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European Technical Assessment

ETA-21/0579
Of 19/10/2021

General part

Technical Assessment Body issuing the European Technical Assessment:

SKG-IKOB Certificatie BV

Trade name of the construction product

Aeromix SHP

**Product family to which the
construction product belongs**

Thermal and/or sound insulation based on bound expanded polystyrene bulk material

Manufacturer

Aerobel b.v.
Caetsbeekstraat 12B
3740 Bilzen
Belgium

Manufacturing plant(s)

Plant A001

**This European Technical Assessment
contains**

7 pages

**This European Technical Assessment is
issued in accordance with regulation
(EU) No 305/2011, on the basis of**

European Assessment Document (EAD): "Thermal and/or sound insulation based on bound expanded polystyrene bulk material", EAD 040635-00-1201: oct. 2017

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Specific parts

1 Technical description of the product:

Aeromix SHP is used to insulate floors with an added thickness between 40 and 600 mm:

- * as an insulating layer on top of the base floor structure. The insulation layer is then finished with a screed top layer.
- * as an insulating layer on top of the base floor structure. The insulation layer is then finished with a top layer of roofing or EPDM.

The installation thickness shall be in every area in conformity with the nominal thickness and shall not exceed the above given limits. The installation thickness has to be checked by the application company.

The insulation material may only be used in structures where it is protected against wetting and weathering.

Product	Description
Aeromix SHP	The insulation material consists of 100% new expanded polystyrene foam, Portland cement and the addition of a bio-based 'Aerobinder'. For on-site processing, 80 kg Portland cement (CEM I 52.5 N) must be added as a mixing ratio to 1000 liters of newly expanded polystyrene granules with a density of 13 kg/m ³ together with 4,6 kg Aerobinder.

The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS – taking into account the installation conditions of the construction product and the release scenarios resulting from there.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

2 Specification of the intended uses in accordance with the applicable Assessment Document (hereinafter EAD)

2.1 Intended use

The intended use of Aeromix SHP is as a thermal/sound insulation layer on floors.

The nominal density of the aged product will be 93 kg/m³ ($\pm 5\%$)

The new expanded polystyrene foam is produced by a steam process with dry saturated steam up to a maximum grain size of 5mm.

The following on-site deliveries of the EPS compound mixture are possible:

1) Factory made blend

The factory made blend of granulated expanded polystyrene foam, Portland cement and Aerobinder is delivered on site in bags where the contents are installed in an earth moist consistency with the addition of water. To ensure the correct consistency, care must be taken to mix the entire volume of the package supplied on site with the recommended batch water.

2) Mixing on site by a mobile unit

The granulated expanded polystyrene foam and the compound are supplied separately on site and are mixed in situ according to the above mixing ratio with the addition of water in an earth moist consistency.

2.2 Working life

The assumed working life of the Aeromix SHP is for the intended use 50 years, provided that the assembled product is subject to appropriate installation, use and maintenance. The indication of 50 years cannot be interpreted as a guarantee given by Aerobel b.v. , but should only be regarded as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3. Performance of the product and references to the methods used for its assessment

The assessment of fitness for use has been made in accordance with EAD 040635-00-1201 "Thermal and/or sound insulation based on bound expanded polystyrene bulk material".

Aeromix SHP		
Basic requirement for constructionwork	Characteristic	Assessments of characteristics
BWR 2 Safety in case of fire		
Reaction to fire	EN 13501-1: 2010	Class E/E _{FL} , d2
BWR 3 Hygiene, health and environment		
Content, emission and/or release of dangerous substances	EN 196-10 and EAD 040635-00-1201: oct. 2017, annex B	HBCDD: 0% ≤ 2 mg Cr(IV)/kg
Release of dangerous substances		Declaration of manufacturer
Water vapour permeability	EN 12086	No performance assessed
BWR 4 safety and accessibility in use		
Compressive stress at 10% strain / compressive strength	EN 826	No performance assessed
Compressive creep	EN 1606	No performance assessed
Thickness and compressibility	EN 12431	No performance assessed
Dimensional stability	EN 1608	No performance assessed
Point load	EN 12430	No performance assessed
BWR 5 Protection against noise		
Impact sound reduction	EN ISO 10140-1 and EN ISO 10140-3	No performance assessed
Dynamic stiffness	EN 29052-1	No performance assessed
BWR 6 Energy economy and heat retention		
Particle size distribution of EPS	EN 933-1 and EN 16025-1	No performance assessed
Water absorption	EN 1609, Method A	No performance assessed
Thermal conductivity at dry conditions	EAD 040635-00-1201: oct. 2017 Annex A / A.1.1: (EN 13163 par. 4.2.1)	$\lambda_{10,dry}$: 0,0352 (W/mK) $\lambda_{10,dry,90/90}$: 0,0361 (W/mK)
Mass related moisture coefficient ($f_{u,1}$) for the conversion of $\lambda_{10,dry}$ to $\lambda_{23,50}$	EAD 040635-00-1201: oct. 2017 Annex A, clause A.2	M_{dry} : 0,413 kg $M_{23,50}$: 0,416 kg $f_{u,1}$: 7,57 kg/kg
Thermal conductivity at 23°C / 50% RV	EAD 040635-00-1201: oct. 2017 Annex A.2, (EN 12667)	$\lambda_{(23,50)}$: 0,0368 (W/mK). $\lambda_{23/50,90/90}$: 0,0377 (W/mK)
mass-related moisture conversion coefficient ($f_{u,2}$) for the conversion of $\lambda_{23,50}$ to $\lambda_{23,80}$	EAD 040635-00-1201: oct. 2017 Annex A, clause A.4	$M_{23/50}$: 0,416 kg $M_{23,80}$: 0,421 kg $f_{u,2}$: 0,632 kg/kg
Fractile value at 23° and 50% RH	EAD 040635-00-1201: oct. 2017 Annex A / A.2: (EN 13163 par. 4.2.1)	$\lambda_{23,50,90/90}$: 0,03769 (W/mK)
Thermal conductivity at 23° and 80% RH	EN-ISO 10456:2010	$\lambda_{23,80}$: 0,03711 (W/mK) $\lambda_{23,80,90/90}$: 0,03839 (W/mK)
Density of fresh mortar	EN 1015-6	No performance assessed
Bound EPS density	EN 1602	95,29 kg/m ³
Bulk Density of the dry mixture of granulated polystyrene and compound or of the granulated polystyrene	EN 1097-3	No performance assessed
Moisture sorption	EN ISO 12571	No performance assessed
Alkaline resistance	EN ISO 175	No performance assessed

