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WE SOLVE THERMAL CHALLENGES

Technical data sheet
va-Q-plus (Technics & Industry)

Product Description

va-Q-plus, the second generation of vacuum insulation panels, is a microporous insulation material based on fumed silica. The high-tech panel is produced at most recent and in-house developed production lines. The powdered core material and the specifically engineered foil technology are optimized for the use at high temperatures and ensure the outstanding insulation ability for the entire service life of the product. The typical fields of application are hot water tanks, district heating pipes, laboratory equipment and the automotive sector.

Features

- **Very good cost-performance ratio**
- **Temperature resistant up to 100 °C, temporary up to 130 °C**
- **Optional imprinting of rills enables an extremely high flexibility**
- Best insulation value over the entire lifetime for insulation panels based on fumed silica
- Long lifetime because of optimized panel designs
- 100 % quality control with the patented gas pressure measurement system (va-Q-check)
- Sustainable product (recyclable core material)

7th of February 2023

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Properties

Thermal conductivity - initial value @ 10 °C*	**< 0.0035 W/(m·K) (at delivery) according to DIN EN 12667**
Thermal conductivity, ventilated @ 10 °C*	**0.020 W/(m·K) according to DIN EN 12667**
U-Value - initial value @ 10 °C*	**0.18 W/(m²·K) (thickness = 20 mm)**
Internal gas pressure @ 20 °C	**< 7 mbar (at delivery)**
Density	**160 – 230 kg/m³ according to DIN EN 1602**
Area density	**3.2 – 4.6 kg/m² (thickness = 20 mm)**
Temperature resistance	**-75 – 100 °C (temporary up to 130 °C possible)****
Moisture resistance	**0 – 70 % relative humidity (until 50 °C)**
Storage stability	**Optimal storable @ 23 °C, 50 % rel. humidity**
Thermal shock resistance	**-75 – 80 °C according to DIN EN 60068-2-14 0 – 110 °C nach DIN EN 60068-2-14**
Specific heat capacity	**0.8 kJ/kgK (at room temperature)**
Compressive strength at 10 % compression	**ca. 120 kPa according to DIN EN 826**
Lifetime	**Depending on usage, up to 60 years**

***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.**

****lower and higher application temperatures are possible on request. Please contact us for details.**

Testing Standards

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

- Long-time performance tests up to 160 °C
- Accelerated aging tests at 50 °C, 70 % relative humidity and 80 °C (dry)
- Long-time monitoring at room conditions (p(t) and λ(t))
- Thermal conductivity measurements λ(T), λ(p) according to DIN EN 12667
- Thermal shock resistance according to DIN EN 60068-2-14

