



## EUROPEAN ASSESSMENT DOCUMENT

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# CHIMNEY KIT WITH CLAY/CERAMIC FLUE LINER WITH CLASSIFICATION T400 (MINIMUM) N1/P1 W3 GXX, AND WITH DIFFERENT OUTER WALLS AND POSSIBLE CHANGE OF OUTER WALL

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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

<b>1</b>	<b>Scope of the EAD .....</b>	<b>4</b>
1.1	Description of the construction product	4
1.2	Information on the intended use(s) of the construction product	7
1.2.1	Intended use(s).....	7
1.2.2	Working life/Durability.....	7
1.3	Specific terms used in this EAD (if necessary in addition to the definitions in CPR, Art 2)	8
1.3.1	Chimney fitting.....	8
1.3.2	Grout.....	8
<b>2</b>	<b>Essential characteristics and relevant assessment methods and criteria.....</b>	<b>8</b>
2.1	Essential characteristics of the product	8
2.1.1	Essential characteristics of the assembled kit to be used in an assembled system.....	8
2.1.2	Essential characteristics of the components of the assembled system.....	10
2.2	Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	14
2.2.1	Essential characteristic of the assembled kit to be used in an assembled system.....	14
2.2.2	Essential characteristics of the components of the assembled system.....	19
<b>3</b>	<b>Assessment and verification of constancy of performance .....</b>	<b>24</b>
3.1	System(s) of assessment and verification of constancy of performance to be applied	24
3.2	Tasks of the manufacturer	24
3.3	Tasks of the notified body	33
<b>4</b>	<b>Reference documents.....</b>	<b>44</b>
<b>Annex A</b>	<b>Test sequence for the chimney kit with clay/ceramic flue liner for verification of classification W3 G.....</b>	<b>46</b>

# 1 SCOPE OF THE EAD

## 1.1 Description of the construction product

The chimney kit with clay/ceramic flue liner is a kit for multiwall sootfire resistant chimneys, working under dry and wet conditions, with corrosion resistance class 3 according to EN 1443, clause 4.5, operating under negative pressure, and positive pressure respectively, and a working temperature class T400/T600 according to EN 1443, clause 4.2. The chimney kit according to this EAD is referring to a classification N1/P1 W3 Gxx.

The chimney kit may be manufactured as prefabricated storey height units.

This EAD is applicable to the chimney kit with clay/ceramic flue liner which is consisting of the following components (see Figure 1a):

- clay/ceramic flue liner
- chimney fittings
- outer wall made of concrete or clay/ceramic, optional with additional coating, or metal or prefabricated outer wall units made of calcium silicate boards
- thermal insulating outer wall element (optional) made of foam glass/ aerated concrete or clay/ceramic with additional filling
- thermal insulation material (mineral fibres) (optional)
- mortar for jointing outer walls
- mortar for jointing flue liners or sealing made of glass fibre fabrics respectively
- grout for outer walls (optional)
- reinforcement and related ancillaries (optional)
- chimney base (consisting of outer wall elements, flue liner, made of clay/ceramic, supporting plate, and the siphon, made of metal or plastics and cleaning and inspection door, including sealing rope, and condensate collector)
- upper cleaning and inspection door, including sealing rope
- closing devices in case of more than one heating appliance (optional, depending on intended use according to Cl. 1.2.1 of this EAD)
- covering
- optional components for the use of the kit in buildings with specific requirements regarding tightness of the building and air exchange rate
- adapter for outer wall geometries in case of change of outer walls (from concrete, clay/ ceramic to metal)
- insulation kit for outer wall top (optional)

In case of non-metallic outer walls, the chimney kit may be extended by means of outer wall made of metal as shown in Figures 1b, whereas the flue liner is to be continued for the whole kit.

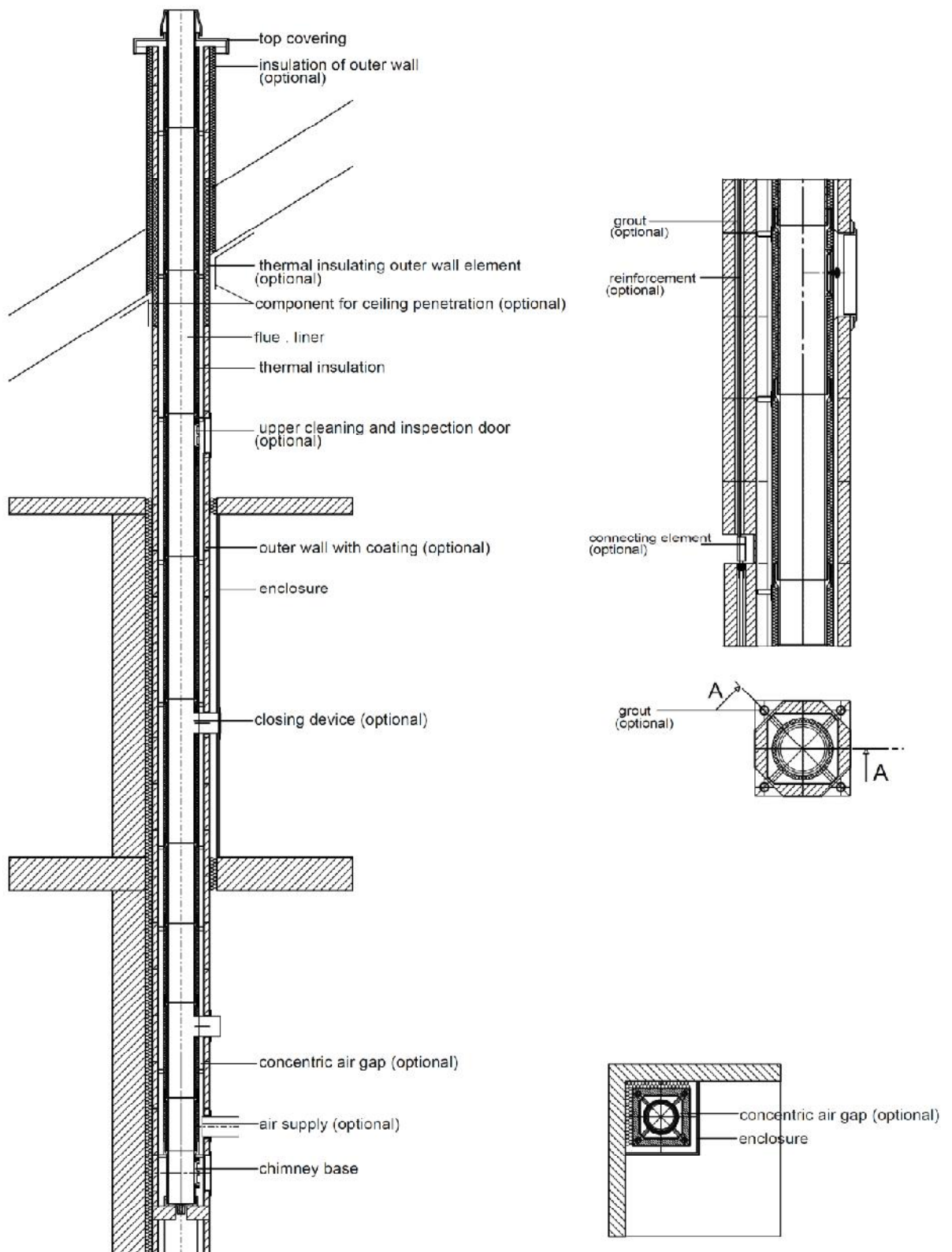


Figure 1a: General drawing of chimney kit and its components (Example)

