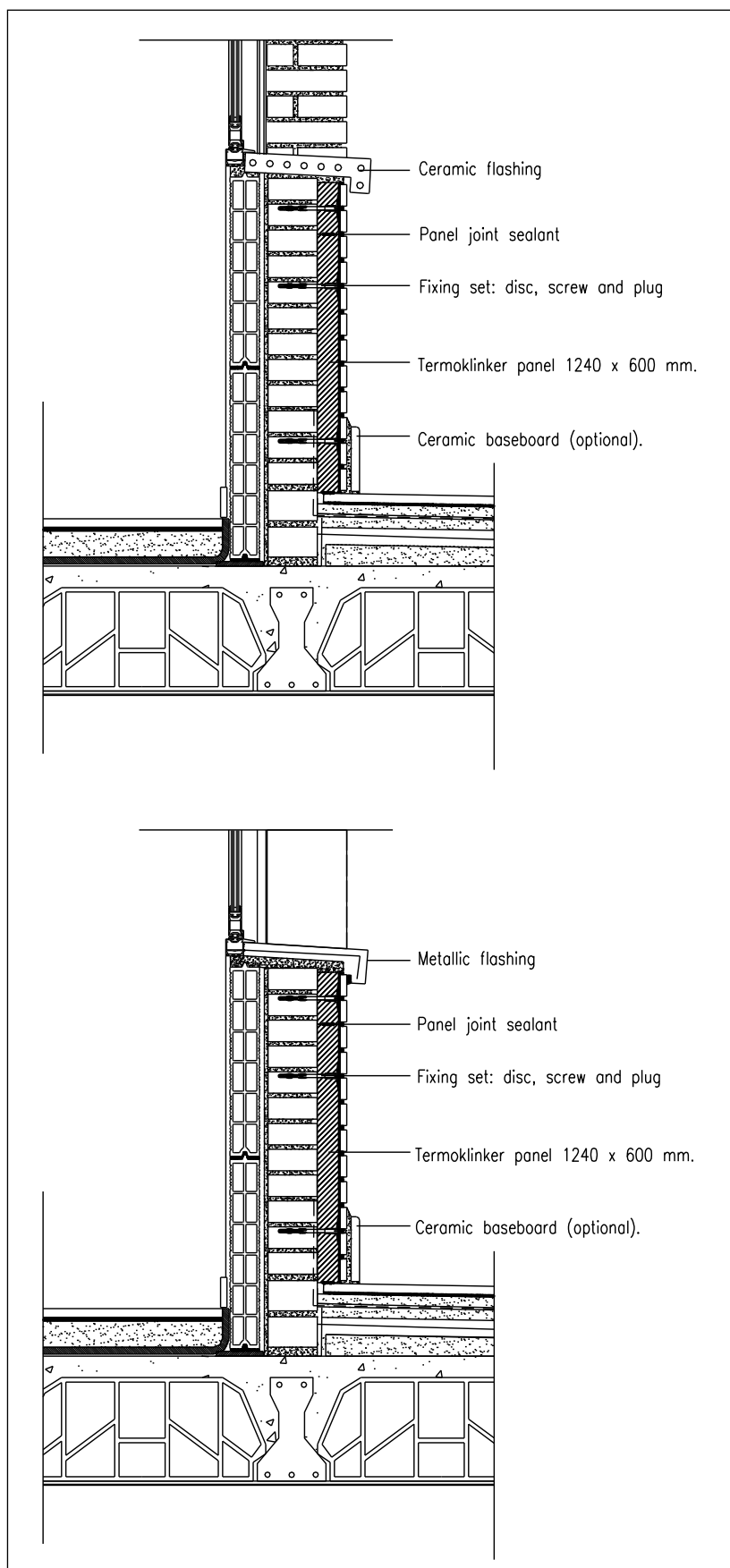
English translation prepared by IETcc

DETAIL C: Vertical sections through the slab and roller box (two different solutions for the window header).



