

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

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European Technical Assessment

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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, Kingspan AlphaCore Pure,
Kingspan AlphaCore Pure A1

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

6 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 thermal insulation boards made of microporous, water-repellent silica, binding fibers and opacifier with the designations "Kingspan AlphaCore", "Kingspan AlphaCore Pure" and "Kingspan AlphaCore Pure A1", hereafter referred to as thermal insulation boards.

The thermal insulation boards are mechanically compressed and can have a water-repellent treatment. The thermal insulation boards are not coated or laminated and are made with the following dimensions:

Nominal thicknesses: 20 mm to 100 mm ("Kingspan AlphaCore", "Kingspan AlphaCore Pure")
10 mm to 30 mm ("Kingspan AlphaCore Pure A1")

Nominal length: ≤ 1200 mm

Nominal widths: ≤ 1200 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
- External insulation of walls under plaster
- Internal insulation of walls
- Insulation (core insulation) of double wall masonry (up to total layer thickness of 150 mm)
- Insulation of walls with timber frame construction and closed panel timber frame construction or comparable partitions

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. When calculating the thermal resistance, the nominal thickness of the insulation materials shall be applied.

Where the thermal insulation boards are installed in two layers up to a maximum thickness of 100 mm or in three layers up to a maximum thickness of 150 mm, the thermal insulation boards are either laid in place loosely or fixed with non-combustible mechanical means of fixing.

Where the thermal insulation boards are fixed by using mechanical means of fixing, only such mechanical means of fixing shall be used, which are suitable for this purpose. The assessment of these fixings is not subject of this European Technical Assessment.

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".

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire Testing acc. to EN ISO 1182, EN ISO 1716 and EN 13823 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Class A2-s1,d0 acc. to EN 13501-1:2018 * Class A1 acc. to EN 13501-1:2018
* The reaction to fire class A2-s1,d0 according to EN 13501-1 is only proven if the thermal insulation boards are not supplementary painted, coated or the like.	

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity at mean reference temperature of 10 °C Test acc. to EN 12667:2001 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Declared value for a moisture content of the insulation boards at 23 °C and 50 % relative humidity: $\lambda_{D(23,50)} = 0.020 \text{ W/(m} \cdot \text{K)}$ * $\lambda_{D(23,50)} = 0.025 \text{ W/(m} \cdot \text{K)}$ *
Conversion of humidity acc. to EN ISO 10456:2007 + AC:2009 ("Kingspan AlphaCore", "Kingspan AlphaCore Pure"):	
Mass-related moisture content at 23 °C/50 % rel. humidity:	$u_{23,50} = 0.004 \text{ kg/kg}$
Mass-related moisture content at 23 °C/80 % rel. humidity:	$u_{23,80} = 0.005 \text{ kg/kg}$
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):	$F_{m2} = 1.02$
Conversion of humidity acc. to EN ISO 10456:2007 + AC:2009 ("Kingspan AlphaCore Pure A1"):	
Mass-related moisture content at 23 °C/50 % rel. humidity:	$u_{23,50} = 0.042 \text{ kg/kg}$
Mass-related moisture content at 23 °C/80 % rel. humidity:	$u_{23,80} = 0.047 \text{ kg/kg}$
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):	$F_{m2} = 1.01$

Essential characteristic	Performance
Dimensional deviations	
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	$S_b \leq 5 \text{ mm/m}$ $S_d \leq 2 \text{ mm}$
Flatness in direction of length and width: Test acc. EN 825:2013	$S_{\max} \leq 2 \text{ mm}$
Water absorption at long term partial immersion Test acc. to EN 12087:2013 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	$W_{ip} \leq 0.1 \text{ kg/m}^2$ No performance assessed.
Water vapour diffusion resistance factor Test acc. to EN 12086:2013, climatic condition A "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	$\mu = 5$ No performance assessed.
Density Test acc. to EN 1602:2013 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Density range 155 kg/m^3 to 195 kg/m^3 220 kg/m^3 to 250 kg/m^3
Bending strength	No performance assessed.
Compressive strength Test acc. to EN 826:2013 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	$\geq 90 \text{ kPa}$ $\geq 150 \text{ kPa}$
Dimensional stability at 70 °C	No performance assessed.
Dimensional stability at 70 °C and 90% relative humidity Test acc. to EN 1604:2013 Conditioning: 48 h, at (70 $\pm$ 2) °C and (90 $\pm$ 5) % relative humidity "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Relative changes in length, width and thickness: $\leq 0.5 \%$ (length, width) $\leq 2.0 \%$ (thickness) No performance assessed.

Essential characteristic	Performance
Deformation at a load of 20 kPa at a temperature of 80 °C Test acc. to EN 1605:2013 "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Relative change in thickness: ≤ 5.0 % No performance assessed.
Tensile strength perpendicular to faces	No performance assessed.
Point load Test acc. to EN 12430:2013 (at a point load of 500 N) "Kingspan AlphaCore", "Kingspan AlphaCore Pure" "Kingspan AlphaCore Pure A1"	Maximum deformation: ≤ 5 mm No performance assessed.
* The declared value is representative for at least 90 % of the production with a level of reliability 90 % and applies to the density range 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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