

## Technical Data Sheet

### va-Q-vip F GGM



## Product Description

va-Q-vip F GGM is a laminated microporous insulation material based on fumed silica and is approved for general construction purposes in accordance with approval number Z-23.11-1658 of the "Deutsches Institut für Bautechnik (DIBT)". The insulation panel is provided with a 3 mm protective layer of rubber granulate on one or both sides. va-Q-vip F GGM 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. va-Q-vip F GGM can be used in buildings according to the application areas DAD, DAA and DEO according to DIN 4108-10, table 1 (floors, flat roofs, ceilings, top floor ceilings).

## 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 according to Z-23.11-1658
- Long lifetime due to optimized panel design with fumed silica
- 100 % quality control with the patented gas pressure measurement system (va-Q-check)
- Sustainable product (recyclable core material)

## 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 - design value incl. aging and edge effects	0.80 W/(m²·K) (thickness = 10 mm) 0.14 W/(m²·K) (thickness = 50 mm)
U-Value - design value incl. aging and edge effects	7.10 h·ft²·°F/Btu (thickness = 10 mm) 40.58 h·ft²·°F/Btu (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)	1000 mm x 600 mm 1000 mm x 300 mm 600 mm x 500 mm 600 mm x 250 mm 300 mm x 250 mm
Available standard thickness	20 mm, 30 mm, 40 mm, 50 mm
Available customized thickness	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.

## Testing standards

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

- Accelerated aging tests at 50 °C, 70 % relative humidity and 80 °C (dry)
- Thermal conductivity measurements  $\lambda(T)$ ,  $\lambda(p)$  according to DIN EN 12667
- Long-time monitoring at room conditions ( $p(t)$ ,  $\lambda(t)$ )
- Fire protection test according to 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]		
≤ 500	10 - 20	+2/-4	+2/-4	+1mm/-1mm
≤ 500	25 - 60			+5 %/-5 %
> 500 - 1000	10 - 20	+2/-5	+2/-5	+1mm/-1mm
> 500 - 1000	25 - 60			+5 %/-5 %

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

## Thermal Resistance (VIP)

Thickness [mm]	U [W/m <sup>2</sup> ·K]	R [m <sup>2</sup> ·K/ W]	R [h·ft <sup>2</sup> ·°F/Btu]
10	0.80	1.25	7.10
15	0.53	1.88	10.65
20	0.35	2.86	16.23
25	0.28	3.57	20.29
30	0.23	4.29	24.35
35	0.20	5.00	28.41
40	0.17	5.71	32.47
45	0.15	6.43	36.53
50	0.14	7.14	40.58
60	0.12	8.57	48.70

## Structure

structure	lamination
va-Q-vip F GGM	3 mm rubber granules (one-sided or both-sided)



va-Q-vip F GGM

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## 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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