EAD **090240-00-0404**

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April 2024

European Assessment Document for

Wood-based composite panel for façades

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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1 SCOPE OF THE EAD

1.1 Description of the construction product

The wood-based composite panel (in the following referred to as “composite wood panel”) is a kit that consists of the following components, which are factory assembled:

- Wood rigid frame, described in 1.3.3.1, manufactured in factory using the following components:
  - A skin made from wood panels as solid wood or wood-based materials, such as Oriented-Strand- Board.
  - A framing made from wood linear elements as beams and pillars. The framing can be made from solid wood or glue-laminated timber.
  - A mineral wool thermal insulation product for buildings[1].
  - Screws, anchors and/or nails used to fix the different components of the wood rigid frame in factory.
- A fixing system described in 1.3.3.2 made of metal materials to secure the composite wood rigid frame to the substrate or to the subframe.
- The groove described in 1.3.3.3
- The panel can have barriers/membranes, seals and other ancillary materials which can be incorporated in factory or installed on site.

The wood-based members are not treated with a fire retardant.

Windows, doors, blinders, external finishes (such as ventilated façade, plaster, etc.) even if installed in factory, and the subframe are outside of the scope of the EAD.

The composite wood panels are non-load-bearing construction elements. They do not contribute to the stability of the wall on which they are installed. The composite wood panel will normally contribute to durability of the works by providing enhanced protection from the effect of weathering. They are intended to enhanced airtightness of the building.

See Annex A for an overview of the kit. The figure A.1 shows the general section of the wood-based composite wood panel with subframe, where the fixing system connects the composite wood panel to the subframe. The figure A.2 shows the general section of the composite wood panel without subframe, where the fixing system connects the composite wood panel to the substrate.

The product is not fully covered by the EAD 090062-01-0404 because it does not include the external finishing or cladding element which are always part of the cladding kit defined in the EAD 090062-01-0404. Table 2.1.1 in this EAD includes the characteristics from EAD 090062-01-0404, which are considered to be applicable for the product and intended use covered by this EAD taking into account that the external skin is not included in the kit, so characteristics such as hygrothermal behaviour, behaviour after pulsating load, freeze-thaw resistance, behaviour after immersion in water, dimensional stability by humidity, linear thermal expansion, chemical and biological resistance and UV radiation resistance are not considered applicable for the product and intended use covered by this EAD. In addition, these type of framings for supporting cladding elements are neither considered in EAD 090062-01-0404 nor in EAD 090034-00-0404.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer’s instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer’s stipulations, e.g., with regard to the intended end use conditions, having influence on the performance of the product covered by this European Assessment Document shall be considered for

[1] A mineral wool thermal insulation product, when relevant as described in the MPII, for buildings that may be positioned between the composite wood panel and the substrate, in the cavities between framings or as an externa additional continuous layer

the determination of the performance and detailed in the ETA as long as the details of the assessment methods as laid down in this EAD are respected.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

The composite wood panel is intended to be used as external insulation and retrofitting of existing buildings in conditions corresponding to service class 2 in EN 1995-1-1[2].

The composite wood panels are fixed to a subframe mounted on external vertical walls or directly on external vertical walls made of masonry (clay, concrete or stone), concrete (cast on site or as prefabricated panels) or metal frame in new or existing buildings (retrofit), by means of fixing systems.

The composite wood panel is intended to be covered by an external finishing, which is not covered by the EAD.

The EAD covers the assessment of the composite wood panel under static, quasi-static and seismic loads.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the composite wood panel for the intended use of 25 years. These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[3].

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD

For more detail, please see the drawings in the Annex A.

1.3.1 Substrate

The term "substrate" refers to an existing wall, which in itself already meets the necessary airtightness and mechanical strength requirements (resistance to static and dynamic loads), as well as a relevant watertightness and water vapor resistance. The substrate walls can be made of masonry (clay, any kind of concrete or stone), concrete (cast on site or as prefabricated panels) or metal frame.

2 All undated references to standards in this EAD are to be understood as references to the dated versions listed in clause 4

3 The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred above.

1.3.2 Subframe

An intermediate assembly of vertical or horizontal wood or metal profiles and metal brackets (including the fixings between the brackets and the profiles) located between the composite wood panel and the substrate. The subframe is not part of the kit.

1.3.3 Composite wood panel

1.3.3.1 Wood rigid frame

The wood rigid frame is a product manufactured in factory with the components described in the clause 1.1 of the present EAD, such as

- A skin made from wood panels as solid wood or wood-based materials, such as Oriented-Strand- Board.
- A framing made from wood linear elements as beams and pillars. The framing can be made from solid wood or glue-laminated timber.
- A mineral wool thermal insulation product for buildings
- The panel can have ancillary materials (see 1.3.4.3) incorporated in factory
- Screws, anchors and/or nails used to fix the different components of the wood rigid frame in factory.

1.3.3.2 Fixing System

Screws/anchors, nails, plates, a combination of them or any special fixing devices made of metal materials used to secure the composite wood panel to the substrate or to the subframe. The fixing system is part of the kit.

