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European Assessment Document for

Building blocks made from bricks and cellular glass core

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The building blocks made from bricks and cellular glass core (in the following referred to as building blocks) are made from two clay masonry units with a core of cellular glass insulation. See figure 1.1.1.

The dimensions of the building block are 500x400x100mm.

The bricks are adhered to the cellular glass insulation with mortar type C2T according to EN 12004-1[1],

The bricks themselves are covered by EN 771-1. The dimensions and performances (following to EN 771-1) of the load-bearing outer leaves (bricks) will be given in the ETA as part of the description of the building blocks.

The cellular glass is covered by EN 13167. The dimensions and performances (following to EN 13167) of the insulating core (cellular glass) will be given in the ETA as part of the of the description of the building blocks.

The vertical joints between the building blocks are connected with a tongue and groove, and the horizontal joints are made with a tile adhesive type C2T in accordance with EN 12004-1 on the surfaces of the bricks only.

The product is not covered by a harmonized technical specification. The building block is not covered by EN 771-1, due to the fact that EN 771-1 only covers the brick, but not the building blocks consisting of bricks, adhesive and cellular glass.

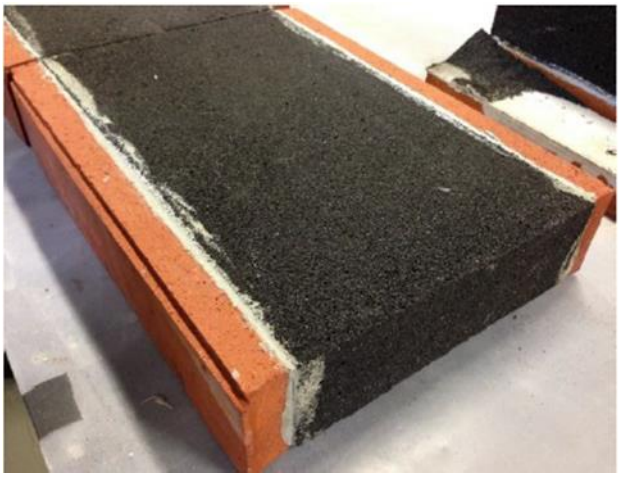

Figure 1.1.1: Example of the building block

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

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

1.2.1 Intended use(s)

The building blocks are used for the construction of external walls and the bricks of the building blocks positioned on the outside of the wall may form the decorative façade surface or not. The building blocks are connected by the tongue and groove in the vertical joints and horizontal joints are connected by an adhesive. The installed blocks constitute an insulated, loadbearing brick wall. The intended use covers only situations where the bearing length of floors or roofs on walls made of building blocks, as well as, the supporting length under these walls equals the full thickness of the wall (= width of the building block) to insure a full-surface support on the two outer leaves (bricks) of the building block.

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 building blocks for the intended use of 50 years when installed in the works (provided that the building blocks are subject to appropriate installation (see 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[2].

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

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

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2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 2.1.1 shows how the performance of the building blocks are established in relation to the essential characteristics.

Table 2.1.1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance
Basic Works Requirement 1: Mechanical resistance and stability			
1	Compression strength of masonry made of the building blocks	2.2.1	Level
2	Secant modulus of elasticity of masonry made of the building blocks	2.2.2	Level
3	Flexural adhesion strength between cellular glass/mortar/brick	2.2.3	Level
4	Initial shear strength of masonry made of the building blocks parallel to bed joints	2.2.4	Level
5	Initial shear strength of building block perpendicular to bed joints	2.2.5	Level
6	Horizontal flexural strength of masonry made of the building blocks	2.2.6	Level
7	Vertical flexural strength of masonry made of the building blocks	2.2.7	Level
8	Deformation capability	2.2.8	Level
9	Freeze/thaw resistance	2.2.9	Level
10	Coefficient of thermal expansion (CTE)	2.2.10	Level
Basic Works Requirement 2: Safety in case of fire			
11	Reaction to fire	2.2.11	Class
12	Façade fire performance	2.2.12	Description, class or level (as relevant)
Basic Works Requirement 3: Hygiene, health and environment			
13	Water absorption	2.2.13	Level
14	Water vapour permeability	2.2.14	Level
Basic Works Requirement 5: Protection against noise			
15	Direct airborne sound insulation	2.2.15	Level
Basic Works Requirement 6: Energy economy and heat retention			
16	Thermal conductivity/resistance	2.2.16	Level
17	Air permeability	2.2.17	Level

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

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

For the preparation of the test specimens for the assessment methods in accordance with clauses 2.2.1, 2.2.2, 2.2.4, 2.2.6, 2.2.7, the vertical joints between the building blocks (where applicable) shall be connected with a tongue and groove, and the horizontal joints shall be made with a tile adhesive type C2T in accordance with EN 12004-1 (instead of masonry mortar as stated in the given test standards) which shall be applied on the surfaces of the bricks only (see 1.1).