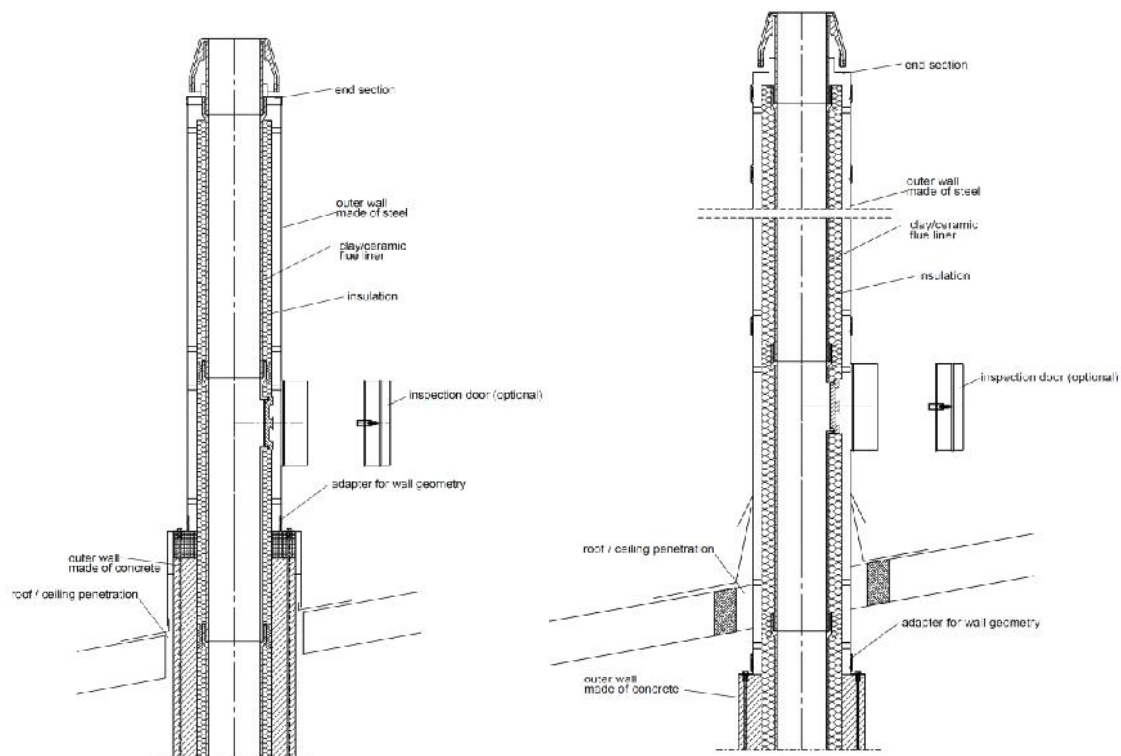


Figure 1b: Chimney kit with extension by means of outer wall made of metal (Examples)

In general, elastomeric sealings are not part of the kit. In case of the classification P1 the inspection doors of the flue liner may include elastomeric sealings in order to achieve the requested tightness. In this case the inspection doors according to this EAD are equipped with an additional element and for its assessment the Clauses 2.2.2.10.5 and 2.2.2.10.6 in this EAD are of relevance.

Elements for ceiling penetration are to be delivered with the kit for the concerned specific intend use but are not an element of the system chimney itself. They are used together with the chimney kit in case the chimney kit should be used as suitable component in buildings with specific requirements regarding tightness of the building and air exchange rate (e.g. passive house).

The change of outer wall, including its geometries, according to this EAD is referred to change of non metallic outer wall to outer wall made of stainless steel for extension of the chimney kit, and relevant for temperature class T400 and T600 respectively. Whereas the possible change is not relevant for system chimneys serving more than one heating appliance. For the outer wall made of metal Cl. 2.2.2.2 in this EAD applies. For the change an adapter as defined in Cl.1.1 of this EAD is used.

The the product is not fully covered by the following harmonised technical specifications:

EN 13063-1 (2007-07), EN 13063-2 (2007-07), EN 13063-3 (2007-07).

The chimney kit according to this EAD deviates from concerned standards due to its classification T400 N1/P1 W3 Gxx, which is not covered by the concerned European harmonized standards, whereas T400 is minimum temperature class covered by this EAD. In addition, the essential characteristics relevant for the use of the product in buldings with specific requirements regarding air tightness and minimum outer surface temperature are not dealt with in the concerned standards. Even the situation of possible change of outer wall within the system chimney, dealt with in Clause 2.2.1.14 in this EAD, is not addressed in the harmonized standards mentioned above. Furthermore, the testing arrangement according to EN 13216-1 does not refer to the specific situation of increased thickness for the thermal insulation as indicated in Clause 2.2.1.2 in this EAD.

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)

This EAD covers the following intended uses and (assembled) systems:

- System chimneys with clay/ceramic flue liner used to convey the products of combustion from appliances to the outside atmosphere under dry and wet conditions, operating under negative/positive pressure.
- Optional: System chimneys serving more than one heating appliance (restricted to T400 and to solid fuel) in case of chimneys for roomsealed appliances for N1.
- Optional: System chimneys in case of chimneys for roomsealed appliances for N1/P1 to be used as suitable component in buildings with specific requirements regarding tightness of the building and air exchange rate (e.g. passive house).

The designation of the product for its intended use is done on basis of the essential characteristics listed below.

- Temperature class
- Pressure class
- Condensate resistance class
- Corrosion resistance class
- Sootfire resistance class, followed by a distance to combustible materials
- Thickness of increased thermal insulation of adjacent wall/ceiling in relation to concerned U-value

In case of serving more than one heating appliance, the following information is relevant:

- Number of heating appliance according to [reference to verification method]
- Declaration of restriction to solid fuel type (+ addressing type of solid fuel)
- Maximum allowable performance of heating appliance [kW]

In case of use in buildings with specific requirements regarding tightness and air exchange rate, the following information is relevant:

- Air tightness of outer wall at testing pressure of 50 Pa: xx [m<sup>3</sup>/hm]
- Minimum outer surface temperature at defined ambient temperature

### 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 chimney kit with clay/ceramic flue liner for the intended use of 30 years when installed in the works (provided that the chimney kit with clay/ceramic flue liner is subject to appropriate installation (see 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience. In particular, it is related to the flue liner and the maintenance of its thickness with respect to the concerned aspects

of durability given in EN 13063-1, EN 13063-2. Appropriate evaluation is carried out by means of the assessment of the resistance to abrasion of the flue liner in relation to a working life.

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<sup>1</sup>.

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 (if necessary in addition to the definitions in CPR, Art 2)**

For the purposes of this EAD, the specific terms and definitions given in EN 1443, EN 13063-1, EN 13063-2 and EN 13063- 3 apply.

#### **1.3.1 Chimney fitting**

The term chimney fitting corresponds to similar terms (chimney junctions (EN 1457-1 and EN 1457-2), opening sections (EN 13063-1)).

#### **1.3.2 Grout**

Grout (in the sense of this EAD): Cement-bonded mortar, manufactured in plant.

## **2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA**

### **2.1 Essential characteristics of the product**

#### **2.1.1 Essential characteristics of the assembled kit to be used in an assembled system**

Table 1 shows how the performance of the assembled chimney kit is assessed in relation to the essential characteristics.

The essential characteristics of the chimney kit with clay/ceramic flue liner relevant for the intended use of the product as foreseen by the manufacturer(s) and as referred to in clause 1.2 of this EAD are indicated in Table 1, those for its components are indicated in Clauses 2.1.2.1 to Clause 2.1.2.17.

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<sup>1</sup> 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.



**Table 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
<b>Basic Works Requirement 2: Safety in case of fire</b>			
1	Resistance to fire resulting from external to external	2.2.1.1	Class (as declared)
2	Resistance to fire from internal to external (sootfire resistance and thermal shock resistance)	2.2.1.2	Class "Gxx"
<b>Basic Works Requirement 3: Hygiene, health and the environment</b>			
3	Gas tightness/leakage	2.2.1.3	Class
4	Flow resistance	2.2.1.4	Level
5	Thermal resistance	2.2.1.5	Level
6	Durability/Condensate resistance	2.2.1.6	Class "W"
7	Durability of gas tightness/leakage against chemicals/corrosion  Durability of compressive strength against chemicals	2.2.1.7	Class "3"
8	Thermal and fluid dynamic characteristics of chimneys serving more than one heating appliance	2.2.1.8	Description
9	Air tightness of the outer wall*	2.2.1.9	Level
10	Minimum outer surface temperature at defined ambient temperature*	2.2.1.10	Level
<b>Basic Works Requirement 4: Safety and accessibility in use</b>			
11	Maximum height	2.2.1.11	Level
12	Freeze/thaw resistance	2.2.1.12	Description
13	Durability in case of change of outer wall**	2.2.1.13	Description
14	Flow resistance in case of change of outer wall**	2.2.1.14	Level
*For specific intended use in buildings with specific requirements regarding tightness of the building and air exchange rate.			
** In case of non-metallic outer wall when the chimney kit may be extended by means of outer wall made of metal, whereas the flue liner is continued for the whole kit			

## 2.1.2 Essential characteristics of the components of the assembled system

### 2.1.2.1 Clay/ceramic flue liner

For clay/ceramic flue liner the essential characteristics according to EN 1457-2 apply, depending on the intended pressure class, whereas the type min. A3P1 and A3N1 respectively for T600 and for T400 type min. B3P1 and B3N1 respectively apply. In addition, water vapour diffusion classes WA/WB/WC apply. For the assessment Clause 2.2.2.1 in this EAD applies.

