EAD **060014-00-0802**

www.eota.eu

July 2019

European Assessment Document for

Construction product for penetration of walls and floors by components for conveying products of combustion

The reference title and language for this EAD is English. The applicable rules of copyright refer to the document elaborated in and published by EOTA.

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

1.1 Description of the construction product

The construction product for penetration of walls and floors by components for conveying products of combustion (named “PWF”) consists of fire protective boards with class A1 (according to EN 13501-1[1]) regarding reaction to fire as defined in EAD 350142-00-1106, or equivalent, and non-combustible thermal insulation boards made of mineral wool (e.g., depicted as key number 1 in Figure 1.1.1 and key number 2 in Figure 1.1.2 in this EAD) assembled in the manufacturing plant.

In addition, for adjustment of the product to the component conveying the combustion products (e.g., adjustment for different dimensions of flue liners), non-combustible (class A1 regarding reaction to fire, according to EN 13501-1) thermal insulation material made of mineral wool, applied either on site (e.g., loose fibred mineral wool) or in the manufacturing plant (e.g., prefabricated boards/shells), is used. Examples are given in Figures 1.1.1 and 1.1.2 (loose fibred mineral wool, indicated as key number 2 in Figure 1.1.1, prefabricated boards/shells, indicated as key number 3 in Figure 1.1.2).

Note: Figures 1.1.1 and 1.1.2 are just examples and shall not be understood limiting the scope of the EAD to such products.

All thermal insulation material used for this product is made of mineral wool, complying with the requirements given in Clause 5.1.5.3 in EN 13063-1. Between the product and the components conveying the combustion products no air gap is foreseen.

For the density of the thermal insulation material, in case of use of ceramic flue liner or plastic flue liner, EN 13063-1, Clause 5.1.5.2 applies. In case of use of metal flue liner, EN 1856-1, clause 5.5 applies.

The component for conveying the combustion products is not forming part of the product covered by this EAD, but to be defined for the performances to be assessed (see clause 2.2.1).

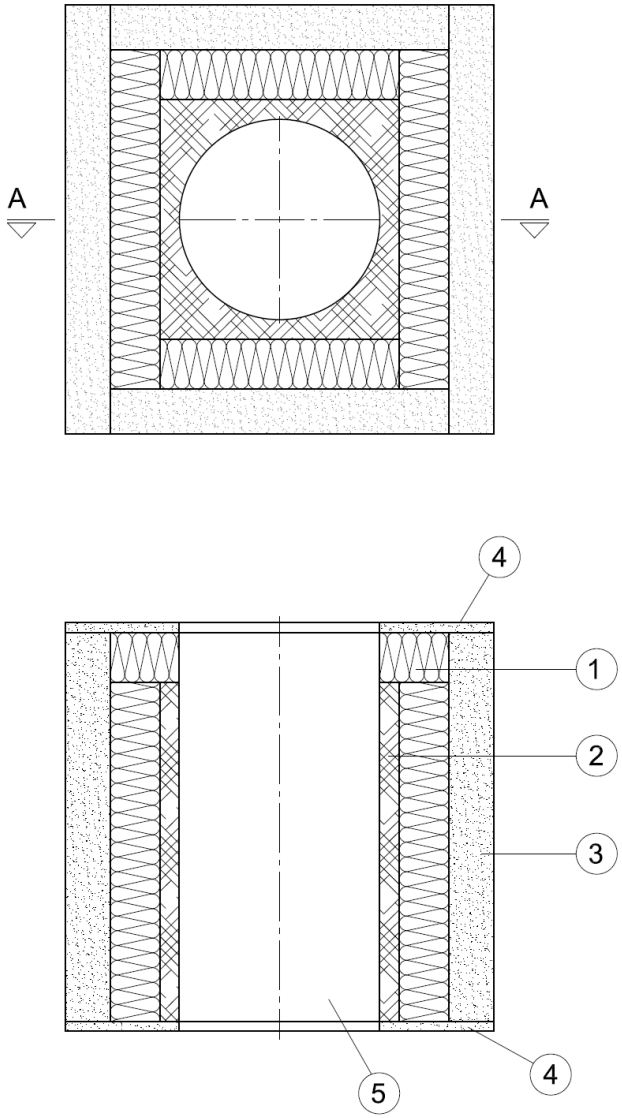
Sealants (optional) are made of inorganic cement-bonded materials (fire resistant ≥1000 °C).

The components are joint together by means of mechanical fixings and/or gluing (inorganic adhesive).

The product may be equipped with lamination made of metal foil (e.g., key number 1 in figure 1.1.2).