Testing will be limited only to the essential characteristics which the manufacturer intends to declare. If for any components covered by harmonised standards or European Technical Assessments the manufacturer of the component has included the performance regarding the relevant characteristic in the Declaration of Performance, retesting of that component for issuing the ETA under the current EAD is not required.

2.2.1 Compression strength of masonry made of the building blocks

The compression strength of blocks is determined in accordance with EN 1052-1 and the level of performance is stated in the ETA as described in EN 1052-1.

2.2.2 Secant modulus of elasticity of masonry made of the building blocks

The secant modulus of elasticity of blocks is determined in accordance with EN 1052-1 and the level of performance is stated in the ETA as described in EN 1052-1.

2.2.3 Flexural adhesion strength between cellular glass/mortar/brick

The sample of the block is fixated at the bottom and top. A load is applied to the cantilevered beam which is mounted onto the top of the block – see figure 2.2.3.1 below.

5 samples with dimensions 500x400x100mm are subject to testing applying EN 1052-5.

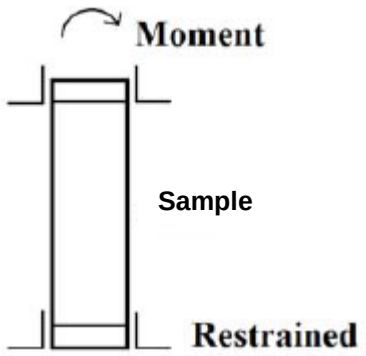

Figure 2.2.3.1: Sketch of the principle in EN 1052-5.

Based on the above standard, the mean value and standard deviation are calculated and the values are stated in the ETA.

2.2.4 Initial shear strength of masonry made of the building blocks parallel to bed joints

The initial shear strength of the building block parallel to bed joints is determined in accordance with EN 1052-3 and the level of performance is stated in the ETA as described in EN 1052-3.

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2.2.5 Initial shear strength of building block perpendicular to bed joints

The initial shear strength of the building block perpendicular to bed joints is determined in accordance with EN 1052-3 and the level of performance is stated in the ETA as described in EN 1052-3.

The load is applied with two 100 mm wide softboards in full length corresponding to the element (see figure 2.2.5.1). For compression distribution neoprene as described is used. The support shall be solely on the clay masonry unit, while the load shall be solely on the cellular glass.

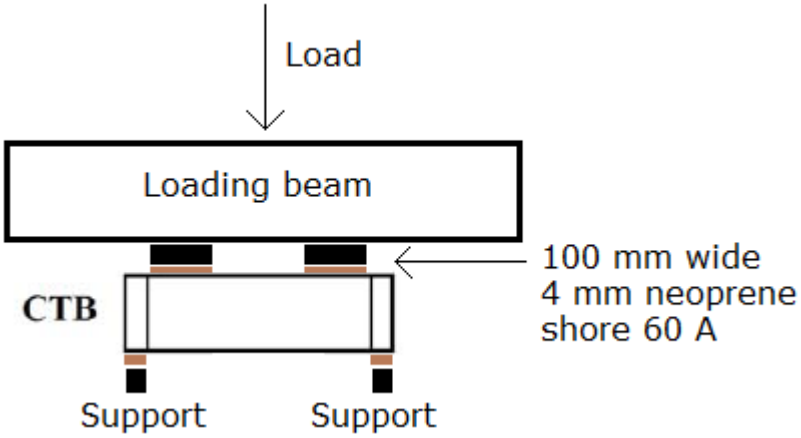

Figure 2.2.5.1: Sketch of the principle in EN 1052-3 when determining the shear force perpendicular to the bed joint

2.2.6 Horizontal flexural strength of masonry made of the building blocks

The horizontal flexural strength of the building block is determined in accordance with EN 1052-2 and the level of performance is stated in the ETA as described in EN 1052-2.

