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European Assessment Document for

Factory-made bonded foam to be used as acoustic and thermal insulation



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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).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The factory-made bonded foam to be used as acoustic and thermal insulation is a type of bonded foam, based on recycled polyurethane flakes used for acoustic and thermal insulation purposes. The construction product can exist in the form of rolls and/or slabs and contains a mixture of PU foam flakes (recyclates) and fibres. The product can be tapered or sloped. The product can be a bonded foam as such and/or may be faced on one or both sides with a flexible facing or different facing materials. In this document, the product covered by this EAD has been referred to as “bonded foam”.

The bonded foam is composed of:

- Recycled polyurethane: 70 to 90 % (recyclates),
- Polyester low-melting fibres: 10 to 30 % (This material comes from raw material sourcing but can be recycled from production of the bonded foam).

The ETA will be issued for the product on the basis of its composition and the other agreed data/information which are deposited with the issuing Technical Assessment Body.

The ETA issued on the basis of this EAD is only valid for products which correspond to the above-mentioned product definition.

The product is not fully covered by EN 13165¹ as the characteristics "air flow resistance" and "airborne sound insulation" are not covered by EN 13165 and the assessment methods for the essential characteristics reaction to fire (2.2.1), content, emission and/or release of dangerous substances (2.2.3), tensile strength perpendicular to faces (2.2.7), length (2.2.8.1), width (2.2.8.1), thickness (2.2.8.2), squareness (2.2.8.3), density (2.2.9), water vapour transmission (2.2.10), dimensional stability (2.2.11), short-term water absorption (2.2.12) and thermal conductivity and thermal resistance (2.2.13) deviate from the methods specified in EN 13165.

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 professional building practices.

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 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.

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

1.2.1 Intended use (s)

The bonded foam is used for acoustic and thermal insulation for use in internal lining and partition applications and for use in floors under floating screeds on solid slabs.

The product must not be exposed to wetting, weathering, condensation, or wind and not be in direct contact to soil, ground- and surface water.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written to take into account a working life of the bonded foam for an intended use of 25 years when installed in the works, provided that the bonded foam is subject to appropriate installation (see clause 1.2.1).

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 works²

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

1.3.1 Recyclates

Production and end-of-life waste having undergone recovery operations

² 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 the working life referred to above.

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 bonded foam 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
3	Durability of reaction to fire against heat, weathering, ageing/degradation	EN 13165 clause 4.2.7.2	Description
Basic Works Requirement 3: Hygiene, health and the environment			
4	Content, emission and/or release of dangerous substances	2.2.3	Level
Basic Works Requirement 5: Protection against noise			
5	Airflow resistance	2.2.4	Level
6	Sound absorption	2.2.5	Level
7	Airborne sound insulation	2.2.6	Level
Basic Works Requirement 6: Energy economy and heat retention			
8	Tensile strength perpendicular to faces	2.2.7	Level
9	Compressive strength	EN 13165, clause 4.3.4	Level
10	Durability of compressive strength against ageing/degradation	EN 13165, clause 4.3.6	Level
11	Length	2.2.8.1	Level
	Width	2.2.8.1	Level
	Thickness	2.2.8.2	Class
	Squareness	2.2.8.3	Level
	Flatness	2.2.8.4	Level
12	Density	2.2.9	Level
13	Water vapour transmission	2.2.10	Level
14	Dimensional stability	2.2.11	Class
15	Short-term water absorption	2.2.12	Level
16	Long-term water absorption	EN 13165, clause 4.3.7.2	Level
17	Flatness after one-sided wetting	EN 13165, clause 4.3.8	Level
18	Thermal conductivity and thermal resistance	2.2.13	Level
19	Durability of thermal resistance against heat, weathering, ageing/degradation	EN 13165, clause 4.2.7.3	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 product shall be tested, using the test method(s) relevant for the corresponding reaction to fire class according to EN 13501-1. The product shall be classified according to Commission Delegated Regulation (EU) No. 2016/364 in connection with EN 13501-1.

