

Data sheet

ENGLISH

Vacupor® NT

Description

Vacupor® NT is a microporous insulation material which has an extremely low thermal conductivity coefficient giving it very good insulating properties.

Vacupor® NT consists of inorganic oxides. The main constituent is fumed silica, the other components are opacifiers for minimizing infrared radiation, and silicates. Vacupor® NT (core material) is not flammable and meets the requirements of IMO FTPC part I and DIN ISO 4102 part I, A1.

Vacupor® NT is heat sealed under vacuum in a multilayer vacuum metalised film. The very low internal pressure and the microporous panel core enable it to reach extremely low thermal conductivity values.

Application

Vacupor® NT was specially developed for applications in vacuum insulation technology. The low density and the specially developed IR opacifiers contained in these grades greatly reduce the thermal conductivity of Vacupor® NT Systems.

Typical applications

Vacupor® NT is also successfully used as insulation material in the following areas:

- Domestic appliances (refrigerator and freezer cabinets)
- Absorption refrigerators
- Cryogenic freezer
- Temperature controlled packaging
- Transport boxes
- Facade elements
- Terrace insulation
- Cold storage floor insulation
- Tank container insulation

Form of delivery

Standard sizes:

- 600 mm x 250 mm
- 600 mm x 500 mm
- 1000 mm x 300 mm
- 1000 mm x 600 mm
- 1200 mm x 500 mm
- 1200 mm x 1000 mm

Standard thicknesses:

- 10, 15, 20, 25, 30 mm
- Further thicknesses on request.

Special formats available on request

Restrictions on applications

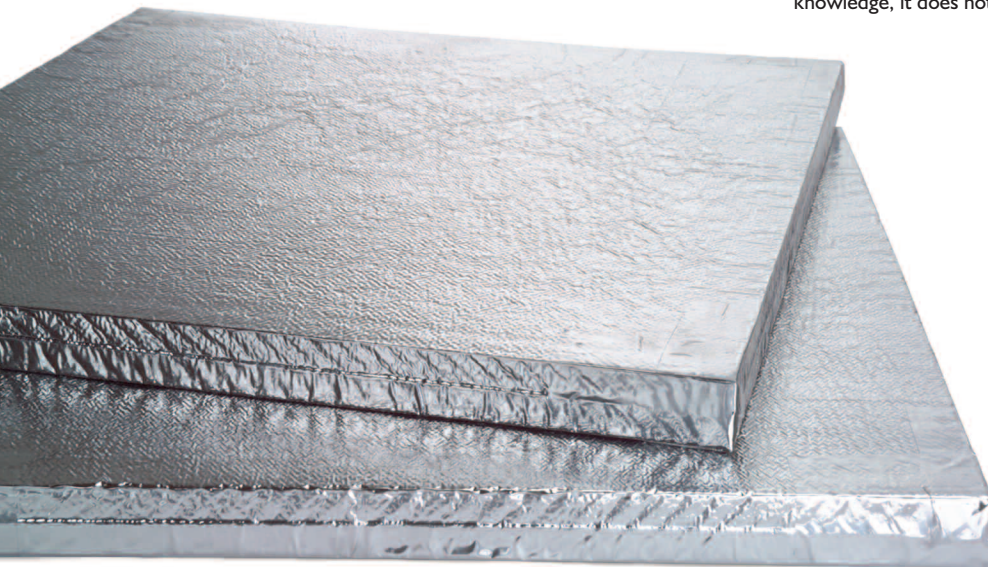
The metallized, multilayer plastic film of the Vacupor® NT must not be damaged by drilling, cutting, milling, nailing, otherwise the internal pressure of the panel will rise and the special properties of the panel will be lost.

Shelf life

Vacupor® NT has a very long shelf life. Please refer to our pressure rise table: Thermal conductivity as a function of interior pressure.

Safety directions

Vacupor® NT is not a hazardous substance according to the EU directive 2006/1907/EEC. Please also see our Safety Data Sheet. Vacupor® NT does not use any dangerous decomposition products and according to current knowledge, it does not cause any problems to human health or the environment.



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Physical Properties	
Colour	Silver
Density (kg/m ³) ⁽¹⁾	150 - 300
Thermal Conductivity at mean temperature of 22.5°C (W/m·K)	
@ 1 mbar ⁽²⁾	0.0041
@ ambient pressure	0.019
Temperature Resistance (°C) ⁽³⁾	-50 < T < 120
Maximum Film Projection (mm)	100
Interior Pressure (mbar)	≤ 5
Theoretical Pressure Rise (mbar)	0.5
Maximum Panel Dimensions	
Length (mm)	150 - 2200
Width (mm)	150 - 1000
Thickness (mm)	10 - 50
Length Tolerances (mm)	
0 to 500	+ 1.0 / -2.0
501 to 1000	+ 1.0 / -4.0
> 1000	+ 1.0 / -6.0
Thickness Tolerances (mm)	
< 20	± 1.0
20 to 30	+ 1.0 / -2.0
> 30	+ 1.0 / -3.0
Thermal Shock Resistance	Vacupor® NT (core material) is insensitive to high and low temperature thermal shocks

Please note:

Vacupor® NT is not approved by the German building and construction authorities for building applications. Vacupor® NT may just be applied in areas where a Vacuum Insulation Panel is treated as an unregulated construction product, if an admission on a single case exists or will be obtained. The thermal conductivity value just describes the value of the Vacuum Insulation Panel under the mentioned conditions, measured in the center of the panel. The measured value does explicitly not correspond with the rated value, determined by the DIBt and may not be used in Germany for the implementation of thermal calculations for buildings.

