

VACUPOR® Roof

Vacuum-Insulation-Panel with Rubber / PIR Protection for flat roof applications

Characteristics

VACUPOR® Roof is a microporous insulation material with an extremely low coefficient of thermal conductivity, i.e. with very good insulating properties. VACUPOR® Roof consists of inorganic oxides. The main constituent is fumed silica, the other components are opacifiers for minimizing infrared radiation, and fibre filaments as re-enforcing fillers.

For protection purposes the panel is covered with a sheet of rubber granules on one side and a sheet of PIR insulation on the other.

VACUPOR® NT-B2, the core insulation panel, is fully CE marked and approved. VACUPOR® Roof is currently in the approval process for CE marking in its own right, as a combined sandwich.

VACUPOR® Roof (core material) is not flammable and is classified A1 according to DIN ISO EN 13501-1.

VACUPOR® Roof is heat sealed in a metallized, multilayer plastic barrier film under vacuum. The very low internal pressure and the microporous panel core is responsible for the extremely low thermal conductivity values.

Application

VACUPOR® Roof was specially developed for applications in the building and construction industry where an approval by the building authorities is required.

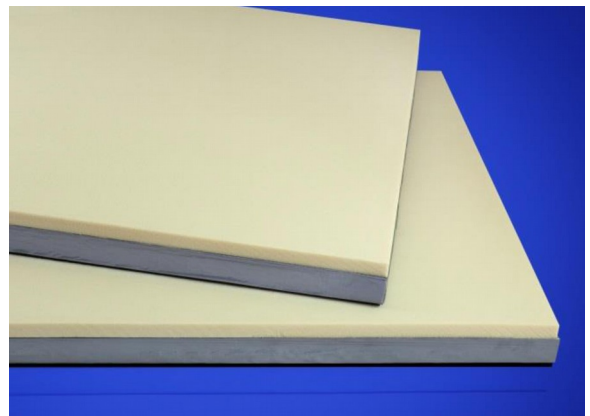
Because of the double-sided protection layers of the rubber granular matting and the PIR, VACUPOR® Roof is excellently suited to all kind of plane and flat applications.

The installation of the insulation is extremely simple and there is minimal danger of damaging the core Vacuum Insulation Panel.

The low density and the specially developed IR opacifiers contained in these grades, greatly reduce the thermal conductivity of VACUPOR® Roof Systems.

VACUPOR® Roof is also successfully used as insulation material in the following areas:

- Terrace insulation
- Flat roof insulation
- Cold storage floor insulation
- Floor insulation



Form of delivery

1. Standard sizes:

- | | | | |
|-----------|---|---------|-----|
| • 1200 mm | * | 1000 mm | * X |
| • 1000 mm | * | 600 mm | * X |
| • 1200 mm | * | 500 mm | * X |
| • 1000 mm | * | 300 mm | * X |
| • 600 mm | * | 500 mm | * X |
| • 600 mm | * | 250 mm | * X |
| • 300 mm | * | 250 mm | * X |

2. Standard thicknesses (X):

- 10, 15, 20, 25, 30, 35, 40, 45 and 50mm
- Further thicknesses on request

3. Special formats available on request

Restrictions on Applications

The metallized, multilayer plastic film of the VACUPOR® Roof must not be damaged by drilling, cutting, milling, nailing or the like, since the interior pressure of the panel will rise and the special properties of the panel, in particular its excellent insulation characteristics, will be lost.

Shelf life

VACUPOR® Roof has a very long shelf life. Please also observe our pressure rise table: Thermal conductivity as a function of interior pressure.

