va-Q-tec

WE SOLVE THERMAL CHALLENGES

Construction

More usable space and lower energy consumption through vacuum insulation

We produce our brochure sustainably:

By producing our brochure in accordance with the provisions of EU Ecolabel, we emphasize our claim for sustainability. The EU Ecolabel is awarded to products and services that have a lower environmental impact than comparable products. This allows the identification of environmentally friendlier and healthier products and services.

Natural paper from sustainably managed forests

The EU Ecolabel places high demands on the entire manufacturing process, including the paper used. The wood fibers used in the paper come from sustainably managed forests. The product meets strict environmental and usability criteria. Certified regional waste disposal companies ensure resource-saving waste disposal and responsible wastewater policies.

Low-pollution printing with organic printing inks and varnishes

Our *bonitasprint* print shop uses low-pollution consumables in all printing processes and prints completely alcohol-free. Workflows and processes are constantly optimized in order to make the entire production process as sustainable as possible.

Renewable raw materials are the basis for organic printing inks and organic varnishes, which are used in our brochure.

Emission-optimized company building & delivery

The *bonitasprint* company building is powered by electricity from 100% renewable energy sources. For this purpose, the company operates its own photovoltaic system. The waste heat from the printing machines and compressors is used to supply heat to the company building. Additional heating is obtained from climate-neutral natural gas with emission compensation.

bonitasprint has a continuous in-house production chain. The company's own fleet includes electric and natural gas vehicles. This prevents transport-related CO_2 emissions. The climate neutrality of these va-Q-tec printed products is also demonstrated by the "climate-neutral printing" logo.

Please collect used paper for recycling.

Imprint: **va-Q-tec Thermal Solutions GmbH,** Alfred-Nobel-Str. 33, 97080 Wuerzburg, Germany
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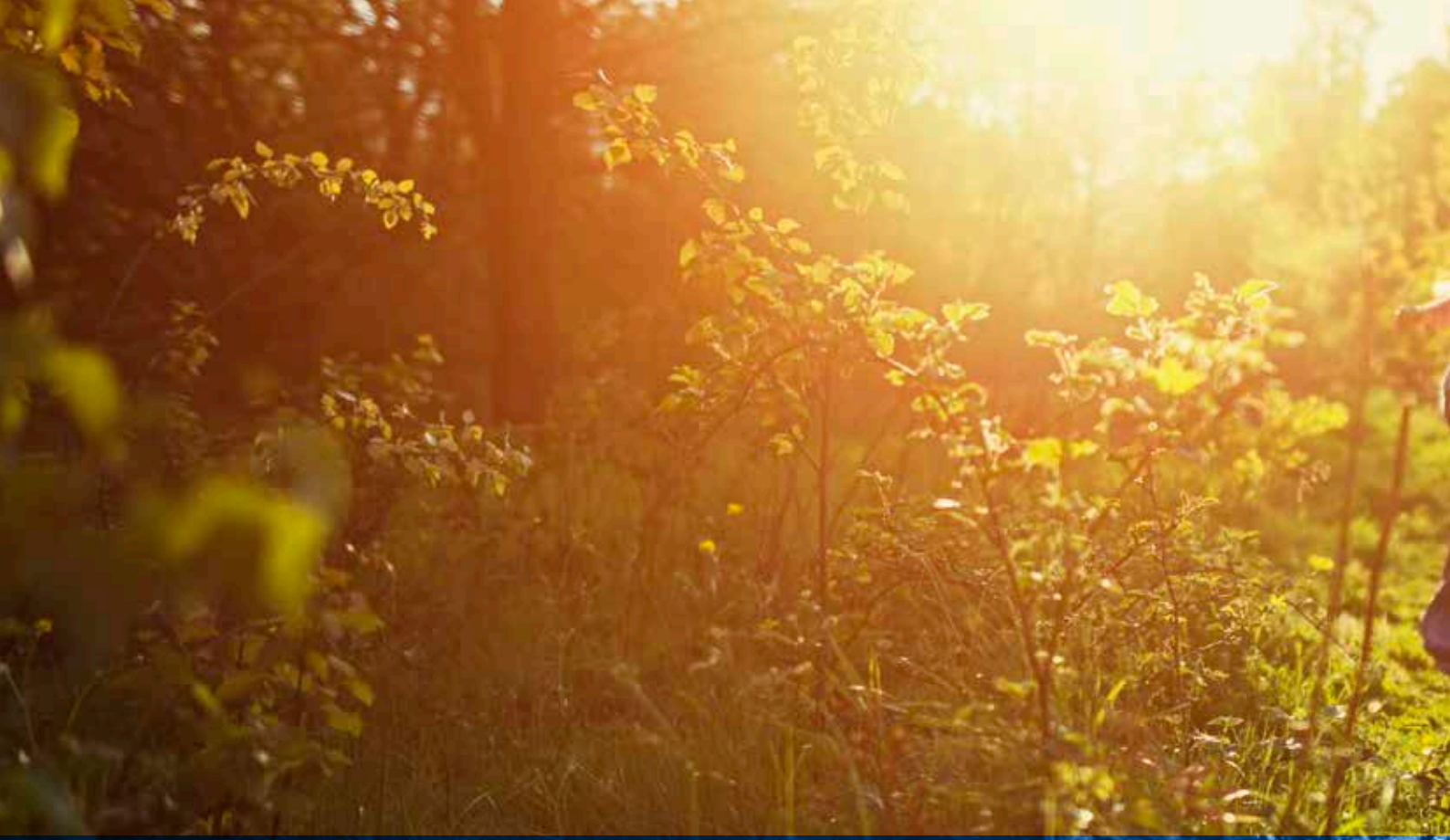
Content



Efficient energy-saving for a better fu

va-Q-tec is a pioneer in sophisticated solutions for thermal energy efficiency, as well as temperature-controlled supply chains. The company develops, produces and markets thin, highly efficient vacuum insulation panels (“VIPs”) for insulation as well as intelligent phase-change materials (“PCMs”) for reliable temperature control. By combining VIPs and PCMs, va-Q-tec manufactures thermal packaging systems (boxes) that can maintain constant temperatures for food and pharmaceuticals for up to five days without an external energy supply.

The company’s operations have been climate-neutral at all sites since 2021. Continuous process optimizations minimize the carbon footprint. At the same time, the products from va-Q-tec increase thermal energy efficiency globally and therefore make a valuable contribution to the protection of the climate. The rapidly growing company founded in 2001 has its headquarters in Wuerzburg.