- (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.

Thermal conductivity

Thermal Conductivity as a function of internal pressure.

Gas Pressure (hPa)	U value (W/m ² K)	λ (10 ⁻³ W/m·K)
< 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

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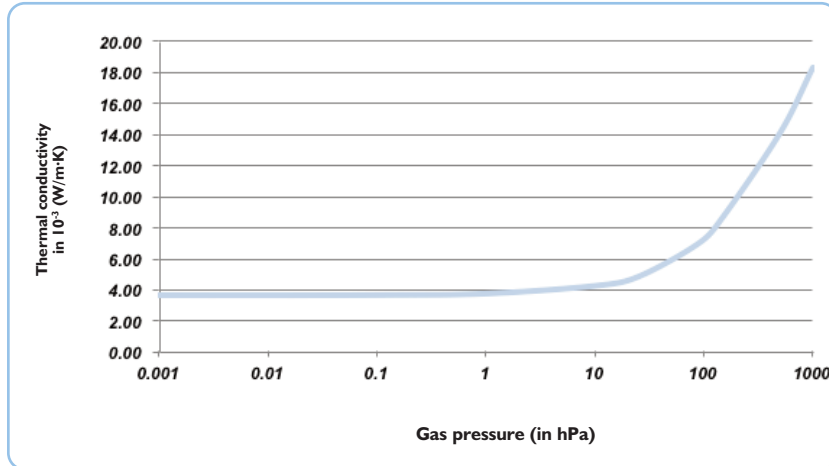
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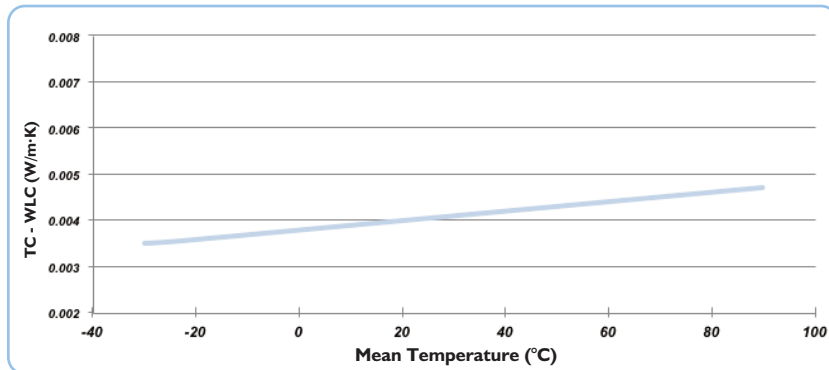
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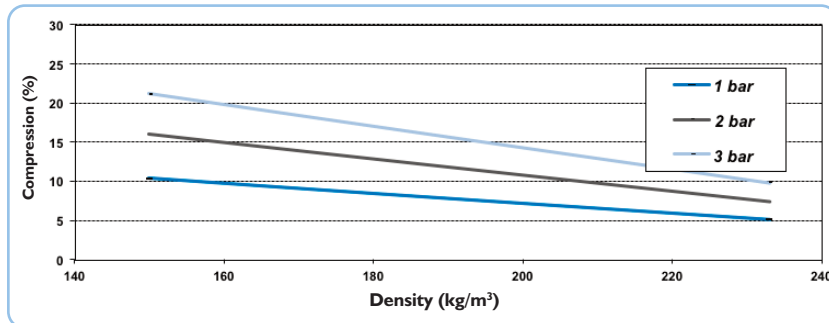
Thermal Conductivity as a function of internal pressure (DIN 52612)



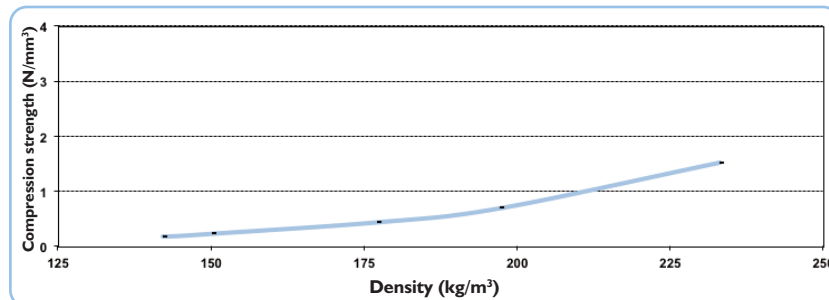
Thermal Conductivity (Panel Core) DIN 52612



Compression Behaviour (Panel Core)



Low-temp. Compression Strength



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