1.3.3.3 Groove

Part of the composite wood panel made of wood and/or metal material to give continuity to the facade once the composite wood panels are installed on site.

The system has only a fixing system at the top edge of the panel and the groove at the bottom part, to interlock the top panel with the one below. For this reason, the groove element is functioning only for horizontal loads acting in the out-of-plane direction of the kits (like wind in depression), and it needs to fix only the lower part of the facade wood panel. The minimum number of necessary grooves depends on the resistance of this element compared to the level of the external loads

1.3.3.4 Ancillary materials

Barrier/membrane, cavity barrier, seals, joint-covers or any supplementary component used in the composite wood panel (e.g., to form joints such as sealant, corner strips, etc.; or to achieve continuity such joint-covers, gaskets, trims, etc.; or groove protectors, etc.; or to improve performance at joints to control rain penetration such as baffles and flashings, etc.) installed in factory and/or on site. These ancillary materials are optional, and when used in the kit they shall be stated in the ETA.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the composite wood panel is established in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Method of assessment	Type of expression of product performance
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
2	Propensity to undergo continuous smouldering	2.2.2	Description
Basic Works Requirement 3: Hygiene, health and the environment			
3	Content, emission and/or release of dangerous substances	2.2.3	Level
4	Watertightness of joints (protection against driving rain)	EAD 090062-01-0404, clause 2.2.4 with closed joints*)	Level
Basic Works Requirement 4: Safety and accessibility in use			
5	Wind load resistance	EAD 090062-01-0404, clause 2.2.9	Level
6	Resistance of groove composite panel element	2.2.4	Level
7	Fixing system (with or without subframe) resistance (horizontal and vertical load)	2.2.5	Description, Level
8	Composite wood panel stiffness	2.2.6	Level
Basic Works Requirement 5: Protection against noise			
9	Airborne sound insulation	EAD 090062-01-0404, clause 2.2.14	Level
Basic Works Requirement 6: Energy economy and heat retention			
10	Thermal resistance	EAD 090062-01-0404, clause 2.2.15	Level
Aspects of durability			
11	Biological resistance	EAD 090062-01-0404 clause 2.2.16.6	Level
12	Corrosion	EAD 090062-01-0404 clause 2.2.16.8	Description

*) The kit shall be tested for watertightness as complete product (finished, with the external finishes) and the external finishes (outside the scope of the EAD) used for the test shall be described in the essential characteristic of the ETA.

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

Testing will be limited only to the essential characteristics which the manufacturer intends to declare. If for any components covered by harmonised standards or European Technical Assessments the manufacturer of the component has included the performance regarding the relevant characteristic in the Declaration of Performance, retesting of that component for issuing the ETA under the current EAD is not required.

2.2.1 Reaction to fire

The composite wood panel shall be tested, using the method(s) relevant for the corresponding reaction to fire class in accordance with EN 13501-1. The composite wood panel shall be classified in accordance with the Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

The classification and field of application shall be stated in the ETA. The classification applies to the tested configuration

Concerning mounting and fixing rules and extended application rules for reaction to fire, see Annex C.

When the thermal insulation product is part of the kit, the individual reaction to fire of the thermal insulation product shall be assessed, depending on the material, in accordance with the relevant thermal insulation standard (see clause 1.1.4 of EAD 090062-01-0404), The thermal insulation product shall be classified in accordance with Delegated Regulation (EU) 2016/364 in connection with EN 13501-1.

For metal components covered by Commission Decision 96/603/EC as amended by Commission Decisions 2000/605/EC and 2003/424/EC for an A1 classification without testing fulfilling the conditions set out in that Decision and its intended use being covered by that Decision, the performance of such components is stated as class A1 in the ETA.

For wood based components covered by another appropriate Classified Without Further Testing (CWFT) decision, so far the conditions set out in that decision are applicable for the use of the component in the kit covered by this EAD.

2.2.2 Propensity to undergo continuous smouldering

The propensity to undergo continuous smouldering of the mineral wool and wood-based materials shall be tested and assessed in accordance with EN 16733 and as specified in annex B.

In accordance with EN 16733, clause 11, the ETA shall specify the following information, for the mineral wool and the wood-based materials, depending on the outcome of the assessment:

- “The product does not show propensity to undergo continuous smouldering”; or
- “The product shows propensity to undergo continuous smouldering” or
- "Assessment of the propensity to undergo continuous smouldering is not possible".

2.2.3 Content, emission and/or release of dangerous substances

The performance of composite wood panels related to the emission and/or release and, where appropriate, the content of dangerous substances will be assessed on the basis of the information provided by the manufacturer[4] after identifying the release scenarios taking into account the intended use of the product

[4] The manufacturer may be asked to provide to the TAB the REACH related information which shall accompany the DoP (cf. Article 6(5) of Regulation (EU) No 305/2011).

and the Member States where the manufacturer intends his product to be made available on the market. Purely inorganic boards, slabs or mats alone and purely inorganic kits with fasteners and frames made of uncoated steel does not have to be tested.