Instruction according to EN 15715 for mounting and fixing of the product shall be followed. When assessing ignitability, the product shall be tested directly exposed to the thermal attack with surface and edge exposure.

The following parameters shall be considered when testing the product:

- Product variations of a product family (as defined by a certain combination of raw materials and a certain type of production process)
- Organic content: the variation with the highest organic content shall be tested
- Density: to cover a range of different densities the highest as well as lowest one shall be tested
- Thickness: to cover a range of different thickness the highest as well as lowest one shall be tested

2.2.2 Propensity to undergo continuous smouldering

The performance of the propensity to undergo continuous smouldering of thermal insulation boards shall be tested and assessed in accordance with EN 16733.

The conditions and parameters which shall be taken into account within the test as well as the rules for the application of the test results are specified in Annex A.

In accordance with EN 16733, clause 11, the ETA shall specify the following information, depending on the outcome of the assessment:

- “The product does not show propensity to undergo continuous smouldering”;
- “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

2.2.3.1 General

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 manufacturer³ 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.

³ 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 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

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

- IA 2: Product with indirect contact to indoor air (e.g., covered products) but possible impact on indoor air.
- IA 3: Product with no contact to and no impact on indoor air.
- S/W 3: Product with no contact to soil, ground- and surface water.

Polyisocyanate and polyol (VVOOC, VOC, SVOC) have to be considered:

The release of VOC and SVOC (individual VOC/SVOCs and the sum emission of VOC/SVOC) has to be determined according to the relevant parts of ISO 16000 and according to EN 16516.

The classification criteria for VVOOC, SVOC, VOC are given below.

Note: Given that the product does not comprise rubbers, this EAD does not deal with the organic compounds PAH and B[a]P and nitrosamines.

2.2.3.2 SVOC and VOC

For the intended use covered by the release scenario IA2, semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) have to be determined in accordance with EN 16516. The loading factor (see Table 2.2.2.1) is to be used for emission testing.

Table 2.2.2.1 Loading factor L, depending on the product type, in accordance with EN 16516

Intended use	Loading factor [m ² /m ³]
Walls	1,0
Floor, ceiling	0,4

Testing is performed with proportionally open edges calculated as follows:

$$\text{Open edge [m]} = 1,2 \text{ [m/m}^2\text{]} \times \text{area of test specimen [m}^2\text{]}$$

The edges of the product shall be sealed with self-adhesive, VOC-free aluminium foil or by the use of a suitable frame. It has to be ensured that no emission derives from the back side.

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 have to be given in the ETA for the relevant parameters (defined in EN 16516) after 3 and/or 28 days testing.

2.2.3.3 Expression of performance

The test results defined in EN 16516 shall be expressed in [mg/m³ or µg/m³] and stated in the ETA.

2.2.4 Airflow resistance

Airflow resistance is determined in accordance with EN ISO 9053-1.

The airflow resistance is to be determined on two or more test specimens. The arithmetic mean shall be specified in the ETA. The specific airflow resistance, *Rs*, shall be expressed in Pa.s/m.

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.

2.2.5 Sound absorption

The sound absorption coefficient shall be assessed in accordance with EN 13165, clause 4.3.10. The ETA shall state the assessment results, comprising of mounting type, tabulated results and a single number value for the weighted sound absorption coefficient.

2.2.6 Airborne sound insulation

Airborne sound insulation of the product, for the specified intended use (see below), shall be assessed by tests according to EN ISO 10140-2 and EN ISO 10140-5 and the result(s) expressed according to EN ISO 717-1.

The weighted sound reduction index, R_w -value, shall be specified in the ETA, together with a detailed description of the assembled system(s) in which the product was tested (including indication of, e.g., thickness, mass per unit area and, if relevant, airflow resistance of the layers).