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

The reaction to fire was tested according to EN-ISO 1182:2010 and EN-ISO 1716:2010 and classified according to EN 13501-1:2010. The mounting and fixing instructions according to EN 16025-1 , Annex C are used.

The product is classified according to commission Delegated Regulation (EU) No 2016/364 for thicknesses of 40 mm and up:

Class E/E_{FL}, d2

3.2 Hygiene, health and environment (BWR 3)

3.2.1 Content, emission and/or release of dangerous substances

The content of Chromium IV was tested according to EN 196-10.

The content of chromium VI ≤ 2 mg Cr(IV)/kg

The content of Hexabromocyclododecane (HBCDD) was tested according to: ANNEX B of EAD 040635-00-1201: oct. 2017

The content of HBCDD is **0%**

3.2.2 Water vapour permeability

The water vapour permeability assessed according to EN 12086.

No performance was assessed.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Compressive stress at 10% strain / Compressive strength

The compressive stress at 10% strain according to EN 826.

No performance was assessed.

3.3.2 Compressive creep

Compressive creep ϵ_{ct} and the total thickness reduction according to EN 1606 over a period of at least 122 days of testing.

No performance assessed.

3.3.3 Thickness and compressibility

The determination of thickness d_L and d_B according to EN 12431

No performance assessed.

3.3.4 Dimensional stability

Dimensional stability according to EN 1604 at 60°C / 90% RH – 48 h / under specified compressive load and temperature conditions.

No performance assessed.

3.3.5 Point load

Behaviour under point load at 5 mm deformation according to EN 12430

No performance assessed.

3.3.6 Alkaline resistance

The alkaline resistance assessed according to EN ISO 175

No performance assessed.

3.4 Protection against noise (BWR 5)

3.4.1 Impact sound reduction

The Impact sound reduction assessed according to EN ISO 10140-1 (category II according to Annex H of EN ISO 10140-1). The weighted impact calculated according to EN ISO 717-2

No performance assessed.

3.4.1 Dynamic stiffness

Dynamic stiffness for impact sound insulation only determined according to EN 29052-1.

No performance assessed.

3.5 Energy, economy and heat retention (BWR 6).

3.5.1 Particle size distribution of EPS

Particle size distribution assessed according to EN 933-1 and EN 16025-1

No performance assessed.

3.5.2 Water absorption

Water absorption assessed according to EN 1609, Method A

No performance assessed.

3.5.3 Thermal conductivity (for thermal insulation only)

Thermal conductivity at a reference temperature of 10°C Test according to EN 12667: 2001	Declared values for a moisture content of the insulation material at 23°C and 50% relative humidity $\lambda_{D(23,50)} = 0,038 \text{ W/(m.K)}$
Conversion of humidity Test according to EN-ISO 10456: 2009 - the mass-related moisture content at 23°C / 50% relative humidity: - the mass-related moisture content at 23°C / 80% relative humidity: - the mass-related moisture conversion coefficient (dry to 23°C / 50% RH) - the mass-related moisture conversion coefficient (23°C / 50% RH to 23°C / 80% RH) - moisture conversion factor dry to 23°C / 50% RH - moisture conversion factor 23°C / 50% RH to 23°C / 80% RH	$U_{23,50} = 0,0058 \text{ kg/kg}$ $U_{23,80} = 0,0192 \text{ kg/kg}$ $F_{u1} = 7,57 \text{ kg/kg}$ $F_{u2} = 0,63 \text{ kg/kg}$ $F_{m1} = 1,01$ $F_{m2} = 1,01$

4 Assessment and verification of consistency of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 1999/91/EC the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) to be applied is: 3

In addition, with regard to reaction in fire for products with fire classification class E, the applicable European legal act is: 1999/91/EC as amended by decision 2001/596/EC, the system(s) of assessment and verification of constancy of performance to be applied is: 3

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Tasks of the manufacturer:

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this European Technical Assessment. The manufacturer may only use initial / raw / constituent materials stated in the technical documentation of this European Technical Assessment.

The factory production control shall be in accordance with the requirements of the Control Plan as described in EAD 040635-00-1201.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

Other tasks of the manufacturer

Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

(a) Technical data sheet:

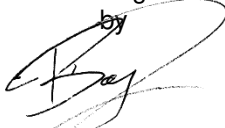
- Field of application:
- Building elements for which Aeromix SHP is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Limits in size, minimum thickness etc. of the products
- Construction of Aeromix SHP including the necessary components and additional products with clear indication whether they are generic or specific.

(b) Installation instruction:

- Steps to be followed
- Stipulations on maintenance, repair and replacement

Issued in Geldermalsen, the Netherlands on 07-01-2022

The original English version is signed on behalf of SKG-IKOB

by


SKG-IKOB, Certification Manager
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