The intended release scenarios for this product and intended use with respect to dangerous substances for this product are:

IA3: Product with no contact to indoor air

S/W3: Product with no contact to soil, ground and surface water

2.2.4 Resistance of groove composite panel element

The characteristic resistance of the groove shall be determined by tests in accordance with the Annex H – Resistance of grooved cladding element - of the EAD 090062-01-0404; the test procedure is described in the clause 6.4 “complete procedure” (6.4.2) of the EN 12512.

At least the worst case (the mechanically weakest case, i.e., weakest material, minimum tongue thickness and maximum groove depth, see figure 2.2.4.1) shall be tested.

The definition of the groove, screws and/or nails used to fix the different components shall be given in the Manufacturers Product Installation Information (MPII) in the description of the product in the ETA.

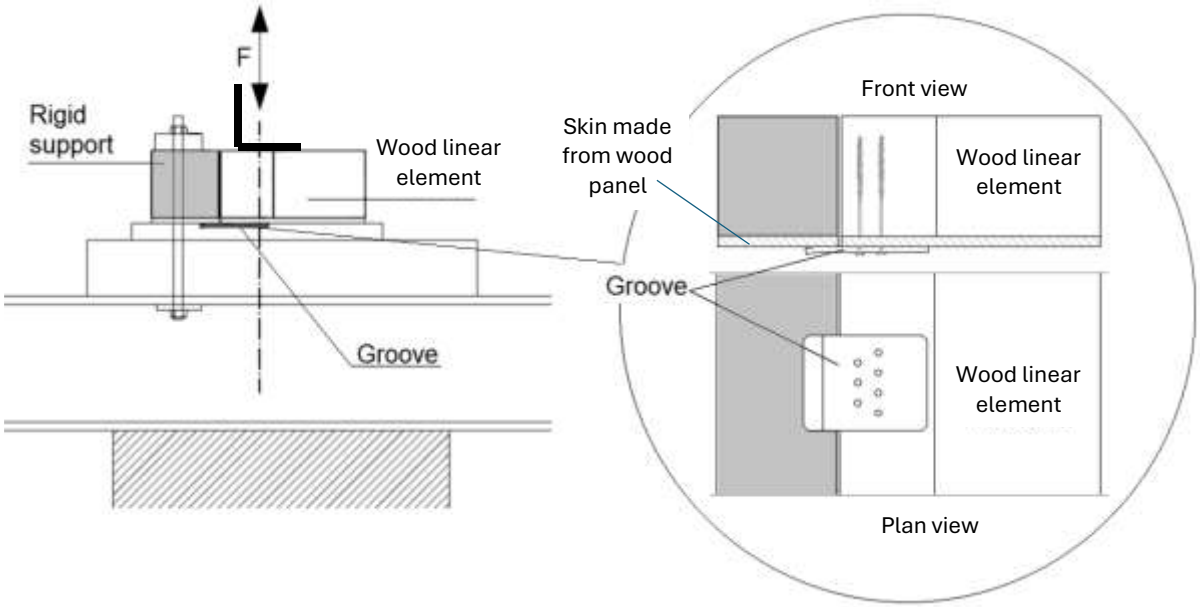

Figure 2.2.4.1. Example of test specimen. The rigid support simulates the other adherent lower panel in the end use situation

The arithmetic average value $F_{u,m}$ [in N] and the characteristic value $F_{u,C}$ [in N] in accordance with equation (N.1) of the EAD 090062-01-0404 shall be stated in the ETA.

$F_{u,C,groove}$ is calculated in accordance with $F_{,C}$ indicate in the annex N of the EAD 090062-01-4040.

$F_{u,m,groove}$ is calculated in accordance with $F_{,m}$ indicate in the annex N of the EAD 090062-01-4040.

The manufacturer is not obliged to:
- provide the chemical constitution and composition of the product (or of constituents of the product) to the TAB, or
- provide a written declaration to the TAB stating whether the product (or constituents of the product) contain(s) substances which are classified as dangerous in accordance with Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the SGDS, taking into account the installation conditions of the construction product and the release scenarios resulting from there.

Any information provided by the manufacturer regarding the chemical composition of the products is not to be distributed to EOTA to other TABs or beyond.

2.2.5 Fixing system (with or without subframe) resistance (horizontal and vertical load)

The assessment of the mechanical resistance of the fixing system is carried out by calculation or by test with the assessment of the mechanical resistance of specimens composed by a representative part of the composite wood panel and the fixing system, with or without subframe.

2.2.5.1 Resistance and stiffness determined by test

The characteristic value of the fixing system (which connect the kit to the subframe, when present, or the kit to the substrate, when the subframe is not present) shall be determined by tests in accordance with the Annex L – Resistance of brackets (horizontal and vertical load) - of the EAD 090062-01-0404; the test procedure described at clause L.4 shall be substituted with the procedure indicated at clause 6.4 “complete procedure” of the EN 12512.

Test shall be performed in the load configurations indicated in clause L.1 of EAD 090062-01-0404 vertical load (weight), clause L.4.2 and horizontal load (perpendicular to the plane, wind), clause L.4.3. with a configuration similar to that reported in the next figures.