The product is not covered by a harmonised European standard (hEN). In particular, it is not covered by hEN 13063-1 because it is a product for conducting chimney flue liners and it is not a chimney kit or chimney flue liner itself; the flue liner is not part of the product. Nevertheless, specific conditions of hEN 13063-1 do apply in terms of the essential characteristic as detailed.

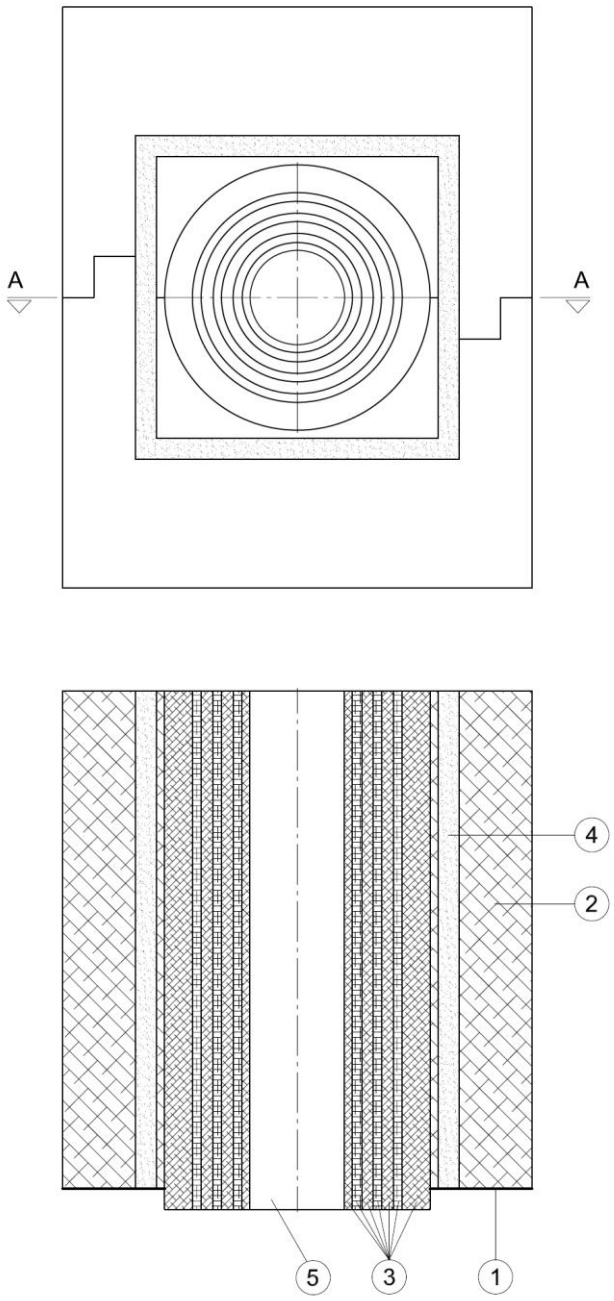
1 All undated references to standards or to EADs in this EAD are to be understood as references to the dated versions listed in chapter 4.



Legend:

1	Thermal insulation board
2	Loose fibred mineral wool
3	Fire protective board
4	Fire protective board
5	Free space reserved for components for conveying products of combustion (single wall flue liner or double wall flue liner or combination of both starting with single wall flue liner and change with adaptor to double wall flue liner inside the PWF), which are not forming part of the product.

Figure 1.1.1: Vertical and cross section of the product (Example)



Legend:

1	Lamination made of metal foil
2	Thermal insulation boards
3	Prefabricated boards/shells
4	Fire protective board
5	Free space reserved for components for conveying products of combustion (single wall flue liner or double wall flue liner or combination of both starting with single wall flue liner and change with adaptor to double wall flue liner inside the PWF), which are not forming part of the product.

Figure 1.1.2: Vertical and cross section of the product (Example)

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)

Protection of adjacent combustible units against heating due to conveyance of combustion products up to temperature class T600 and sootfire resistance class G according to Clause 4 of EN 1443.

Note: Classification Txxx G does include the use of the product for classification Txxx O.

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 PWF for the intended use of 10-25 years, depending on the product used for conveyance of combustion products, when installed in the works (provided that the fire protection panels and non-combustible thermal insulation boards are subject to appropriate installation (see 1.1)). 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 works[2].

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.

[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 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 “PWF” 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	Resistance to fire from internal to external (sootfire resistance and thermal shock resistance)	2.2.1	Description
2	Reaction to fire	2.2.2	Class
3	Propensity to undergo continuous smouldering	2.2.3	Description
Basic Works Requirement 3: Hygiene, health and the environment			
4	Tightness[1]	2.2.4	Level

[1] Relevant in case of use of the product in outer walls of buildings with specific requirements regarding the tightness of the building (e.g., passive house).