The following test arrangements shall apply:

- The bonded foam shall be fixed or bonded to other parts of the assembly in accordance with the installation requirements of the manufacturer or as stated below per intended use; and
- The bonded foam shall have a thickness of (40 ± 10) mm or shall be the thinnest product within the range covered by the ETA; and
- The testing area shall be approximately 12 m²; and
- Depending on the intended use(s), the following apply
 - For bonded foam used for lining, EN ISO 717-1, Annex D, applies. The basic structure shall be aerated concrete blocks, with a thickness of approximately 100 mm and a density of approximately 70 kg/m². The bonded foam shall be fixed or bonded onto the structure. The assembly shall be completed by fixing or bonding a single layer of plasterboard, with a thickness of approximately 12,5 mm, onto the bonded foam; and/or
 - For bonded foam used in partitions, EN ISO 10140-1, Annex A, applies. The framework in which the partition shall be mounted in a framework consist of aluminium U-profiled ceiling and floor tracks with a thickness corresponding with the thickness of the bonded foam + 5 mm. The C-profiled studs, with the same thickness as the floor and ceiling tracks, shall be inserted at 600 mm centre to centre distance. The bonded foam shall be inserted into the studs. A single layer of plasterboard, with a thickness of 12,5 mm, shall be fastened to both sides of the framework. The joints between the partition boards and at the perimeter shall be sealed with a fast jointing compound. At the floor, the gap of 10 mm shall be sealed with an acrylic sealant.
 - For bonded foam used under screeds in floors, EN ISO 717-1, Annex D applies. The assembly is composed of the reference floor, a reinforced concrete slab of 140 mm in accordance with EN ISO 10140-5, Annexes B and C, a steel mesh reinforced screed, with a thickness of 70 mm, a PE-foil of 150 µm and the bonded foam.

In addition to the provisions specified above, additional different assemblies, comprising bonded foam with other thicknesses and other assembly components, using different test areas, may be assessed and the results thereof specified in the ETA. In such cases, the composition of the assembly and the test area shall also be specified in the ETA.

2.2.7 Tensile strength perpendicular to faces

The bonded foam shall be determined in accordance EN 13165, clause 4.3.5.

The tensile strength measured perpendicularly shall be determined on five test specimens (dimension 50 mm x 50 mm), the average of the five test specimens shall be specified in the ETA.

2.2.8 Geometry

2.2.8.1 Length and width

The length and width of the bonded foam shall be determined on at least three test specimens in accordance with EN 13165, clause 4.2.2.

Regarding both length and width, the arithmetic mean shall be stated in the ETA. If the manufacturers' product installation instructions (MPII) states a nominal value for length or width, these recorded minimum and maximum values shall be commented against the nominal value.

2.2.8.2 Thickness

The thickness, d , is determined in accordance with the principles of the method specified in EN 13165, clause 4.2.3, with a pressure of 50 Pa ($\pm 1,5$ Pa) and at least 3 test specimens.

The arithmetic mean shall be stated in the ETA. If the manufacturers' product installation instructions (MPII) states a nominal value for the thickness, the thickness tolerance class shall be determined from the recorded minimum and maximum values, taking into account the thickness tolerance classes given in table 2.2.7.2.1, and this thickness tolerance class shall be stated in the ETA.

Table 2.2.7.2.1 Thickness classes

Class	Nominal thickness (mm)		
	< 50	50 to 75	> 75
	Tolerance (mm)		
T1	± 3	± 4	+ 6, - 4
T2	± 2	± 3	+5, - 3
T3	$\pm 1,5$	$\pm 1,5$	$\pm 1,5$

2.2.8.3 Squareness

The squareness shall be determined on at least three test specimens in accordance with EN 13165, clause 4.2.4.

The maximum squareness shall be stated in the ETA, commented against the value of 5 mm/m. If the manufacturers' product installation instructions (MPII) states a nominal value for squareness, the recorded maximum squareness shall also be commented against the nominal value.

2.2.8.4 Flatness

The flatness shall be determined on at least one test specimen in accordance with EN 13165, clause 4.2.5.

The maximum flatness shall be stated in the ETA, commented against the applicable value stated in Table 3 of EN 13165. If the manufacturers' product installation instructions (MPII) states a nominal value for flatness, the recorded maximum flatness shall be commented against the nominal value.

2.2.9 Density

The apparent density shall be determined in accordance with EN 13165, clause E.7, on samples on which the thickness, d , was determined.

