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and types of construction

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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Kingspan AlphaCore Sandwich MW 50, Kingspan
AlphaCore Sandwich MW 60, Kingspan AlphaCore
Sandwich MWF, Kingspan AlphaCore Pad

Product family
to which the construction product belongs

Thermal insulation board made of microporous silica

Manufacturer

Kingspan Insulation Limited
Pembroke Leominster
Herefordshire HR6 9LA
GROSSBRITANNIEN

Manufacturing plant

Evonik Resource Efficiency GmbH
Rodenbacher Chaussee 4
63457 Hanau
DEUTSCHLAND

Kingspan Insulation Limited
Pembroke Leominster
Herefordshire HR6 9LA
GROSSBRITANNIEN

This European Technical Assessment
contains

7 pages which form an integral part of this assessment

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

EAD 040057-01-1201

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Specific part

1 Technical description of the product

This European Technical Assessment applies to the factory-made multi-layer thermal insulation boards with the designations "Kingspan AlphaCore Sandwich MW 50", "Kingspan AlphaCore Sandwich MW 60", "Kingspan AlphaCore Sandwich MWF" and "Kingspan AlphaCore Pad", hereinafter referred to as 'thermal insulation boards'.

The thermal insulation boards consist of a monolithic core made of microporous, water-repellent silica, binding fibers and opacifier which is fitted with an additional outer facing layer on both sides of the core. The thermal insulation core is mechanically compressed and can have a water-repellent treatment.

The additional facing layer can be made of mineral wool, glass fibre non-woven or glass fibre fabric.

The thickness of the thermal insulation board depends on the type of the used facing layer and the monolithic thermal insulation core (see Table 1).

The thickness of the thermal insulation core ranges between 20 mm minimum and 50 mm maximum depending on the variant.

Table 1: Structure of the thermal insulation boards with thermal insulation core and additional layers

Product	Nominal thickness thermal insulation core	Nominal thickness thermal insulation board	Structure
"Kingspan AlphaCore Sandwich MW 50"	30 mm	50 mm	10 mm laminate mineral wool thermal insulation core 10 mm laminate mineral wool
"Kingspan AlphaCore Sandwich MW 60"	40 mm	60 mm	10 mm laminate mineral wool thermal insulation core 10 mm laminate mineral wool
"Kingspan AlphaCore Sandwich MWF"	50 mm	60 mm	glass fibre non-woven thermal insulation core 10 mm laminate mineral wool
"Kingspan AlphaCore Pad"	20 mm - 50 mm	20 mm - 50 mm	glass fibre fabric thermal insulation core glass fibre fabric

The facing layers of the thermal insulation boards "Kingspan AlphaCore Sandwich MW 50", "Kingspan AlphaCore Sandwich MW 60" and "Kingspan AlphaCore Sandwich MWF" is sewn onto the thermal insulation core with a PE thread and thus mechanically fixed to it. The seams run along the entire length of the thermal insulation board with a spacing of 10 cm and are fixed with a hot melt adhesive at individual points and additionally secured with an adhesive tape running in direction of the seams across the entire length.

For the thermal insulation board "Kingspan AlphaCore Pad", the thermal insulation core is sewn into a glass fibre fabric with an E-glass thread.

For the mineral wool facing layer of the thermal insulation boards "Kingspan AlphaCore Sandwich MW 50", "Kingspan AlphaCore Sandwich MW 60" and "Kingspan AlphaCore Sandwich MWF", 10 mm thick, non-combustible mineral wool boards of a density of $\geq 180 \text{ kg/m}^3$, made of stone fibres and laminated with a glass fibre non-woven are used. They comply with the requirements corresponding to reaction-to-fire class A1 in accordance with DIN EN 13501-1.

The nominal value of the thermal conductivity of the facing layers made of mineral wool according to EN 13162:2012+A1:2015 amounts to $\lambda_D = 0,040 \text{ W/(m}\cdot\text{K)}$.

For the facing layer made of glass fibre non-woven of the thermal insulation board "Kingspan AlphaCore Sandwich MWF", a glass fibre non-woven with a thickness of 0.75 mm and a mass per unit area of 164 g/m^2 to 191 g/m^2 is used.

For the facing layers of the thermal insulation board "Kingspan AlphaCore Pad", a glass fibre fabric with a thickness of 0.2 mm and a mass per unit area of 190 g/m^2 to 220 g/m^2 is used.

The thermal insulation boards are made with the following dimensions:

Nominal thicknesses:	20 mm - 60 mm	(see table 1)
Nominal length:	$\leq 1200 \text{ mm}$	
Nominal widths:	$\leq 1200 \text{ mm}$	

Special dimensions deviating from the above nominal length and nominal widths are possible.

The European Technical Assessment has been issued for the product on the basis of agreed data/ information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed. The European Technical Assessment applies only to products corresponding to this agreed data/information.