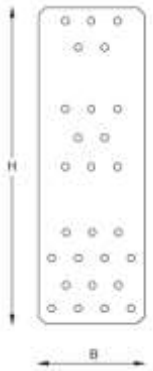

Figure 2.2.5.1.1. Example of the shape and the geometry for a vertical subframe configuration bracket

The fixing system shall be given in the MPII and in the description of the product in the ETA.

Vertical load test. Example of the test device.

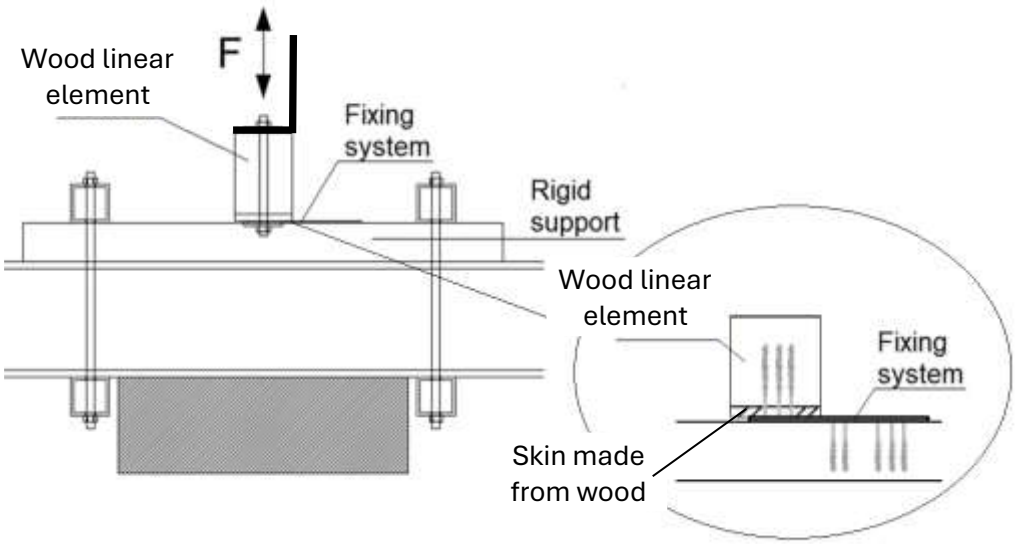

Figure 2.2.5.1.2. Horizontal load test. Example of the test device.

An additional load configuration shall be considered in order to assess the resistance of the connection subjected to in plane horizontal action (similarly to the action of the grazing wind). The test shall be performed with a configuration as shown in the following figure

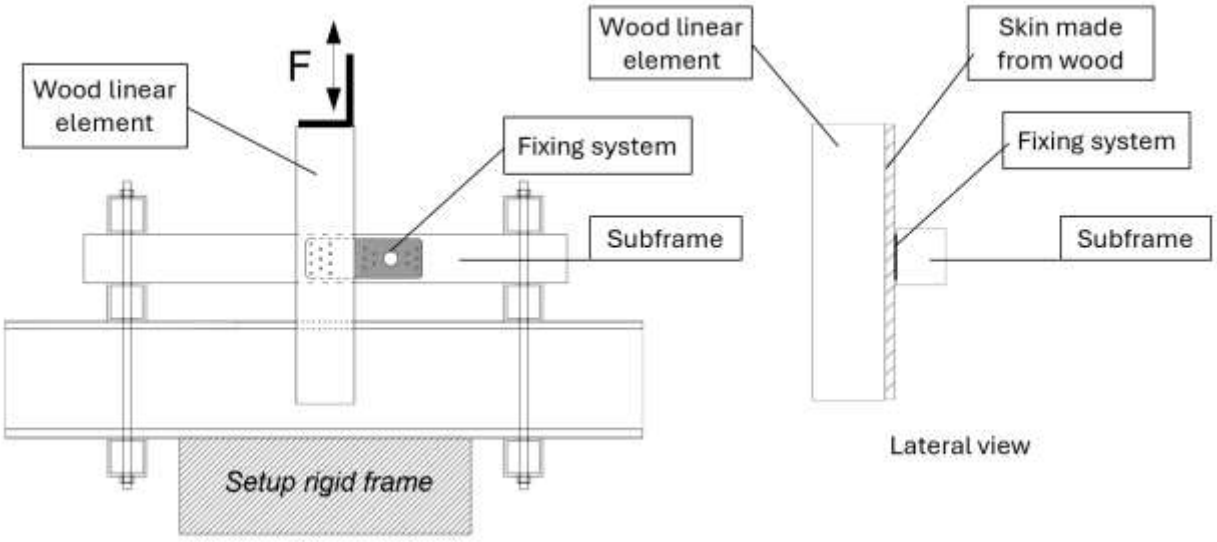

Figure 2.2.5.1.3. Test set-up

5 specimens shall be tested, each different fixing system type is intended to be used (it means 5 specimens each load configuration for a total amount of 15 tests for each fixing system), characteristic value calculated in accordance with Annex N of EAD 090062-01-0404 of strength and mean value of stiffness of the fixing system shall be stated in the ETA.