The mean apparent density and the difference with the recorded minimum and maximum apparent density shall be specified in the ETA. If the manufacturers' product installation instructions (MPII) states a nominal value for density, the mean apparent density shall be commented against the nominal value.

2.2.10 Water vapour transmission

Water vapour transmission properties of the product including possible facings or coatings shall be determined in accordance with EN 13165, clause 4.3.9 and Table 11. However, the value quoted in EN ISO 10456 may not be used.

Any test recipient according to EN 12086, clause 5.1 and Annex B, may be used, since it may be assumed that this does not influence test results. Test conditions shall be in accordance with EN 12086, clause 7.1, Type A.

2.2.11 Dimensional stability

Dimensional stability shall be determined in accordance with EN 1603 method A; additionally, for use cases not subject to precipitation, wetting, weathering or condensation, dimensional stability shall be determined in accordance with EN 1604 for one or more load cases (high temperature, high humidity, high temperature and high humidity, sub-zero temperature). The load case high temperature and high humidity covers both the load case high temperature and the load case high humidity. The classes, test conditions, test methods and maximum values of relative changes in length, $\Delta\varepsilon_l$ and width, $\Delta\varepsilon_w$ are given in table 2.2.10.1.

Table 2.2.10.1 Dimensional stability classes

Designation	Test conditions	Test method	Maximum values of relative changes in length, $\Delta\varepsilon_l$ and width, $\Delta\varepsilon_w$ in %
DS(N)5	23°C, 50% R.H.	EN 1603	± 0,5
DS(N)2	23°C, 50% R.H.	EN 1603	± 0,2
DS(70,-)4	70 °C	EN 1604	± 5,0
DS(70,-)3	70 °C	EN 1604	± 3,0
DS(70,-)2	70 °C	EN 1604	± 2,0
DS(70,-)1	70 °C	EN 1604	± 1,0
DS(23,90)4	23 °C, 90 % R.H.	EN 1604	± 5,0
DS(23,90)3	23 °C, 90 % R.H.	EN 1604	± 3,0
DS(23,90)2	23 °C, 90 % R.H.	EN 1604	± 2,0
DS(23,90)1	23 °C, 90 % R.H.	EN 1604	± 1,0
DS(70,90)4	70 °C, 90 % R.H.	EN 1604	± 5,0
DS(70,90)3	70 °C, 90 % R.H.	EN 1604	± 3,0
DS(70,90)2	70 °C, 90 % R.H.	EN 1604	± 2,0
DS(70,90)1	70 °C, 90 % R.H.	EN 1604	± 1,0
DS(-20,-)2	-20 °C	EN 1604	± 0,5
DS(-20,-)1	-20 °C	EN 1604	± 1,0

Note: The above maximum values are taken from the harmonised standard EN 13165, clause 4.3.2).

The dimensional stability shall be stated in the ETA, expressed as the designation of the dimensional stability class(es) corresponding to the relative change in length and width for the correspondingly assessed test conditions.

2.2.12 Short-term water absorption

Short-term water absorption by partial immersion, W_p , shall be determined in accordance with EN 13165, clause 4.3.7.1. The test shall be performed in accordance with EN ISO 29767 method A. The result of the assessment, i.e., the average test result on at least 4 test specimens, shall be specified in the ETA.

2.2.13 Thermal conductivity and thermal resistance

2.2.13.1 General

Thermal resistance and thermal conductivity shall be based upon measurements carried out in accordance with EN 12667 or, for thick products, EN 12939.

The thermal resistance and thermal conductivity can be stated as arithmetic average or as statistical values, the latter being the reference method. The arithmetic average method is used when input data as described in EN 13165, Annex A, are not available.