2.2.7 Vertical flexural strength of masonry made of the building blocks

The vertical flexural strength of the building block is determined in accordance with EN 1052-2 and the level of performance is stated in the ETA as described in EN 1052-2.

2.2.8 Deformation capability

The principle of the test setup is shown in figure 2.2.8.1. The theoretical static system of a double restrained beam corresponds well to the mechanics of a shell-wall. The outer leaf expands due to solar heating and causes the outer leaf to move parallel to the inner leaf.

The practical test is carried out on a simply-supported beam. The deformation values of the simply-supported beam shall then be converted by a ratio factor K, to determine the deformation corresponding to a double restrained beam. The factor K is determined according to Annex A.

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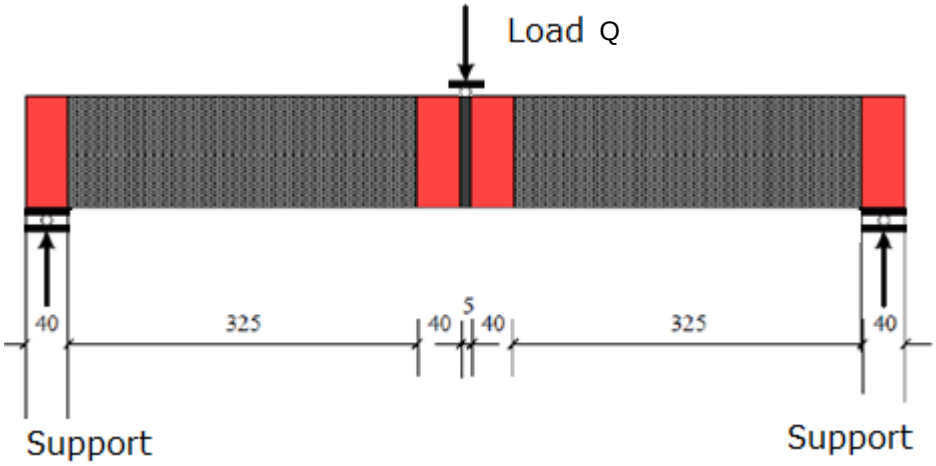

Figure 2.2.8.1: Principle of test setup – simply-supported beam.

2 samples are tested with the following dimensions:

Width: 80 – 100 mm,

Height: 80 – 100 mm,

Total Length: 815 mm,

Block length: 405 mm.

The load speed is 0,5mm/min.

The arrangement for support and load consists of 40 mm x 5 mm steel plates with Ø 8 – 10 mm rollers both with the same width as the specimen.

The 2 units are glued using the same glue as applied for connecting the cellular glass and the 2 masonry clay units.

The glued joint is during execution given a small recess to fit the load arrangement.

The glued test specimen cures for 7 d $\pm$ 1 d.

The load Q and the deflection δ_S are measured simultaneously and the work-line with failure load and deflection shall be recorded.

Using the values from the test and Annex A the possible length between expansion joints is calculated and stated in the ETA.

The load and deformation at failure are measured and adjusted with the above-mentioned ratio factor, and the mean value for the failure load and deformation are stated in the ETA.

2.2.9 Freeze/thaw resistance

The freeze/thaw resistance of the building block is determined in accordance with EN 771-1, Annex B.3, and the level of performance is stated in the ETA.

2.2.10 Coefficient of thermal expansion (CTE)

One sample of the building block is tested.

The specimen is placed in a freezer with a temperature of -40 °C for 24 hours. Afterwards the building block is placed in a room with ambient laboratory temperature of 23 ± 3°C.

This relocation shall be completed within 30 seconds.

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After relocation the thermal expansion of the building block is measured with a laser device (length, width and height), one side at a time. The temperature is measured just before the specimen is placed in the freezer and just after relocation.

Based on the measurements the coefficient of thermal expansion is calculated by

$$CTE = \frac{\frac{\Delta x}{x}}{\Delta T}$$

Where x is the length, width and height respectively measured before storage in the freezer and Δx is the change in length, width and height respectively after storage. ΔT is the difference in the measured temperatures.

The expansion coefficient for each direction and the mean value of the three directions are stated in the ETA.

