



EUROPEAN ASSESSMENT DOCUMENT

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**CHIMNEY KIT
WITH CLAY/CERAMIC FLUE LINER
WITH CLASSIFICATION
T400 (MINIMUM) N1 W3 GXX**

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

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The 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 a working temperature class T400 according to EN 1443, clause 4.2. The chimney kit according to this EAD is referring to a classification T400 (minimum) N1 W3 Gxx, whereas T400 is minimum temperature class covered by this EAD. The chimney kit may be manufactured as storey height units, whereas storey height units means with defined length of the units.

This EAD is applicable to the chimney kit with clay/ceramic flue liner which is consisting of the following components:

- clay/ceramic flue liner
- chimney fittings
- outer wall made of concrete or clay/ceramic
- thermal insulating outer wall element made of foam glass / cement bonded foam glass (optional, depending on intended use)
- thermal insulation material (mineral fibres)
- mortar for jointing outer walls
- mortar for jointing flue liners
- grout for outer walls (optional)
- reinforcement and related ancillaries (optional)
- chimney base (consisting of outer wall elements, made of concrete or clay/ceramic, flue liner, made of clay/ceramic, plate, made of concrete and the siphon, made of metal or plastics, and concrete as filling material, and cleaning and inspection door, and condensate collector) and the siphon, made of plastics, and cleaning and inspection door) and ancillaries
- upper cleaning and inspection door
- closing devices in case of more than one heating appliance (optional, depending on intended use) (see also cl. 1.2.1 of this EAD)
- elements for ceiling penetration (optional, depending on intended use), according to Figure 1 in this EAD
- covering (optional)

The optional application of the components for the use of the kit in buildings with specific requirements regarding tightness of the building and air exchange rate is illustrated in Figures 1 as examples.

Elastomeric sealings are not part of the kit.

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 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 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 thightness and minimum outer surface temperature are not dealt with in the concerned standards.

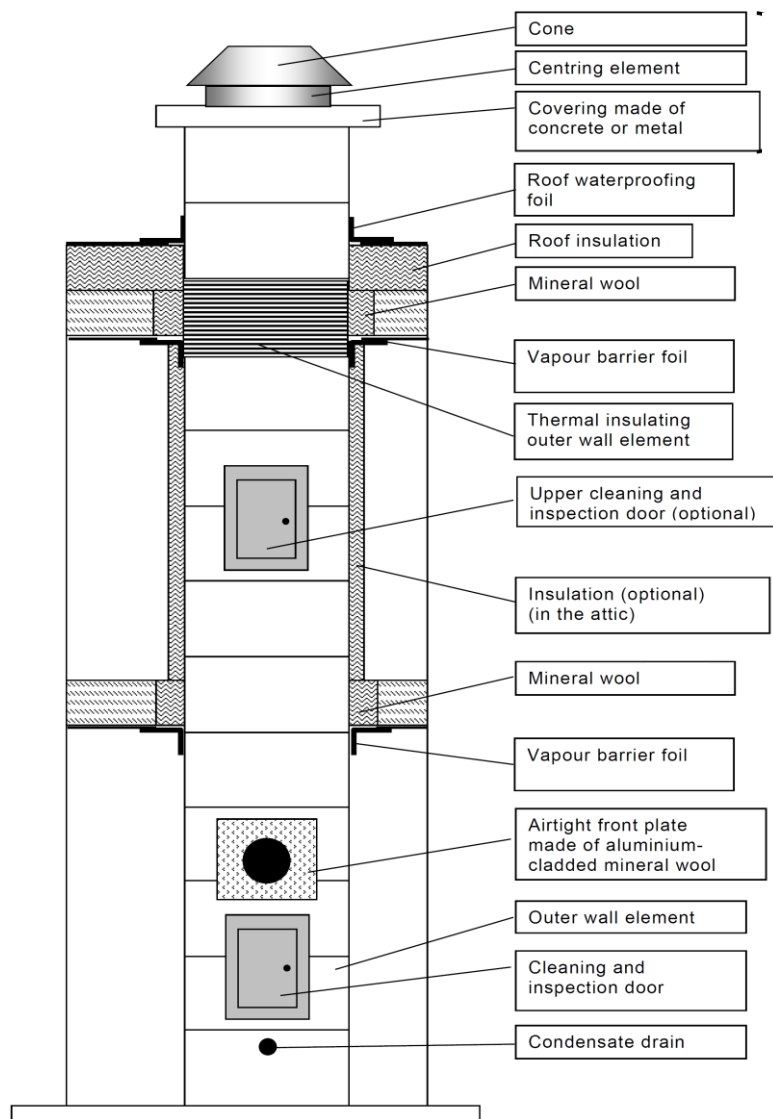
Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients

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.

