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EAD 210058-00-0504

September 2019

European Assessment Document for

Wood-based composite panels for indoor wall or ceiling design or both



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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) 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

Contents

1	Scope of the EAD	3
1.1	Description of the construction product	3
1.2	Information on the intended use(s) of the construction product	4
1.2.1	Intended use(s).....	4
1.2.2	Working life/Durability.....	4
2	Essential characteristics and relevant assessment methods and criteria	5
2.1	Essential characteristics of the product	5
2.2	Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	5
2.2.1	Reaction to fire	5
2.2.2	Propensity to undergo continuous smouldering	6
2.2.3	Content, emission and/or release of dangerous substances	6
2.2.3.1	SVOC and VOC	6
2.2.3.2	Pentachlorophenol (PCP)	7
2.2.3.3	Formaldehyde emission	7
2.2.4	Sound absorption	8
2.2.5	Thermal resistance	8
3	Assessment and verification of constancy of performance	9
3.1	System(s) of assessment and verification of constancy of performance to be applied	9
3.2	Tasks of the manufacturer	9
3.3	Tasks of the notified body	11
4	Reference documents	12
	Annex A: Mounting and fixing provisions as well as extended applications rules for the test results of the relevant reaction to fire tests	13
	ANNEX B: Mounting and fixing provisions as well as extended applications rules for the test results of the tests according to EN 16733 regarding the propensity to undergo continuous smouldering	17

1 SCOPE OF THE EAD

1.1 Description of the construction product

The construction product is a non-load bearing wood-based composite panel used for indoor wall cladding and/or ceiling cladding (in the following referred to as wood-based composite panel).

The wood-based composite panels consist of a central core layer made of wood-based panels (high-density fibreboard - HDF, medium-density fibreboard – MDF or particle board - PB) associated with several other layers. The product components as covered by this EAD are mentioned below:

- Coating (varnish or melamine resin),
- Decorative layer (paper, PP-foil, PET-foil or real wood veneer),
- Optional underlay (melamine paper),
- Central core layer made of wood-based panels (HDF, MDF, PB) and
- Optional counter-pressure layer (melamine paper) applied as single layer or bi-layered or an insulation material (wood fibre mat) for acoustic purposes.

The single layers can be glued together or hot pressed. The type and material basis of all layers of the composite-based panels (including possible stabilizing layers and/or other intermediate layers) shall be defined in the ETA.

This EAD is applicable for composite-based panels of different dimensions (width and length), thicknesses and area weights. The respective dimensions, total thicknesses and the total area weights of the composite-based panels shall be stated in the ETA.

The possible ways for mounting the composite-based panels to wall and/or ceiling are:

- Fixing with ventilation gap, on, e.g., battens or metal bars as substructure, using mechanic connectors as, e.g., nails, staples, screws and installation clips, respectively, for fixing.
- Fixing without ventilation gap, by the use of adhesive(s).

The substructure and the adhesive itself are not part of this EAD, but a general description including key properties shall be given in the ETA, if relevant with regard to the reaction to fire classification.

The composite-based panels are joined by a smooth tongue and groove connection or click system but can contain design joints. Milled edges of the panels can be covered (e.g., with paint, stamping foil). A respective statement shall be given in the ETA.

Decorative elements made of metal for finishing corners and/or edges can be used but they are not part of this EAD.

Flame retardants can be added to the wood-based panel and/or to the wood fibre mat. The usage shall be stated in the ETA.

The product is not covered by a harmonised European standard (hEN).

EN 14915 covers solid wood paneling and cladding (treated, untreated and coated products) used as interior and exterior claddings. EN 13986 covers wood-based panels for use in construction (unfaced, overlaid, veneered or coated) among others for internal use as non-structural components in dry conditions. EN 13986 has a much wider range of applications (for internal use as structural components in dry conditions and in humid conditions; for external use as structural components; for internal uses as non-structural components in humid conditions; for external use as non-structural components; for use as structural floor decking on joists in dry, humid or external conditions; for use as structural roof decking on joists in dry, humid or external conditions; for use as structural wall sheathing on studs in dry, humid or external conditions). Both standards do not cover composite products with different layers. Therefore, the decorative layer, underlay, counter pressure layer and the insulation material would not be covered. In addition, both standards do not include an assessment method for the emission of VOC and SVOC

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 having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

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

1.2.1 Intended use(s)

The wood-based composite panels are intended to be used for decorative purposes as non-load bearing component for internal wall cladding and/or ceiling finishes. The panels are intended for the use in dry and/or wet rooms. Direct exposition to water is not intended.