2.2.5.2 Resistance and stiffness determined by calculation

The characteristic value of the fixing system shall be determined in accordance with the following standards:

- Resistance and stiffness of the connection related to the wood portion of the system: clause 8 of the EN 1995-1-1 “Connections with metal fasteners” and clause 7.1 of the EN 1995-1-1 “Joint slip”.
- Resistance and stiffness of the connection related to the steel portion of the system:
    - Steel elements: clause 6.1 of the EN 1993-1-1 “Resistance of cross-sections” and clause 6.3 of the EN 1993-1-8 “Rotational stiffness”.
    - Bolts, nuts and washers: clause 3 of the EN 1993-1-8 “Connections made with bolts, rivets or pins”.
    - Welds: clause 4 of the EN 1993-1-8 “Welded connections”.

The characteristic value calculated in accordance with Annex N of EAD 090062-01-0404 of strength and mean value of stiffness of the fixing system obtained by calculation shall be stated in the ETA.

Examples of structural models and calculations are given in EOTA Technical Report 089.

2.2.6 Composite wood panel stiffness

The in-plane stiffness of the composite wood panel shall be assessed in accordance with the EN 594. These tests are intended to assess the mechanic characteristics of the whole composite wood panel with the fixing system. Tests are performed in accordance with the clause 6.1 and 6.2 of the EN 594.

Typical timber frame panels adopted in building construction are connected at the bottom edge of the panel to the foundation. The composite wood panels could be hanged by fixing system placed at the top edge of the panel, other configurations are possible. For this reason, depending on the fixing system configuration chosen and stated in the ETA, the specimen shall be tested to be representative of the intended end-use conditions (e.g., turned upside down respect the specimen (timber frame) illustrated in the EN 594 when the composite wood panel is hanged).

2 specimens shall be tested, each different fixing system type is intended to be used, strength and mean value of stiffness shall be stated in the ETA together with information about the build-up of the tested sample for which the value applies.

The racking resistance/stiffness of composite wood panels with different dimensions shall be calculated by the use of a simple numerical model that takes into account the stiffness of the different components. Relevant components of the numerical model are the following with its characteristic's sources:

- The shear stiffness of wood-based panel such as OSB/3 (see EN 13986 and EN 310).
- The sliding (deformability) of the connection between the panels and the linear elements of the frame (see §7.1 EC 1995- 1-1) and
- The stiffness of the fixing systems to the substructure (obtained in conformity with the clause 2.2.5 *Fixing system (with or without subframe) resistance (horizontal and vertical load)*).

For each Fixing System assessed, the mean ultimate strength (R_m^+ and R_m^-) and the mean value of stiffness (K_m+ and K_m-) of the composite wood panel shall be stated in the ETA for both the tested directions in the plane.

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3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is Decision 2003/640/EC.

The applicable AVCP system is 2+ for any use except for uses subject to regulations on reaction to fire.

For uses subject to regulations on reaction to fire[5] the applicable AVCP systems regarding reaction to fire are 1, or 3, or 4 depending on the conditions defined in the said Decision

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the composite wood panel in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

The manufacturer (regarding the components he buys from the market with DoP) shall take into account the Declaration of Performance issued by the manufacturer of that component. No retesting is necessary

Table 3.2.1 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
2	Materials	Checking of supplier certificates	Conformity with the order	Testing is not required	Each delivery
3	Geometry (form and dimensions)	Checking of supplier certificates	Conformity with the order	Testing is not required	Each delivery
4	Mechanical characteristics	In accordance with row 6-9 in table 2.1.1	According to control plan	Testing is not required	Each delivery
5	Reaction to fire of components	In accordance with 2.2.1	According to control plan	1	Every two years
6	Checks on production drawings of the kit	Visual	According to control plan	1	Each delivery
7	Manufactured components – where relevant	According to control plan	According to control plan	1	Each delivery
8	Propensity to undergo continuous smouldering	Indirect tests (e.g., dimensions, density, mass loss etc.)	According to control plan	1	Every batch
		Direct tests	According to control plan	1	Every two years

5 Including propensity to undergo continuous smouldering, where relevant.

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the composite wood panel are laid down in Table 3.3.1.

Table 3.3.1 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control					
1	The Notified Body will ascertain that the factory production control with the staff and equipment are suitable to ensure a continuous and orderly manufacturing of the composite wood panel.	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	According to Control plan	According to Control plan	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control					
2	The Notified Body will ascertain that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in Table 3.2.1	According to Control plan	According to Control plan	1/year

The intervention of the notified body under AVCP system 1 is only necessary for reaction to fire[6] for products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).