2.2.11 Reaction to fire

One of the following options shall apply for the assessment:

a) All components of the building blocks (bricks, cellular glass core (where applicable) and tile adhesive) are considered to satisfy the requirements for performance class A1 of the characteristic reaction to fire
   - either in accordance with the Decision 96/603/EC (as amended by Commission Decisions 2000/605/EC and 2003/424/EC) without the need for testing on the basis of their fulfilling the conditions set out in that Decision and their intended use being covered by that Decision,

   In this case the reaction to fire performance of the entire building blocks is also considered to be class A1 without the need for additional testing.

   This option applies when the cellular glass fulfils the provisions in EN 13167 clause 4.2.6 for being classified without testing.

b) If option (a) does not apply or classification for one or several components is missing, then the building blocks shall be tested, using the relevant test method(s) for the corresponding reaction to fire class according to EN 13501-1. The building blocks shall be classified according to Commission Delegated Regulation 2016/364/EU in connection with EN 13501-1.
   For conducting the relevant tests including mounting and fixing of the test specimens as well as the application of test results, the provisions given in Annex C shall apply.

The obtained reaction to fire class shall be given in the ETA together with those conditions for which the classification is valid.

2.2.12 Façade fire performance

If the manufacturer intends to declare the façade fire performance of the product, in absence of a European assessment approach, the ETA shall be issued taking into account the situation in Member States where the manufacturer intends his product to be made available on the market.
Information on such situation is included in Annex B.
The assessment method(s) used shall be indicated in the ETA.

2.2.13 Water absorption

The water absorption of the building blocks is determined in accordance with EN 771-1, clause 5.2.7, and the level of performance is stated in the ETA.

2.2.14 Water vapour permeability

The water vapour permeability of the building blocks is determined in accordance with EN 771-1, clause section 5.2.11, and the level of performance is stated in the ETA.

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2.2.15 Direct airborne sound insulation

The improvement of airborne sound insulation shall be tested according to EN ISO 10140-1, Annex G.

The ratings of airborne sound insulation shall be undertaken according to EN ISO 717-1.

The weighted improvement ΔR_w, the sound reduction index R_w w and the spectrum adaptation terms C and C_{tr}, are stated in the ETA.

2.2.16 Thermal conductivity/resistance

Thermal resistance (R-value) of the building blocks is calculated according to EN ISO 6946, using the thermal resistance of the components as tabulated in table 3 of EN ISO 10456. Equivalently, the building blocks can be tested according to EN 12667 or EN 12939 depending on the thickness of the insulation core.

The performance of the building blocks related to thermal resistance is stated in the ETA together with an indication of the method used.

2.2.17 Air permeability

The air permeability of the building blocks is determined in accordance with EN ISO 9053-1. The value of air flow resistivity is stated in the ETA in levels with steps of 1 kPa×s/m^2.

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3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is Commission Decision 97/740/EC, as amended by the Commission Decision 2001/596/EC.

The applicable AVCP system is 2+ for any use except for uses subject to regulations on reaction to fire performance.

In case of a more intensively developed fire the outer bricks may spall from the core or fall down due to loss of adhesion and then the insulation core will be directly exposed to fire as set out as precondition in Decision 97/740/EC for the application of specific AVCP systems with regard to reaction to fire.

Thus, for uses subject to regulations on reaction to fire the applicable AVCP systems are 1, 3 or 4.

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3.2 Tasks of the manufacturer

The corner stones of the actions to be undertaken by the manufacturer of the building blocks made from bricks and cellular glass core in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.1.

Table 3.2.1 Control plan for the manufacturer; corner stones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]					
1	Incoming material specification	Suppliers documents (inducing DoP of incoming material /components in accordance with EN 771-1 EN 12004-1 EN 13167)	As defined in the control plan	-	Per material batch
2	Dimensions and tolerances of building blocks (including flatness of bed faces and plane parallelism of bed faces)	Measurement according to EN 771	As defined in the control plan	5 per production batch	Daily
3	Compressive strength of building blocks or Compressive strength of the clay masonry units	EN 772-1	As defined in the control plan	6	Each week
4	compression strength and secant modulus of elasticity of masonry	2.2.1/2.2.2	As defined in the control plan	1	Each 5 years
5	Flexural adhesion	2.2.3	As defined in the control plan	1	Each batch
6	Shear strength	2.2.4/2.2.5	As defined in the control plan	1	Each batch
7	Flexural strength	2.2.6/2.2.7	As defined in the control plan	1	Each batch
8	Reaction to fire	2.2.11 – options a) and b): -> see line 1	See control plan		Each delivery of the components
		2.2.11 – option c):			
		indirect tests - Dimension - Density / weight per unit area	See control plan	1	Each batch
		direct tests	See control plan	At least 1	Once per two years

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3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the building blocks made from bricks and cellular glass core are laid down in Table 3.3.1.