2 Specification of the intended use in accordance with the applicable European Assessment Document (EAD)

The thermal insulation boards can be used for the following intended uses:

- External insulation of roofs or floors protected from precipitation, wetting or weathering, below coverings or waterproofing
- Internal insulation of ceilings (underside) or roofs and insulation below the rafters/supporting structure, suspended ceilings
- Internal insulation of floors or bedplates (on the top) below floor screed without requirements regarding protection against noise
- External insulation of walls behind cladding
- Internal insulation of walls
- Insulation of walls with timber frame construction and closed panel timber frame construction or comparable partitions
- Insulation (core insulation) of double wall masonry, up to total layer thickness of 150 mm (only "Kingspan AlphaCore Pad")

The performance according to section 3 only applies if the thermal insulation boards are installed according to the manufacturer's installation instructions and if they are protected from precipitation, wetting or weathering in built-in state and during transport, storage and installation.

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

For sampling, conditioning and testing the provisions of the EAD No 040057-01-1201 "Thermal insulation board made of microporous silica" apply.

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of the thermal insulation boards Testing acc. to EN ISO 1182, EN ISO 1716 and EN 13823	Class A2-s1,d0 acc. to EN 13501-1:2018 *
Propensity to undergo continuous smouldering Test acc. to EN 16733:2016	The thermal insulation board does not show propensity to undergo continuous smouldering.
* The given classification is valid for application on timber and wood-based substrates with a reaction-to fire class of at least D-s2, d0 in accordance with EN 13501-1 (minimum thickness $d \geq 8$ mm, minimum density ≥ 300 kg/m ³) or on mineral substrates (reaction-to-fire class A1/A2-s1, d0 in accordance with EN 13501-1; minimum thickness $d \geq 6$ mm). The thermal insulation boards shall be fixed to the substrates mechanically with metal fasteners.	

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity of the thermal insulation core* at mean reference temperature of 10 °C Test acc. to EN 12667:2001	Declared value for a moisture content of the insulation product at 23 °C and 50 % relative humidity: $\lambda_{D(23,50)} = 0.020$ W/(m · K)**
Conversion of humidity acc. to EN ISO 10456:2007 + AC:2009	
Mass-related moisture content at 23 °C/50 % rel. humidity:	$u_{23,50} = 0.004$ kg/kg
Mass-related moisture content at 23 °C/80 % rel. humidity:	$u_{23,80} = 0.005$ kg/kg
Moisture conversion factor (dry to 23 °C/50 % rel. humidity):	$F_{m1} = 1.01$
Moisture conversion factor (23 °C/50 % rel. humidity to 23 °C/80 % rel. humidity):	$F_{m2} = 1.02$
Dimensional deviations of the thermal insulation boards	
Length and width Test acc. EN 822:2013	class L3 and W1 acc. to EN 13168:2015
Thickness Test acc. EN 823:2013 (with a load of 50 Pa $\pm$ 1.5 Pa)	class T1 acc. to EN 13168:2015
Squareness in direction of length and width: in direction of thickness: Test acc. EN 824:2013	$S_b \leq 5$ mm/m $S_d \leq 2$ mm
Flatness in direction of length and width: Test acc. EN 825:2013	$S_{max} \leq 2$ mm

Essential characteristic	Performance
Water absorption of the thermal insulation boards at short term partial immersion	No performance assessed.
Water absorption of the thermal insulation boards at long term partial immersion Test acc. to EN 12087:2013	$W_{ip} \leq 0.95 \text{ kg/m}^2$
Water vapour diffusion resistance factor of the thermal insulation core Test acc. to EN 12086:2013, climatic condition A	$\mu = 5$
Density of the thermal insulation core Test acc. to EN 1602:2013	Density range: 155 kg/m^3 to 195 kg/m^3
Bending strength	No performance assessed.
Compressive strength of the thermal insulation boards Test acc. to EN 826:2013	$\geq 75 \text{ kPa}$
Dimensional stability at 70 °C	No performance assessed.
Dimensional stability of the thermal insulation boards at 70 °C and 90% relative humidity Test acc. to EN 1604:2013 Conditioning: 48 h, at $(70 \pm 2) \text{ °C}$ and $(90 \pm 5) \%$ relative humidity	Relative changes in length, width and thickness: $\leq 0.5 \%$ (length, width) $\leq 0.5 \%$ (thickness)
Deformation at a load of 20 kPa at a temperature of 80 °C Test acc. to EN 1605:2013	Relative change in thickness: $\leq 1.0 \%$
Tensile strength perpendicular to faces	No performance assessed.
Point load (thermal insulation boards) Test acc. to EN 12430:2013 (at a point load of 500 N)	Maximum deformation: $\leq 5.0 \text{ mm}$
* without additional facing layers ** The declared value is representative for at least 90 % of the production with a level of reliability 90 % and applies to the density range of the thermal insulation core given in section 3.2.	

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

In accordance with the European Assessment Document EAD No 040057-01-1201 "Thermal insulation board made of microporous silica" the legal basis is:

Commission Decision 1999/91/EC (as amended).

The system to be applied is: system 3.

In addition, with regard to reaction to fire, the system to be applied is: system 1.

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

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beglaubigt:
Getzlaff