

## Technical Data Sheet

### va-Q-vip F



## Product Description

va-Q-vip F is a microporous insulation material based on fumed silica. The vacuum insulation panel is approved for general construction purposes in accordance with approval number Z-23.11-1658 and ETA-17/0926 of the "Deutsches Institut für Bautechnik (DIBT)". va-Q-vip F elements are unique because of their rectangular edges and corners (va-Q-seam) whereas individual elements can be joined together almost seamlessly. In general rectangular panels are produced but various shapes (trapeze, triangle, corner section) are possible on request. The va-Q-vip F can be used in buildings according to the application areas DAD, DAA, DZ, DI, DEO, WAB, WH and WI after DIN 4108-10, table 1 (floors, flat roofs, ceilings, top floor ceilings, exterior insulation behind panelling, walls, insulation in wood frame construction). Hereby our application-specific, laminated versions va-Q-vip F EPS, va-Q-vip F XPS and va-Q-vip F GGM are obtainable.

## Features

- **Enhanced usable room area due to thinner insulation material**
- **Smooth edges and no foil overlaps due to patented va-Q-seam technology**
- **Various standard sizes on stock**
- Approved for general construction purposes after Z-23.11-1658 and ETA-17/0926
- Long lifetime due to optimized panel design
- 100 % quality control with the patented gas pressure measurement system (va-Q-check)
- Sustainable product (recyclable core material)

## Properties

Thermal conductivity $\lambda(10\text{ °C})^*$	$\leq 0.0043\text{ W}/(\text{m}\cdot\text{K})$ (thickness $\geq 20\text{ mm}$ , at delivery) after DIN EN 12667
Thermal conductivity - design value incl. aging and edge effects	$0.007\text{ W}/(\text{m}\cdot\text{K})$ $\geq 20\text{ mm}$ thickness $0.008\text{ W}/(\text{m}\cdot\text{K})$ $< 20\text{ mm}$ thickness
Thermal conductivity ventilated $\lambda(10\text{ °C})^*$ - design value incl. aging and edge effects	$0.020\text{ W}/(\text{m}\cdot\text{K})$
U-Value (thickness = $20\text{ mm}^*$ , $10\text{ °C}$ )	$0.22\text{ W}/(\text{m}^2\cdot\text{K})$
U-Value - design value incl. aging and edge effects @ $10\text{ °C}$	$0.8\text{ W}/(\text{m}^2\cdot\text{K})$ (thickness = $10\text{ mm}$ ) $0.14\text{ W}/(\text{m}^2\cdot\text{K})$ (thickness = $50\text{ mm}$ )
Internal gas pressure @ $20\text{ °C}$	$\leq 5\text{ mbar}$ (at delivery)
Density	$180 - 210\text{ kg}/\text{m}^3$ (thickness $\geq 20\text{ mm}$ ) after DIN EN 1602 $180 - 250\text{ kg}/\text{m}^3$ (thickness $< 20\text{ mm}$ ) after DIN EN 1602
Area density	$3.5 - 5\text{ kg}/\text{m}^2$ (thickness = $20\text{ mm}$ )
Temperature resistance	$-75 - 80\text{ °C}$ (temporary up to $120\text{ °C}$ )
Moisture resistance	$0 - 70\%$ rel. humidity (until $50\text{ °C}$ )
Specific heat capacity	$0.8 - 1.0\text{ kJ}/(\text{kg}\cdot\text{K})$ (at room temperature)
Compressive strength at $10\%$ compression	$\geq 150\text{ kPa}$ after DIN EN 826 $\geq 100\text{ kPa}$ after DIN EN 826 (version EPS, GGM)
Tensile strength perpendicular to plane	$\geq 30\text{ kPa}$ after DIN EN 1607
Lifetime	Depending on usage, up to 60 years
Fire class	B2 following DIN 4102 E following EN 13501-1**
Standard sizes (l x w)	$1000\text{ mm} \times 600\text{ mm}$ $1000\text{ mm} \times 400\text{ mm}$ $1000\text{ mm} \times 300\text{ mm}$ $600\text{ mm} \times 600\text{ mm}$ $600\text{ mm} \times 400\text{ mm}$ $400\text{ mm} \times 300\text{ mm}$ $300\text{ mm} \times 300\text{ mm}$
Available thickness	$10 - 50\text{ mm}$ , in $5\text{ mm}$ steps

\*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 additional lamination

## Testing standards

Our va-Q-vip F panels are subjected to the following internal test methods to confirm their exceptional properties:

- Accelerated aging tests at 50 °C, 70 % relative humidity and 80 °C (dry)
- Thermal conductivity measurements  $\lambda(T)$ ,  $\lambda(p)$  following DIN EN 12667
- Long-time monitoring at room conditions ( $p(t)$ ,  $\lambda(t)$ )
- Fire protection test after DIN 4102-1 / EN 11925-2
- Measurement of the length- and point-related heat transition coefficient (thermal bridge effect,  $\Psi$ -value)

## Measures and tolerances (VIP)

length l / width w in [mm]	thickness t in [mm]	tolerances: l/w/t in [mm]		
		l	w	t
$\leq 500$	$\geq 10 - 50$	+2/-4	+2/-4	+5 %/-5 %
> 500 - 1000	$\geq 10 - 50$	+2/-5	+2/-5	+5 %/-5 %

**Remark:** Please ask for preferred sizes and tolerances.

## Application-specific versions

For the different application areas in construction sector additional application-specific versions of the va-Q-vip F are obtainable:

version	lamination	application area
va-Q-vip F EPS	10 mm EPS (one-sided or both-sided)	interior (walls, floors, ceilings, etc.)
va-Q-vip F XPS	3 mm XPS (one-sided or both-sided)	interior (walls, floors, ceilings, etc.)
va-Q-vip F GGM	3 mm rubber granules (one-sided or both-sided)	mainly floors

**Remark:** Any desired combinations of the versions are available on request. The listed versions are approved for general construction purposes in accordance with approval number Z-23.11-1658 of the "Deutsches Institut für Bautechnik".



va-Q-vip F EPS



va-Q-vip F XPS



va-Q-vip F GGM

## Legal Notes/Disclaimer

The data presented in this technical data sheet are in accordance with the present state of our knowledge.

All numbers and features proposed in this data sheet (e.g. lifetime) were determined under test conditions in the laboratory and therefore represent a nonbinding and purely scientific value. There are no guarantees associated with. Only the respectively agreed warranty period and warranty rights apply.

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