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Measures and tolerances

	width w in [mm]				width w in [mm]				width w in [mm]			
length l in [mm]	≤ 300				> 300 - 500				> 500			
	thickness t in [mm]	tolerances: l/w/t in [mm]			thickness t in [mm]	tolerances: l/w/t in [mm]			thickness t in [mm]	tolerances: l/w/t in [mm]		
≤ 500	≤ 10	+2/-4	+2/-4	+2/-1,5	≤ 10	+2/-4	+3/-7	+2/-1,5	≤ 10	+2/-4	+4/-10	+2/-1,5
	> 10 - 15	+3/-4	+3/-5	+2/-2	> 10 - 15	+3/-4	+4/-8	+2/-2	> 10 - 15	+3/-4	+5/-10	+2/-2
	> 15 -20	+4/-5	+4/-8	+2,5/-3	> 15 -20	+4/-5	+5/-12	+2,5/-3	> 15 -20	+4/-5	+6/-14	+2,5/-3
	> 20 - 25	+4/-6	+4/-8	+3/-3,5	> 20 - 25	+4/-6	+5/-13	+3/-3,5	> 20 - 25	+4/-6	+6/-15	+3/-3,5
	> 25 - 30	+4/-8	+5/-10	+3/-4	> 25 - 30	+4/-8	+5/-15	+3/-4	> 25 - 30	+4/-8	+6/-17	+3/-4
	> 30	+4/-10	+5/-12	+3/-4,5	> 30	+4/-10	+6/-15	+3/-4,5	> 30	+4/-10	+6/-20	+3/-4,5
> 500 - 1000	≤ 10	+4/-5	+2/-4	+2/-1,5	≤ 10	+4/-5	+3/-7	+2/-1,5	≤ 10	+4/-5	+4/-10	+2/-1,5
	> 10 - 15	+4/-7	+3/-5	+2/-2	> 10 - 15	+4/-7	+4/-8	+2/-2	> 10 - 15	+4/-7	+5/-10	+2/-2
	> 15 -20	+5/-12	+4/-8	+2,5/-3	> 15 -20	+5/-12	+5/-12	+2,5/-3	> 15 -20	+5/-12	+6/-14	+2,5/-3
	> 20 - 25	+5/-12	+4/-8	+3/-3,5	> 20 - 25	+5/-12	+5/-13	+3/-3,5	> 20 - 25	+5/-12	+6/-15	+3/-3,5
	> 25 - 30	+5/-12	+5/-10	+3/-4	> 25 - 30	+5/-12	+5/-15	+3/-4	> 25 - 30	+5/-12	+6/-17	+3/-4
	> 30	+5/-15	+5/-12	+3/-4,5	> 30	+5/-15	+6/-15	+3/-4,5	> 30	+5/-15	+6/-20	+3/-4,5
> 1000 - 1500	≤ 10	+5/-7	+2/-4	+2/-1,5	≤ 10	+5/-7	+3/-7	+2/-1,5	≤ 10	+5/-7	+4/-10	+2/-1,5
	> 10 - 15	+7/-10	+3/-5	+2/-2	> 10 - 15	+7/-10	+4/-8	+2/-2	> 10 - 15	+7/-10	+5/-10	+2/-2
	> 15 -20	+10/-15	+4/-8	+2,5/-3	> 15 -20	+10/-15	+5/-12	+2,5/-3	> 15 -20	+10/-15	+6/-14	+2,5/-3
	> 20 - 25	+10/-15	+4/-8	+3/-3,5	> 20 - 25	+10/-15	+5/-13	+3/-3,5	> 20 - 25	+10/-15	+6/-15	+3/-3,5
	> 25 - 30	+10/-17	+5/-10	+3/-4	> 25 - 30	+10/-17	+5/-15	+3/-4	> 25 - 30	+10/-17	+6/-17	+3/-4
	> 30	+10/-18	+5/-12	+3/-4,5	> 30	+10/-18	+6/-15	+3/-4,5	> 30	+10/-18	+6/-20	+3/-4,5
> 1500	≤ 10	+7/-10	+2/-4	+2/-1,5	≤ 10	+7/-10	+3/-7	+2/-1,5	≤ 10	+7/-10	+4/-10	+2/-1,5
	> 10 - 15	+10/-15	+3/-5	+2/-2	> 10 - 15	+10/-15	+4/-8	+2/-2	> 10 - 15	+10/-15	+5/-10	+2/-2
	> 15 -20	+20/-20	+4/-8	+2,5/-3	> 15 -20	+20/-20	+5/-12	+2,5/-3	> 15 -20	+20/-20	+6/-14	+2,5/-3
	> 20 - 25	+20/-20	+4/-8	+3/-3,5	> 20 - 25	+20/-20	+5/-13	+3/-3,5	> 20 - 25	+20/-20	+6/-15	+3/-3,5
	> 25 - 30	+20/-20	+5/-10	+3/-4	> 25 - 30	+20/-20	+5/-15	+3/-4	> 25 - 30	+20/-20	+6/-17	+3/-4
	> 30	+20/-20	+5/-12	+3/-4,5	> 30	+20/-20	+6/-15	+3/-4,5	> 30	+20/-20	+6/-20	+3/-4,5

Remark: Based on the unique production method, the panels are less thick at the edges and corners than in the center. The measures, tolerances and insulation values refer to the insulated area of the panel form one corner to another. Circulating the panel there is a 10 mm to 20 mm wide sealing seam. A typical panel measures 8 mm up to 30 mm. The smaller the panel the slighter is the maximal thickness of the panel due to production limits. **Please ask for your wished dimensions.**

Flaps	Measure	Tolerance
Width of flaps	20 mm	+0/-10 mm

Remark: The laying and fixing of the flaps plus other refinements, e.g. laminations, are possible on request.

Legal Notes/Disclaimer

7th of February 2023

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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.

To the extent permitted by law, all other warranties of any kind, whether express or implied, including, but not limited to the implied warranties of MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, and non-infringement are EXCLUDED.

Proposals for usage and applications do not constitute a guarantee, warranty or representation of suitability for the specific purpose. However the user bears the responsibility if the product is suitable and compatible for his own purposes. The user shall perform his own tests and experiments for his individual purposes and applications regarding the suitability and processing of the product described herein.

We reserve the right to change the product values and features. The respective current valid version of this technical data sheet applies and is published on our homepage.