### 2.1.2.2 Outer wall

For outer wall, made of concrete the essential characteristics according to EN 12446 apply.

Instead of concrete the outer wall may be made of clay/ceramic or metal or units made of calcium silicate boards.

In case of clay/ceramic the essential characteristics according to EN 13069 apply.

For outer wall, made of metal, including extension of the outer wall as defined in Cl. 1.1 of this EAD, the essential characteristics according to EN 13063-1, Annex B, apply.

For outer wall made of units of calcium silicate boards for the material of the boards the essential characteristics according to EN 14306 apply. For the jointing material a material with reaction to fire class A1 according CDR (EU) 2016/364 is used. In addition, for the compressive strength of the jointing material EN 13063-1 applies.

For the assessment Clause 2.2.2.2 in this EAD applies.

In case of storey height units, the compressive strength shall be assessed depending on the concept of reinforcement (see 2.2.2.8 in this EAD) and maximum allowable length of the units, considering all operating situations (transport, mounting, fixing).

Optional coating of outer walls in case of storey height units and made of concrete or clay/ceramic is defined in the ETA.

### 2.1.2.3 Thermal insulating outer wall element made of foam glass/ aerated concrete or made of clay/ceramic with additional filling

For the outer wall element made of foam glass/aerated concrete Table 1b of this EAD applies.

Table 1b – Essential characteristics of of the thermal insulating outer wall element made of foam glass/ aerated concrete 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 4: Safety and accessibility in use			
1	Compressive strength of the element	2.2.2.3.1	Level

In case of outer wall elements made of clay/ceramic the thermal insulating outer wall element consist of outer wall element filled with lightweight aggregates according to EN 13055-1 or expanded perlite according to EN 14316-1. For assessment Clause 2.2.2.3.1 in this EAD applies.

### 2.1.2.4 Chimney fittings

For chimney fittings the essential characteristics according to EN 1457-2 apply, depending on the intended pressure class, whereas the type min. A3P1 and A3N1 respectively for T600 and for T400 type min. B3P1 and B3N1 respectively, apply. In addition, water vapour diffusion class WA/WB/WC apply. For the assessment Clause 2.2.2.4 in this EAD applies.

**2.1.2.5 Mortar for jointing outer walls**

For mortar for jointing outer walls, including jointing the parts of the thermal insulating outer wall elements the essential characteristics according to EN 13063-1, Cl. 5.1.7 apply. For the assessment Clause 2.2.2.5 in this EAD applies.

**2.1.2.6 Mortar for jointing flue liners**

For mortar for jointing flue liners the essential characteristics according to EN 13063-2, Cl. 5.1.3, apply. For the assessment Clause 2.2.2.6 in this EAD applies.

**2.1.2.7 Grout for outer walls**

For grout the essential characteristics according to Table 1c of this EAD apply.

Table 1c – Essential characteristics of the grout 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	2.2.2.7.1	Class
Basic Works Requirement 4: Safety and accessibility in use			
2	Flow of grout	2.2.2.7.2	Level
3	Shrinkage	2.2.2.7.3	Level
4	Expansion	2.2.2.7.4	Level

**2.1.2.8 Reinforcement and related ancillaries**

For reinforcement the following essential characteristics are according to Table 1d of this EAD apply.

Table 1d – Essential characteristics of the reinforcement and related ancillaries 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 4: Safety and accessibility in use			
1	Tensile strength	2.2.2.8.1	Level
2	Yield strength	2.2.2.8.2	Level

For related ancillaries, consisting of metallic parts, individual design and related assessment shall be evaluated on basis of available documentation (e.g. standards, guidance documents, national provisions).

**2.1.2.9 Chimney base**

For the clay/ceramic flue liner the essential characteristics according to EN 1457-2 apply.

For the cleaning and inspection doors the essential characteristics according to Table 1d of this EAD apply. For the assessment Clause 2.2.2.10 in this EAD applies.

For outer wall made of concrete the essential characteristics according to EN 12446 apply. Alternatively, the outer wall may be made of clay/ceramic. In that case the essential characteristics according to EN 13069 apply. For the assessment Clause 2.2.2.2 in this EAD applies.

In case of concrete as filling material the concerned parameters according to EN 12446 are relevant.

The plate of the chimney base, if any, made of concrete or suspension devices made of metal, or equivalent equipment has to be designed according to calculations regarding its load bearing capacity. The condensate collector as ancillary of the flue liner is made of clay/ceramic.

Alternatively, the chimney base may be designed by means of outer wall according to EN 12446, including a plate, made of concrete or suspension devices made of metal.

Note: The appropriate separation of the siphon from the component chimney base and, therefore, no need of consideration in the assessment procedure shall be indicated in the European Technical Assessment.

#### 2.1.2.10 Upper cleaning and inspection door

For cleaning and inspection door the essential characteristics according to Table 1e of this EAD apply.

Table 1e – Essential characteristics of the cleaning and inspection door 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 3: Hygiene, health and environment			
1	Leakage	2.2.2.10.1	Level
Basic Works Requirement 4: Safety and accessibility in use			
2	Surface temperature	2.2.2.10.2	Level
3	Restriction of relative movement of flue liner	2.2.2.10.3	Description
4	Condensate resistance	2.2.2.10.4	Description
5	Allowable temperature of the inspection door of the flue liner in case of classification P1	2.2.2.10.5	Description
6	Absence of condensate of the inner surface of the inspection door in case of classification P1	2.2.2.10.6	Description

**2.1.2.11 Closing devices (in case of more than one heating appliance)**

For closing devices the essential characteristics according to Table 1f of this EAD apply.

Table 1f – Essential characteristics of the closing devices 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 3: Hygiene, health and environment			
1	Leakage	2.2.2.11.1	Level
Basic Works Requirement 4: Safety and accessibility in use			
2	Surface temperature	2.2.2.11.2	Level

**2.1.2.12 Elements of ceiling penetration (optional components for the use of the kit in buildings with specific requirements regarding tightness of the building and air exchange rate)**

Elements for ceiling penetration consist of metal part for fixation and filling made of plastics, whereas dimensions and material characteristics shall be assessed. Assessment methods are given in 2.2.2.12 in this EAD.

**2.1.2.13 Thermal insulation material**

If part of the kit for the thermal insulation material to be applied to the flue liner, the thermal insulation material is made of mineral fibres. For the assessment Clause 2.2.2.13 in this EAD applies.

**2.1.2.14 Adapter for outer wall geometries in case of change of outer walls**

For adapter made of metal and used as connecting element in case of change of outer wall the essential characteristics according to Table 1g of this EAD apply.

Table 1g – Essential characteristics of adapter for outer wall in case of change of outer walls 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 3: Hygiene, health and environment			
1	Geometry and material quality	2.2.2.14.1	Description

**2.1.2.15 Sealing made of glass fibre fabrics**

For sealing made of glass fibres fabrics the essential characteristics according to Table 1g of this EAD apply.

Table 1g - Essential characteristics of the sealing made of glass fibres fabrics 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 4: Safety and accessibility in use			
1	Acid resistance	2.2.2.15.1	Level

### 2.1.2.16 Sealing rope

For sealing rope used in the inspection door of the outer wall the essential characteristics according to Table 1h of this EAD apply.

Table 1h – Essential characteristics of the sealing rope 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 4: Safety and accessibility in use			
2	Density	2.2.2.16.2	Level

### 2.1.2.17 Covering

For the covering made of stainless steel the relevant dimensions and material characteristics shall be assessed. Assessment methods given in 2.2.2.17.

For the covering made of concrete the essential characteristics according to Table 1i of this EAD apply.

Table 1i – Essential characteristics of the covering 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 4: Safety and accessibility in use			
1	Freeze thaw resistance	2.2.2.17.1	Description
2	Durability against heating	2.2.2.17.2	Description

### 2.1.2.18 Insulation kit for outer wall top

The additional thermal insulation kit to be applied to the top of the chimney kit consists of a thermal insulation board and jointing material and rendering and covering. The thermal insulation board is a material made of mineral fibres defined in EN 13162. For the jointing material and covering a material according to EN 998-1 is used. For the rendering a textile fabric made of anorganic filaments is used. For the assessment Clause 2.2.2.18 in this EAD applies.

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

### 2.2.1 Essential characteristic of the assembled kit to be used in an assembled system

The testing of the chimney kit with clay/ceramic flue liner shall be carried out according to the test sequence stated in Annex A.