Key factors that drive us forward:

Thermal energy efficiency
Approximately 60% of primary energy consumption in Germany and other industrial countries is used for thermal purposes.

Globalization of supply chains
Increasing globalization and outsourcing of clinical research and manufacturing creates huge requirements for efficient pharma TempChain packaging.

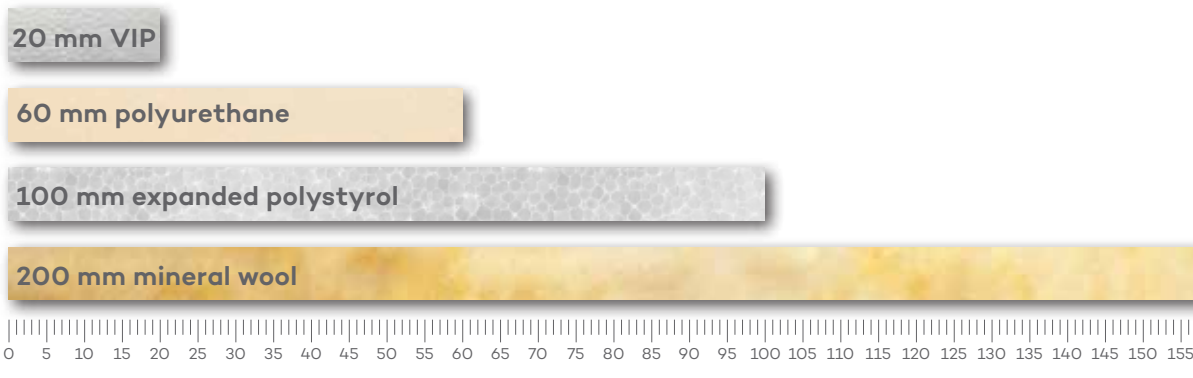
Product safety and regulation
By 2024, 70% of the world's top-selling pharmaceuticals require strictly temperature-controlled supply chain ("TempChain").

Technology

As a pioneer in the vacuum insulation sector, va-Q-tec develops innovative insulation solutions for new constructions and renovations. Based on Vacuum Insulation Panels (VIPs), the products provide a high level of insulation, greatly reduced insulation thickness and modular construction for different sizes and shapes. They are particularly advantageous in locations that offer small space but still require good thermal insulation.

All va-Q-tec products are the result of intensive development. They provide added value to customers and offer solutions for basic social challenges like energy conservation. The high product quality, controlled by the worldwide unique and patented va-Q-check® control system, enables the reliable application of this durable, highly efficient vacuum insulation.

Insulating material - comparison for a U-value of 0.35 W/(m²·K):



- Reduction in heating costs and CO_2 emissions
- Thin insulation layer increases usable space
- Materials are harmless to health and recyclable
- Long term insulation performance
- Produced in a globally climate-neutral company. Technology “MADE IN GERMANY”
- Flexibility to different shapes