Properties (applicable to standard format)	Comments	Standards	Units	Values
Color	Caused by film / Coverage			Silver / Black / Yellow
Density ¹			kg / m ³	170-210
Thermal conductivity	@ 1 mbar ² @ ambient pressure	Measured at 22,5 °C (72.5 °F) mean temperature DIN 52612	W / (m×K) W / (m×K)	≤ 0,005 ≤ 0,019
Rated value for VACUPOR® NT-B2	According to DIBT approval number Z-23.11-1662		W / (m×K)	0,008
Heat resistance ³	Caused by film weld seam		°C	-50 <T< 120
Maximum film projection			mm	150
Interior pressure ²	As delivered		mbar	≤ 5
Theoretical pressure rise	Under standard conditions		mbar / a	0,5
Maximum panel dimensions	Length Width Thickness		mm mm mm	150 - 2200 150 - 1000 10 - 50
Length and width tolerances	0 to 500 mm 501 to 1000 mm > 1000		mm mm mm	+ 1,0 / - 2,0 + 1,0 / - 4,0 + 1,0 / - 6,0
Thickness tolerances	< 20 mm 20 mm to 30 mm > 30 mm		mm mm mm	± 1,0 + 1,0 / - 2,0 + 1,0 / - 3,0
Thermal shock resistance	VACUPOR® Roof (corematerial) is insensitive to high and low temperature thermal shocks			

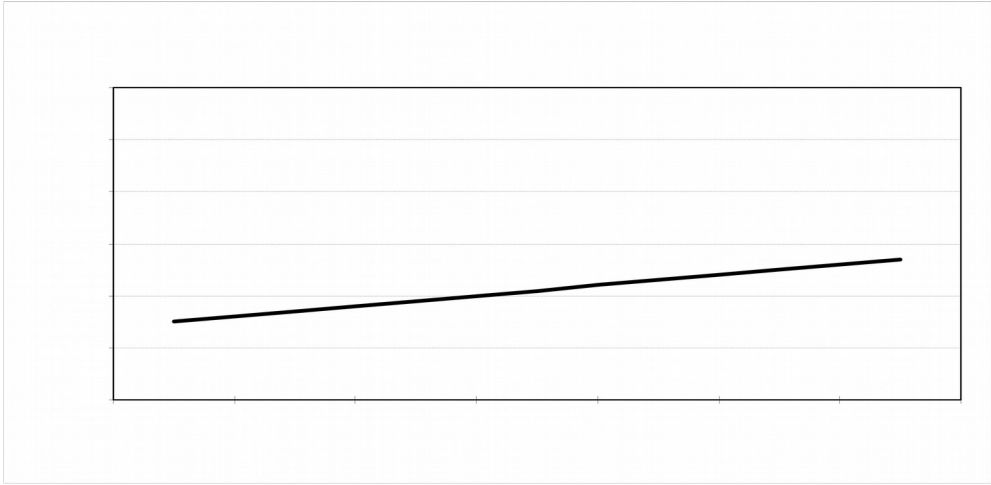
¹ Dependent on board thickness

² Dependent on the panel-size and -thickness, internal pressure can be between 0.5 – 5 mbar. The standard internal pressure in the evacuation chamber is < 0.5 mbar.

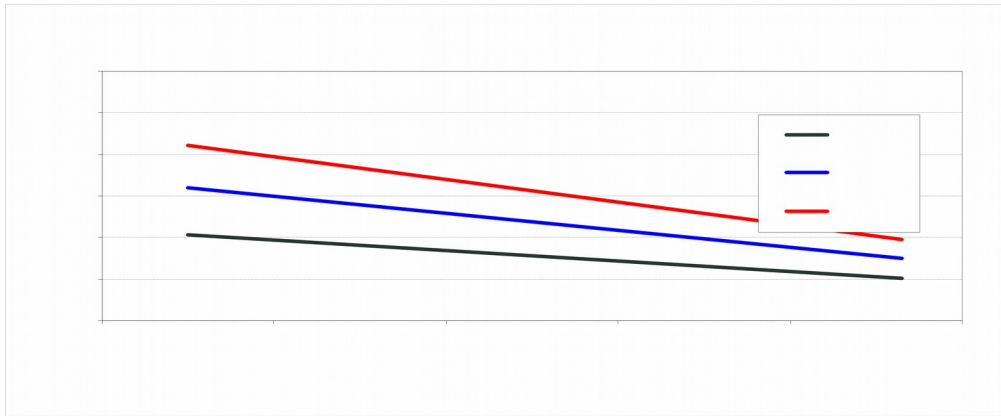
³ The limits are fixed by the barrier film (sealing material) used; constant load: ≤ 80°C (176°F); short load time with 120°C (248°F): roughly 30 minutes.