In case of change of outer wall by means of extension of the chimney kit with outer wall made of metal the assessment methods given thereafter in equivalence apply, whereas a system chimney with outer wall made of metal is subject of the assessment.

#### 2.2.1.1 Resistance to fire resulting from external to external of the assembled system

EN 13063-1, Clause 5.2.4, applies. According to EN 13063-1, Clause 5.2.4, as long as a European assessment method is not available, the resistance to fire from external to external shall be assessed and declared according to national provisions.

### 2.2.1.2 Resistance to fire from internal to external (sootfire resistance and thermal shock resistance) of the assembled system

EN 13063-1, Clauses 5.2.1.2 and 5.2.1.3, apply.

In addition and optional, the following testing arrangements, deviating from EN 13216-1, are of relevance: Assessment with respect to increased thermal insulation of walls and ceilings, whereas the thickness and design situations (e.g. type of floor penetration, insulation of the walls) shall be defined by the manufacturer, including definition of minimum distances to combustable materials, and depending on the classification of the chimney kit system envisaged. Alternatively to the conditions given EN 13216-1, referred to in EN 13063-1, the hot gas velocity as defined in EN 1859 may be used. The results, including these conditions and the hot gas velocity used, shall be stated in the ETA. For the EAD it is exclusively related to the assessment of minimum distance to burnable materials in case of increased thermal insulation.

Note: The alternative use of hot gas velocity as defined in EN 1859 is related to the fact that on European level in related standards these two approaches of hot gas velocities are implemented, and harmonization on basis of them is reasonable.

The sootfire resistance and the distance between the outer surface of the chimney kit and the adjacent combustable material shall be stated as G (xx), where G is the sootfire resistance class for chimneys with sootfire resistance and xx is the minimum distance in mm. For the minimum distance the maximum value resulting of the assessment given in 13063-1, Clause 5.2.1, and taking into account the conditions stated above is relevant.

Elements for ceiling penetration (see Clause 2.2.2.12 in this EAD) are to be included in the assessment. They are not considered as elements influencing the distance in the classification Gxx.

The application of the elements for ceiling penetration in the assessment shall be done with separate ceiling element (which means normally zone C) in the testing arrangement according to EN 13216-1. As an alternative, the elements for ceiling penetration can be assessed within the same testing procedure for assessment of parameters according to EN 13063-1 in ceiling (situated between zone B and C or A and B according to EN 13216-1) in the testing arrangement according to EN 13216-1 by means of separate assessment of the same test specimen.

For the assessment additional positions for measurement of surface temperature in the concerned area shall be foreseen, whereas the assessment shall include the temperature at the location of the ceiling penetration element.

Note: Elements for ceiling penetration included in the assessment are to be defined in the ETA.

### 2.2.1.3 Gas tightness/leakage of the assembled system

The gas tightness/leakage of the assembled system shall be assessed according to EN 13063-1, Clause 5.3.1. In order to assess the envisaged positive pressure P1, EN 13063-2 applies. In addition, assessment shall be done in equivalence to EN 13063-1, Clause 5.3.1, in order to cover the envisaged resistance to sootfire.

### 2.2.1.4 Flow resistance of the assembled system

The flow resistance shall be assessed according to EN 13063-1, Clause 5.3.3, and EN 13063-3, Clause 5.7.1.

The flow resistance of the flue liner and concrete parts (in case of air flue system) shall be assessed either according to EN 13216-1, Clause 5.11, or according to EN 13384-1, Table B.4.

The flow resistance of the chimney fittings shall be assessed either according to EN 13216-1, Clause 5.11, or according to EN 13384-1, Table B.8.

### 2.2.1.5 Thermal resistance of the assembled system

The thermal resistance of the assembled system shall be assessed according to EN 13063-1, Clause 5.2.3.

### 2.2.1.6 Durability/Condensate resistance of the assembled system

The condensate resistance of the assembled system shall be assessed according to EN 13216-1, Clause 5.5, except assessment of changing in weight of test sample or components according to Clauses 5.5.3 and 5.5.5.

Elastomeric sealings are not part of the kit (see Clause 1.1 and, for classification P1 according to Cl. 2.2.1.3 in this EAD, additions given therein).

The vapour resistance (condensate resistance in the meaning of EN 13063-2) of the assembled system shall be assessed according to EN 13216-1, Clause 5.6, as stated in EN 13063-2, Clause 5.3.2.1.

Description that no vapour saturation in any part of the kit and no appearance of water on the outside of the test sample of fittings or chimney sections occur. If met, the condensate resistance of the chimney kit shall be declared as condensate resistance class "W".

### 2.2.1.7 Durability of gas tightness/leakage against chemicals/corrosion

Durability of compressive strength against chemicals of the assembled system

For the assessment of the corrosion resistance of the assembled system the following shall be taken:

- Sootfire resistance according to clause 2.2.1.2 of this EAD with classification according to Table 1 in this EAD.
- Condensate resistance according to Clause 2.2.1.6 of this EAD with classification according to Table 1 in this EAD.
- Water resistance according to Clause 2.2.2.6.3 and acid resistance according to Clause 2.2.2.6.4 of this EAD for mortar for jointing flue liners

The chimney shall be classified as corrosion resistant class "3".

### 2.2.1.8 Thermal and fluid dynamic characteristics of chimneys serving more than one heating appliance

For the roomheaters fired by solid fuel the following conditions apply:

- Declaration of service pressure (minimum values according to EN 13240, Cl. 6.4),
- Declaration of efficiency (minimum value according to EN 13240, Cl. 6.3),
- Allowable amount of CO-concentration of  $\leq 1200$  ppm, related to a content of  $O_2$  of 13 % (Note: The criterion according to EN 13240, cl. 6.2, is not applied due to the fact that EN 13240 does not address airflue systems),
- Proper self-closing of opening door of heating appliance,
- Performance of heating appliance (kW) – to be declared on basis of calculation (see EN 13384-2),
- Leakage rate of  $\leq 2m^3/h$  (testing pressure: 10 Pa).

Assessment shall be done by calculation, assisted by testing.

For calculation EN 13384-2 applies.

In the assessment by means of testing the following aspects and influences have to be considered:

- Each of the heating appliances shall be able to work, independent of service conditions of the other heating appliances,
- Influence of opening of doors of individual heating appliance to proper functioning of other heating appliances,
- Influence of overflow openings to service conditions of heating appliances (relationship between service pressure and efficiency),
- Maintenance of negative pressure in all heating rooms for all service conditions (e.g. appropriate devices like door contact switch).



Therefore, the assessment by means of testing shall follow the following principles:

1. For testing the number of heating appliances shall correspond to the number of heating appliances for which in the calculation according to EN 13384-2 a positive result has been demonstrated. If the number of heating appliances in case of testing should be less than those in case of calculation, applicability of that concept needs to be assessed.
2. The minimum number of heating appliances is three in order to verify the related parameters (e.g. function of the overflow opening, efficiency).
3. The distance between the inputs of heating appliances by means of connecting flue pipes shall correspond to the values determined by calculation.
4. The distance between the input of the highest heating appliance and the top of the chimney shall be at least 4 m.
5. The nominal efficiency of the heating appliances should be such that in any testing situation the remaining efficiency will not be less than 50 % (see also EN 13240, Table Z A.1).
6. All heating appliances shall show in all testing situations a heat output of not less than 80 % of the nominal performance.
7. Proper functioning of the overflow opening needs to be considered.

Based on the principles stated above, the following service situations shall be tested:

Scenario no. 1: All heating appliances are operating by operating negative pressure of 0 Pa in related testing rooms.

Scenario no. 2: All heating appliances are operating by operating negative pressure of at least 8 Pa in related testing rooms.

Scenario no. 3: The highest heating appliance is operating by operating negative pressure of 0 Pa in the related testing room.

Scenario no. 4: Initial burning of the fuel in the lowest heating appliance when the door of the heating appliance in the middle of the test set is still open; operating negative pressure of 0 Pa, with open overflow opening.

For the testing situations according to Cl. 2.2.1.9.1 of this EAD the following applies:

Testing scenario no. 1:

All heating appliances are allowed to show a decrease in efficiency to a value of not less than 80 % of the declared efficiency (values measured during the nominal heat output test according to EN 13240, A.4.7).

Testing scenario no. 2:

All heating appliances are allowed to show a decrease in efficiency to a value of not less than 80 % of the declared efficiency (values measured during the nominal heat output test according to EN 13240, A.4.7)

No outflow of combustion products in case of opening of the door of the heating appliance.