Figure 1: Assembled system with all components (example)



Note: Figure 1 as example only; relevant for list of components is the descriptive list in Clause 1.1.

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 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 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

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 [m³/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 works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD

For 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 2.1.2.14.

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
Basic Works Requirement 2: Safety in case of fire			
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"
Basic Works Requirement 3: Hygiene, health and the environment			
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
Basic Works Requirement 4: Safety and accessibility in use			
11	Maximum height	2.2.1.11	Level
12	Freeze/thaw resistance	2.2.1.12	Description
*For specific intended use in buildings with specific requirements regarding tightness of the building and air exchange rate.			

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, whereas the type min. A3N1 for T600 or type min. B3N1 for T400 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. 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 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).

2.1.2.3 Thermal insulating outer wall element made of foam glass/cement bonded foam glass

For the outer wall element including foam glass Table 1a of this EAD applies.

Table 1a – Essential characteristics of the thermal insulating outer wall element and assessment methods

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

2.1.2.4 Chimney fittings

For chimney fittings the essential characteristics according to EN 1457-2 apply, whereas the type min. A3N1 for T600 or the type min. B3N1 for T400 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 1b of this EAD apply.

Table 1b – Essential characteristics of the grout and assessment methods

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 1c of this EAD apply.

Table 1c – Essential characteristics of the reinforcement and related ancillaries and assessment methods

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 1d of this EAD apply.

Table 1d – Essential characteristics of the cleaning and inspection door and assessment methods

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

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

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

Table 1e – Essential characteristics of the closing devices and assessment methods

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

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 given in 2.2.2.12 in this EAD.

2.1.2.13 Thermal insulation material

If part of the kit, for insulation materials the essential characteristics according to EN 13063-1 apply.

For the assessment Clause 2.2.2.13 in this EAD applies.

2.1.2.14 Covering

For the covering made of stainless steel the relevant dimensions and material characteristics shall be assessed. Assessment methods given in 2.2.2.14.

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

Table 1g – Essential characteristics of the top covering made of concrete and assessment methods

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 4: Safety and accessibility in use			
1	Freeze thaw resistance	2.2.2.14.1	Description
2	Durability against heating	2.2.2.14.2	Description

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.

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.

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.

The sootfire resistance and the distance between the outer surface of the chimney kit and the adjacent combustible 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.

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.

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).

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 and 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 ≤ 1200 ppm, related to a content of O₂ 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 $\leq 2\text{m}^3/\text{h}$ (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 ± 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 inner 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 jointing material for outer wall Clause 2.2.2.5.1 of this EAD applies. For assessment of the compressive strength of the outer wall Clause 2.2.2.2 of this EAD applies.

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.

2.2.2 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 essential characteristics EN 12446 apply.

If instead of concrete for the outer wall the material clay/ceramic is used EN 13069 applies for assessment of essential characteristics.

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.

In case of storey height units 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/cement bonded foam glass

2.2.2.3.1 Compressive strength of the element

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.

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): 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.

2.2.2.11 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 EN 13501-1. 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 EN 13501-1.

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

EN 13063-1, Clause 5.1.5, applies.

2.2.2.14 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:

2.2.2.14.1 Freeze thaw resistance

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

2.2.2.14.2 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.

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: 1995/467/EC, amended by 2001/596/EC and 2002/592/EC and 2010/679/EC

The system(s) is (are): 1-3-4 (Reaction to fire), 2+

For the component "element for ceiling penetration made of plastics", where relevant, for reaction to fire:

The system(s) is (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 2n.