In this case the cornerstones of the tasks to be undertaken by the notified body under AVCP system 1 are laid down in Table 3.3.2

6 Including propensity to undergo continuous smouldering, where relevant.

Table 3.3.2 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control					
1	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 are fulfilled for reaction to fire, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control					
2	Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 in the Decisions regarding reaction to fire are fulfilled, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material)	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in table 3.2.1	As defined in the control plan agreed between the TAB and the manufacturer	As defined in the control plan agreed between the TAB and the manufacturer	1/year

4 REFERENCE DOCUMENTS

EN 1995-1-1:2004+ A2:2014	Eurocode 5: Design of timber structures – Part 1-1: General – Common rules and rules for buildings.
EN 1993-1-1:2022	Eurocode 3: Design of steel structures – Part 1-1: General rules and rules for buildings.
EN 1993-1-8:2024	Eurocode 3: Design of steel structures – Part 1-8: Design of joints.
EN 16733:2016	Reaction to fire tests for building products – Determination of a building product's propensity to undergo continuous smouldering.
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.
EN 12512:2001/A1:2005	Timber structures – Test methods – Cyclic testing of joints made with mechanical fasteners.
EN 594:2011	Timber structures – Test methods – Racking strength and stiffness of timber frame wall panels.
EN 13820:2003	Thermal insulating materials for building applications – Determination of organic content.
EN ISO 29470:2020	Thermal insulating products for building applications – Determination of the apparent density.
EN ISO 29466:2022	Thermal insulating products for building applications – Determination of thickness.
EN 323:1993	Wood-based panels – Determination of density.
EN 13823:2020+A1:2022	Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item.
EN 13986:2004/A1:2015	Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking.
EN 310:1993	Wood-based panels – Determination of modulus of elasticity in bending and bending strength.
EN 13238:2010	Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates.
EOTA Technical Report 089	Examples of structural models and calculations for wood based composite panels for facades

ANNEX A: PRINCIPLE DRAWINGS OF THE KIT

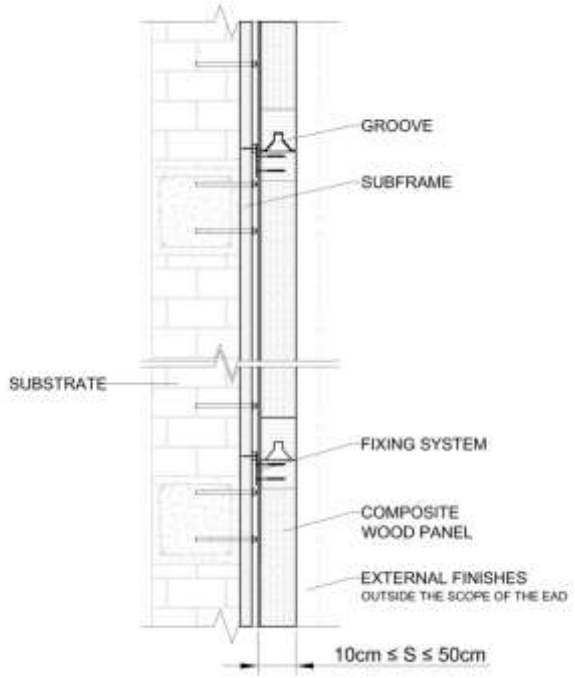

Figure A.1. – general section of the wood-based composite wood panel with subframe

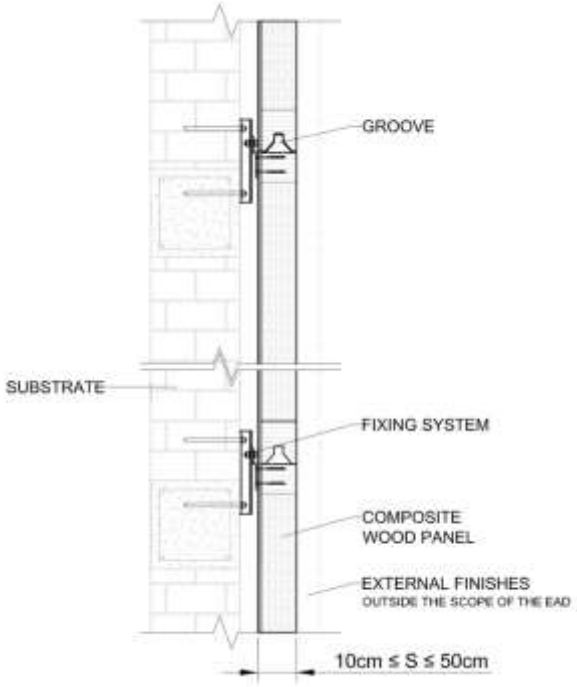

Figure A.2 - general section of the wood-based composite wood panel without subframe

ANNEX B: PROVISIONS FOR ASSESSING PROPENSITY TO UNDERGO CONTINUOUS SMOULDERING

B.1 Provisions for factory-made products made of mineral wool[7]

B.1.1 Sample taking

In addition to EN 16733, the following conditions and parameters shall be considered when performing sampling and preparing test samples:

- the product-variations of a product family (as defined by a certain combination of raw materials and other additives and produced in a certain production process) [8];
- the product or product variant with the highest organic content (in percentage per mass), determined in accordance with EN 13820;
- the product or product variant with the highest density as well as a density of about 100 kg/m³ (± 15 %); if the highest density is lower than 115 kg/m³, then only the product or product variant with the highest density (density determined in accordance with EN ISO 29470);
- the product or product variant with the highest thickness. If the highest thickness is greater than 100 mm, then the specimen thickness shall be reduced from the reverse (non-exposed) side to the maximum testable thickness of about 100 mm (thickness determined in accordance with EN ISO 29466 on at least three specimens).
- each different produced fibre orientation, i.e., lengthwise and crosswise to the length direction of the specimen as well as perpendicular to the surface of the specimen front side;
- without any facings, coatings (or similar) – existing facings or coatings shall be removed when preparing the test specimens.