The composite-based panels are not intended to be used as outer planking with determined fire protection ability (K classes according to EN 13501-2) to improve the fire resistance of walls and ceilings assembled with these panels.

The use of the composite-based panels as partial cladding of only a single or parts of a single wall and/or ceilings is also intended.

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 underlays for the intended use of 25 years when installed in the works. 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 works¹.

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 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 to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

All undated references to standards or to EADs in this EAD are to be understood as references to the dated versions listed in chapter 4.

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the composite-based panels is assessed 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	Assessment method	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	Description/Level/Class
Basic Works Requirement 5: Protection against noise			
4	Sound absorption	2.2.4	Level
Basic Works Requirement 6: Energy economy and heat retention			
5	Thermal resistance	2.2.5	Level

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.

2.2.1 Reaction to fire

The wood-based composite panels shall be tested using the test method(s) relevant for the corresponding reaction to fire class according to EN 13501-1. The panels shall be classified according to Commission Delegated Regulation (EU) 2016/364 in connection with EN 13501-1. The provisions given in Annex A shall be considered within the tests and the classification.

The reaction to fire class shall be stated in the ETA together with the conditions (see parameters addressed in Annex A for testing purposes and the application of test results) for which the classification is valid.

2.2.2 Propensity to undergo continuous smouldering

The naked wood-based core layer of the composite-based panels or, in case of panels with an additional wood-fibre insulation layer on the backside, the composite of the naked wood-based core layer and the wood-fibre insulation mat shall be tested according to EN 16733. The provisions given in Annex B shall be considered within the tests.

Assessment and expression of the product performance shall be in accordance with EN 16733, clause 11, as follows:

- a) If the tests have been passed, it shall be stated in the ETA: “The product does not show propensity for continuous smouldering combustion”.
- b) If the tests have been failed, it shall be stated in the ETA: “The product shows propensity for continuous smouldering combustion”.
- c) If the assessment was not possible, it shall be stated in the ETA: “Assessment of the propensity for continuous smouldering combustion is not possible”.

2.2.3 Content, emission and/or release of dangerous substances

The performance of the product related to the emissions and/or release and, where appropriate, the content of dangerous substances will be assessed on the basis of the information provided by the manufacturer² after identifying the release scenarios taking into account the intended use of the product and the Member States where the manufacturer intends his product to be made available on the market.

The identified intended release scenario for this product and intended use with respect to dangerous substances for this product is:

IA1³: Product with direct contact to indoor air.

2.2.3.1 SVOC and VOC

For the intended use covered by the release scenario IA1 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) shall be determined in accordance with EN 16516.

The respective loading factor [m^2/m^3] used for emission testing can be taken from the following table:

Table 2.2.3.1.1 Loading factor L, depending on the product type (in accordance with EN 16516)

Intended use	Loading factor [m^2/m^3]
Walls	1.0
Ceiling	0.4
Walls and ceiling	1.4

² The manufacturer may be asked to provide to the TAB the REACH related information which he must accompany the DoP with (cf. Article 6(5) of Regulation (EU) No 305/2011).

The manufacturer is not be obliged:

- to provide the chemical constitution and composition of the product (or of constituents of the product) to the TAB, or
- to provide a written declaration to the TAB stating whether the product (or constituents of the product) contain(s) substances which are classified as dangerous according to 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 may not be distributed to EOTA or to TABs.

³ Scenario IA1 is applicable for products which are in contact with indoor air in a way that dangerous substances could be released directly out of the product.

Determined product performances shall be representative for the entire product range.

Characterisation of products to be assessed shall be done in accordance with available specifications. The following product specifications shall be taken into account when testing the composite-based panel:

- Each panel with a different composition shall be tested separately.
- Each panel with a different coating shall be tested separately.
- Each panel with a different surface texture shall be tested separately.
- The panel with the highest thicknesses of the individual layers and/or of the final product and the area weight shall be considered.

In case of doubt, the tests shall be performed separately on samples with different specifications for each characteristic.

