



EUROPEAN ASSESSMENT DOCUMENT

EAD 360001-00-0803

October 2016

VENTILATION SYSTEM MADE OF MINERAL WOOL COVERED WITH FILM ON OUTSIDE AND INSIDE

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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).

Contents

1	Scope of the EAD.....	4
1.1	Description of the construction product	4
1.2	Information on the intended use of the construction product	4
1.2.1	Intended use.....	4
1.2.2	Working life/Durability.....	4
1.3	Specific terms used in this EAD	4
2	Essential characteristics and relevant assessment methods and criteria.....	5
2.1	Essential characteristics of the product	5
2.2	Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	5
2.2.1	Reaction to fire	5
2.2.2	Erosion and emission performance.....	6
2.2.3	Microbiological growth.....	6
2.2.4	Stiffness.....	6
2.2.5	Bulging and/or caving.....	6
2.2.6	Dimensional stability.....	6
2.2.7	Dimensional tolerances	7
2.2.8	Resistance against pressure	7
2.2.9	Tightness.....	7
2.2.10	Water vapour resistance	7
2.2.11	Acoustical absorption	7
3	Assessment and verification of constancy of performance	8
3.1	Systems of assessment and verification of constancy of performance to be applied	8
3.2	Tasks of the manufacturer	8
3.3	Tasks of the notified body	9
4	Reference documents	10

1 SCOPE OF THE EAD

1.1 Description of the construction product

Ventilation system made of mineral wool covered with surface treated aluminum film on outside and inside. The kit consists of ducts and circular fittings.

The product is not covered by a harmonised European standard (hEN).

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use of the construction product

1.2.1 Intended use

The ventilation system is intended to be used inside buildings.

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 ventilation system for the intended use of 25 years when installed in the works. 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 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 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 purpose of this EAD, the terms and definitions given in clause 3 of EN 13403 applies.

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.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 1 shows how the performance of ventilation system is assessed in relation to the essential characteristics.

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 <i>(level, class, description)</i>
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Erosion	2.2.2.1	level
3	Emission	2.2.2.2	levels
4	Microbiological growth	2.2.3	levels
5	Stiffness	2.2.4	level
6	Bulging and /or caving	2.2.5	levels
7	Dimensional stability	2.2.6	levels
8	Dimensional tolerances	2.2.7	levels
9	Resistance against pressure	2.2.8	level
10	Tightness	2.2.9	level
11	Water vapour resistance	2.2.10	level
Basic Works Requirement 5: Protection against noise			
12	Acoustical absorption	2.2.11	levels

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

2.2.1 Reaction to fire

Mounting and fixing conditions shall be in accordance to EN 15715:2009 table A1 and table A2.

The ventilation system shall be tested, using the test method(s) according to EN 13501-1 relevant for the corresponding reaction to fire class.

The product shall be classified according to Commission Delegated Regulation (EU) No. 2016/364.

2.2.2 Erosion and emission performance

2.2.2.1 Erosion

Performance assessment according to EN 13403 clause 7.2. After tests ductwork shall be inspected for damages (i.e. if material flake off, break away, or show evidence of delamination or erosion). Information about size of damaged area shall be reported in the ETA.

Threshold values in clause 7.2 of EN 13403 are not applicable.

2.2.2.2 Emission

Performance assessment according to EN 13403 clause 7.2. Information about concentration ($\mu\text{g}/\text{m}^3$) of particles bigger than $0,5 \mu\text{m}$ and bigger than $5,0 \mu\text{m}$ shall be reported in the ETA.

Threshold values in clause 7.2 of EN 13403 are not applicable.

2.2.3 Microbiological growth

Before tests for microbiological growth the ductwork shall be cleaned, the number of cleaning cycles shall be calculated according to the assumed working life, one cleaning per year.

Test according to EN 13403 clause 7.4.

Following information shall be reported:

- Extent of mould growth (visual inspection)
- Indication of deterioration in wall structure (visual inspection)
- If the mould has spread beyond the inoculated area
- If significant growth of mould has been observed

Threshold values in clause 7.4 of EN 13403 are not applicable.

2.2.4 Stiffness

Verification of duct stiffness according to EN 13403 clause 7.1.

Value for flexural rigidity $[EI]$ N mm^2 shall be reported in the ETA.

2.2.5 Bulging and/or caving

Test method according to EN 13403 clause 4.4.

Following information shall be reported:

- bulging/caving during test, calculated in percentage of the width
- bulging/caving during test, measured in mm
- bulging/caving after load relieving, calculated in percentage of the width
- bulging/caving after load relieving, measured in mm

Threshold values in clause 4.4 of EN 13403 are not applicable.

2.2.6 Dimensional stability

Test according to EN 13403 clause 4.7.6 or EN 13180.