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 Resistance to fire from internal to external (sootfire resistance and thermal shock resistance)

Purpose of the assessment

For the PWF the compatibility with the relevant temperature class, to be stated in the intended use in the ETA, and sootfire resistance class according to the relevant technical specification of the liner for conveying the combustion products, shall be assessed.

Assessment method

In case of use of ceramic liner for conveying the combustion products, assessment shall be done according to EN 13216-1, Clause 5.7.

In case of use of ceramic liner in combination with metal liner for conveying the combustion products, assessment shall be done according to EN 1859, Clause 4.5.3.

In case of use of metal liner for conveying the combustion products, assessment shall be done according to EN 1859, Clause 4.5.3. Products assessed with metal flue liner also cover the use with ceramic flue liner.

The use of plastic flue liner according to EN 14471, which is limited to sootfire resistance class “O” according to EN 14471, for conveying the combustion products, for temperature class up to T200 is covered by the assessment stated above either for the use of ceramic or for the use of metal liner.

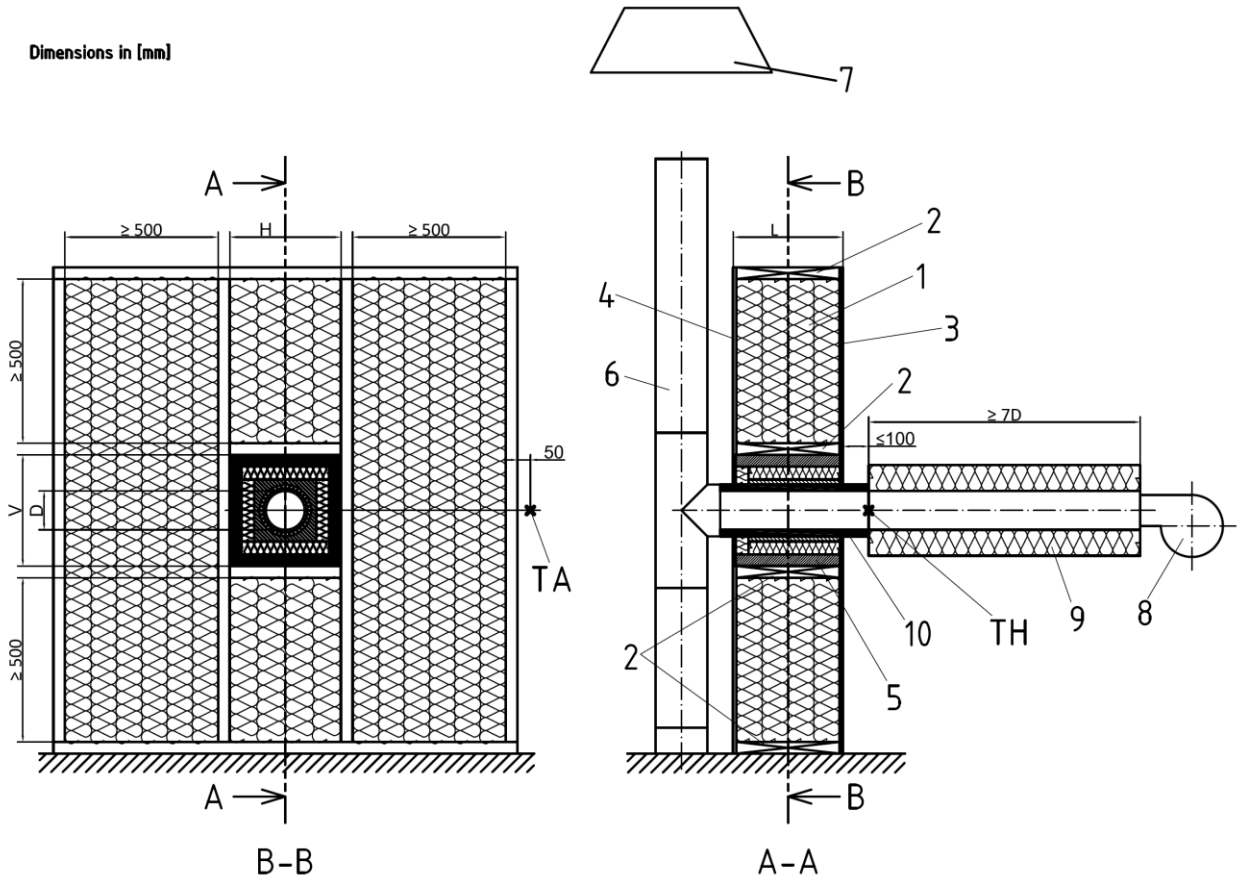
Regarding the test rig, deviating to EN 13216-1, Clause 5.7 (for ceramic liner), and EN 1859, Clause 4.5.3 (for metal liner), the product is installed in a wall made of burnable materials, as defined in Figure 2.2.1.1.