The above data is only intended as a guide and should not be used in preparing specifications.

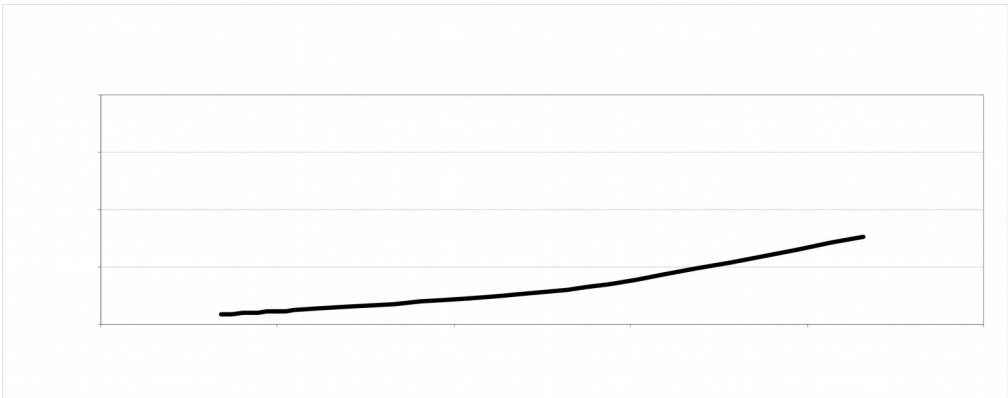
Thermal conductivity (panel core) DIN 52612



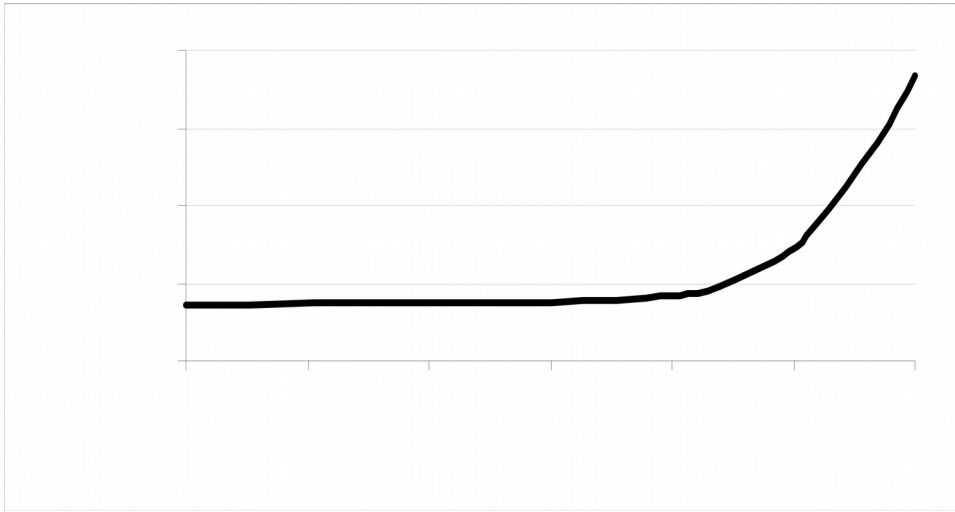
Compression behavior (panel core)



Low-temp. Compression strength (panel core)



Thermal conductivity as a function of internal pressure (DIN 52612)



gas pressure p_{gas} [hPa]	U- Value [W/(m ² K)]	λ [10 ⁻³ W/(mK)]
< 10 ⁻³	0.187	3.63
0.1	0.188	3.66
1.0	0.193	3.75
10	0.219	4.25
150	0.448	8.70
1000	0.943	18.30

Safety directions

VACUPOR® Roof is not a hazardous material as defined in EU directive 2006/1907/EEC.

VACUPOR® Roof does not liberate hazardous decomposition products and, as far as is known at present, does not cause any problems to human health or the environment.

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The data presented in this leaflet are in accordance with the present state of our knowledge, but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this leaflet should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies' raw materials are also being used. The recommendations do not absolve the user from the obligation of investigating the possibility of infringement of third parties' rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.

Please address all technical questions that affect quality and product safety to:

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