Testing scenario no. 3:

All heating appliances are allowed to show a decrease in efficiency to a value of not less than 80 % of the declared efficiency (values measured during the nominal heat output test according to EN 13240, A.4.7)

Testing scenario no. 4:

No overflow of combustion product in the air duct.

If the conditions for testing scenarios no. 1 – 4 are met, the calculation can be considered as being correct.

#### 2.2.1.9 Air tightness of the outer wall

Assessment shall be done on representative units, including all relevant components (e.g. mortar for jointing outer wall, inspection openings, ceiling penetration elements etc.) in equivalence to EN 13829, whereas a testing pressure of  $\pm 50$  Pa shall be used. For assessment of the tightness of the outer wall after thermal load, equivalent assessment as stated in Clause 2.2.1.2 in this EAD shall be carried out.

The leakage rate and its change according to the concept stated in the paragraph above shall be assessed.

#### 2.2.1.10 Minimum outer surface temperature at defined ambient temperature

Assessment shall be done on representative unit by means of calculation, whereas for calculation of thermal flow simulation by means of consideration of thermal bridges at defined indoor air temperature and outdoor temperature applies.

The defined indoor air temperature and outdoor temperature, shall be given in the ETA. Information on validation of calculation program (e.g. reference to EN ISO 10211 and EN ISO 10077-2) shall be included in the technical documentation, deposited with the Technical Assessment Body.

Alternatively, the assessment can be done by appropriate testing under operating conditions of the chimney kit, carried out at defined cold outdoor temperature or by generation of relevant temperatures (indoor, outdoor) in case of assessment by means of testing. In such cases, details shall be laid down in the technical documentation.

The resulting minimum outer surface temperature shall be given in the ETA.

#### 2.2.1.11 Maximum height of the assembled system

For assessment of the maximum height of the flue liner (by means of maximum load for opening sections) Clause 2.2.2.4.1 of this EAD and for assessment of the compressive strength for mortar jointing for flue liner Clause 2.2.2.6.2 of this EAD apply.

For assessment of the compressive strength of the jointing material for outer wall made of concrete or outer wall made of clay/ceramic Clause 2.2.2.5.1 of this EAD applies. In case of jointing material for outer wall made of calcium silicate boards Clause 2.1.2.2 of this EAD applies.

For assessment of the compressive strength of the outer wall Clause 2.2.2.2 of this EAD applies, whereas in case of outer wall made of metal it is presumed that the outer wall is operating independent from the flue liner. In case of change of outer wall as indicated in Chapter 1.1 of this EAD this shall to be taken into account. The compressive strength of the units made of calcium silicate boards shall be assessed in analogy to EN 12446.

For assessment of the compressive strength for overflow opening EN 13063- 3, Clause 5.3, applies.

The maximum height of the assembled system shall be given in the ETA referring to the minimum value resulting from the assessment.

Note: In the assessment the type of chimney base (Clause 2.1.2.9 in this EAD) is to be taken into account.

#### 2.2.1.12 Freeze thaw resistance of the assembled system

Freeze thaw resistance shall be assessed and described according to the assessment given in EN 13063-1, Clause 5.5.

#### 2.2.1.13 Durability in case of change of outer wall

Assessment shall be done on a representative unit, consisting of adapter element placed on outer wall made of concrete or clay/ceramic and section of outer wall made of metal, including all relevant features, whereas for the assessment in analogy to EN 13216-1 zone C is relevant. Conditions in relation to thermal insulation as detailed in Clause 2.2.1.2 in this EAD shall be taken into account accordingly.

Assessment is done by means of heat stress test and the sootfire test carried out in equivalence to EN 13216-1 for temperature class T400 and T600 respectively, depending on the classification envisaged.

After carrying out the tests no visual defects shall occur at the outer wall made of concrete and clay/ceramic. Furthermore, based on temperatures recorded for the outer walls, it shall be assessed whether they may result in inadequate behaviour of the chimney kit in relation to this change of the outer walls. This means that the occurring maximum temperature on the surface of the adapter is not higher than for the outer wall made of metal above.

#### 2.2.1.14 Flow resistance in case of change of outer wall

The flow resistance of the adapter shall be assessed according to EN 13384-1. The flow resistance of the extension by means of outer wall of metal shall be assessed as stated in Clause 2.2.1.4 in this EAD.

### 2.2.2 Essential characteristics of the components of the assembled system

#### 2.2.2.1 Clay/ceramic flue liner

For assessment of essential characteristics EN 1457-2 apply.

#### 2.2.2.2 Outer wall

For assessment of outer wall made of concrete EN 12446 applies.

If a secondary mineral, defined according to legislation in concerned Member States where the product is put on the market, is used, this shall be indicated.

For assessment of outer wall made of clay/ceramic EN 13069 applies.

For assessment of outer wall made of metal EN 13063-1, Annex B applies.

In case of outer wall made of units of calcium silicate boards, for the material of the boards the assessment shall be done according to relevant European Standard (e.g. EN 14306) or European Assessment Document. For the jointing material reaction to fire shall be assessed and classified according CDR (EU) 2016/364. The assessment of the compressive strength of the jointing material shall be carried out according to EN 13063-1.

In case of storey height units made of concrete or clay/ceramic the assessment of requested value for compressive strength in relation to the length of the units shall be done by calculation. As an alternative, appropriate testing for assessment is allowed.

#### 2.2.2.3 Thermal insulating outer wall element made of foam glass/ aerated concrete or clay/ceramic with additional filling

##### 2.2.2.3.1 Compressive strength of the element

In case of foam glass/ aerated concrete the assessment shall be done in equivalence to EN 12446 Clause 8.4. The test specimen shall take into account the composition of the outer wall adequately.

The assessment of the compressive strength of the outer wall element made of clay/ceramic with additional filling is covered by the assessment of the clay/ceramic walls according to EN 13069.

#### 2.2.2.4 Chimney fittings

For assessment of essential characteristics EN 1457-2 applies.

##### 2.2.2.4.1 Maximum height inner liner (by means of maximum load for opening sections)

EN 13063-2, Clause 5.1.2, applies.

##### 2.2.2.5 Mortar for jointing outer wall elements and wall units in case of storey height units

#### 2.2.2.5.1 Compressive strength of jointing material

EN 13063-1, Clause 5.1.7, applies.

#### 2.2.2.6 Mortar for jointing flue liners

##### 2.2.2.6.1 Density

EN 13063-2, Clause 5.1.3.1.1, applies.

##### 2.2.2.6.2 Compressive strength of jointing material

EN 13063-2, Clause 5.1.3.1.2, applies.

##### 2.2.2.6.3 Water resistance

EN 13063-2, Clause 5.1.3.1.3, applies.

##### 2.2.2.6.4 Acid resistance

EN 13063-2, Clause 5.1.3.1.4, applies.

#### 2.2.2.7 Grout in case of storey height design

##### 2.2.2.7.1 Reaction to fire

According to the decision 96/603/EC of the European Commission, amended by the Commission Decision 2000/424/EC4, the component is classified as A1 product.

##### 2.2.2.7.2 Flow of grout

EN 13395-2 or EN 1015-3 respectively applies (depending on the consistence of grout).

Assessment of the spread value.

##### 2.2.2.7.3 Shrinkage

EN 12617-4 applies.

For the assessment of degree of shrinkage (c) (mean value) of grout the following applies:

Assessment of degree of shrinkage (c) (mean value) expressed by means of ‰ (mm/m).

##### 2.2.2.7.4 Expansion

EN 12617-4 or EN 445 apply.

The value of expansion (c) (mean value) shall be after duration of measurement of 24 hours more than 0,0 %.

Note: The threshold value indicated is not considered as threshold value for the kit covered by the EAD. The threshold value is only referring to components parameters.

#### 2.2.2.8 Reinforcement in case of storey height design

##### 2.2.2.8.1 Tensile strength

Assessment shall be done according to EN ISO 15630-1 in conjunction with EN ISO 6892-1, and values are to be given in the ETA.

##### 2.2.2.8.2 Yield strength

Assessment shall be done according to EN ISO 15630-1 in conjunction with EN ISO 6892-1, and values are to be given in the ETA.

### 2.2.2.9 Chimney base

For the clay/ceramic flue liner Clause 2.2.2.1 of this EAD applies.

For outer wall made of concrete EN 12446 applies. In case of using clay/ceramic for outer wall EN 13069 applies.

For the cleaning and inspection door Clause 2.2.2.10 of this EAD applies.

