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General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

"QASA-D" and "QASA-N"

Product family
to which the construction product belongs

Vacuum insulation panel (VIP) with factory applied
protection layers

Manufacturer

VARIOTEC GmbH & Co. KG
Weißmarterstraße 3-5
92318 Neumarkt/Opf.
DEUTSCHLAND

Manufacturing plant

VARIOTEC GmbH & Co. KG
Weißmarterstraße 3-5
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DEUTSCHLAND

This European Technical Assessment
contains

7 pages including 0 annex 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 040011-00-1201

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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 "QASA-D" und "QASA-N", hereafter referred to as thermal insulation boards.

The thermal insulation boards "QASA-N" consist of vacuum insulation panels (VIP) without protection layer. The thermal insulation boards "QASA-D" consist of vacuum insulation panels "QASA-N" with an additional protection layer on the top and bottom side in accordance with Table 1.

The vacuum insulation panels consist of a supporting core of fumed silica powder and an opacifier, covered with a polypropylene non-woven fabric as dust cover, sealed under vacuum in a multi-layer metallized high-barrier foil and additionally coated with a permeation barrier.

The necessary welds are arranged at the edges or on the surface of the vacuum insulation panels. The sealed foil tabs are fixated on the vacuum insulation panels by means of an adhesive tape.

The vacuum insulation panels are laminated on the top and bottom each having full surface-bonded protection layer according to Table 1.

The edges of the thermal insulation boards "QASA-D" are circumferentially masked with a fabric adhesive tape so that the edges of the VIP are hidden by the fabric adhesive tape. A suitable PVC adhesive tape can also be used alternatively as edge protection tape.

In combination with the protection layer "Firetherm panel made of pressed perlite", 15 mm wide edge strips made of silica are arranged along the longitudinal sides between the protection layers. The edge strips are bonded to the VIP. The adhesive tape is therefore not needed for this variant.

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

Length: ≥ 400 mm

Width: ≥ 300 mm

Thickness: 20 mm to 50 mm

In combination with the protection layer "Firetherm panel made of pressed perlite", the VIPs have a nominal thickness of 25 mm to 50 mm (not including the protection layer).

For use in edge areas and corner areas of the surface to be insulated special formats that deviate from the above longitudinal and latitudinal dimensions are possible.

The protection layers have the following dimensions:

Length: ≥ 400 mm

Width: ≥ 300 mm

Thickness: see Table 1

In combination with the protection layer "Firetherm panel made of pressed perlite", the protection layer protrudes beyond the edges of the VIP at the both opposing longitudinal sides by at least 15 mm to accommodate the edge strip.

The density of this silica edge strip is $270 \text{ kg/m}^3 \pm 10 \%$ in accordance with EN 1602.

The silica edge strip has the following dimensions (nominal dimensions):

Length: ≥ 400 mm

Width: 15 mm

Thickness: 25 mm to 50 mm

Table 1: Type and thickness of the protection layers

| | | |
|---|--|--------|
| 1 | Extruded polystyrene foam board (XPS) | 5 mm |
| 2 | Polyurethane rigid foam board (PUR) | 15 mm |
| 3 | Glass fibre reinforced plastic board (GRP) | 1.5 mm |
| 4 | Rubber granulate mat | 3 mm |
| 5 | Thermofin roofing membrane (FPO) with inlaid glass-fibre matting | 1.2 mm |
| 6 | Cementbonded glass fibre lightweight concrete board | 15 mm |
| 7 | Firetherm panel made of pressed perlite | 3 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 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.

In combination with the protection layer "Firetherm panel made of pressed perlite", the insulation board joints on the visible side in the area of joints/seams are sealed with the aluminium adhesive tape "Gerband 705" (manufactured by Gerlinger GmbH & Co. KG). These thermal insulation boards are installed in a single layer with the possibility to add mechanical fixings along the edges. The insulation boards are bonded to the solid mineral substrate using mineral mortar (factory-made dry mortar in accordance with EN 998-1).

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 040011-00-1201 "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).

English translation prepared by DIBt

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 11925-2:2010 and EN 13823:2010+A1:2014 | Class E * acc. to EN 13501-1:2018 |
| "QASA-N" (without protection layer) "QASA-D" with protection layers acc. to Table 1 (not for "Firetherm panel made of pressed perlite") | |
| "QASA-D" with protection layers on both sides "Firetherm panel made of pressed perlite" | |
| * for any intended use ** for application on substrates of plasterboard and also on substrates class A1 or A2-s1, d0 acc. to EN 13501-1:2018, thickness ≥ 12 mm, density ≥ 525 kg/m ³ | |

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 VIP panel "QASA-N" without facings (Nominal thickness: 20 mm to 50 mm) | Declared value of thermal conductivity ^{a)} $\lambda_D = 0.0072$ W/(m·K) with $\lambda_D = (\lambda_{90/90} + \Delta\lambda_a) \times F_{tb}$ |
| Aging supplement Correction factor for the thermal bridge effect Thermal conductivity before aging and without consideration of the thermal bridge effect of edge area Nominal thickness: 20 mm to 50 mm | $\Delta\lambda_a = 0.0021$ W/(m·K) $F_{tb} = 1.10$ $\lambda_{90/90} = 0.0044$ W/(m·K) |
| Water vapour resistance | No performance assessed. |
| Nominal thickness test acc. to EN 823:2013 dimensional deviation | 20 mm to 50 mm - 3 mm/ + 5 mm or ^{b)} + 5% |
| 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 % |

| Essential characteristic | Performance |
|---|--|
| 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 | $\leq 6 \text{ mm}$ |
| Density test acc. to EN 1602:2013 | 190 kg/m ³ to 220 kg/m ³ |
| Mass per unit area of the multilayer high barrier foil | $\geq 110 \text{ g/m}^2$ |
| Oxygen permeability of the multilayer high barrier foil | No performance assessed. |
| Compressive stress at 10 % deformation test acc. to EN 826:2013 "QASA-N" (without facings) "QASA-D" (with facings) | $\sigma_{10\%} \geq 170 \text{ kPa}$ $\sigma_{10\%} \geq 190 \text{ kPa}$ |
| 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: $\leq 1.0 \%$ |
| 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: $\leq 2.0 \%$ |
| Tensile strength of the multilayer high barrier foil test acc. to EN ISO 527-3:2018 | $\geq 80 \text{ MPa}$ |
| Internal pressure of the VIP test acc. to EAD (clause 2.2.15) | $\leq 3 \text{ mbar}$ |
| Tensile strength perpendicular to the faces (with or without facings) test acc. to EN 1607:2013 | $\geq 60 \text{ kPa}$ |
| Behaviour under point load | No performance assessed. |
| Shear strength of the thermal insulation board | No performance assessed. |
| <p>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.</p> <p>b) Whichever gives the smallest numerical tolerance.</p> <p>c) Special formats are possible for the use in edge areas and corner areas.</p> | |

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

In accordance with the European Assessment Document No 040011-00-1201 "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 (except for reaction to fire): system 3

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

Commission Decision 2001/596/EC for products which are covered by the a.m. European Assessment Document No 040011-00-1201

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

System 3: for "QASA-N (without protection layer) and "QASA-D" with protection layers according to Table 1 (not for "Firetherm panel made of pressed perlite")

System 1: for "QASA-D" with protection layer "Firetherm panel made of pressed perlite"

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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beglaubigt:
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