The dimensional stability shall be assessed by means of a test that shows changes in length, width and thickness. Values shall be presented in percentage.

Threshold values in clause 4.7.6 of EN 13403 are not applicable.

2.2.7 Dimensional tolerances

Tolerances for length and width shall be tested in accordance with EN 822. Values for deviation (\pm) shall be presented in percentage.

Tolerance for thickness shall be tested in accordance with EN 823. Value for deviation (\pm) shall be presented in percentage.

2.2.8 Resistance against pressure

Test according to EN 13403 clause 7.3. Air ducts and connector sections with joints, assembled in accordance with the manufacturer's instructions, shall withstand without rupture an internal air pressure of 2,5 times the manufacturer's rated positive pressure, but not less than 200 Pa.

The resistance against pressure shall be assessed by measurements of ruptures. For this test rupture is considered as evidenced by breaks, tears, rips or other openings. Plastic deformation is not considered to be a rupture. Ruptures shall be measured and declared in mm.

Any joining material shall remain intact to the extent that materials such as tapes do not become displaced. Displacements shall be measured and declared in mm.

Other evidence of damage, which would cause the sample to become unusable, shall be described.

2.2.9 Tightness

Tightness tests shall be performed according to standard EN 1507 or EN 15727.

Leakage test with negative pressure shall be done with at least one of following pressures: 200, 500 or 750 Pa.

Leakage test with positive pressure shall be done with at least one of following pressures: 400, 1000 or 2000 Pa.

Assessment of tightness shall be presented in a diagram with leakage factors as a function of test pressure or a table.

2.2.10 Water vapour resistance

Method of verification according to EN 12086.

Value for water vapour resistance shall be presented.

2.2.11 Acoustical absorption

Method of verification according to EN ISO 7235 clause 6.

Values according to EN ISO 7235 clause 7.8 shall be presented.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 Systems of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 1999/91/EC as amended by Decision 2001/596/EC.

The system is: **3**.

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 1999/91/EC as amended by Decision 2001/596/EC.

The systems are: **1, 3 or 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.

Table 2 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC)					
1	Check of incoming material		Compliance to material properties stated in manufacturer's DoP.		Every batch
2	Dimensional stability	2.2.7	Compliance to dimensional stability stated in manufacturer's DoP.	1	Once in 2 years
3	Dimensional tolerances	2.2.8	Compliance to dimensional tolerances stated in manufacturer's DoP.	1	Once in 2 years
4	Resistance against pressure	2.2.9	Compliance to properties for resistance against pressure stated in manufacturer's DoP.	1	Once in 2 years
5	Tightness	2.2.10	Compliance to tightness stated in manufacturer's DoP.	1	Once in 2 years

3.3 Tasks of the notified body

The intervention of the notified body under AVCP system 1 is only necessary regarding reaction to fire and only under the conditions foreseen in the Decision 1999/91/EC as amended by Decision 2001/596/EC.

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for ventilation system are laid down in Table 3.

Table 3 Control plan for the notified body; cornerstones

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control <i>(for system 1 only)</i>					
1	Reaction to fire*	2.2.1	The notified body shall ascertain that, in accordance with the control plan, the manufacturing plant of the single product manufacturer, in particular personnel and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the ventilation system according the European Technical Assessment.		
Continuous surveillance, assessment and evaluation of factory production control <i>(for system 1 only)</i>					
2	Reaction to fire*	2.2.1	The notified body shall visit the factory once a year. It has to verify the continuing conformity with the ETA, taking into account the prescribed test plan.		

* Only relevant for products of classes A1, A2, B or C. Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

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 822 Thermal insulating products for building applications – Determination of length and width
- EN 823 Thermal insulating products for building applications – Determination of thickness
- EN ISO 7235 Acoustics - Laboratory measurement procedures for ducted silencers and air-terminal units - Insertion loss, flow noise and total pressure loss (ISO 7235:2003)
- EN 1507 Ventilation for buildings - Sheet metal air ducts with rectangular section - Requirements for strength and leakage.
- EN 12086 Thermal insulating products for building applications – Determination of water vapour transmission properties.
- EN 12097 Ventilation for buildings - Ductwork - Requirements for ductwork components to facilitate maintenance of ductwork systems.
- EN 13180 Ventilation for buildings - Ductwork - Dimensions and mechanical requirements for flexible ducts.
- EN 13403 Ventilation for buildings – Non-metallic ducts – Ductwork made from insulation ductboards.
- EN 13403 Standards according to Normative references in EN 13403.
- EN 15239 Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of ventilation systems.
- EN 15240 Ventilation for buildings - Energy performance of buildings - Guidelines for inspection of air-conditioning systems.
- EN 15715 Thermal insulation products – Instructions for mounting and fixing for reaction to fire testing – Factory made products
- EN 15727 Ventilation for buildings - Ducts and ductwork components, leakage classification and testing.