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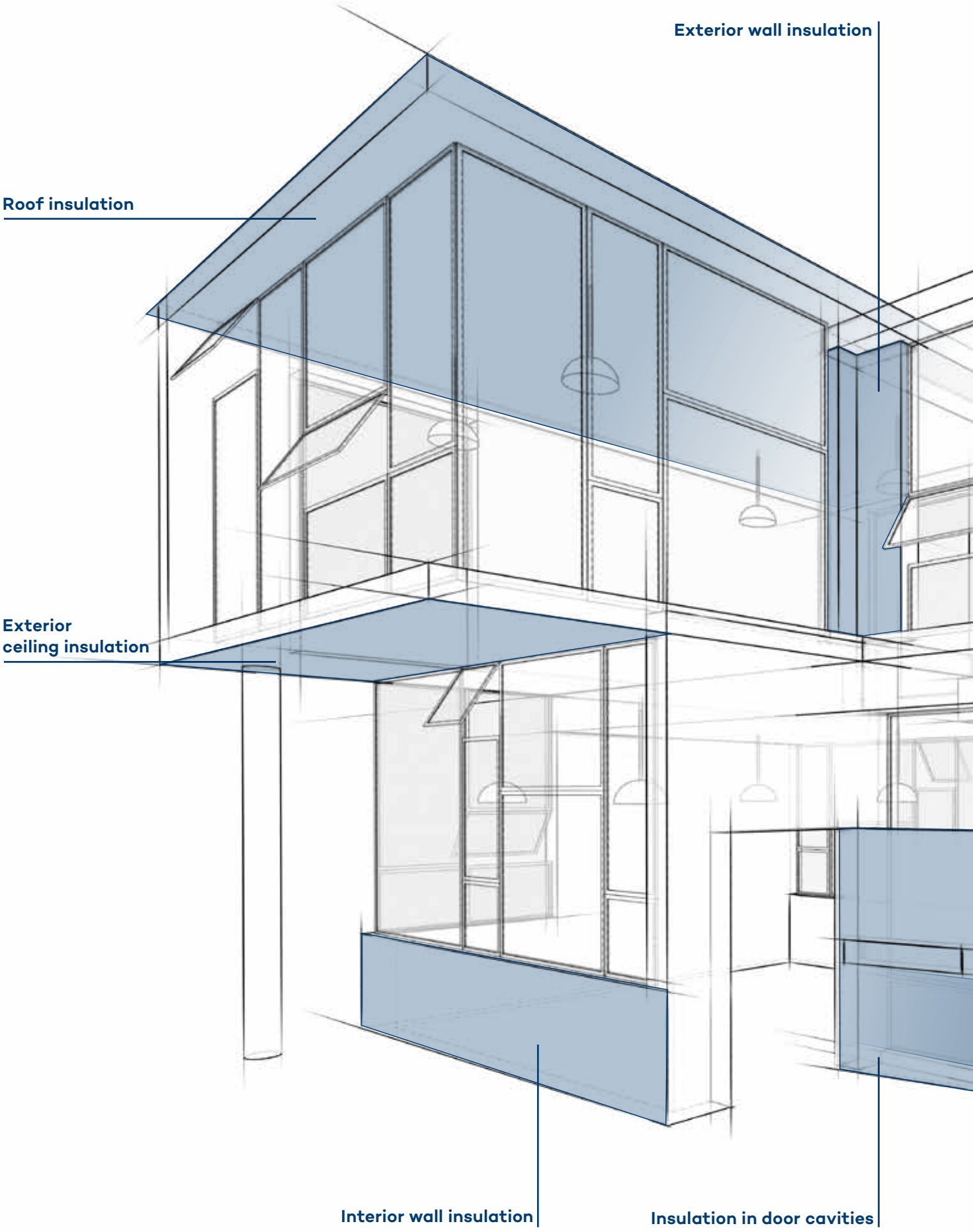
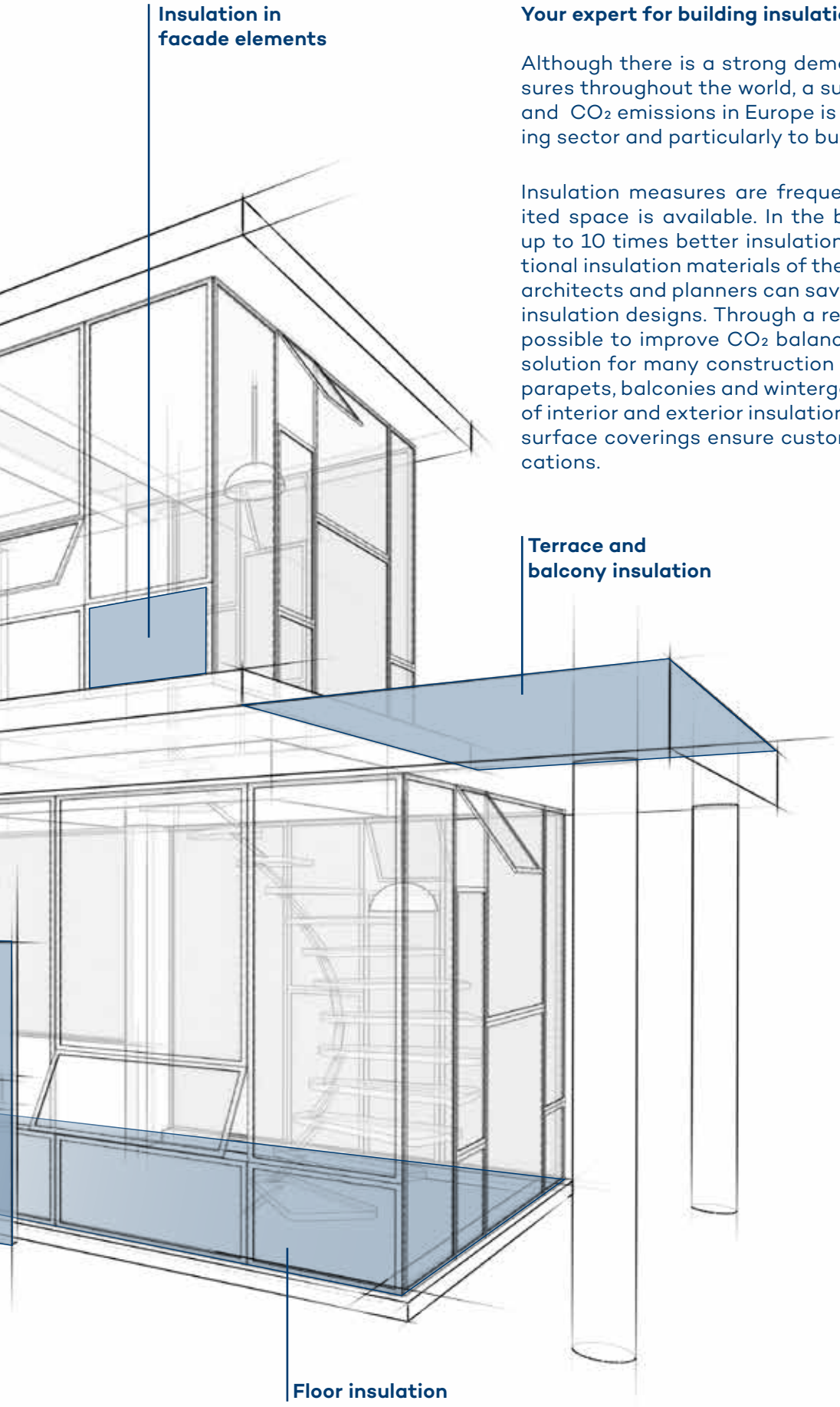

Exterior wall insulation
Roof insulation
Exterior
ceiling insulation
Interior wall insulation
Insulation in door cavities

Application Areas



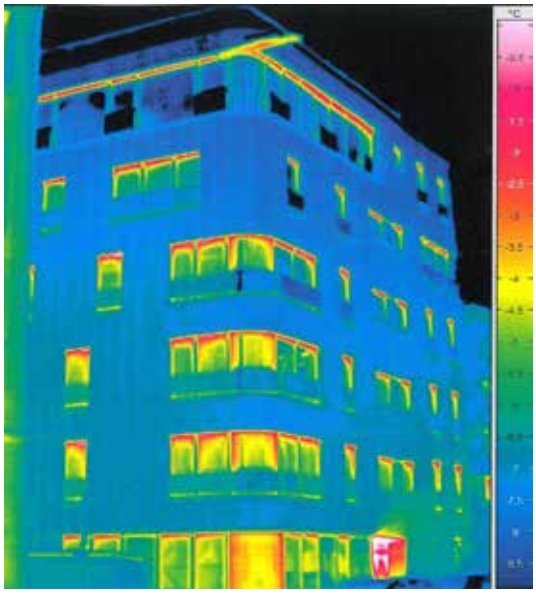
Your expert for building insulation solutions

Although there is a strong demand for energy-saving measures throughout the world, a substantial part of energy use and CO_2 emissions in Europe is directly related to the building sector and particularly to building heating.

Insulation measures are frequently excluded because limited space is available. In the building sector, VIPs provide up to 10 times better insulation performance than conventional insulation materials of the same thickness. In this way, architects and planners can save considerable space in their insulation designs. Through a reduced need for heating, it is possible to improve CO_2 balance as well. VIPs are the ideal solution for many construction applications: ceilings, floors, parapets, balconies and wintergardens as well as other areas of interior and exterior insulation. Different sizes, shapes and surface coverings ensure customized solutions for all applications.

Facade – new construction

The European directive for energy performance in buildings sets standards for thermal insulation of building envelopes that have a significant impact on useable insulation materials. The flexibility in exterior insulation provided by VIPs offers a space-saving insulation alternative to conventional insulation and can increase the comfort level with regard to the indoor climate.



It is important to consider that insulation measures must always be part of overall harmonious energy design.

Other applications for VIPs include the insulation of roller shutter boxes, window reveals or raffstore-niches.