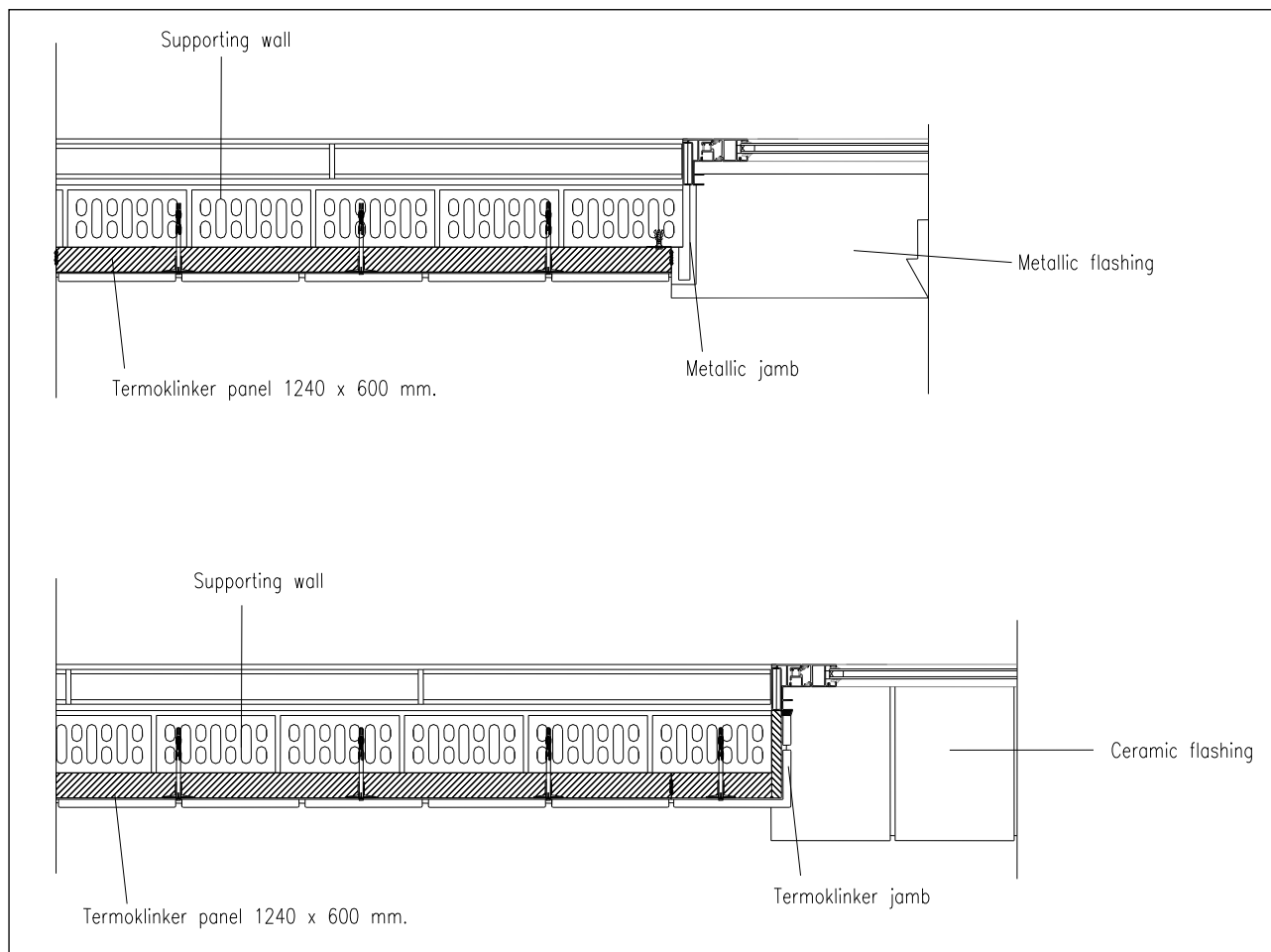
English translation prepared by IETcc

DETAIL D: Vertical sections through the window (two solutions for the window sill).



English translation prepared by IETcc

DETAIL E: Horizontal section through jamb (made of termoklinker or metallic)



Annex 2: Factory Production control of kit

This confidential information and is not included in the European Technical Assessment when that assessment is publicly available.