

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

vakuVIP EU, vakuVIP Gum-1 EU, vakuVIP Gum-2 EU

Product family
to which the construction product belongs

Vacuum insulation panels (VIP) with factory applied
protection layers

Manufacturer

Vaku-Isotherm GmbH
Schönborner Straße 37
09669 Frankenberg/OT Sachsenburg
DEUTSCHLAND

Manufacturing plant

Vaku-Isotherm GmbH
Schönborner Straße 37
09669 Frankenberg/OT Sachsenburg

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

040011-01-1201

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Specific part

1 Technical description of the product

This European Technical Assessment applies to the insulation boards of vacuum insulation panels with the designations "vakuVIP EU", "vakuVIP Gum-1 EU" and "vakuVIP Gum-2 EU", hereafter referred to as thermal insulation boards.

The thermal insulation boards "vakuVIP EU" consist of vacuum insulation panels (VIP) without protection layers.

The "vakuVIP Gum-1 EU" vacuum insulation panels consist of a "vakuVIP EU" vacuum insulation panel to which an additional protection layer made of a 3 mm thick rubber granulate mat is glued on one side.

The "vakuVIP Gum-2 EU" vacuum insulation panels consist of a "vakuVIP EU" vacuum insulation panel to which additional protection layers made of a 3 mm thick rubber granulate mat is glued on both sides.

The vacuum insulation panels consist of a supporting core made of pressed, highly-dispersed silica powder wrapped into a polypropylene non-woven, serving as a dust protection cover, and sealed under vacuum in a multi-layer plastic foil with metallised layers.

The top and bottom foil layers are welded together at the shorter edges of the vacuum insulation panel, then folded over and additionally fixed with an adhesive tape. A weld line of the foil also runs along the length of the vacuum insulation panel on one side, which is fixed to the surface with adhesive tape if necessary.

Alternatively, the weld line can be arranged circumferentially along the edges, folded over and fixed with adhesive tape.

The corners of the vacuum insulation panel are strengthened with adhesive tape.

The vacuum insulation panels (without protection layers) have the following dimensions (nominal dimensions):

Length: ≥ 400 mm

Width: ≥ 300 mm

Thickness: 10 mm to 50 mm

The vacuum insulation boards with additional protection layer (3 mm thick rubber granulate mat glued on one side or on both sides) have the following dimensions (nominal dimensions):

Length: ≥ 400 mm

Width: ≥ 300 mm

Thickness: 20 mm to 50 mm

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

The thermal insulation boards are intended to be used for the thermal insulation of walls, ceilings, floors and roofs in buildings.

The installation of the thermal insulation boards is carried out only by specialized companies that have adequate experience with the installation of the product and have been trained by the manufacturer.

The performance according to section 3 only applies if the undamaged thermal insulation board is installed according to the manufacture's installation instructions (without drill and cut) and if it is protected from precipitation, wetting or weathering and mechanical damage in built-in state and during transport, storage and installation.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the thermal insulation boards of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only 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

For sampling, conditioning and testing the provisions of the EAD No 040011-01-1201 "Vacuum insulation panels (VIP) with factory applied protection layers" apply.

Unless stated otherwise, the product performances given below were determined on the VIP element (without protection layers).

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire of the thermal insulation boards test acc. to EN ISO 11925-2:2020 "vakuVIP EU" (without protection layer)	Class E acc. to EN 13501-1:2018
"vakuVIP Gum-1 EU", "vakuVIP Gum-2 EU" with protection layer	Class E acc. to EN 13501-1:2018