Facade – renovations

VIPs can also play a role in building renovations by meeting today's energy standards. Since VIPs offer excellent insulation performance even at thin material thickness, the facade's existing appearance can be largely maintained.

Due to the slim design of the panels neither a removal of the roof overhang is necessary, nor does it create unattractive embrasures-look on windows and doors, which can be created by the use of voluminous insulation materials.

Especially for buildings subject to heritage protection, this is often the only way to accomplish energy-saving renovation.

Balconies & Terraces

The outdoor area is becoming more and more important for building residents, as they represent additional living space. Terraces, in particular, are being used with increased frequency, becoming the center of activity in warmer months.

Living areas are often found beneath terraces, and this can represent a significant architectural challenge in the planning of insulation measures. For example, this area must be professionally insulated, but the necessary construction height for the insulation is not available. In addition, the transition from the exterior area to the living space must remain free of barriers and tripping hazards.

This situation is exactly where VIPs come in. With the thin yet efficient insulation provided by VIPs, it is possible to eliminate height differences that could otherwise create tripping hazards. Nevertheless, all thermal insulation requirements and regulations are met.

Floor applications

In the area of floor application, VIPs offer enormous advantages over conventional insulation materials. These result in versatile use options ranging from private residences to commercial applications such as cold storage rooms.

Due to their low thickness compared to conventional insulation materials, VIPs are an optimal way to insulate thinly but efficiently during renovation. This makes it possible to install insulation in areas of limited height in combination with modern thin-layer floor heating. This provides increased thermal insulation and reduces heating costs.

There are also many advantages in commercial cold room construction through the use of VIPs. The low thickness and outstanding insulation performance eliminates differences in total floor thickness, reducing the need for costly labor. Projects to upgrade or renovate existing supermarket facilities save time and money by installing VIPs.

Wintergarden

Wintergardens are becoming increasingly popular and are retrofitted or planned into new buildings more frequently. A wintergarden enables a life close to nature, separated only by a glass pane, with the feeling of being outdoors. Thanks to modern thermal insulation glazing and insulation materials, using wintergardens yearround has become a reality without the need to sacrifice comfort and coziness. Even in cold wintergardens, VIPs make it possible to extend the use phase beyond the summer months.

VIP installations also result in excellent U-values and meet the requirements of the current European directive. The slim construction also enables a uniform material thickness between insulating glass and other components.

In the renovation of existing wintergarden, VIPs can contribute to the improvement of living conditions.

Prefabricated buildings & building parts

Especially in prefabricated buildings such as manufactured housing, modular buildings and container constructions, VIPs can be produced in the desired dimension and easily integrated into the manufacturer's production process.

In this way, VIPs also enable the construction of modern slim-construction buildings. Due to low wall thicknesses, valuable additional usable space is created. Other benefits include shortened assembly times and reduced transport volume.

Application Examples

Living in the city, working around the corner and insulating with vacuum insulations panels: a futuristic triad. In recent years population numbers in many major cities have exploded. This is taking place in an extremely limited area where each square meter of residential or commercial space counts – for each person and for the society as a whole.

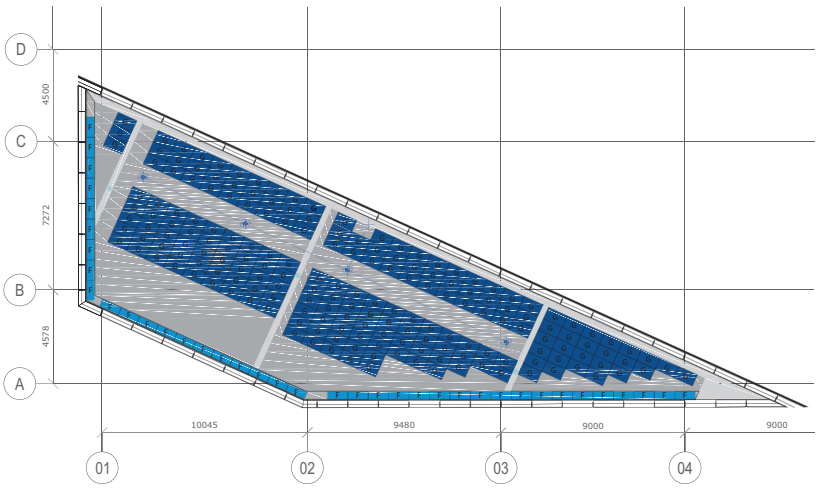
This reality is impressively illustrated by the Grand Tower Frankfurt, a prestigious property that is Germany's tallest residential building. With its 401 apartments, the skyscraper rises to a height of 172 meters. It is located in the heart of the financial center at the perimeter of the Europaviertel and the vertical opaque areas of its facade are insulated with va-Q-tec VIPs.

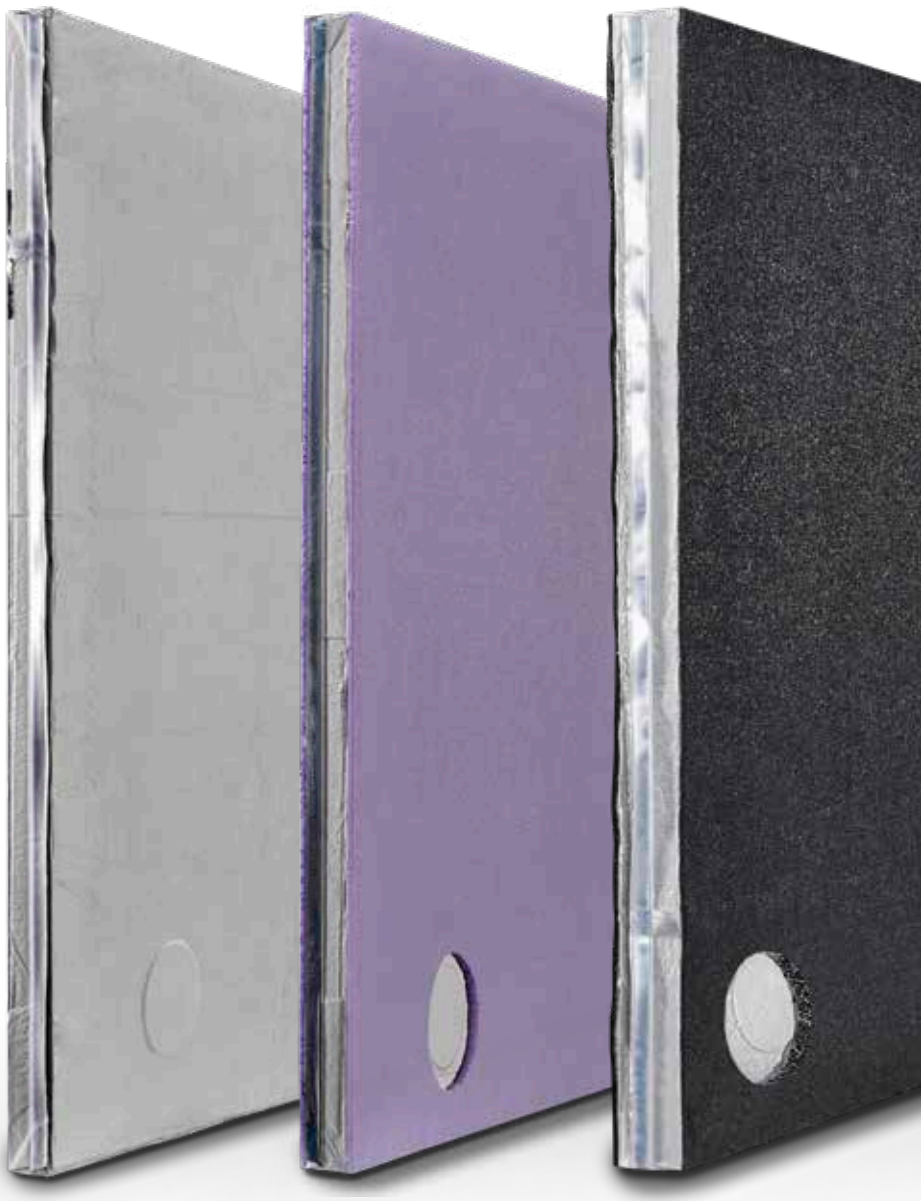
> By using VIPs, we gained approximately 123 m^2 of residential space – a lucrative return for the investor.
>
> Lars Röhl, Market Director Construction