An overview of the product designations and design data is given in the ETA.

The wood-based composite panels to be assessed shall always include all facings and/or coatings that are applied to the composite-based panels, as placed on the market. Influences of different colours of facings or coatings can be determined by performing tests on a light, on a dark and on a colour in the middle of the range.

The prepared test specimen shall fully represent all the envisaged end use conditions as specified by the applicant.

The edges of the product should be sealed with self-adhesive, VOC-free aluminum foil or using a suitable frame. The testing shall be performed with an uncovered back side if the fixing takes place with gap ventilation. If the fixing takes place without ventilation gap or with adhesive it shall be ensured that no emission derives from the back side.

Considering possible joint designs the ratio of sample size to joint length shall be at least 2,5 : 1.

Once the test specimen has been produced, it shall immediately be placed in the emission test chamber. This time is considered the starting time of the emission test.

The test results shall be recorded for the relevant parameters (e.g., chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, edge sealing, conditioning, glue system, production date, arrival date, test period, test result) after 3 and/or 28 days testing.

The relevant product performances shall be stated in the ETA in $\mu\text{g}/\text{m}^3$ or mg/m^3 .

2.2.3.2 Pentachlorophenol (PCP)

If recycled wood, potentially treated with biocides, is used for the production of the wood-based core layer the content of pentachlorophenol shall be tested. The testing of the core layer is performed as described in EN 13986, clause 5.18, in accordance to CEN/TR 14823.

The content of pentachlorophenol shall be stated in the ETA [ppm].

2.2.3.3 Formaldehyde emission

The assessment and classification of formaldehyde emission of wood-based core layers (HDF, MDF, PB), shall be performed in accordance with EN 13986, clause 5.7.

The formaldehyde emission [mg/m^3] and the resultant formaldehyde classification (E1 or E2) shall be stated in the ETA.

2.2.4 Sound absorption

The determination of the sound absorption coefficient α_s shall be performed according to EN ISO 354. Mounting option B.2 according to Annex B of EN ISO 354 is used. The sound absorption characteristics α_p and α_w are calculated according to EN ISO 11654 for frequencies 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz.

The obtained values α_p and α_w are rounded to the nearest 0,05 (α_p larger than 1 shall be expressed as $\alpha_p = 1$).

The values of α_p [-] as a table or a graph and the weighted sound absorption coefficient α_w [-] as a single number value shall be stated in the ETA.

2.2.5 Thermal resistance

The thermal resistance shall be determined according to EN 12664.at a mean temperature of 10 °C. Before testing the specimen shall be stored at (23 ± 2) °C and (50 ± 5) % relative humidity until stabilisation at constant mass is achieved.

The thermal resistance of the wood-based composite panel shall be given in the ETA.

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 Commission Decision 98/437/EC, as amended by Commission Decision 2001/596/EC.

The system is 3 for the following uses:

- as internal finishes, as complete elements,
- as internal stiffening elements in walls or ceilings,
- as internal finishes in walls or ceilings subject to requirements against accidental injuries from cutting objects,
- in internal suspended ceilings subject to safety in use requirements,
- as internal finishes in walls or ceilings, as relevant, subject to regulations on dangerous substances.

In addition, with regard to reaction to fire including propensity to undergo continuous smouldering, for products covered by this EAD the systems are 1, 3 or 4 (system 1 in case of classes A1 to C⁴; system 3 in case of classes D and E; system 4 in case of class F).

For other uses than specified above the system is 4.

3.2 Tasks of the manufacturer

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

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]					
1	Reaction to fire including propensity to undergo continuous smouldering ⁵	2.2.1 and 2.2.2	Control plan	at least 1 (depending on the test method applied)	With production start and: <ul style="list-style-type: none"> • EN ISO 11925-2 every three month • EN 13823 once a year • EN 16733 once per two years
2	Thickness of the composite-based panel as well as of the materials used for the various layers	Control plan	Control plan	3	per batch
3	Mass per unit area of the composite-based panel as well as of the materials used for the various layers	Control plan	Control plan	3	per batch

⁴ It can be assumed that the addition of flame retardants and/or the limitation of organic content are compulsory for obtaining one of these classes.