B.1.2 Preparation of test specimen

The tests shall be done on free-hanging specimens without consideration of the intended end-use conditions, because propensity to undergo continuous smouldering is hardly affected by end-use conditions, and without any joints (see further). If clause 6.2.5 of EN 16733 applies, a permanent contact between the pieces shall be assured

B.1.3 Extended application of test results

The test results considering the aforementioned parameters are also valid for products:

- of the same defined product- family,
- with lower organic content,
- with all lower densities,
- with lower thickness and also with higher thickness when 100 mm thick specimens were tested,
- with all fibre orientations,
- with any facings or coatings and
- for any end-use conditions.

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7 For products made of mineral wool fibres and aerogel the same provisions shall apply as given in clause B.1 for factory-made products made of mineral wool.

8 To permit the TAB to apply EXAP-rules, the manufacturer should provide sufficient information (e.g., on the basis of the composition of the products in question), allowing the TAB to determine which products or product variants shall be submitted to testing.

B.2 Provisions for wood-based boards / panels

B.2.1 Sample taking

In addition to EN 16733, the following conditions and parameters shall be considered when performing sampling and preparing test samples:

- product-variations of a product family (as defined by a certain combination of raw material, e.g., binder, additives, wood type of the wood shapes / wood fibres etc., and produced in a certain production process);
- the product or product variant with the highest as well as the lowest density of the wood-based board / panel, determined by tests in accordance with EN 323;
- the product or product variant with the highest thickness of the wood-based board / panel, determined by tests in accordance with EN ISO 29466 on at least three specimens;
- each different produced shape / fibre orientation (i.e., lengthwise and crosswise to the length direction of the specimen);
- without any external non-substantial facings, coatings or suchlike – existing external non-substantial facings or coatings shall be removed when preparing the test specimens

B.2.2 Preparation of tests specimens

The tests shall be done without consideration of the intended end-use conditions, because propensity to undergo continuous smouldering is hardly affected by end-use conditions. If the clause 6.2.5 of EN 16733 applies, a permanent contact between the pieces shall be assured.

B.2.3 Extended application of test results

The results of tests considering the aforementioned parameters in fully are also valid for products:

- of the same defined product-family,
- with all densities of wood-based boards / panels between those evaluated,
- with lower thickness of wood-based boards / panels and also with higher thickness when 100 mm thick specimens were tested,
- with all shape / fibre orientations, if all relevant orientations had been tested,
- with any external non-substantial facings or coatings or suchlike and
- for any end-use conditions.

ANNEX C: MOUNTING AND FIXING PROVISIONS FOR SBI TEST (EN 13823)

C.1 Terminology

Module:

A module in the context of this Annex is a specimen of the kit fully reflecting all main components (e.g., frame, insulation, and fasteners) in the kit cut to fit the size of the test rig.

Extended application:

The direct application rules of test results, in relation to each relevant parameter for this test method (composition, dimensions, density of components, organic content) is specified in clause C.3".

C.2 Mounting and fixing in accordance with EN 13823

C.2.1 Dimensions of the test rig

The test rig consists of a corner with a long (1,0 m) and a short (0,5 m) wing. The long wing consists of 2 modules, with one vertical and one horizontal module-to-module joint in between as specified in the MPII. All modules shall be tested vertically. The dimensions of the specimens shall be:

	Assembly dimensions (mm – nominally)	
	Length	**Height**
Short wing	495	1500
Long wing (see figure C.2.3.1)	200 + t	1500
	800 - t	1500
Where t = thickness of the kit		

Table C.2.1 Dimensions of the test rig

C.2.2 Test specimen

The composite wood panel for facades kit shall be mounted and fixed in accordance with EN 13823.

The test specimen shall fully represent all the envisaged components in the end use condition as specified in the MPII.

The assembly including corner and joint details shall be tested and in accordance with the end use conditions as specified in the MPII.

The largest panel thickness (perpendicular to the face) envisaged shall be used in the test when a non-combustible substrate (classified as A1 or A2-s1, d0) is used. In case of using a combustible substrate the largest and thinnest thickness shall be used for testing.

Where relevant, the insulation material used shall be as specified in the MPII and represent end use conditions.

The type and dimensions of materials and products used, the dimensions and location of possible fixings etc. shall be recorded in the test report and described in the classification report.

C.2.3 Mounting and fixing of the test assembly

In accordance with EN 13823, kit is fixed mechanically to the backing board.

The assembly may be prepared, and fixed together, away from the test chamber. The complete assembly can then be transported to the chamber.