VIPs with a thickness of 50mm were installed in this case. To achieve the identical insulation performance with conventional insulation materials, a thickness of approximately 250 mm would have been required. This significantly reduced the space utilized by insulation, thus gaining additional living area. A total of approximately 6,000 VIPs were installed into the building.

At a height of 278 meters, the new high-rise project 22 Bishopsgate is the tallest structure in London's financial district. This is exceeded only by the 310-meter height of "The Shard" on the opposite bank of the Thames.

The 22 Bishopsgate project, an investment in the billions, was opened in 2020. To achieve maximum energy efficiency in this project, various floors were insulated with approximately 2,000 m^2 of va-Q-tec VIPs.





Products

va-Q-vip F

Universally Applicable

Maximization of the usable space thanks to space-saving insulation with a comparable U-value

Avoidance of thermal bridges thanks to optimization of the panel edges using **patented va-Q-seam technology**

Building authority approval in accordance with ETA-17/0926

Long service life due to optimized panel design with fumed silica

100% outgoing goods inspection: quality assurance through **patented internal gas pressure measurement** (va-Q-check®)

Fully recyclable core material (EPD available upon request)

Manufactured by a **CO_2-neutral company, "MADE IN GERMANY"** technology

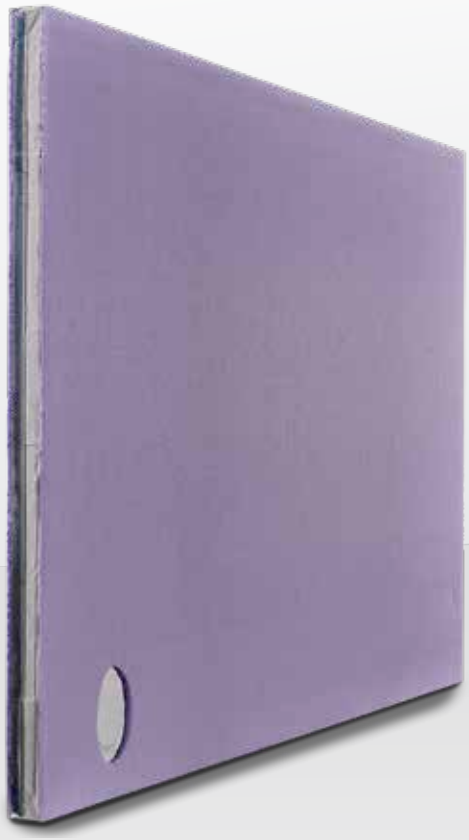
Multiple standard sizes available in stock (special sizes upon request)

Properties

Thermal conductivity - initial value @ 10 °C*	≤ 0.0043 W/(m·K) (thickness ≥ 15 mm, at delivery) according to DIN EN 12667
Thermal conductivity - incl. aging and edge effects	0.0065 W/(m·K) (thickness ≥ 20 mm) 0.0071 W/(m·K) (thickness < 20 mm)
Thermal conductivity ventilated - design value incl. aging and edge effects	0.020 W/(m·K)
U-Value - initial value @ 10 °C*	0.22 W/(m²·K) (thickness = 20 mm)
U^D-Value - incl. aging and edge effects	0.71 W/(m²·K) (thickness = 10 mm) 0.13 W/(m²·K) (thickness = 50 mm)
Internal gas pressure @ 20 °C	≤ 5 mbar (at delivery)
Density	180 – 210 kg/m³ (thickness ≥ 20 mm) according to DIN EN 1602 180 – 250 kg/m³ (thickness < 20 mm) according to DIN EN 1602
Area density	3.5 – 5 kg/m² (thickness = 20 mm)
Temperature resistance	-75 – 80 °C (temporary up to 120 °C)
Moisture resistance	0 – 70 % rel. humidity (until 50 °C)
Specific heat capacity	0.8 – 1.0 kJ/(kg·K) (at room temperature)
Compressive strength at 10 % compression	≥ 180 kPa according to DIN EN 826
Tensile strength perpendicular to plane	≥ 30 kPa according to DIN EN 1607
Lifetime	Depending on usage, up to 60 years
Fire class	E according to EN 13501-1
Standard sizes (l x w)	1,000 mm x 600 mm 1,000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Available standard thicknesses	20 mm, 30 mm, 40 mm, 50 mm
Available customized thicknesses	10 mm, 15 mm, 25 mm, 35 mm, 45 mm, 60 mm

* Please note terms of service § 6 “Deviation range of the insulation value” in “Special Terms and Conditions of Sale and Delivery, Product: Vacuum Insulation Panels (VIPs)” corresponding to the valid version respectively.

va-Q-vip F XPS



Suitable for use as a **built-in component** thanks to additional **surface protection with XPS lamination**