Table 3.3.1: Tasks for the notified body; cornerstones

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				
The Notified Body will ascertain that the factory production control with the staff and equipment are suitable to ensure a continuous and orderly manufacturing. In addition, where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 are fulfilled, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).	Verification of the complete FPC as described in the control plan agreed between the TAB and the manufacturer	According to Control plan	According to Control plan	When starting the production or a new line
Continuous surveillance, assessment and evaluation of factory production control				
The Notified Body will ascertain that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan. Where the intervention of the Notified Body is necessary only because the conditions for the applicability of system 1 in the Decisions are fulfilled, the notified body will consider especially the clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g., an addition of fire retardants or a limiting of organic material).	Verification of the controls carried out by the manufacturer as described in the control plan agreed between the TAB and the manufacturer with reference to the raw materials, to the process and to the product as indicated in table 3.2.1	According to Control plan	According to Control plan	1/year

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4 REFERENCE DOCUMENTS

EN 12004-1:2017	Adhesives for ceramic tiles – Part 1: Requirements, assessment and verification of constancy of performance, classification and marking
EN 13167:2012+ A1:2015	Thermal insulation products for buildings – Factory made cellular glass (CG) products – Specification
EN 1996-1-1:2022	Eurocode 6 – Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry structures
EN 1052-1:1998	Method of test for masonry – Part 1: Determination of compressive strength
EN 1052-3:2002+A1:2007	Methods of test for masonry – Part 3: Determination of initial shear strength
EN 1052-2:2016+AC:2017	Methods of test for masonry – Part 2: Determination of flexural strength
EN 1052-5:2005	Methods of test for masonry – Part 5: Determinaton of bond strength by the bond wrench method
EN 771-1:2011+A1:2015	Specification for masonry units – Part 1: Clay masonry units
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
EN ISO 10140-1:2021	Acoustics – Laboratory measurement of sound insulation of building elements – Part 1: Application rules for specific products
EN ISO 717-1:2020	Acoustics – Rating of sound insulation in buildings and of building elements – Part 1: Airborne sound insulation
EN ISO 6946:2017	Building components and building elements – Thermal resistance and thermal transmittance – Calculation method
EN ISO 10456:2007+AC:2009	Building materials and products – Hygrothermal properties - Tabulated design values and procedures for determining declared and design thermal values
EN 12667:2001	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance
EN 12939:2000	Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of high and medium thermal resistance
EN ISO 9053-1:2018	Acoustics – Determination of airflow resistance – Part 1: Static airflow method
EN 772-1:2011+A1:2015	Methods of test for masonry units - Part 1: Determination of compressive strength
EN ISO 1182:2010	Reaction to fire tests for products - Non-combustibility test
EN ISO 1716:2018	Reaction to fire tests for products – Determination of the gross heat of combustion (calorific value)
EN ISO 11925-2:2020	Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test
EN 13823:2020	Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item
EN 13238:2010	Reaction to fire tests for building products - Conditioning procedures and general rules for selection of substrates

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ANNEX A DETERMINATION OF K FACTOR

Determination of the ratio factor K

The theoretical setup with restrained supports as illustrated in figure 2.2.8.14 in clause 2.2.8 is practically not possible to make. Therefore, the test setup has to be simplified to a simply-supported beam.