…

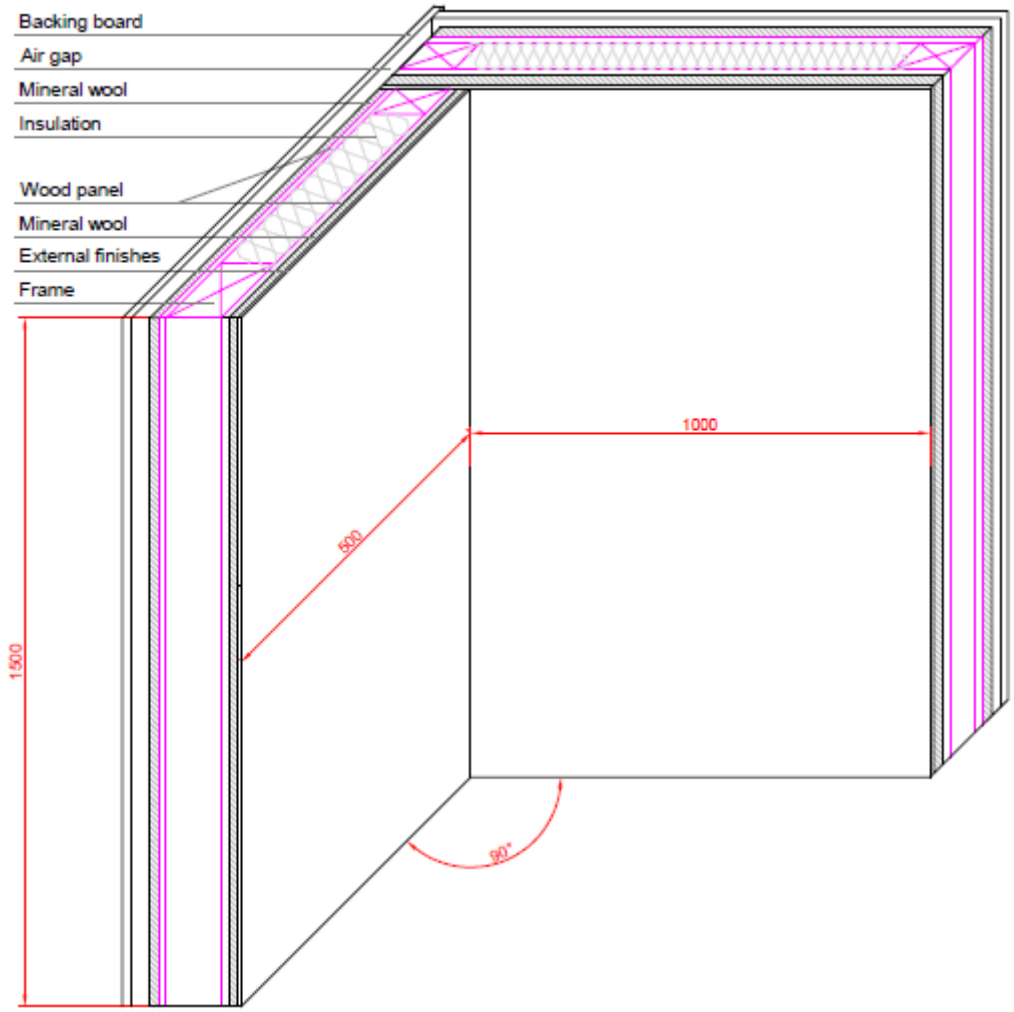

Figure C.2.3.1 – Test configuration

C.3. End Use Application

When determining the testing programme all potential variations in product properties and in its potential end-use condition need to be considered. For this type of construction product, the following provides guidance on the potential end-use application rules that may apply dependant on the testing programme undertaken.

C.3.1 Influence of substrate

If the composite wood panel for facades kit was tested in front of particleboard, the kit can be used in front of any wood structure or any A2 or A1 product. If the composite wood panel for facades kit was tested in front of gypsum plasterboard the kit can be used only in front of any A2 or A1 product. If the composite wood panel for facades kit was tested in front of calcium silicate board the kit can be used only in front of any A2 or A1 product except plasterboard (for further guidance see EN 13238).

The test result of a test with non-fire-treated timber frame shall be valid, without test, for the same type of external finishes.

C.3.2 Influence of insulation product

If the composite wood panel for facades kit incorporates an insulation material that is of Class A2 or lower, the influence of any changes in thickness or density of the insulation on the performance of the kit shall be tested.

If the insulation material is of Class A1, then the density and thickness may be increased without influence on the scope of the classification of the kit, as long as the insulation material is class A1.

When the test is carried out without insulation layer, the test result is applicable provided that the insulation layer placed behind the cladding element in the end-use situation is made of materials of class A1 or A2-s1,d0 (e.g., mineral wool).

When the test is carried out with mineral wool insulation shall be valid for:

- all other greater thickness of mineral wool insulation layer with the same density and the same or better reaction to fire classification.
- the same type of panel used without insulation, if the substrate chosen in accordance with EN 13238 is made of panel with Euro-class A1 or A2 (e.g., fibres-cement panel).

The results of reaction to fire tests, where a combustible insulation material was used as substrate, are also valid for end-use applications of the tested product without insulation on solid mineral substrates of class A1 or A2-s1,d0 like masonry or concrete.

C.3.3 General note

If different classifications are obtained when investigating the influence of variation in product properties or end use application, additional testing shall be conducted to redefine the product family to which any single classification applies.