For the plate of chimney base made of concrete the following applies:

Compressive strength: Requirement according to EN 12446. Assessment method: EN 1354.

Bulk density (Hardened concrete according to EN 206-1): Assessment according to EN 12390-7.

In case of using other materials or compositions of materials (filling material made of concrete) equivalent performance level shall be assessed.

If instead of plate of concrete a suspension device made of metal is used its dimensions and material designation shall be given.

### 2.2.2.10 Upper cleaning and inspection door

#### 2.2.2.10.1 Leakage

To be assessed for the complete system with cleaning and inspection doors according to Clauses 2.2.1.2 and 2.2.1.3 of this EAD.

Referring to EN 13063-1, Clause 5.4, and EN 13063-2, Clause 5.4, the leakage of the cleaning and inspection doors shall not lead to a leakage rate of the kit greater than given in Table 2 in EN 13063-1 and Table 3 in EN 13063-2 respectively for the concerned pressure class.

#### 2.2.2.10.2 Surface temperature

To be assessed according to EN 13063-1, Clause 5.4, for the complete system with cleaning and inspection doors when assessed according to Clauses 2.2.1.2 and 2.2.1.3 of this EAD.

Referring to EN 13063-1, Clause 5.4, the temperature at the outer surface of the cleaning and inspection doors shall not increase more than 140 K.

#### 2.2.2.10.3 Restriction of relative movement of flue liner

To be assessed for the complete system with cleaning and inspection doors after assessment according to Clauses 2.2.1.2 and 2.2.1.3 of this EAD by means of visual inspection.

Referring to EN 13063-1, Clause 5.4, the cleaning and inspection doors shall not hinder the relative movement of the flue liner.

#### 2.2.2.10.4 Condensate resistance

To be assessed for the complete system with cleaning and inspection doors according to Clause 2.2.1.6 of this EAD.

Referring to EN 13063-2, Clause 5.4, no water shall occur at the outside of the cleaning and inspection doors.

#### 2.2.2.10.5 Allowable temperature of the inspection door of the flue liner in case of classification P1

The assessment shall be done according to Clause 2.2.1.3 of this EAD, whereas, in addition the occurring temperature at the elastomeric sealing of the inspection door of the flue liner if any, shall be considered. The temperature occurred shall be assessed in relation to the temperature indicated for the elastomeric sealing according to EN 14241-1. The functionality of the inspection door for the classification of the chimney kit envisaged is given when the occurred temperature at the elastomeric sealing does not exceed the temperature stated above.

#### 2.2.2.10.6 Absence of condensate of the inner surface of the inspection door in case of classification P1

The assessment shall be done according to Clause 2.2.1.3 of this EAD, whereas, in addition it shall be assessed whether at the elastomeric sealing, if any, condensate occurs. The functionality of the inspection door is given when no condensate occurs.

#### 2.2.2.11 Closing devices (in case of more than one heating appliance)

##### 2.2.2.11.1 Leakage

Assessment shall be done in analogy to EN 13063-1, Annex A.2.5. The leakage of the closing device shall not lead to a leakage rate of the testing sample greater than given in Table 2 in EN 13063-1.

##### 2.2.2.11.2 Surface temperature

To be assessed according to EN 13063-1, Clause 5.4, for the complete system with closing devices when tested according to Clauses 2.2.1.2 and 2.2.1.3 of this EAD.

Referring to EN 13063-1, Clause 5.4, the temperature at the outer surface of the closing devices shall not increase more than 140 K.

#### 2.2.2.12 Elements for ceiling penetration (optional)

For the metal part of the ceiling penetration the relevant dimensions and material characteristics shall be given, whereas the material quality shall be defined in the ETA.

For the part made of plastics, assessment shall be done according to the relevant specification. The relevant dimensions and material shall be specified in the ETA.

For reaction to fire, the component shall be verified according to CDR (EU) 2016/364. The following conditions apply:

The following product and end-use application parameters have to be considered: thickness, density, composition of product, substrate and method of fixing.

The substrates shall be selected in accordance with EN 13238. Where non-standard substrates are used, the test result is limited to that same substrate in its end use application.

The specimen has to be tested with surface and edge exposure according to EN ISO 11925-2.

The plastic material has to be applied without joints on both wings of test device according to EN 13823.

For the part made of metal the relevant dimensions and type of material and material characteristics respectively shall be assessed.

For the part made of plastics assessment shall be done according to the relevant specification, including the related material parameters for the type of plastics to be used. Regarding reaction to fire, the component shall be classified according to CDR (EU) 2016/364.

Note: The elements for ceiling penetration are part of the kit and included in the assessment of sootfire resistance and thermal shock resistance (see clause 2.2.1.2 in this EAD).

#### 2.2.2.13 Thermal insulation material

For the assessment of the thermal insulation material to be applied to the flue liner, EN 13063-1, Clause 5.1.5, applies.

#### 2.2.2.14 Adapter for outer wall geometries in case of change of outer walls

##### 2.2.2.14.1 Geometry and material quality

The adapter shall fit with the geometry of the outer walls. The assessment shall be done by means of technical files. The thickness of the adapter shall comply with the technical file. The material quality shall be at least 1.4301.

##### 2.2.2.15 Sealing made of glass fibre fabrics

##### 2.2.2.15.1 Acid resistance

Assessment in analogy to EN 13063-2, Clause A.2.2.5, applies.

##### 2.2.2.16 Sealing rope

##### 2.2.2.16.1 Density

The density is assessed by means of the mass and the geometry of the rope.

##### 2.2.2.17 Covering

For the covering made of stainless steel assessment of the relevant dimensions and material characteristics for this element apply with the steel grade to be indicated.

For the covering made of concrete the following applies:

##### 2.2.2.17.1 Freeze thaw resistance

Freeze thaw resistance shall be assessed according to EN 13063-1, Clause 5.5.

##### 2.2.2.17.2 Durability against heating

Assessment in conjunction with EN 13063-1, Clauses 5.2.1.2 and 5.2.1.3

No visible cracks shall occur.

##### 2.2.2.18 Insulation kit for outer wall top

For the assessment of the thermal insulation board EN 13162 applies.

For the assessment of the jointing material and covering EN 998-1 applies.

For the assessment of the rendering the material parameters are laid down in the technical data sheet in addition the maximum force and elongation at maximum force shall be assessed according to EN ISO 13934-1.

### 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+

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 2001/596/EC (EU)

The systems are: 1-3-4

#### 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 2 to Table 2q.

In case of components manufactured by separate manufacturers, the FPC as indicated in the tables below is related to relevant documentation provided by the manufacturer of the chimney kit.

**Table 2 Control plan for the chimney kit with clay/ceramic flue liner; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Equivalent to EN 13063-1, -2, -3				

**Table 2a Control plan for the clay/ceramic flue liner; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	For parameters according to EN 1457-2, Table ZA.1	EN 1457-2, Table ZA.3			



**Table 2b Control plan for the outer wall cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	For outer wall made of concrete according to EN 12446, Table ZA.1	EN 12446, Table ZA.3			
2	For outer wall made of clay/ceramic according to EN 13069, Table ZA.1	EN 13069, Table ZA.3			
3	For outer wall made of metal according to EN 13063-1, Annex B	EN 13063-1, Annex B 2			
4	For outer wall made of units of calcium silicate boards	According to relevant European Standard or European Assessment Document			
5	For jointing material in case of calcium silicate boards				
	Compressive strength	EN 13063-1	Declared value with related tolerances	2	Each delivery

**Table 2c Control plan for the thermal insulating outer wall elements made of foam glass/ aerated concrete or clay/ceramic with additional filling; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Thermal insulating outer wall element foam glass/ aerated concrete				
	Bulk density	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan	Declared value (Tolerances: $\pm 10\%$ )	Inspection document according to EN 10204 each charge + 2 tests per year on at least 3 samples (bulk density)/Alternative: To be laid down in control plan	
	Compressive strength		Declared value		
Dimensions	Measurement	Declared value (Tolerances: equivalent to EN 12446)	Equivalent to EN 12446		
2	Thermal insulating outer wall element made of clay/ceramic with additional filling				
	Outer wall element without filling	See Table 2b in this EAD			

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
	Filling: Lightweight aggregates Expanded perlite	According to EN 13055-1 According to EN 14316-1			

**Table 2d Control plan for the chimney fittings; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	For parameters according to EN 1457-2, Table ZA.1	EN 1457-2, Table ZA.3			

**Table 2e Control plan for the mortar for jointing outer wall; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Compressive strength	EN 998-2 applies in conjunction with EN 13063-1			

**Table 2f Control plan for the mortar for jointing flue liners; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Density	EN 13063-2, Table 7			

**Table 2g Control plan for the grout in case of storey height units; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Spread value of grout	EN 13395-2 or EN 1015-3 (respectively)	Spread value declared with related tolerances	3	Once a week

Note: Information is to be provided about use of material with decrease of spread value of max. 100mm in 30 minutes after manufacturing.

