Deutsches Institut für Bautechnik

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**Approval body for construction products and types of construction**

**Bautechnisches Prüfamt**

An institution established by the Federal and Laender Governments

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# European Technical Assessment

# ETA-19/0126 of 1 August 2019

English translation prepared by DIBt - Original version in German language

**General Part**

| | |
|---|---|
| Technical Assessment Body issuing the European Technical Assessment: | Deutsches Institut für Bautechnik |
| Trade name of the construction product | "Vaco-Solo", "Vacuris NS", "Vacosi Compact", "Vacuris GFK", "Vacosi Variant" |
| Product family to which the construction product belongs | Vacuum insulation panels (VIP) with/without factory applied protection layers |
| Manufacturer | Vitec GmbH<br>Am Ellerbach 1<br>38871 Ilsenburg<br>DEUTSCHLAND |
| Manufacturing plant | Vitec GmbH<br>Am Ellerbach 1<br>38871 Ilsenburg<br>DEUTSCHLAND |
| 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 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 "Vaco-Solo", "Vacuris NS", "Vacosi Compact", "Vacuris GFK" and "Vacosi Variant", hereafter referred to as thermal insulation boards.

The thermal insulation boards "Vaco-Solo" and "Vacuris NS" have a core made of pyrogenic silica powder, rayon and an opacifier, wrapped in a polypropylene fabric for dust protection. The core is shrink-wrapped under vacuum with a high-barrier foil.

The high-barrier foil is a metallised aluminium composite foil consisting of an outside aluminium foil and a plastic film laminated with a fibre fleece on the core-facing surface.

The thermal insulation boards "Vacosi-Compact" and "Vacuris GFK" are additionally completely covered with a glass fibre reinforced plastic layer (approx. 1 mm thick)

The thermal insulation board "Vacosi-Variant" has a mineral wool strip (approx. 10 mm thick) running along the front ends of the high-barrier foil. The top and bottom sides, including the mineral wool strip, are covered with a layer of glass fibre reinforced plastic (approx. 1 mm thick).

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, 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 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 040011-00-1201 "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).

### 3.1 Mechanical resistance and stability (BWR 1)

Not applicable.

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance |
|---|---|
| Reaction to fire of the thermal insulation boards<br>test acc. to EN ISO 11925-2:2011 | Class E<br>acc. to EN 13501-1:2007 + A1:2009 |

### 3.3 Hygiene, health and the environment (BWR 3)

Not applicable.

### 3.4 Safety and accessibility (BWR 4)

Not applicable.

### 3.5 Protection against noise (BWR 5)

Not applicable.

### 3.6 Energy economy and heat retention (BWR 6)

| Essential characteristic | Performance |
|---|---|
| Thermal conductivity<br>test acc. to EN 12667:2001<br>acc. to a.m. EAD | Declared value of thermal conductivity [a] |
| Nominal thickness: 20 mm | $\lambda_D$ = 0.0074 W/(m·K)<br>with<br>$\lambda_D = ( \lambda_{90/90} + \Delta\lambda_a ) \times F_{tb}$ |
| Aging supplement | $\Delta\lambda_a$ = 0.0005 W/(m·K) |
| Correction factor for the thermal bridge effect | $F_{tb}$ = 1.10 |
| Thermal conductivity before aging and without consideration of the thermal bridge effect of edge area | |
| Nominal thickness: 20 mm | $\lambda_{90/90}$ = 0.0062 W/(m·K) |
| Water vapour resistance | No performance assessed. |
| Nominal thickness<br>test acc. to EN 823:2013<br>dimensional deviation | 20 mm<br><br>- 3 mm/ + 5 mm or [b] + 5% |
| Nominal length<br>test acc. to EN 822:2013<br>dimensional deviation | 1000 mm [c]<br><br>± 2 % |
| Nominal width<br>test acc. to EN 822:2013<br>dimensional deviation | 500 mm [c]<br><br>± 1.5 % |
| Squareness<br>test acc. to EN 824:2013<br>dimensional deviation | <br><br>$S_b \leq 5$ mm/m |

| Essential characteristic | Performance |
|---|---|
| Flatness<br>test acc. to EN 825:2013<br>dimensional deviation | ≤ 6 mm |
| Density<br>test acc. to EN 1602:2013 | 190 kg/m³ to 210 kg/m³ |
| Mass per unit area of the multilayer high barrier foil | 90 g/m² to 110 g/m² |
| Oxygen permeability of the multilayer high barrier foil | No performance assessed. |
| Compressive stress at 10 % deformation<br>test acc. to EN 826:2013 | $\sigma_{10\ \%}$ ≥ 300 kPa |
| Dimensional stability under specified temperature and humidity | No performance assessed. |
| Deformation under specified load and temperature | No performance assessed. |
| Tensile strength of the multilayer high barrier foil | No performance assessed. |
| Internal pressure of the VIP | No performance assessed. |
| Tensile strength perpendicular to the faces<br>test acc. to EN 1607:2013 | ≥ 90 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.

### 3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was investigated for this product.

## 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 system to be applied is: 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.

Issued in Berlin on 1 August 2019 by Deutsches Institut für Bautechnik.

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*beglaubigt:*
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