2.2.13.2 Assessment of the arithmetic average

- At least 4 measurements shall be performed;
- the reference mean temperature shall be 10°C;
- the measured values shall be expressed with three significant figures;
- for products of uniform thickness, the thermal resistance, R , shall always be determined. The thermal conductivity, λ , shall be determined where possible. Where appropriate, for products of non-uniform thickness (e.g., for sloped and tapered products) only the thermal conductivity, λ , shall be determined, taking into account EN ISO 6946, Annex E;
- The value of thermal conductivity is calculated according to EN ISO 10456 for a moisture content of the insulation product at 23 °C/50 %RH. If conversion of the thermal conductivity due to moisture is necessary, the moisture conversion coefficient, f_u , and the moisture content, u , at 23 °C/50 %RH and at 23 °C/80 %RH shall be given in ETA.

The measured values and the arithmetic average of thermal conductivity shall be given in the ETA.

2.2.13.3 Assessment of the statistical values

The thermal conductivity and thermal resistance shall be determined according to the following:

- the reference mean temperature shall be 10°C;
- the measured values shall be expressed with three significant figures;
- for products of uniform thickness, the thermal resistance, R_D , shall be specified in the ETA. The thermal conductivity, λ_D , shall be specified where possible;
- the thermal resistance, R_D , and the thermal conductivity, λ_D , shall be given as limit values representing at least 90% of the production, determined with a confidence level of 90%;
- the statistical value of thermal conductivity, $\lambda_{90/90}$, shall be rounded upwards to the nearest 0,001 W/(m.K) and specified as λ_D in levels with steps of 0,001 W/(m.K);
- the thermal resistance, R_D , shall be calculated from the nominal thickness, d_N , and the corresponding thermal conductivity $\lambda_{90/90}$, unless measured directly;
- the statistical value of thermal resistance, $R_{90/90}$, when calculated from the nominal thickness, d_N , and the corresponding thermal conductivity, $\lambda_{90/90}$, shall be rounded downwards to the nearest 0,05 m².K/W, and specified as R_D in levels with steps of 0,05 m².K/W;
- the statistical value of thermal resistance $R_{90/90}$, for those products for which only the thermal resistance is measured directly, shall be rounded downwards to the nearest 0,05 m².K/W and specified as R_D in levels with steps of 0,05 m².K/W;

The thermal conductivity and resistance shall be given at a mean temperature of 10°C and with a moisture content equal to the one in equilibrium with air at 23°C and relative humidity of 50% (cf. EN ISO 10456, clause 5, Table 1). They shall be determined using the principles as detailed in EN 13165, Annex A, clauses A.2, A.3.2 and A.3.3.

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 Decision⁴ 1999/91/EC, as amended by Decision⁵ 2001/596/EC. The systems to be applied have been specified in Table 3.1.1.

Table 3.1.1 System of assessment and verification of constancy of performance applicable to the products covered by this EAD.

Product(s)	Intended use(s)	Level(s) or class(es)	System(s) of assessment and verification of constancy of performance ⁽¹⁾
Thermal insulation products	Any	-	3
	For uses subject to reaction to fire regulations	A1*, A2*, B* and C*	1
		A1**, A2**, B**, C**, D, E	3
		(A1 to F)*** and NPD****	4
⁽¹⁾ Systems 1, 3 and 4: see Regulation (EU) N° 305/2011, Annex V			
* 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)			
** Products/materials not covered by footnote (*)			
*** Products/materials that do not require to be tested for reaction to fire (e.g., Products/materials of classes A1 according to Commission Decision 96/603/EC, as amended).			
**** 'No Performance Determined' in accordance with Regulation (EU) N° 305/2011, Article 6(f)			