**Table 2h Control plan for the reinforcement in case of storey height units; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b> <b>[including testing of samples taken at the factory in accordance with a prescribed test plan]*</b>					
1	Tensile strength	Each delivery: 3.1 Certificate according to EN 10204			
2	Yield strength	Each delivery: 3.1 Certificate according to EN 10204			

**Table 2i Control plan for the chimney base; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Flue liner: See Table 2a				
2	Cleaning and inspection door: See Table 2j				
3	Outer wall: See Table 2b				
4	Plate of chimney base, made of concrete:				
	Bulk density	EN 12390-7	EN 206-1, Cl. 5.5.2	3	Each charge
	Dimensions (height)	Measurement			
	Suspension device:				
	Dimensions	Measurement		1 per diameter	Each delivery
Material	3.1 Certificate according to EN 10204				

**Table 2j Control plan for the upper cleaning and inspection door; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Cleaning and inspection door of outer wall:		In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		
	Dimensions (fitting accuracy)			All pieces	
	Functioning ability: Leakage			10	Each delivery of insulation material
	Insulation material: Dimensions			-	Each delivery
	Identification of incoming material (metal, insulation material)				
2	Inspection and cleaning door of flue liner:			3	Once a year
	Leakage				
	Condensate resistance				

**Table 2k Control plan for the closing devices; cornerstones**

No	Subject/type of control	Test or control method)	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Dimensions Closure mechanism Fitting accuracy Identification of material	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		10% of each charge/delivery	

**Table 2l Control plan for the elements for ceiling penetration; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Material quality	Declaration each delivery			
2	Dimensions				

**Table 2m Control plan for the thermal insulation material; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	For the thermal insulation material to be applied to the flue liner	EN 13063-1			
2	For the thermal insulation to be applied to the top of the chimney kit	EN 13162			

**Table 2n Control plan for the adapter for outer wall geometries in case of change of outer walls; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Geometry including thickness	By means of gauge; visual check	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan	10 % of each delivery	
	Material quality	Each delivery: 3.1. Certificate according to EN 10204			

**Table 2o Control plan for the sealing made of glass fibre fabrics; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Bulk density	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan	Declared value with related tolerances	3	Each delivery
2	Geometry (Dimensions)	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		1 per type	Each delivery

**Table 2p Control plan for the sealing rope; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Geometry (Dimensions)	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		1 per charge and per diameter	
	Density	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan	Declared value with related tolerances	3	Each delivery

**Table 2q Control plan for the covering; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Factory production control (FPC)</b>					
1	Covering made of stainless steel: Dimensions	Measurement by means of tape – Criteria according to technical drawings to be laid down in the ETA		One each charge	
2	Material quality	Each delivery: 3.1. Certificate according to EN 10204			
3	Covering made concrete: Absence of cracks	Visual control		Each piece	Each piece
4	Bending tension strength	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		8 pieces of 1 specimen	Once a month

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
5	Spread value of concrete	In equivalence to EN 1015-3	Declared value, tolerances laid down in control plan	3	Once a week



### 3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified production control certification body in the procedure of assessment and verification of constancy of performance for the chimney kit with clay/ceramic flue liner are laid down in Table 3 to Table 3q. The role of the notified product certification body is limited only for reaction to fire and this only if a limitation of organic substances takes place or if a fire retardant is added in the production phase. The tasks of the NB cannot be extended beyond the manufacturer of the kit.

**Table 3 Control plan for the notified body for the chimney kit with clay/ceramic flue liner; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Parameters according to Table 1 of this EAD	Control of devices and equipment and documentation of FPC for the kit			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Parameters according to Table 1 of this EAD	Control of documentation of FPC for the kit			Once a year

**Table 3a Control plan for the notified body for the clay/ceramic flue liner; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			Once a year

**Table 3b Control plan for the notified body for the outer wall; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	For outer wall made of concrete according to EN 12446, Table ZA.1	EN 12446		When starting production or new production line	
2	For outer wall made of clay/ceramic according to EN 13069, Table ZA.1	EN 13069			
3	For outer wall made of metal according to EN 13063-1, Annex B	EN 13063-1, Annex B 2			
4	For outer wall made of units of calcium silicate boards	According to relevant European Standard or European Assessment Document			
5	For jointing material in case of calcium silicate boards				
	Compressive strength	Check of documentation			
6	Compressive strength in case of storey height units	Check of documentation			
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
7	For outer wall made of concrete according to EN 12446, Table ZA.1	EN 12446		Once a year	
8	For outer wall made of clay/ceramic according to EN 13069, Table ZA.1	EN 13069			
9	For outer wall made of metal according to EN 13063-1, Annex B	EN 13063-1, Annex B 2			
10	For outer wall made of units of calcium silicate boards	According to relevant European Standard or European Assessment Document			
11	For jointing material in case of calcium silicate boards				
	Compressive strength	Control of documentation of FPC			
12	Compressive strength in case of storey height units	Control of documentation of FPC			

**Table 3c Control plan for the notified body for for the thermal insulating outer wall elements made of foam glass/ aerated concrete or clay/ceramic with additional filling; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
Thermal insulating outer wall element foam glass/ aerated concrete					
1	Bulk density	Control of devices and equipment and documentation of FPC			When starting production or new production line
2	Compressive strength	Check of documentation of FPC			
3	Dimensions	Control of devices and equipment and documentation of FPC			
Thermal insulating outer wall element made of clay/ceramic with additional filling					
4	Outer wall element without filling	See Table 3b in this EAD			
5	Filling				When starting production or new production line
	Lightweight aggregates	EN 13055-1			
	Expanded perlite	EN 14316-1			
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
Thermal insulating outer wall element foam glass/ aerated concrete					
6	Bulk density	Control of documentation of FPC			Once a year
7	Compressive strength				
8	Dimensions				
Thermal insulating outer wall element made of clay/ceramic with additional filling					
9	Outer wall element without filling	See Table 3b in this EAD			
10	Filling				Once a year
	Lightweight aggregates	Control of documentation of FPC			
	Expanded perlite				

**Table 3d Control plan for the notified body for the chimney fittings; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			Once a year

**Table 3e Control plan for the notified body for the mortar for jointing outer wall; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Compressive strength	EN 998-2 in conjunction with EN 13063-1			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Compressive strength	EN 998-2 in conjunction with EN 13063-1			Once a year

**Table 3f Control plan for the notified body for the mortar for jointing flue liners; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Density	EN 13063-2			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Density	EN 13063-2			Once a year

**Table 3g Control plan for the notified body for the grout in case of storey height units; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Spread value of grout including its decrease within a certain limit of time	Control of devices and equipment and documentation of FPC			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Spread value of grout	Control of documentation of FPC			Once a year

**Table 3h Control plan for the notified body for the reinforcement in case of storey height units; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Tensile strength	Control of documentation of FPC			When starting production or new production line
2	Yield strength				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
3	Tensile strength	Control of documentation of FPC			Once a year
4	Yield strength				

**Table 3i Control plan for the notified body for the chimney base; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Flue liner according EN 1457-2, Table ZA.1	Check of availability of certificate (AVCP system: 2+) and Declaration of Performance			When starting production or new production line
2	Cleaning and inspection doors: See Table 3j of this EAD				
3	Outer wall: See Table 3b of this EAD				
4	Plate of chimney base, made of concrete	Control of devices and equipment and documentation of FPC			When starting production or new production line
	Bulk density				
	Dimensions				
	Suspension device Dimensions Material				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
5	Flue liner according EN 1457-2, Table ZA.1	Check of availability of certificate (AVCP system: 2+) and Declaration of Performance			Once a year
6	Cleaning and inspection doors: See Table 3j of this EAD				
7	Outer wall See Table 3b of this EAD				
8	Plate of chimney base, made of concrete	Control of documentation of FPC			Once a year
	Bulk density				
	Dimensions				
	Suspension device Dimensions Material				