⁵ in addition to the indirect tests according to lines no. 2, 3, 7, 11 and 12

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
4	Content, emission and/or release of dangerous substances (product)	2.2.3	Control plan	1	With production start and every 5 years
5	Formaldehyde emission (wood-based core layers)	EN 717-1 ISO 12460-3 ⁶ ISO 12460-5 ⁵	Control plan	3	Once every 8 h and/or each delivery of incoming materials
6	PCP (wood-based core layers)	2.2.3.2	Control plan	1	Once every 8 h and/or each delivery of incoming materials
7	Coverage of adhesives	Control plan	Control plan	1	Continuously, during the production process
8	Adhesion of the coating	EN ISO 2409	Control plan	1	Continuously, during the production process
9	Sound absorption	2.2.4	Control plan	1	With production start and every 5 years
10	Thermal resistance	2.2.5	Control plan	1	With production start and every 5 years
11	Check of incoming raw materials	Control plan	Control plan	1	Every delivery
12	Check of chemical composition	An incoming inspection of all delivered raw materials shall be carried out at the plant site. It shall be determined whether the delivered raw materials meet all the relevant characteristic values as specified by the manufacturer.	Control plan	1	Continuously, during the production process

⁶ Derived method: A product-related correlation has to be determined compared to the method in accordance to EN 717-1.

3.3 Tasks of the notified body

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

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance 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 <i>(for systems 1+, 1 and 2+ only)</i>					
1	Reaction to fire including propensity to undergo continuous smouldering, especially <ul style="list-style-type: none"> - Presence of suitable test equipment (for direct and indirect tests – in particular with regard to limitation of organic content and/or addition of flame retardants) - Presence of trained personnel - Presence of an appropriate quality assurance system and necessary stipulations 	2.2.1, 2.2.2 and Control plan	See control plan	see control plan	Before production start and in case of relevant modifications of the production process
Continuous surveillance, assessment and evaluation of factory production control <i>(for systems 1+, 1 and 2+ only)</i>					
2	Reaction to fire including propensity to undergo continuous smouldering, especially <ul style="list-style-type: none"> - Evaluation of the documents concerning the factory production control including the test results (of direct and indirect tests – in particular with regard to limitation of organic content and/or addition of flame retardants) - Issuing a surveillance report 	Verification of the controls carried out by the manufacturer on the raw materials, on the process and on the product as indicated in Table 3.2.1 with regard to reaction to fire	-	-	Once a year

4 REFERENCE DOCUMENTS

CEN/TR 14823:2003	Durability of wood and wood-based products – Quantitative determination of pentachlorophenol in wood – Gas chromatographic method
EN 717-1:2004	Wood-based panels – Determination of formaldehyde release – Part 1: Formaldehyde emission by the chamber method
EN 12664:2001	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Dry and moist products with medium and low thermal resistance
EN 13238:2010	Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
EN 13501-2:2016	Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services
EN 13823:2020	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 16516:2017+A1:2020	Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air
EN 16733:2016	Reaction to fire tests for building products – Determination of a building product's propensity to undergo continuous smouldering
EN ISO 11654:1997	Acoustics – Sound absorbers for use in buildings – Rating of sound absorption (ISO 11654:1997)
EN ISO 1182:2020	Reaction to fire tests for products – Non-combustibility test (EN ISO 1182:2020)
EN ISO 11925-2:2020	Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test (ISO 11925-2:2020)
EN ISO 1716:2018	Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value) (ISO 1716:2018)
EN ISO 354:2003	Acoustics – Measurement of sound absorption in a reverberation room (ISO 354:2003)
EN ISO 12460-3:2020	Wood-based panels - Determination of formaldehyde release - Part 3: Gas analysis method (ISO 12460-3:2020)
EN ISO 12460-5:2015	Wood-based panels - Determination of formaldehyde release - Part 5: Extraction method (called the perforator method) (ISO 12460-5:2015)
EN ISO 2409:2020	Paints and varnishes - Cross-cut test (ISO 2409:2020)
EN 1602:2013	Thermal insulating products for building applications – Determination of the apparent density
EN 823:2013	Thermal insulating products for building applications – Determination of thickness

ANNEX A

ANNEX A: MOUNTING AND FIXING PROVISIONS AS WELL AS EXTENDED APPLICATIONS RULES FOR THE TEST RESULTS OF THE RELEVANT REACTION TO FIRE TESTS

1. EN ISO 1182 and EN ISO 1716

These test methods are relevant for reaction to fire classes A1 and/or A2.