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
Factory production control (FPC)					
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
Factory production control (FPC)					
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 made of concrete or clay/ceramic; 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)					
1	For parameters according to EN 12446, Table ZA.1	EN 12446, Table ZA.3			
2	For parameters according to EN 13069, Table ZA.1	EN 13069, Table ZA.3			

Table 2c Control plan for the thermal insulating outer wall elements made of foam glass or cement bonded foam glass; 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)					
1	Thermal insulating outer wall element				
	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			

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
Factory production control (FPC)					
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
Factory production control (FPC)					
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
Factory production control (FPC)					
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
Factory production control (FPC)					
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
Factory production control (FPC)					
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
Factory production control (FPC)					
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, 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
Factory production control (FPC)					
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
Factory production control (FPC)					
1	Dimensions	In equivalence to EN 13063-1, Clause 10.5, first paragraph, whereas details are laid down in control plan		10% of each charge/delivery	
	Closure mechanism				
	Fitting accuracy				
	Identification of material				

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
Factory production control (FPC)					
1	Material quality	Declaration each delivery			
2	Dimensions				

Table 2m Control plan for the insulation material; 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)					
1	EN 13063-1	EN 13063-1			

Table 2n 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
Factory production control (FPC)					
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
5	Spread value of concrete	In equivalence to 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 3n. 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
Initial inspection of the manufacturing plant and of factory production control					
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
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			When starting production or new production line
Continuous surveillance, assessment and evaluation of factory production control					
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 made of concrete or clay/ceramic; 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	Parameters according to EN 12446, Table ZA.1	EN 12446			When starting production or new production line
2	Parameters according EN 13069, Table ZA.1	EN 13069			
3	Compressive strength in case of storey height units	Check of documentation			
Continuous surveillance, assessment and evaluation of factory production control					
4	Parameters according to EN 12446, Table ZA.1	EN 12446			Once a year
5	Parameters according EN 13069, Table ZA.1	EN 13069			
6	Compressive strength in case of storey height units	Check of documentation			

Table 3c Control plan for the notified body for for the thermal insulating outer wall elements made of foam glass or cement bonded foam glass; 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	Bulk density	Control of devices and equipment and documentation of FPC			When starting production or new production line
2	Compressive strength	Check of documentation			
Continuous surveillance, assessment and evaluation of factory production control					
4	Bulk density	Control of documentation of FPC			Once a year
5	Compressive strength				

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
Initial inspection of the manufacturing plant and of factory production control					
1	Parameters according to EN 1457-2, Table ZA.1	EN 1457-2			When starting production or new production line
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Compressive strength	EN 998-2 in conjunction with EN 13063-1			When starting production or new production line
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Density	EN 13063-2			When starting production or new production line
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
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
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Tensile strength	Control of documentation of FPC			When starting production or new production line
2	Yield strength				
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
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				
Continuous surveillance, assessment and evaluation of factory production control					
5	Flue liner according EN 1457-2, Table ZA.1	Check of availability of certificate (AVCP system: 2+) and EC 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
Initial inspection of the manufacturing plant and of factory production control					
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				
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
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				
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Material quality	Check of documentation			When starting production or new production line
	Dimensions				
Continuous surveillance, assessment and evaluation of factory production control					
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
Initial inspection of the manufacturing plant and of factory production control					
1	Parameter according to EN 13063-1	EN 13063-1			When starting production or new production line
Continuous surveillance, assessment and evaluation of factory production control					
2	Parameter according to EN 13063-1	EN 13063-1			Once a year

Table 3n 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
Initial inspection of the manufacturing plant and of factory production control					
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				
Continuous surveillance, assessment and evaluation of factory production control					
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.

EN 206 “Concrete: Specification, performance, production and conformity”

EN 445 “Grout for prestressing tendons — Test methods”

EN 772-13 “Methods of test for masonry units - Part 13: Determination of net and gross dry density of masonry units (except for natural stone)”

EN 826 “Thermal insulating products for building applications - Determination of compression behaviour”

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 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 12667 “Thermal performance of building materials and products - Determination of thermal resistance by means of guarded hot plate and heat flow meter methods - Products of high and medium thermal resistance”

EN 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 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”

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

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 10456 “Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values — Technical Corrigendum 1“

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. 5.2.2²
- 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. 5.2.2² 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

² 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.