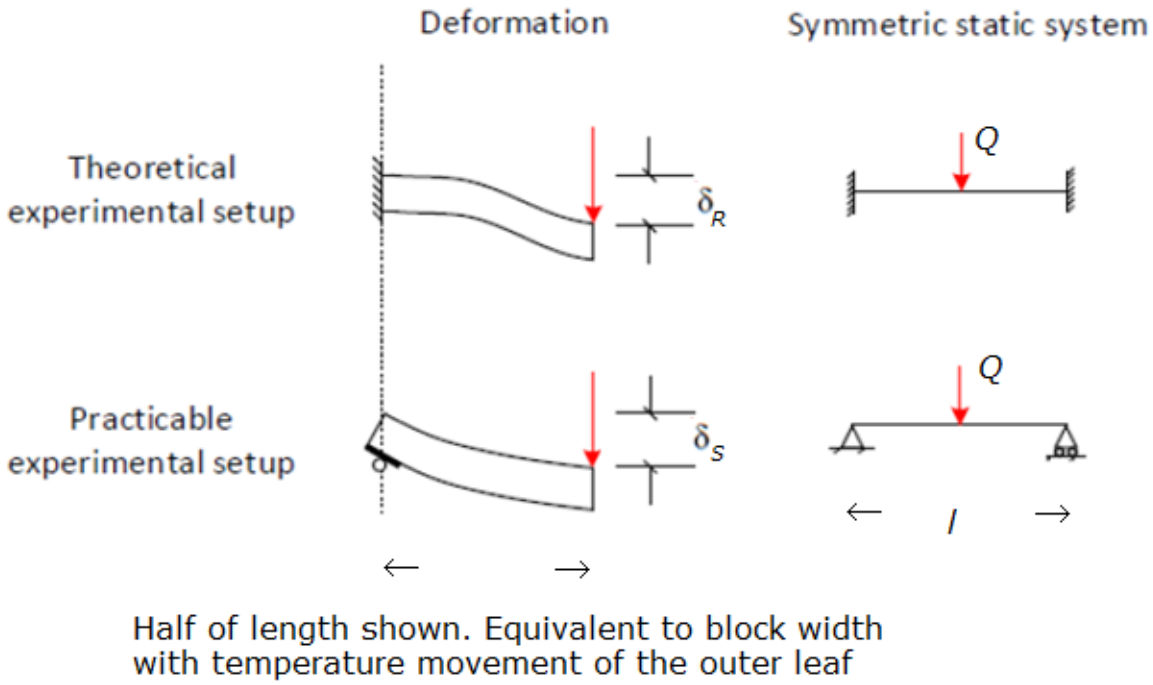

Figure A.1: Restrained beam and simply supported beam

The measured deformation values for the simply-supported beam shall be converted into deformation values for the restrained beam. This shall be done by determining the ratio factor K.

Deformation formula for the restrained beam:

$$\delta_R = \frac{1}{192} \cdot \frac{Q \cdot l^3}{E \cdot I}$$

Deformation formula for the simply-supported beam:

$$\delta_S = \frac{1}{48} \cdot \frac{Q * l^3}{E \cdot I}$$

The ratio factor is:

$$\delta_R = \delta_S \cdot K$$

$$K = 0.25$$

Legend:

δ_R:	Deflection for the restrained system
δ_S:	Deflection for the simply-supported system
Q:	Load
I:	Moments of inertia for the cross-section (3. order moment)
E:	Modules of elasticity for the cellular glass
K:	Ratio of deflection between the simply-supported and restrained system

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ANNEX B ASSESSMENT METHODS APPLIED IN EU/EFTA MEMBER STATES FOR ASSESSING THE FIRE PERFORMANCE OF FACADES

Country	Assessment method
Austria	ÖNORM B 3800-5
Czech Republic	ČSN ISO 13785-1
Denmark, Sweden, Norway	SP Fire 105
Finland	• SP Fire 105 • BS 8414
France	LEPIR 2
Germany	• DIN 4102-20 Complementary reaction-to-fire test for claddings of exterior walls, • Technical regulation A 2.2.1.5
Hungary	MSZ 14800-6:2009 Fire resistance tests. Part 6: Fire propagation test for building façades
Ireland	BS 8414 (BR 135)
Poland	PN-B-02867:2013
Switzerland, Liechtenstein	• DIN 4102-20 • ÖNorm B 3800-5 • Prüfbestimmung für Aussenwandbekleidungssysteme

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ANNEX C: GUIDANCE FOR TEST OF REACTION TO FIRE

C.1 Testing in accordance with EN ISO 1182 and EN ISO 1716

These methods are needed to determine classes A1 and A2. The specimens shall be prepared and tested in accordance with the provisions given in test standards EN ISO 1182 and EN ISO 1716. All specimens shall be conditioned in accordance with provisions given in EN 13238 before testing. Each different chemical composition of the components of the building blocks has to be considered when testing. In case of products with the same composition but different densities and different amount of organic compounds, the variations with the highest and lowest density of the concerned component and the highest amount of organic compounds shall be tested. If the product contains flame retardant, the variation with the lowest amount of the flame retardant shall be tested.