However, due to the nature of the wood-based composite panels the application of these both methods will likely not be relevant, because composite-based products normally are not able to meet the criteria for the aforementioned classes.

Otherwise, the required tests shall be done in accordance with the provisions of these two test standards and the following parameters of the composite-based panels and their components shall be considered for choosing and preparing the test specimens and the execution of tests:

- product variations of a defined product family^{7,8},
- density,
- organic content,
- type and amount of flame retardants.

In addition, thickness and weight per unit area of each layer of non-homogenous (multi-layer) products shall be considered, when calculating the total Q_{PCS} value of the entire product.

The results of these tests considering the aforementioned parameters are valid for all product variations of the same product family

- with the same density (if only one was tested) or a density between highest and lowest density tested,
- with equal or lower organic content,
- with the same type and equal or higher amount of flame retardants,
- with thickness of the products as specified below:
 - any thickness in case of homogenous products,
 - the same thickness and weight per unit area of the layers of non-homogenous products used for calculating the total Q_{PCS} value of the entire product, or
 - any thickness and weight per unit area between highest and lowest values of these two parameters of the layers of non-homogenous products used for calculating the total Q_{PCS} value of the entire product.

2. EN 13238 (SBI test)

This test method is relevant for reaction to fire classes A2 to D according to EN 13501-1 simulating the use of the panels as indoor wall cladding as well as for ceiling cladding.

Dimension of the test rig and the test specimens

The test rig consists of a right-angle corner with a long wing (1,0 m width) and a short wing (0,5 m width), each 1,5 m height. The dimensions of the specimens shall be:

	Assembly dimensions [mm – nominally]	
	Length	Height
Short wing	500	1500
Long wing	1000 + t	1500

Where t = thickness of the panels

⁷ as defined by a certain combination of raw materials and produced in a certain type of production process

⁸ To permit the TAB to apply extended application rules for the test results, it is recommended that the manufacturer should provide (but is not obliged to do so) sufficient information (e.g., on the basis of the composition of the product in question), allowing the TAB to determine – with regard to the various product parameters - which products or product variants shall be submitted to testing and to reduce the number of tests required.

On the long wing of each test specimen at least one vertical and one horizontal joint shall be considered as prescribed in the test standard (200 mm far away from the inner corner of the test specimen and 500 mm above the floor of the specimen trolley). Execution of the joints shall be done with the tongue and groove connection, the click connection or the special design joint of the panels as defined by the manufacturer for his panels. If several joint designs are possible, at least one orientation test shall be performed with each of them and the most onerous case shall be tested again at least twice to obtain the necessary number of results for a classification.

Substrate

If an adhesive is foreseen for fixing purposes in the end-use application, the test specimens shall be glued onto an appropriate standard substrate according to EN 13238 representing a range of substrates in end use applications.

If mechanical connectors are foreseen for fixing purposes in the end-use application the test specimen shall be mechanically fixed onto a sub-construction in front of an appropriate standard substrate according to EN 13238, which together form an air gap between composite-based panel and standard substrate.

Other substrate (deviating from EN 13238) may also be used for testing purposes. However, in this case the test results will only be valid for the practical use of the panels on this specific substrate.

Sub-construction and fixing devices

In case of specimens with an air gap a sub-construction shall be used as support of the composite panels. This sub-construction may consist of a frame made of timber battens from non-FR-treated spruce wood of standard grade, saw-cut (density: $475 \pm 25 \text{ kg/m}^3$). The vertical members of the frame shall have a cross section of (40 ± 1) mm width and $\leq (40 \pm 1)$ mm depth. They are positioned behind the lateral edges of the specimen wings as well as behind the vertical joint on the long wing of the specimen. The horizontal members of the frame shall have a cross section of (40 ± 1) mm width and $\leq (15 \pm 1)$ mm depth. They are positioned behind the top and the bottom edge of the specimen wings and, if relevant, behind the horizontal joint on the long specimen wing.

Equivalently to the timber frame a supporting frame made of steel or aluminium angles (dimension: $40 \times \leq 40 \times 1.5$ mm) can be used for testing purposes. Positioning of the angles shall be the same as for the timber battens.