Maximization of the usable space thanks to space-saving insulation with a comparable U-value

Avoidance of thermal bridges thanks to optimization of the panel edges using **patented va-Q-seam technology**

Long service life due to optimized panel design with fumed silica

100% outgoing goods inspection: quality assurance through **patented internal gas pressure measurement** (va-Q-check®)

Fully recyclable core material

Manufactured by a **CO_2-neutral company, "MADE IN GERMANY"** technology

Multiple standard sizes available in stock (special sizes upon request)

Properties

Thermal conductivity - initial value @ 10 °C*	≤ 0.0043 W/(m·K) (thickness ≥ 15 mm, at delivery) according to DIN EN 12667
Thermal conductivity - incl. aging and edge effects**	0.007 W/(m·K) (thickness ≥ 20 mm) 0.008 W/(m·K) (thickness < 20 mm)
Thermal conductivity ventilated - design value incl. aging and edge effects**	0.020 W/(m·K)
U-Value - initial value @ 10 °C*	0.22 W/(m²·K) (thickness = 20 mm)
U-Value - incl. aging and edge effects**	0.80 W/(m²·K) (thickness = 10 mm) 0.14 W/(m²·K) (thickness = 50 mm)
Internal gas pressure @ 20 °C	≤ 5 mbar (at delivery)
Density	180 – 210 kg/m³ (thickness ≥ 20 mm) according to DIN EN 1602 180 – 250 kg/m³ (thickness < 20 mm) according to DIN EN 1602
Area density	3.5 – 5 kg/m² (thickness = 20 mm)
Temperature resistance	-75 – 80 °C (temporary up to 120 °C)
Moisture resistance	0 – 70 % rel. humidity (until 50 °C)
Specific heat capacity	0.8 – 1.0 kJ/(kg·K) (at room temperature)
Compressive strength at 10 % compression	≥ 180 kPa according to DIN EN 826
Tensile strength perpendicular to plane**	≥ 30 kPa according to DIN EN 1607
Lifetime	Depending on usage, up to 60 years
Fire class**	E according to EN 13501-1
Standard sizes (l x w)	1,000 mm x 600 mm 1,000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Available standard thicknesses	20 mm, 30 mm, 40 mm, 50 mm
Available customized thicknesses	10 mm, 15 mm, 25 mm, 35 mm, 45 mm, 60 mm

* Please note terms of service § 6 "Deviation range of the insulation value" in "Special Terms and Conditions of Sale and Delivery, Product: Vacuum Insulation Panels (VIPs)" corresponding to the valid version respectively.
** Only for va-Q-vip F without XPS cover layer.

va-Q-vip F GGM

Suitable for **use in floor areas** thanks to additional **surface protection with GGM lamination**

Maximization of the usable space thanks to space-saving insulation with a comparable U-value

Avoidance of thermal bridges thanks to optimization of the panel edges using **patented va-Q-seam technology**

Building authority approval in accordance with Z-23.11-1658

Long service life due to optimized panel design with fumed silica

100% outgoing goods inspection: quality assurance through **patented internal gas pressure measurement** (va-Q-check®)

Fully recyclable core material

Manufactured by a **CO_2-neutral company, "MADE IN GERMANY"** technology

Multiple standard sizes available in stock (special sizes upon request)

Properties

Thermal conductivity - initial value @ 10 °C*	≤ 0.0043 W/(m·K) (thickness ≥ 15 mm, at delivery) according to DIN EN 12667
Thermal conductivity - design value incl. aging and edge effects	0.007 W/(m·K) (thickness ≥ 20 mm) 0.008 W/(m·K) (thickness < 20 mm)
Thermal conductivity ventilated - design value incl. aging and edge effects	0.020 W/(m·K)
U-Value - initial value @ 10 °C*	0.22 W/(m²·K) (thickness = 20 mm)
U-Value - incl. aging and edge effects	0.80 W/(m²·K) (thickness = 10 mm) 0.14 W/(m²·K) (thickness = 50 mm)
Internal gas pressure @ 20 °C	≤ 5 mbar (at delivery)
Density	180 – 210 kg/m³ (thickness ≥ 20 mm) according to DIN EN 1602 180 – 250 kg/m³ (thickness < 20 mm) according to DIN EN 1602
Area density	3.5 – 5 kg/m² (thickness = 20 mm)
Temperature resistance	-75 – 80 °C (temporary up to 120 °C)
Moisture resistance	0 – 70 % rel. humidity (until 50 °C)
Specific heat capacity	0.8 – 1.0 kJ/(kg·K) (at room temperature)
Compressive strength at 10 % compression	≥ 150 kPa according to DIN EN 826
Lifetime	Depending on usage, up to 60 years
Fire class	B2 according to DIN 4102
Standard sizes (l x w)	1,000 mm x 600 mm 1,000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Available standard thicknesses	20 mm, 30 mm, 40 mm, 50 mm
Available customized thicknesses	10 mm, 15 mm, 25 mm, 35 mm, 45 mm, 60 mm
Areas of application	DAD, DAA, DEO

* Please note terms of service § 6 “Deviation range of the insulation value” in “Special Terms and Conditions of Sale and Delivery, Product: Vacuum Insulation Panels (VIPs)” corresponding to the valid version respectively.

va-Q-vip Floor

Particularly suitable for **balconies, terraces and flat roofs**

Additional protection against mechanical damage
thanks to PIR and GGM lamination

Enables **barrier-free usable areas**

Avoidance of thermal bridges thanks to optimization
of the panel edges using **patented va-Q-seam technology**

Building authority approval in accordance with Z-23.11-1658

Long service life due to optimized panel design
with fumed silica

100% outgoing goods inspection: quality assurance through
patented internal gas pressure measurement (va-Q-check®)

Fully recyclable core material

Manufactured by a **CO_2-neutral company,**
“MADE IN GERMANY” technology

Multiple standard sizes available in stock
(special sizes upon request)