**Table 3j Control plan for the notified body for the upper cleaning and inspection door; cornerstones**

No	Subject/type of control	Test or control method)	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Cleaning and inspection door of outer wall:	Control of devices and equipment and documentation of FPC			When starting production or new production line
	Dimensions (fitting accuracy)				
	Functioning ability: Leakage				
	Insulation material: Dimensions				
	Identification of incoming material (metal, insulation material)	Control of documentation of FPC			
2	Inspection and cleaning door of flue liner:	Control of devices and equipment and documentation of FPC			
	Leakage				
	Condensate resistance				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
3	Cleaning and inspection door of outer wall:	Control of documentation of FPC			Once a year
	Dimensions (fitting accuracy)				
	Functioning ability: Leakage				
	Insulation material: Dimensions				
	Identification of incoming material (metal, insulation material)				
4	Inspection and cleaning door of flue liner:				
	Leakage				
	Condensate resistance				

**Table 3k Control plan for the notified body for the closing devices; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Dimensions	Control of devices and equipment and documentation of FPC			When starting production or new production line
	Closure mechanism				
	Fitting accuracy				
	Identification of material				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Dimensions	Control of documentation of FPC			Once a year
	Closure mechanism				
	Fitting accuracy				
	Identification of material				

**Table 3l Control plan for the notified body for ceiling penetration; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Material quality	Check of documentation			When starting production or new production line
	Dimensions				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Material quality	Control of documentation of FPC			Once a year
	Dimensions				



**Table 3m Control plan for the notified body for the the insulation material; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Parameter according to EN 13063-1	EN 13063-1			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Parameter according to EN 13063-1	EN 13063-1			Once a year

**Table 3n Control plan for the notified body for the the adapter for outer wall geometries in case of change of outer walls; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Geometry	Control of devices and equipment and documentation of FPC			When starting production or new production line
2	Material quality				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
3	Geometry	Control of documentation of FPC			Once a year
4	Material quality				

**Table 3o Control plan for the notified body for the the sealing made of glass fibre fabrics; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Bulk density	Control of devices and equipment and documentation of FPC			When starting production or new production line
2	Geometry(Dimensions)				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
3	Bulk density	Control of documentation of FPC			Once a year
4	Geometry(Dimensions)				

**Table 3p Control plan for the notified body for the the sealing rope cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Geometry(Dimensions)	Control of devices and equipment and documentation of FPC			When starting production or new production line
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
2	Geometry(Dimensions)	Control of documentation of FPC			Once a year

**Table 3q Control plan for the notified body for the covering; cornerstones**

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
<b>Initial inspection of the manufacturing plant and of factory production control</b>					
1	Covering made of stainless steel: Material quality Dimensions	Check of documentation			When starting production or new production line
2	Covering made of concrete: Absence of cracks	Control of devices and equipment and documentation of FPC			When starting production or new production line
	Bending tension strength				
	Spread value of concrete				
<b>Continuous surveillance, assessment and evaluation of factory production control</b>					
3	Covering made of stainless steel: Material quality Dimensions	Control of documentation of FPC			Once a year
4	Covering made of concrete: Absence of cracks				
	Bending tension strength				
	Spread value of concrete				

## 4 REFERENCE DOCUMENTS

As far as no edition date is given in the list of standards thereafter, the standard in its current version at the time of issuing the European Technical Assessment, is of relevance.

CPR Regulation (EU) No 305/2011 of the European Parliament and of the of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

EN 206-1 "Concrete: Specification, performance, production and conformity"

EN 445 "Grout for prestressing tendons — Test methods"

EN 998-1 "Specification for mortar for masonry - Part 1: Rendering and plastering mortar"

EN 998-2 "Specification for mortar for masonry - Part 2: Masonry mortar"

EN 1015-3 "Methods of test for mortar for masonry — Part 3: Determination of consistence of fresh mortar (by flow table)"

EN 1354 "Determination of compressive strength of lightweight aggregate concrete with open structure"

EN 1443 "Chimneys - General requirements"

EN 1457-1 "Chimneys - Clay/ceramic flue liners - Part 1: Flue liners operating under dry conditions - Requirements and test methods"

EN 1457-2 "Chimneys - Clay/ceramic flue liners - Part 2: Flue liners operating under wet conditions - Requirements and test methods"

EN 1859 "Chimneys – Metal chimneys – Test methods"

EN 10204 "Metallic products - Types of inspection documents"

EN 12390-7 "Testing hardened concrete – Part 7: Density of hardened concrete"

EN 12446 "Chimneys - Components - Concrete outer wall elements"

EN 12617-4 "Products and systems for the protection and repair of concrete structures - Test methods – Part 4: Determination of shrinkage and expansion"

EN 13055-1 "Lightweight aggregates – Part 1: Lightweight aggregates for concrete, mortar and grout (consolidated version)"

EN 13063-1 "Chimneys - System chimneys with clay/ceramic flue liners - Part 1: Requirements and test methods for sootfire resistance"

EN 13063-2 "Chimneys - System chimneys with clay/ceramic flue liners - Part 2: Requirements and test methods under wet conditions"

EN 13063-3 "Chimneys - System chimneys with clay/ceramic flue liners - Part 3: Requirements and test methods for air flue system chimneys"

EN 13069 "Chimneys – Clay/ceramic outer walls for system chimneys – Requirements and test methods"

EN 13162 "Thermal insulation product for buildings – Factory made of mineral wool (MW) products specification"

EN 13216-1 "Chimneys - Test methods for system chimneys - Part 1: General test methods"

EN 13238 "Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates"

EN 13240 "Roomheaters fired by solid fuel - Requirements and test methods"

EN 13384-1 "Chimneys - Thermal and fluid dynamic calculation methods - Part 1: Chimneys serving one appliance"

EN 13384-2 "Chimneys - Thermal and fluid dynamic calculation methods - Part 2: Chimneys serving more than one heating appliance"

EN 13395-2 "Products and systems for the protection and repair of concrete structures – Test methods – Determination of workability – Part 2: Test for flow of grout or mortar"

CDR (EU) 2016/364 superseding EN 13501-1 "Fire classification of construction products and building elements - Part 1: Classification using data from fire resistance tests".

EN 13501-2 "Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services"

EN 13823 "Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item"

EN 13829 "Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method (ISO 9972:1996, modified)"

EN 13934-1 "Textiles – Tensile properties of fabrics- Part 1: Determination of maximum force and elongation at maximum force using the strip method"

EN 14241-1 "Chimneys – Elastomeric seals and elastomeric sealant – Material requirements and test methods- Part1: Seals in flue liners"

EN 14306 "Thermal insulation products for building equipment and industrial installations – Factory made calcium silicate"

EN 14316-1 "Thermal insulation products for buildings – In situ thermal insulation formed from expanded perlite (EP) products – Part 1: Specification for bonded and loose-fill products before installation"

EN ISO 6892-1 "Metallic materials — Tensile testing — Part 1: Method of test at room temperature"

EN ISO 10211 "Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations"

EN ISO 10077-2 "Thermal performance of windows, doors and shutters - Calculation of thermal transmittance – Part 2: Numerical method for frames"

EN ISO 11925-2 "Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test"

EN ISO 15630-1 "Steel for the reinforcement and prestressing of concrete — Test methods — Part 1: Reinforcing bars, wire rod and wire"

## **ANNEX A TEST SEQUENCE FOR THE CHIMNEY KIT WITH CLAY/CERAMIC FLUE LINER FOR VERIFICATION OF CLASSIFICATION W3 G**

The testing of the chimney kit with clay/ceramic flue liner shall be carried out with the following test sequence:

- a) Gas tightness according to cl. 2.2.1.3
- b) Thermal test on operating conditions according to cl. 2.2.1.2
- c) Gas tightness according to cl. 2.2.1.3
- d) Relative movement according to EN 13063-1, cl. 5.2.2<sup>2</sup>
- e) Thermal test under soot fire conditions according to cl. 2.2.1.2
- f) Gas tightness according to cl. 2.2.1.3
- g) Relative movement according to EN 13063-1, cl. 5.2.2<sup>3</sup> and abrasion resistance of the clay/ceramic flue liner according to EN 1457-2, cl. 16.12
- h) Condensate resistance and water resistance according to 2.2.1.6
- i) Flow resistance according to cl. 2.2.1.4
- j) Thermal resistance according to cl. 2.2.1.5

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<sup>2</sup> These characteristics are only noted in the test sequence for the chimney kit with clay/ceramic flue liner for completion as also listed in the test sequences given in EN 13063-1 and -2, Annex A.1, but are no mandated product characteristics and therefore not specified in Clause 2 of this EAD and in the referred ETA.