Results of tests with a timber frame are also valid for the use of the composite-based panels on metallic sub-constructions. Results of tests with a metal frame are only valid for the use of the composite-based panels on metal sub-constructions.

Mechanical fixing devices (e.g., metal screws or nails) shall be used for fixing the composite-based panel on the support frame using the highest possible distance between the two neighbouring fixing points. The test results are valid for all mechanical fixing devices made of metal with equal or lower distances between two neighbouring points.

Air gap and ventilation

For tests of specimens which are fixed onto a support frame, two different depths of the air gap between the rear side of the composite-based panel and the substrate shall be considered – the lowest possible depth in end-use conditions as well as a depth of 40 mm. At least one orientation test shall be performed with each of them and the most onerous case shall be tested again at least twice to obtain the necessary number of results for a classification. The results of tests with these two different dimensions of the air gap are valid for equal or any greater depths of the air gap than that minimum considered in the tests.

In case that ventilation of the air gap is possible under end-use conditions, the boards of the SBI rig according to clause 4.4.11 of EN 13823 shall be removed. In addition, an open joint at the bottom edge of the test specimen shall be considered on both the long and the short wing in order to ensure sufficient ventilation of the air gap. For this purpose, the lower edge of the composite-based panels shall end 10 mm above the U-profile of the SBI rig.

Test specimens

The following parameters shall be considered when preparing the test specimens:

- Chemical composition and assembly: Each different composition and assembly (e.g., number, type and dimensions of the various layers of the panels) shall be considered within the tests.
- Colour: If there is a range of different colours but no difference in the chemical composition itself, tests with a light, a dark and a medium colour (e.g., White, Black and Red) shall be performed.
- Thickness: The highest as well as the lowest thickness of the entire composite-based panels as well as of the core layer and – where existent – of the insulation layer shall be tested.
- Weight per unit area: The highest as well as the lowest weight per unit area shall be tested.
- Orientation: If relevant, the specimen shall be mounted and tested with vertical as well as with horizontal orientation.
- Adhesive: Each adhesive foreseen for fixing purposes in the end-use shall be considered within the tests of the panels, taking into account the highest possible coverage of the adhesive.

The results of tests taking into consideration completely the aforementioned parameters are valid for:

- only the chemical composition and assembly as tested,
- the complete range of colours,
- any thickness between those evaluated for the entire composite-based panels, the wood-based core layer and – where existent – the wood-fibre insulation layer,
- any weight per unit areas between those evaluated,
- any orientation of the panels and
- the tested adhesive only with equal or lower coverages than tested.

Due to the intended end-use of the composite-based panels as indoor wall and ceiling cladding the whole specimen (including the substrate) shall be positioned directly in front of the SBI backing board.

At least one test with any of the identified specimen configurations (based on the aforementioned parameters) shall be performed and two further tests with the most onerous specimen configuration as basis for the classification.

3. EN ISO 11925-2 (Small ignition source test)

This test method is relevant for reaction to fire classes B to E according to EN 13501-1 simulating both the use of the panels as indoor wall cladding and as ceiling cladding.

Dimensions of the test specimens and preparation

The dimension of the test specimens shall be as prescribed in the test standard.

A lengthwise joint in the middle axis of the test specimen shall be considered for at least two tests. Execution of the joint shall be done with the tongue and groove connection of the panels.

Substrate

The test specimens shall be glued onto an appropriate standard substrate according to EN 13238 representing a range of substrates in end use applications.

Other substrate (deviating from EN 13238) may also be used for testing purposes. However, in this case the test results will only be valid for the practical use of the panels on this specific substrate.

For end-use applications of the composite-based panel on sub-constructions with an air gap between cladding and substrate the tests shall be conducted on free-hanging specimens without using a substrate.

Test specimens

The following parameters shall be considered when preparing the test specimens:

- Chemical composition and assembly: Each different composition and assembly (e.g., number, type and dimensions of the various layers of the panels) shall be considered within the tests.
- Colour: If there is a range of different colours but no difference in the chemical composition itself, tests with a light, a dark and a medium colour (e.g., White, Black and Red) shall be performed.