The dimension of the cross section of the wood joists (figure 2.2.1.1, key number 2) is defined by a thickness of 50 mm and the length L of the product to be assessed (figure 2.2.1.1, key L).

The temperature measurement elements shall be located centred in the middle of the penetration on the adjacent combustible unit (see Figures 2.2.1.2 and 2.2.1.3).

In applying EN 1443, Clauses 4.2.1 and 4.2.5, the temperature limits of 85°C and 100°C respectively of adjacent combustible materials shall be considered as assessment criterion for the whole procedure.

In general, one specimen shall be tested. For the upper limit of diameters for the flue liner in the testing the diameter 200 mm applies. For the range of products to be covered, the assessment shall be done on the product configuration with the minimal thermal insulation thickness between the components for conveying products of combustion and the adjacent combustible materials, in order to cover the most onerous situation regarding occurring temperature in order to evaluate the temperature limits stated above.For the sealants made of inorganic cement-bonded material, if part of the product, assessment of long-term resistance to thermal load is not of relevance as only sealants are used which are fire resistant ≥1000 °C according to the scope of this EAD.



Legend:

1	Insulation according to EN 13216-1, 5.7.2.2.3
2	Timbers with a thickness of 50 mm
3 & 4	Wall covering according to EN 13216-1
5	PWF according to this EAD
6	Chimney for conveying combustion products (not part of this EAD)
7	Extract provisions
8	Hot gas generator according to EN 13216-1, 5.7.2.4.2
9	Hot gas connecting pipe according to EN 13216-1, 5.7.2.4.1
10	Single wall flue liner or double wall flue liner or combination of both starting with single wall flue liner and change with adaptor to double wall flue liner inside the PWF (defined for the assessment procedure but not part of the product covered by the ETA according to this EAD)
D	Inner diameter of the flue liner that passes the PWF
V	Vertical dimension of the PWF
H	Horizontal dimensions of the PWF
L	Maximum declared length of the PWF
TH	Hot gas temperature defined according to EN 13216-1, 5.7.2.5.1
TA	Ambient air temperature according to EN 13216-1, 4.2 - 4.4

Figure 2.2.1.1: Test configuration for PWF according to this EAD, dimensions are given in [mm]