3.2 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity test acc. to EN 12667:2001 acc. to a.m. EAD	Declared value of thermal conductivity ^{a)}
VIP panel "vakuVIP EU" (without protection layer) Nominal thickness: 10 mm to 15 mm Nominal thickness: 20 mm to 50 mm	$\lambda_D = 0.0087 \text{ W/(m} \cdot \text{K)}$ $\lambda_D = 0.0080 \text{ W/(m} \cdot \text{K)}$ with $\lambda_D = (\lambda_{90/90} + \Delta\lambda_a) \times F_{tb}$
Aging supplement (acc. to EN 17140) Nominal thickness: 10 mm to 15 mm Nominal thickness: 20 mm to 50 mm	$\Delta\lambda_a = 0.0034 \text{ W/(m} \cdot \text{K)}$ $\Delta\lambda_a = 0.0031 \text{ W/(m} \cdot \text{K)}$
Correction factor for the thermal bridge effect Thermal conductivity before aging and without consideration of the thermal bridge effect of edge area	$F_{tb} = 1.10$
Nominal thickness: 10 mm to 15 mm Nominal thickness: 20 mm to 50 mm	$\lambda_{90/90} = 0.0045 \text{ W/(m} \cdot \text{K)}$ $\lambda_{90/90} = 0.0041 \text{ W/(m} \cdot \text{K)}$

Essential characteristic	Performance
Nominal thickness, test acc. to EN 823:2013 "vakuVIP EU" (without protection layer) "vakuVIP Gum-1 EU", "vakuVIP Gum-2 EU" with protection layer dimensional deviation	10 mm to 50 mm 20 mm to 50 mm - 3 mm/ + 5 mm or ^{b)} + 5%
Water vapour resistance	No performance assessed.
Nominal length test acc. to EN 822:2013 dimensional deviation	≥ 400 mm ^{c)} ± 2 %
Nominal width test acc. to EN 822:2013 dimensional deviation	≥ 300 mm ^{c)} ± 1.5 %
Squareness test acc. to EN 824:2013 dimensional deviation	$S_b \leq 5 \text{ mm/m}$
Flatness test acc. to EN 825:2013 dimensional deviation	≤ 6 mm
Density test acc. to EN 1602:2013 Nominal thickness: 10 mm to 15 mm Nominal thickness: 20 mm to 50 mm	225 kg/m ³ bis 295 kg/m ³ 185 kg/m ³ bis 210 kg/m ³
Mass per unit area of the multilayer high barrier foil	≥ 100 g/m ²
Oxygen permeability of the multilayer high barrier foil	No performance assessed.
Compressive stress at 10 % deformation test acc. to EN 826:2013	$\sigma_{10\%} \geq 125 \text{ kPa}$
Dimensional stability under specified temperature and humidity test acc. to EN 1604:2013 Conditioning: 48 h, at (70±2) °C and (90±5) % relative humidity	Relative changes in length, width and thickness: ≤ 3.0 %
Deformation under specified load and temperature test acc. to EN 1605:2013 Test condition 2 (40 kPa, 70 °C, 168 h)	Relative change in thickness: ≤ 3.0 %
Tensile strength of the multilayer high barrier foil	No performance assessed.

Essential characteristic	Performance
Internal pressure of the VIP test acc. to EAD (clause 2.2.15)	≤ 5 mbar
Tensile strength perpendicular to the faces test acc. to EN 1607:2013	≥ 15 kPa
Behaviour under point load	No performance assessed.
Shear strength of the thermal insulation board	No performance assessed.
a) Declared value of thermal conductivity, representative for at least 90 % of the production with a confidence level of 90 %, including aging and thermal bridge effect of edge area. Influences of fixing elements and supporting structures are not taken into account. When calculating the thermal resistance (R), the thickness of the VIP element (without protective layers) is used, the influence of the protective layers is neglected in the calculation. b) Whichever gives the smallest numerical tolerance. c) Special formats are possible for the use in edge areas and corner areas.	

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

In accordance with the European Assessment Document 040011-01-1201 "Vacuum insulation panels (VIP) with factory applied protection layers" the legal basis is:

Commission Decision 1999/91/EC

The following system to be applied is: system 3

In addition, with regard to reaction to fire, the legal basis is:

Commission Decision 2001/596/EC

The following system to be applied is for reaction to fire: system 3

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 with Deutsches Institut für Bautechnik.

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