- Thickness: The highest as well as the lowest thickness of the entire composite-based panels as well as of the core layer and – where existent – of the insulation layer shall be tested.
- Weight per unit area: The highest as well as the lowest weight per unit area shall be tested.
- Orientation: If relevant, the specimen shall be mounted and tested with vertical as well as with horizontal orientation.
- Adhesive: Each adhesive foreseen for fixing purposes in the end-use shall be considered within the tests of the panels, taking into account the highest possible coverage of the adhesive.

The results of tests taking into consideration completely the aforementioned parameters are valid for:

- only the chemical composition and assembly as tested,
- the complete range of colours,
- any thickness between those evaluated for the entire composite-based panels, the wood-based core layer and – where existent – the wood-fibre insulation layer,
- any weight per unit areas between those evaluated,
- any orientation and
- each tested adhesive with equal or lower coverages than tested.

Due to the various intended end-use applications of the polymer-based panels the test specimens shall be tested with edge exposure as well as with surface exposure. Additionally, further tests shall be performed on specimens turned 90 degrees on their vertical axis with edge exposure on all relevant layers.

At least two tests with any of the identified specimen configurations (based on the aforementioned parameters) shall be performed and four further tests with the most onerous specimen configuration as basis for the classification.

4. Recommendation

Since there is a wide field of possible assemblies of the composite-based panels and various parameters which may influence the reaction to fire performance, it is recommended to agree the necessary test programme between applicant, Technical Assessment Body in charge and involved test laboratory before commencing the reaction to fire tests.

ANNEX B

ANNEX B: MOUNTING AND FIXING PROVISIONS AS WELL AS EXTENDED APPLICATIONS RULES FOR THE TEST RESULTS OF THE TESTS ACCORDING TO EN 16733 REGARDING THE PROPENSITY TO UNDERGO CONTINUOUS SMOULDERING

Dimension of the test specimens

The dimensions of the test specimens shall be in compliance with the provisions given in EN 16733.

Mounting and fixing conditions

The tests shall be done on free-hanging specimens without any substrate behind and without consideration of the intended end-use conditions. For fixing of the specimens the specimen holder as prescribed in the test standard shall be used. If clause 6.2.5 of EN 16733 applies, a permanent contact between the pieces shall be assured.

Test specimens

The following conditions and parameters shall be considered within the tests:

- Type and chemical composition of the wood-based core layer and the wood fibre insulation layer (where existent)^{7,8}: Each different composition (binder, additives, wood type of the wood shapes / wood fibres etc.) shall be tested.
- Type of production process of the wood-fibre insulation layer (where existent): Different production processes of the insulation layer shall be tested separately.
- Density according to EN 1602: The highest as well as the lowest density of the wood-based core layer as well as of the wood-fibre insulation layer (where existent) shall be tested.
- Thickness to be determined by tests according to EN 823: The highest thickness of the wood-based core layer as well as of the wood-fibre insulation layer (where existent) shall be tested.
- Type of the adhesive or the adhesion approach for connecting core layer and insulation layer: Each different adhesive or adhesion approach shall be tested.
- Fibre orientation (e.g., lengthwise and crosswise to the production direction)
- Without any external non-substantial facings, coatings or suchlike: Existing external non-substantial facings or coatings shall be removed when preparing the test specimens.

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

- of the same composition of wood-based core layer and wood-fibre insulation layer (where existent),
- of the same combination of products used for the core layer and the insulation layer (where existent),
- of the same type of production process of the wood-fibre insulation layer (where existent),
- with all densities of wood-based core layer and wood-fibre insulation layer (where existent) between those evaluated,
- with lower thickness of wood-based core layer and wood-fibre insulation layer (where existent),
- with all fibre orientations, if all relevant orientations had been tested,
- with any external non-substantial facings or coatings or suchlike,
- for any end-use conditions.

In case of multi-layered composite-based panels, consisting of a wood-based core layer and a wood-fibre insulation layer, it is necessary to perform tests with fire exposure on both sides, i.e., on the surface of the core layer as well as on the surface of the insulation layer.

At least one test with any of the identified specimen configurations (based on the aforementioned parameters) shall be performed and one further test with the most onerous specimen configuration as basis for the classification.

Recommendation

Since there is a wide field of possible assemblies of the composite-based panels and various parameters which may influence propensity to undergo continuous smouldering, it is recommended to agree the necessary test programme between applicant, Technical Assessment Body in charge and involved test laboratory before commencing the reaction to fire tests.