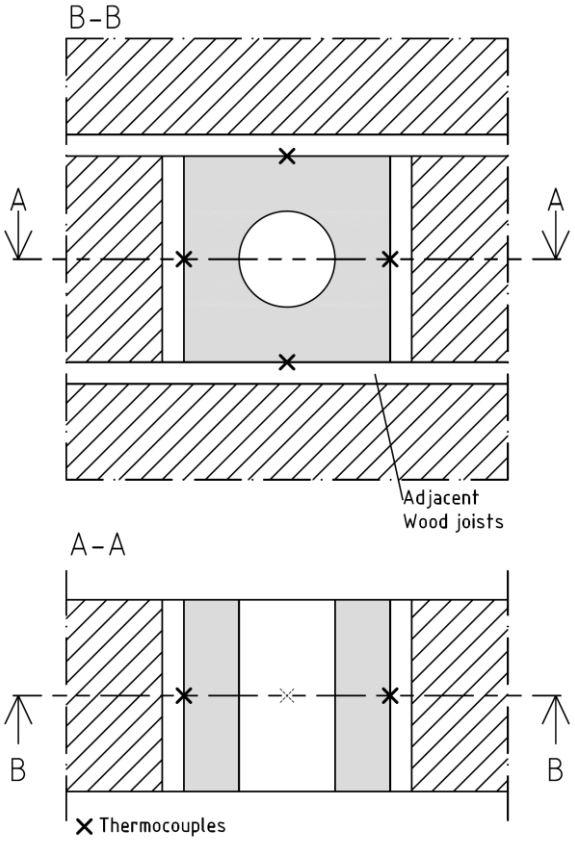


Figure 2.2.1.2: Temperature measurement configuration

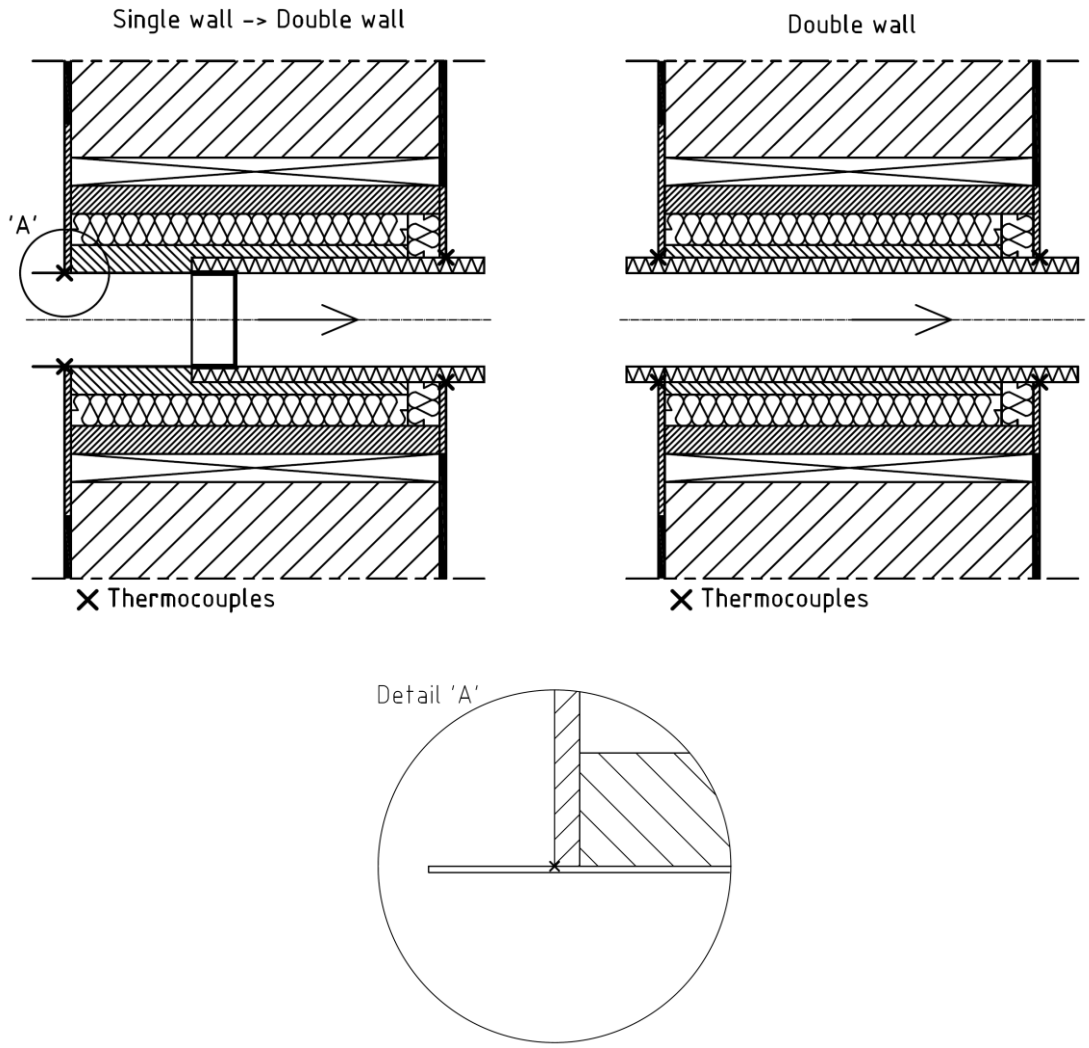


Figure 2.2.1.3: Temperature measurement configuration

Expression of results

Result shall be stated in terms of description in relation to the relevant temperature class and sootfire resistance class according to the relevant technical specification for the component conveying the combustion product for its intended use.

In the ETA the following shall be stated: Given for Txxx and G. In addition, dimensions and density of thermal insulation used in the assessment shall be stated in the ETA. The stated Txxx and G also applies for product configurations with thermal insulation of greater dimensions.

2.2.2 Reaction to fire

Purpose of the assessment

This clause is referring to the assessment and classification of reaction to fire of the relevant components.

Assessment method

The components shall be classified using one of the cases listed below.

Case 1: Components satisfying the requirements for the fire reaction class A1, without the need for testing

The components are considered to satisfy the requirements for performance class of the characteristic reaction to fire, in accordance with the Commission Decision 96/603/EC, amended by Commission Decision 2000/605/EC and Commission Decision 2003/424/EC, without the need for testing. The used Commission Decision regarding the components shall be stated in the ETA.

Therefore, the performance of the component(s) covered by above mentioned decisions is A1.

Case 2: Components covered by harmonised technical specifications

The performance regarding reaction to fire of materials not covered by Case 1 shall be taken from the DoP of this component and given in the ETA.

Case 3: Conditions of case 1 and case 2 are not given

The component shall be tested according to the method(s) referred to in EN 13501-1 and relevant for the corresponding reaction to fire class. The product shall be classified according to the Commission Delegated Regulation (EU) No 2016/364.

Expression of results

Reaction to fire class of the components shall be stated in the ETA.

2.2.3 Propensity to undergo continuous smouldering

Purpose of the assessment

The characteristic "Propensity to undergo continuous smouldering" is required in some Member States and according to the scope of this EAD, is relevant for components made of mineral wool (EN 13162) and in-situ loose-fill products made of mineral wool fibres.