Properties

Thermal conductivity (VIP) - initial value @ 10 °C*	≤ 0.0043 W/(m·K) (thickness ≥ 20 mm, at delivery) according to DIN EN 12667
Thermal conductivity (VIP) - design value incl. aging and edge effects	0.007 W/(m·K) (thickness ≥ 20 mm)
Thermal conductivity (VIP) ventilated - design value incl. aging and edge effects	0.020 mW/(m·K)
U-Value (VIP) - initial value @ 10 °C*	0.22 W/(m²·K) (thickness = 20 mm)
Internal gas pressure @ 20 °C	≤ 5 mbar (at delivery)
Density	180 – 210 kg/m³ according to DIN EN 1602
Area density	3.5 – 5 kg/m² (thickness = 20 mm)
Temperature resistance (VIP)	-70 – 80 °C (temporary up to 120 °C)
Moisture resistance	0 – 70 % rel. humidity (until 50 °C)
Specific heat capacity	0.8 – 1.0 kJ/(kg·K) (at room temperature)
Compressive strength at 10 % compression	≥ 150 kPa according to DIN EN 826
Lifetime	Depending on usage, up to 60 years
Fire class (VIP)	B2 according to DIN 4102
Standard sizes (l x w)	1,000 mm x 600 mm 1,000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Available thickness (overall construction)	20 mm, 30 mm, 40 mm (customized shapes available on request)
Areas of application	DAD, DAA, DEO

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va-Q-vip A2

Will be suitable for use in buildings with **fire protection requirements of class A2**

Up to 85% space savings compared to conventional insulation, thereby maximizing usable space

Dust-free and easy mounting, without harmful fibers or breakage

Avoidance of thermal bridges thanks to optimization of the panel edges using **patented va-Q-seam technology**

Long service life due to optimized panel design with fumed silica

100% outgoing goods inspection: quality assurance through **patented internal gas pressure measurement** (va-Q-check®)

Fully recyclable core material

Manufactured by a **CO_2-neutral company, "MADE IN GERMANY"** technology

Multiple standard sizes (special sizes upon request)

Properties*

Thermal conductivity - initial value @ 10 °C**	≤ 0.0043 W/(m·K) according to DIN EN 12667
Thermal conductivity - λ_D incl. aging and edge effects	0.008 W/(m·K)
Thermal conductivity ventilated - design value incl. aging and edge effects	0.020 W/(m·K)
U-Value - initial value @ 10 °C**	0.22 W/(m²·K) (thickness = 20 mm)
U_D-Value - incl. aging and edge effects	0.40 W/(m²·K) (thickness = 10 mm) 0.16 W/(m²·K) (thickness = 50 mm)
Internal gas pressure @ 20 °C	≤ 5 mbar (at delivery)
Density	180 – 210 kg/m³ according to DIN EN 1602
Area density	3.5 – 5 kg/m² (thickness = 20 mm)
Temperature resistance	-75 – 80 °C (temporary up to 120 °C)
Moisture resistance	0 – 70 % rel. humidity (until 50 °C)
Specific heat capacity	0.8 – 1.0 kJ/(kg·K) (at room temperature)
Compressive strength at 10 % compression	≥ 180 kPa according to DIN EN 826
Tensile strength perpendicular to plane**	≥ 30 kPa according to DIN EN 1607
Lifetime	Depending on usage, up to 60 years
Fire class	A2-s1, d0 according to EN 13501-1
Standard sizes (l x w)	1,000 mm x 600 mm 1,000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Standard thicknesses	20 mm, 30 mm, 40 mm, 50 mm
Customized thicknesses	25 mm, 35 mm, 45 mm, 60 mm

* All technical specifications are preliminary as of 01/2025, subject to change pending approval. The va-Q-vip A2 is expected to be available starting in 2026. For further information, please contact va-Q-tec.

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Patented va-Q-check® system

Quality is a top priority of everything we do at va-Q-tec - the capital „Q“ in the middle of our name serves as a reminder hereof. In addition to premium quality service and profound technical consulting, we strive to produce only the very best quality products.

Quick and precise quality checks

The quality and service life of VIPs depends on the quality of the core material, the barrier foil, and most importantly, on the internal gas pressure. That is why va-Q-tec developed the globally patented quality control system va-Q-check®. It allows for the precise measurement of the internal gas pressure of every individual VIP in seconds. Each va-Q-tec VIP is equipped with a small sensor disc for measurements and a barcode label. These two components allow va-Q-tec to store all information about the VIPs.

An external sensor measures the heat transfer in the panel and within seconds va-Q-check® transmits precise information on the internal gas pressure of the VIPs. The transparent inspection system checks every single box, panel or container before it leaves production. In addition to the high quality materials, the inspection can thus guarantee the quality of the products.

Advantages of quality controls with va-Q-check®

- Quick and precise quality control
- Significant reduction of non-visible VIP defects
- Vacuum check on site is possible

Thermal consulting

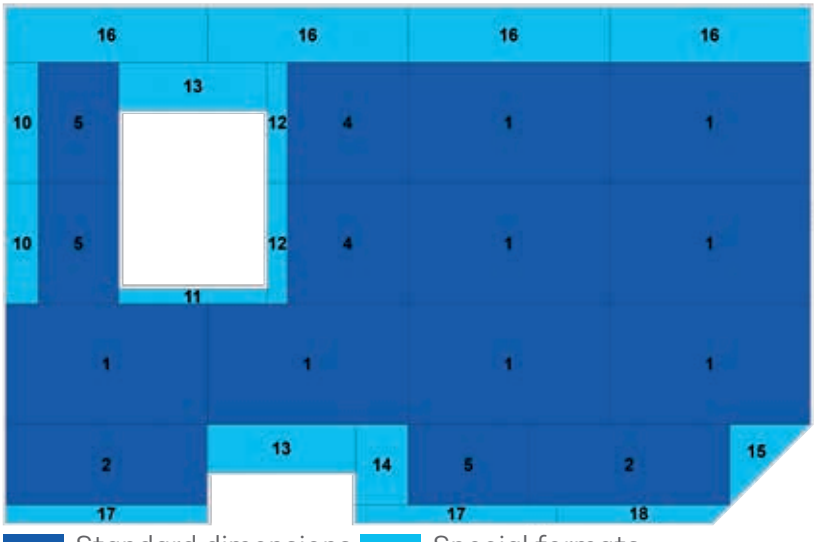
va-Q-tec is specialized in the development and manufacture of high-quality products for thermal insulation. The company offers its customers profound thermal consulting to achieve the best solution for your requirements. The experts employ the most up-to-date software in predicting, analyzing and assessing the thermal performance of all products. In this way, they can give customers precise recommendations as to which products are most suitable for a specific application.

As a special service, the company offers complimentary consulting at the construction site or on company premises. This results in individualized solutions for each project designed jointly with the customers. They additionally receive valuable tips for the installation of VIPs.

va-Q-plan System

Every project is different, and va-Q-tec assists in the planning of each one. Immediately following placement of the order, the va-Q-plan software is used to create a VIP installation plan for the individual surface to be insulated.