The test result is valid for that variation tested and all of the following variations of the product:

- being part of the same product family (as defined by a certain combination of raw materials and a certain type of production process),
- with the same density (if only one was tested) or any densities between those evaluated in the tests,
- of any dimensions,
- with lower amounts organic compounds and
- with higher amounts of the same type of flame retardant as the one which has been tested.

C.2 Testing in accordance with EN 13823 (SBI)

This method is relevant for determining classes A2, B, C and D as well as for the additional classifications s1, s2, s3, d0, d1 and d2 regarding smoke production and flaming droplets. The specimens shall be prepared and tested in accordance with the provisions given in test standard EN 13823. All specimens shall be conditioned in accordance with provisions given in EN 13238 before testing.

The corner specimen consists of two wings, designated the short and long wings.
The specimens shall have the following dimensions:

a) short wing: 495 $\pm$ 5 mm (length) x 1500 $\pm$ 5 mm (height)
b) long wing: 1000 $\pm$ 5 mm (length) x 1500 $\pm$ 5 mm (height)

As the building blocks may be used without render or plaster finish in their end use application, they shall be tested with a 40 mm wide air gap between the backside of the specimens and the backing board of the test rig.

For building blocks with a width (b) greater than 160 mm, the width shall be reduced to 160 mm by cutting away the unexposed surface. Length (a) and height (c) of the building blocks shall be cut to fit the size of the test rig. The long wing of the specimen shall be made with staggered vertical joints. If the length (a) of the blocks is less than or equal to 500 mm, the short wing shall be made from one piece. Otherwise, staggered vertical joints shall be made in the short wing as well.

The cut building blocks are simply stacked on top of each other dry without any adhesive.

The assembly may be prepared away from the test chamber. The complete assembly can then be transported to the chamber.

The following parameters of the building blocks shall be taken into account when conducting the SBI tests:

- product variations of the same product family (as defined by a certain combination of raw materials and a certain type of production process)
- the greatest and lowest width (for product ranges including building blocks with a width less than 160 mm),
- the lowest thickness of the external brick layers
- highest and lowest density of the components of the building blocks,
- the highest amount of organic compounds and
- the lowest amount of flame retardant.

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The test results are valid for the variation tested and all of the following variations of the product:
- being part of the same product family (as defined by a certain combination of raw materials and a certain type of production process),
- with all widths between those tested (for product ranges including building blocks with a width less than 160 mm) and also for higher widths, if 160 mm thick building blocks were tested,
- with all other unit lengths and heights,
- the same or any higher thickness of the external bricks,
- with the same density (if only one was tested) or any densities between those evaluated in the tests,
- with lower amounts of organic compounds and
- with higher amounts of the same type of flame retardant as the one which has been tested.

C.3 Testing in accordance with EN ISO 11925-2

This method is relevant for determining the reaction to fire classes B, C, D and E. The specimens shall be prepared and tested in accordance with the provisions given in test standard EN ISO 11925-2. All specimens shall be conditioned in accordance with provisions given in EN 13238 before testing.

For building blocks with a width (b) greater than 60 mm, the width shall be reduced to 60 mm (= maximum testable thickness) by cutting away the unexposed surface.

All tests shall be conducted on free-hanging specimens without any substrate behind. The specimens shall be tested with surface exposure and edge exposure as well as with edge exposure on each layer of specimens turned 90 degrees on their vertical axis.

The following parameters shall be taken into account when preparing the specimens:
- product variations of the same product family (as defined by a certain combination of raw materials and a certain type of production process),
- the greatest width (usually that means the greatest testable width of 60 mm),
- the lowest thickness of the external brick layers,
- highest and lowest density of the components of the building blocks,
- the highest amount of organic compounds and
- the lowest amount of flame retardant.

The test results are valid for the variation tested and all of the following variations of the product:
- being part of the same product family (as defined by a certain combination of raw materials and a certain type of production process),
- with lower widths and also for higher widths, if 60 mm thick building blocks were tested,
- with all other unit lengths and heights,
- the same or any higher thickness of the external bricks,
- with the same density (if only one was tested) or any densities between those evaluated in the tests,
- with lower amounts of organic compounds and
- with higher amounts of the same type of flame retardant as the one which has been tested.

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