Assessment method

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

The conditions and parameters which shall be taken into account within the tests as well as the rules for the application of test results for the thermal insulation products are specified in Annex A, until harmonised technical specifications for the thermal insulation products do not provide such provisions.

Expression of results

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

Performance according to EN 16733, Clause 11, of the thermal insulation product as given in its own DoP or after testing	Description of the performance of the product regarding the characteristic Propensity to undergo continuous smouldering to be stated in the ETA
The thermal insulation product does not show propensity to undergo continuous smouldering (NoS).	The product does not show propensity to undergo continuous smouldering.
The thermal insulation product shows propensity to undergo continuous smouldering (S).	The product shows propensity to undergo continuous smouldering.
Assessment of the propensity for continuous smouldering combustion is not possible (ANP).	Assessment of the propensity to undergo continuous smouldering is not possible.

2.2.4 Tightness

Purpose of the assessment

The air tightness of the PWF shall be assessed and indicated in the ETA for the use within buildings where specific requirements for the building and its elements regarding air tightness apply.

Assessment method

Assessment shall be done on a complete unit, composed of the product PWF according to this EAD and the component of conveying the combustion products, applying positive and negative pressure of 50 Pa.

Test shall be carried out on one representative specimen. The product including the related minimum thickness of thermal insulation and related maximum diameter of the component of conveying the combustion products shall be tested in order to cover the most onerous situation. Most onerous situation is related to maximum occurring temperature at the outer wall to the adjacent part of the work.

For the assessment procedure Annex B of this EAD applies.

Assessment of the tightness shall be carried out before and after thermal load of the PWF defined in Clause 2.2.1 in this EAD.

Expression of results

In the ETA the tightness shall be expressed as maximum leakage rates [m^3/h] of the PWF, stated for positive and negative testing pressure of 50 Pa, including information of the type of product used for conveying the combustion products subject of the assessment.

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: 95/467/EC (EU), amended by 2001/596/EC (EU) and 2002/592/EC (EU) and 2010/679/EC (EU).

The 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[3] the applicable AVCP systems are: 1-3-4 depending on the conditions defined in the said Decision.

[3] Including propensity to undergo continuous smouldering, where relevant.

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 Tables 3.2.1 to 3.2.2.

For kits: 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]					
1	Check of incoming materials/components	Check of documentation of incoming materials according to relevant technical specification and/or supplier certificates	Laid down in control plan	N/A	Each delivery
1.1	Thermal insulation boards and prefabricated boards/shells:				
	Dimensions	Measurement	As defined in the control plan	As defined in the control plan	Each delivery
	Density	As defined in the control plan	As defined in the control plan	As defined in the control plan	Each delivery
	Mass loss	EN 13820	As defined in the control plan	As defined in the control plan	Each delivery
	Visual check	As defined in the control plan	As defined in the control plan	As defined in the control plan	Each delivery
1.2	Loose fibred mineral wool:				
	Weight	As defined in the control plan	As defined in the control plan	As defined in the control plan	Each delivery
2	Production: Dimensions Assembling	Laid down in control plan	Laid down in control plan	Each product	Each product
3	Finished products				
	Dimensions	Measurement	As defined in the control plan	As defined in the control plan	Each product
	Visual check	As defined in the control plan	As defined in the control plan	As defined in the control plan	Each product
	Loose fibred mineral wool: Amount per product	As defined in the control plan	As defined in the control plan	As defined in the control plan	Each product

N/A : not available

Table 3.2.2 Control plan for the manufacturer when the components are not produced by 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	Components belonging to FPC case 1 (*)	(1)	Conformity with the order	Testing is not required	Each delivery
		(2)	According to Control Plan	Testing is not required	Each delivery
2	Components belonging to FPC case 2 (**):	(1)	Conformity with the order	Testing is not required	Each delivery
	▪ Characteristics declared in DoP for the specific use within the kit.	(2)	According to Control Plan	Testing is not required	Each delivery
	▪ Characteristics not declared in DoP for the specific use within the kit.	(3)	According to Control Plan	According to Control Plan	According to Control Plan
3	Components belonging to FPC case 3 (***):	(1)	Conformity with the order	Testing is not required	Each delivery
		(3)	According to Control Plan	According to Control Plan	According to Control Plan

(1) Checking of delivery ticket and/or label on the package.
(2) Checking of technical data sheet and DoP or, when relevant: checking of supplier certificates or supplier tests or test or control according to Table 3.2.1 above.
(3) Checking of supplier documents and/or supplier tests and/or test or control according to Table 3.2.1 above.
(*) FPC case 1: Component covered by a hEN or its own ETA for all characteristics needed for the specific use within the kit.
(**) FPC case 2: If the component is a product covered by a hEN or its own ETA which, however, does not include all characteristics needed for the specific use within the kit or the characteristic is presented as NPD option for the component manufacturer.
(***) FPC case 3: The component is a product not (yet) covered by a hEN or its own ETA (in case of inspection document according to EN 10204, Type 2.2 applies for parameters given in line 1.1 and 1.2 in Table 3.2.1).