In this process, standard formats are preferentially used in order to reduce costs and delivery times as much as possible. In areas where standard-format installation is not possible, special formats are used. With these options, virtually 100% of the surface area can be installed with VIPs. These panels are of course assigned position numbers corresponding to the plan for fast and easy laying. An easy-to-understand list of all parts is also included.



Standard dimensions Special formats

U-value calculator

The heat transfer coefficient “U-value” represents the heat transfer through a material as a function of the temperature gradient between the warm and the cold side. The U-value calculator can be used to estimate the heat loss with one or several insulating materials. The unit of the U-value is W/(m²·K) (watts per square meter and per Kelvin) and indicates the heat flow through an area of one square meter with a temperature difference of one Kelvin (= 1°C). The higher the U-value, the worse the insulation effect, the lower the U-value, the better the insulation effect.

The U-value calculator is for guidance. Heat transfer resistances of the air are not considered.

To learn more about U-value or to calculate your required performance visit:
www.va-Q-tec.com/en/u-value-calculator/

Inventory and logistics

va-Q-tec offers an extensive stock of VIPs. In the modern and efficient warehouse, a large number of different formats and material thicknesses are available.

This inventory permits orders to be processed and delivered to the desired location within a very short time.

Special variants

va-Q-tec is the only VIP manufacturer in the world that can produce vacuum panels in a wide variety of two- and three-dimensional shapes. 3D shapes, VIPs with folds, panels with recesses, corner sections or perforations, cylindrical or round - all va-Q-tec panels are tailor-made and adapted to individual needs.

Moreover, cover layers in form of rubber sheets, XPS and PU are available for building panels; these offer additional protection for the VIP and facilitate the assembly process.

Building authority approval

German Building Approval & ETA
The Vacuum Insulation Panels are approved in accordance with ETA-17/0926 (va-Q-vip F) and abZ Z-23.11-1658 (va-Q-vip F GGM, va-Q-vip Floor) approved by the Deutsches Institut für Bautechnik.

The rated value of the thermal conductivity for va-Q-vip F has been set at 0.007 W/(m·K) for thickness of 20 mm or more. This value already includes the supplements for aging and the thermal bridge effect in the edge seal.

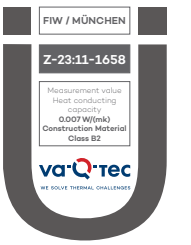
Decisive for the very good rating of the va-Q-tec products is the sophisticated and globally unique quality system of va-Q-tec Thermal Solutions GmbH, which includes a precise on-site inspection during installation.

The Vacuum Insulation Panels va-Q-vip F meet the requirements of building material class E in accordance with EN 13501-1. Their application areas are the thermal insulation of walls, roofs and ceilings, as well as floor slabs (on the upper side of the floor slab but under screed), all without sound insulation requirements.

The Vacuum Insulation Panels va-Q-vip F GGM and va-Q-vip Floor meet the requirements of building material class B2 in accordance with DIN 4102-1. The application areas defined by DIN 4108-10 are DAD, DAA and DEO.

Regular in-house production controls and external inspections are carried out by FIW Munich. va-Q-tec is therefore authorized to label the construction products with the Ü-label and the CE label. This ensures that new construction and renovation projects benefit from vacuum insulation with outstanding insulation properties and proven processing technology.

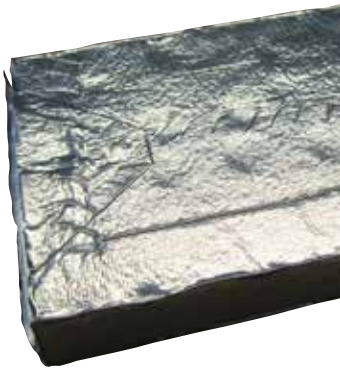
Supported by the practical experience of our partner companies in planning and execution, construction solutions compliant with approvals are possible using Vacuum Insulation Panels.



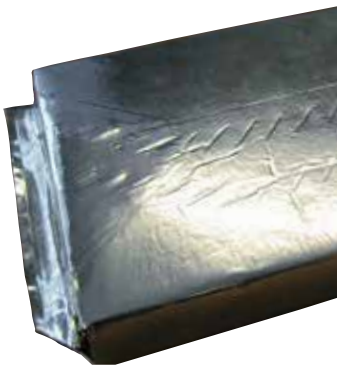
General Instructions for Use for va-Q-vip F & Variants

va-Q-vip F is approved according to ETA-17/0926. The variants with integrated cover layers (va-Q-vip Floor, va-Q-vip F GGM) hold a general building permit no. Z-23.11-1658. The envelopes are considered to be normally flammable in accordance with fire rating DIN 4102-B2 or respectively E in accordance with EN 13501-1. Vacuum Insulation Panels (VIPs) must always be handled with care. When processing the products va-Q-vip F (including GGM, Floor), the following points should be observed:

- The VIPs must not be subject to mechanical damage. Sawing, drilling and scratching MUST be avoided. The panels must be checked for proper functionality by means of a visual inspection before installation. Defective panels must be replaced.
- The substrate onto which the VIPs are to be mounted must be smooth, even, and free from edges and ridges.
- Care must be taken that constructions with VIPs are only subject to an even, flat compressive load. Point loads, as well as tension and shear loads, must be avoided.
- The VIPs can be bonded with, for example, 2-component polyurethane adhesive, hot melt or dispersion adhesive. Please ensure that the adhesive is free from alkaline, cement and solvent-based substances. Sikaflex® - 111 Stick & Seal (va-Q-vip, va-Q-vip F) and SikaBond® -TF plus N (va-Q-vip, va-Q-vip F, va-Q-vip GGM) are tried and tested products.
- During storage and use the VIPs must not be exposed to high temperatures, high levels of humidity and/or aggressive gases. Avoid permanent relative atmospheric humidity over 60% and temperatures over 80°C.
- Ensure that no moisture, such as rainwater, enters the area of the panels during installation.
- Only trained personnel are authorized to handle with va-Q-vip F. The instructions for use, in particular, must be adapted for each individual case.
- The insulation system must be designed in such a manner that individual ventilated VIPs do not lead to technical problems with the entire system.
- When installed on the ground, walking on the panels must be prevented.
- If there are adjacent components, a circumferential construction joint of 10-20 mm is recommended in order to compensate for dimensional tolerances. This can be compensated with standard insulating materials.
- If in doubt or if you have further questions, we are happy to assist you.



Intact VIP



Damaged VIP

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