⁴ Official Journal L 29 of 3 February 1999

⁵ Official Journal L 209 of 2 August 2001

3.2 Tasks of the manufacturer

The corner stones of the actions to be undertaken by the manufacturer of bonded foam 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 ⁽¹⁾	Criteria, if any	Minimum number of samples	Minimum frequency of control ⁽²⁾
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Reaction to fire	2.2.1	2.2.1	1	Once per month
2	SVOC and VOC	2.2.3	See control plan	1	Once per year
3	Airflow resistance	2.2.4	See control plan	2.2.4	Every two years
4	Sound absorption	2.2.5	See control plan	2.2.5	
5	Airborne sound insulation	2.2.6	See control plan	2.2.6	
6	Tensile strength perpendicular to faces	2.2.7	See control plan	3	Once per month
7	Length	2.2.8	See control plan	2.2.8	Every two hours
	Width				Every eight hours
	Thickness				
	Squareness				
	Flatness				
8	Density	2.2.9	See control plan	2.2.9	Every eight hours
9	Water vapour transmission	2.2.10	See control plan	2.2.10	Once every year
10	Dimensional stability	2.2.11	See control plan	2.2.11	Once every year
11	Short-term water absorption	2.2.12	See control plan	2.2.12	Once every year
12	Thermal conductivity and thermal resistance	2.2.13	See control plan	2.2.13	Once per year, indirect testing 1 per 24 h for the density ⁽³⁾
Notes: (1) The TAB and the manufacturer may agree to alternative tests or control methods and corresponding number of samples and criteria. (2) In case of discontinuous production these minimum frequencies should be adapted to an equivalent frequency. (3) Indirect verification / testing is done via determination of the density					

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 (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

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 carried out by the manufacturer regarding the constancy of performance related to reaction to fire <i>(for system 1 only)</i>					
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 carried out by the manufacturer regarding the constancy of performance related to reaction to fire <i>(for system 1 only)</i>					
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 1603:2013	Thermal insulating products for building applications. Determination of dimensional stability under constant normal laboratory conditions (23 C/50 % relative humidity)
EN 1604:2013	Thermal insulating products for building applications - Determination of dimensional stability under specified temperature and humidity conditions
EN 12086:2013	Thermal insulating products for building applications. Determination of water vapour transmission properties
EN 12667:2001	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance
EN 12939:2000	Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Thick products of high and medium thermal resistance
EN 13165:2012+A2:2016	Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products – Specification
EN 13501-1:2018	Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
EN 15715:2009	Thermal insulation products - Instructions for mounting and fixing for reaction to fire testing - Factory made products
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 717-1:2020	Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation
EN ISO 6946:2017	Building components and building elements - Thermal resistance and thermal transmittance - Calculation methods
EN ISO 9053-1:2018	Acoustics - Determination of airflow resistance - Part 1: Static airflow method
EN ISO 10140-1:2021	Acoustics - Laboratory measurement of sound insulation of building elements - Part 1: Application rules for specific products
EN ISO 10140-2:2021	Acoustics - Laboratory measurement of sound insulation of building elements - Part 2: Measurement of airborne sound insulation
EN ISO 10140-5:2021	Acoustics - Laboratory measurement of sound insulation of building elements - Part 5: Requirements for test facilities and equipment
EN ISO 10456:2007/AC:2009	Building materials and products. Procedures for determining declared and design thermal values (ISO 10456:1999)
EN ISO 29466:2022	Thermal insulating products for building applications - Determination of thickness
EN ISO 29470:2020	Thermal insulating products for building applications - Determination of the apparent density
EN ISO 29767:2019	Thermal insulating products for building applications - Determination of short-term water absorption by partial immersion

ISO 16000-3:2011	Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method
ISO 16000-9:2006:	Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method
ISO 16000-11:2006	Determination of the emission of volatile organic compounds from building products and furnishing - Sampling, storage of samples and preparation of test specimens

ANNEX A Additional provisions for determination the characteristic Propensity to undergo continuous smouldering

A.1 Sample input data

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 materials, e.g., type of binder and additives / treatment, and produced in a certain type of production process)⁶;
- the product or product variant with the highest and lowest density, determined by tests according to EN ISO 29470;
- the product or product variant with the highest thickness, determined by tests according to EN ISO 29466 on at least three specimens;
- each different produced orientation (i.e., lengthwise and crosswise to the length direction of the specimen),
- without any facings, coatings or suchlike – existing facings or coatings shall be removed when preparing the test specimens.

A.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 paragraph 6.2.5 of EN 16733 applies, a permanent contact between the pieces shall be assured.

A.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 between those evaluated,
- with lower thickness and also with higher thickness when 100 mm thick specimens were tested,
- with all orientations, if all relevant orientations had been tested,
- with any facings or coatings or suchlike and
- for any end-use conditions.

⁶ 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 should be submitted to testing.