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 “PWF” are laid down in Table 3.3.1.

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 3.3.1 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	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 "**PWF**".	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	As defined in the control plan	As defined in the control plan	When starting the production
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	Once a year

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 *(for system 1 only)*					
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 *(for system 1 only)*					
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	2 times/year

4 REFERENCE DOCUMENTS

EAD 350142-00-1106:02-2016	“Fire protective boards, slab and mat products and kits”
EN 823:2013	“Thermal insulating products for building applications — Determination of thickness”
EN 1026:2016	“Windows and doors — Air permeability — Test method”
EN 1097-3:1998	“Tests for mechanical and physical properties of aggregates - Part 3: Determination of loose bulk density and voids”
EN 1443:2019	“Chimneys — General requirements”
EN 1602:2013	“Thermal insulating products for building applications — Determination of the apparent density”
EN 1859:2009+A1:2013	“Chimneys — Metal chimneys — Test methods”
EN 10204:2004	“Metallic products – Types of inspection documents”
EN 13063-1:2005+A1:2007	“Chimneys — System chimneys with clay/ceramic flue liners — Part 1: Requirements and test methods for sootfire resistance”
EN 13162:2012+A1:2015	“Thermal insulation products for buildings — Factory made mineral wool (MW) products — Specification”
EN 13216-1:2019	“Chimneys — Test methods for system chimneys — Part 1: General test methods”
EN 13501-1:2018	“Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests”
EN 13820:2003	“Thermal insulating materials for building applications – Determination of organic content”
EN 14471:2013+A1:2015	“Chimneys — System chimneys with plastic flue liners — Requirements and test methods“
EN 16733:2016	“Reaction to fire tests for building products — Determination of a building product's propensity to undergo continuous smouldering”

ANNEX A ADDITIONAL PROVISIONS FOR DETERMINATION OF THE PROPENSITY TO UNDERGO CONTINUOUS SMOULDERING OF THERMAL INSULATION MATERIAL MADE OF MINERAL WOOL AND MINERAL WOOL FIBRES

A.1 Provisions for factory-made products made of mineral wool

A.1.1 Specimen input data

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

- the product-variations of a product family (as defined by a certain combination of raw materials, e.g., fibre type, type of binder and additives, and produced in a certain production process)[4];
- the product or product variant with the highest organic content (in percentage per mass), determined according to EN 13820;
- the product or product variant with the highest density of the density range; if the maximum density is higher than 115 kg/m³, then additionally the product or product variant with a density of about 100 kg/m³ (± 15 %) shall be tested. If the highest density is lower than 115 kg/m³, then only the product or product variant with the highest density shall be tested. The density shall be determined in accordance with EN 1602.
- 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 backside to the maximum testable thickness of about 100 mm. The thickness shall be determined in accordance with EN 823 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 non-substantial facings, coatings (or similar) – existing non-substantial facings or coatings shall be removed when preparing the test specimens.

A.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.

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

A.1.3 Extended application of test results

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

- of the same product-type,
- 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 non-substantial facings or coatings and
- for any end-use conditions.

4 To permit the TAB to apply EXAP-rules for test results within the assessment, it is recommended that the manufacturer provides (but he is not obliged to do it) sufficient information (e.g., on the basis of the composition of the product in question), allowing the TAB to determine which products or product variants shall be submitted to testing and to reduce the number of tests required.

A.2 Provisions for in-situ loose-fill products made of mineral wool fibres

A.2.1 Specimen input data

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

- the product-variations of a product family (as defined by a certain combination of raw materials, e.g., fibre type, type of binder and additives, and produced in a certain production process)[5];
- the product or product variant with the highest organic content (in percentage per mass), determined according to EN 13820;
- the product or product variant with the highest as well as lowest bulk density and - if part of the bulk density range to be considered - a bulk density of about 100 kg/m^3 (± 15 %), determined according to EN 1097-3.

A.2.2 Preparation of test specimen

The tests shall be done on free-hanging specimens using the specimen holder for loose-fill products as specified in the test standard (wire mesh box with a thickness of about 100 mm) without consideration of the intended end-use conditions, because propensity to undergo continuous smouldering is hardly affected by end-use conditions.

A.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 lower organic content,
- with any bulk densities between those evaluated,
- for any thickness and
- for any end-use conditions.

5 To permit the TAB to apply EXAP-rules for test results within the assessment, it is recommended that the manufacturer provides (but he is not obliged to do it) sufficient information (e.g., on the basis of the composition of the product in question), allowing the TAB to determine which products or product variants shall be submitted to testing and to reduce the number of tests required.

ANNEX B ASSESSMENT OF TIGHTNESS - ASSESSMENT PROCEDURE

B.1 Scope

This annex describes the method of assessing the tightness of a complete unit, composed of the product PWF according to this EAD and including a representative specimen of the component of conveying the combustion products.

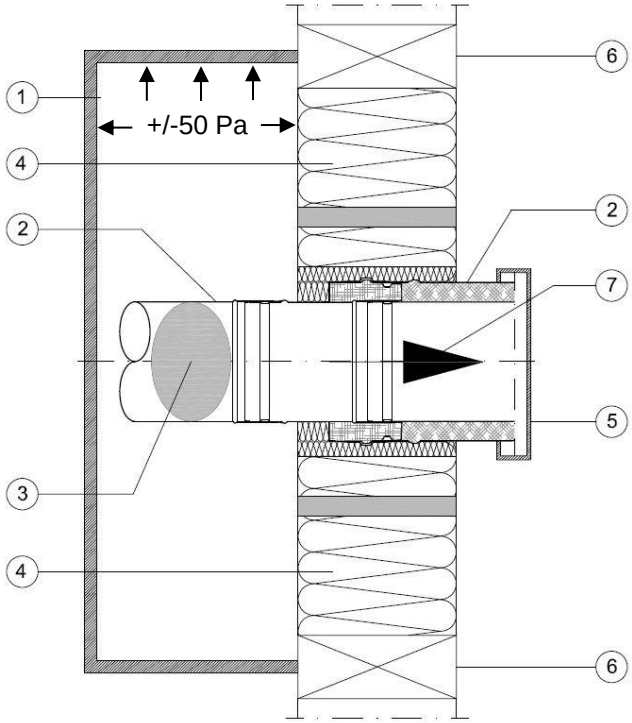
The assessment method given in EN 1026 applies with the deviations as defined hereinafter.

B.2 Description of the testing principles (Clause 4 in EN 1026)

Assessment shall be done by applying a positive and negative pressure of 50 Pa.

B.3 Testing equipment (Clause 5 in EN 1026)

Deviating to Clause 5.1 in EN 1026, for the testing equipment the test assembly defined in Figure B.3.1 applies.



Legend:

1	Test assembly for gas tightness
2	Single wall flue or double wall flue liner or combination of both starting with single wall flue liner and change with adaptor to double wall flue liner inside the PWF
3	Sealing
4	Product
5	Closure
6	Wood
7	Direction of flue gas

Figure B.3.1: Test assembly

Clause 5.2 in EN 1026 applies.

Clause 5.3 in EN 1026 is not of relevance.

Clauses 5.4 – 5.6 in EN 1026 apply.

B.4 Preparation of test specimen (Clause 6 in EN 1026)

The principles given in Clause 6 in EN 1026 apply.

B.5 Testing procedure (Clause 7 in EN 1026)

Clause 7.1 in EN 1026 applies, whereas deviating to Clause 7.1 in EN 1026 a positive testing pressure +50 Pa and a negative testing pressure -50 Pa apply.

Clause 7.2 in EN 1026 applies, whereas testing chamber with defined air permeability as defined in Clause 7.2.2 in EN 1026 applies.

B.6 Test execution (Clause 7 in EN 1026)

Instead of Clauses 7.3 and 7.4 in EN 1026 the following applies:

B.6.1 General

Before execution of the test, the openings of the product conveying the combustion products shall be sealed. In case of double wall conveying products, the outer wall shall be included. The test chamber (see in Figure B.3.1 Legend no 1) is to be applied room sided.

The testing pressures as defined in Clause B.5 is to be applied.

B.6.2 Measurement of leakage rate

The test chamber shall be provided with sufficient amount of air in order to establish the concerned testing pressure in case of positive testing pressure and extracted from air in order to generate the negative testing pressure respectively. The time to reach the maximum test pressure shall be not less than 1 s and the pressure shall be sustained for at least 3 s. The duration of the application of pressure for both levels (positive and negative) shall be sufficient to allow the test pressure to stabilise before the leakage rate is measured. The leakage rate shall be measured and recorded.

B.7 Determination of test result (Clause 8 in EN 1026)

Clauses 8.1 and 8.2 in EN 1026 apply, with the following deviation: instead of pressure p_x the applied testing pressure defined in clause B.5 is used.

Clauses 8.3 and 8.4 in EN 1026 are not of relevance.

B.8 Test report

The test report shall include the assessed leakage rate in terms of [m^3/h] for positive and negative testing pressure.