

Data sheet

ENGLISH

# Vacupor® Insert NT

## Microporous core material for Vacuum Insulation Panels (VIP)

### Description

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

Vacupor® Insert NT consists of inorganic oxides. The main constituent is fumed silica; the other components are opacifiers for minimizing infrared radiation.

Vacupor® Insert NT is not flammable and meets the requirements of IMO FTPC part I and DIN ISO 4102 part I, A1.

Vacupor® Insert NT is available shrink-wrapped in a PE plastic foil or wrapped into a PP non-woven material. When used as an insert in a vacuum insulation panel, extraordinary low heat conductivity values and enormously long lifetimes can be reached with this core.

### Application

Vacupor® Insert NT is a core material, specially developed for applications in vacuum insulation technology.

The low density and the specially developed IR opacifiers, greatly reduce the thermal conductivity.

### Typical applications

Vacupor® Insert NT is already successfully used as core material in Vacuum Panels for the following:

- Household Refrigerators
- Absorption refrigerators
- Cryogenic freezer
- Temperature controlled packaging
- Transport boxes
- Facade elements
- Terrace insulation
- Cold-floor insulation

### Form of delivery

#### Standard sizes:

- 600 mm x 250 mm (23.6 in x 9.8 in)
- 1000 mm x 300 mm (39.4 in x 11.8 in)
- 600 mm x 500 mm (23.6 in x 19.7 in)
- 1200 mm x 500 mm (47.2 in x 19.7 in)
- 1000 mm x 600 mm (39.4 in x 23.6 in)
- 1200 mm x 1000 mm (47.2 in x 39.4 in)

#### Standard thicknesses:

- 10, 15, 20, 25, 30 mm (0.4, 0.6, 0.8, 1.0, 1.2 in)
- Further thicknesses on request

#### Special formats available on request

### Restrictions on applications

Vacupor® Insert NT has a non-porous surface therefore it is sensitive to all liquids that can wet it; this includes water, oil, petroleum spirit. By using a suitable surface treatment such as PE or aluminium foil the moisture sensitivity of Vacupor® Insert NT is significantly improved or eliminated altogether.

### Shelf life

Vacupor® Insert NT has an unlimited shelf life.

Vacupor® Insert NT must be handled and stored in dry conditions. Vacupor® Insert NT is resistant to diffusion by atmospheric humidity (water vapour).

### Safety directions

Vacupor® Insert NT is not a hazardous substance according to the EU directive 2006/1907/EEC. Please also see our Safety Data Sheet. Vacupor Insert 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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Metric information

Physical Properties	
Colour	grey
Density, kg/m <sup>3</sup> <sup>(1)</sup>	150-300
Thermal Conductivity at mean temperature of 22.5°C, W/m·K	
@ 1 mbar	≤0.005
@ ambient pressure	≤0.019
Temperature Resistance, °C	
@ 1% Linear shrinkage after 12 h after side temperature treatment	800
Cold crushing strength, DIN 53421, N/mm <sup>2</sup>	1-3
Compression Strength @ 10% compressibility DIN-53421, N/mm <sup>2</sup>	0.12
Specific heat capacity at 400°C, kJ/kg·K	1.05
Maximum Panel Dimensions	
Length mm	1200
Width mm	1000
Thick. mm	10-50
Length Tolerances, mm	
0 to 50	+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

<sup>(1)</sup> Dependent on insert thickness.

**Please note:**

The thermal conductivity value specified only describes the value of the Vacuum Insulation Panel under the stated conditions, which is measured at the centre on the panel. The rated value is not explicitly specified by the DIBt design value and may not be used to perform thermal calculations for buildings in Germany.

**Thermal conductivity**

Thermal Conductivity as a function of internal pressure.

Gas Pressure (hPa)	U value (W/m <sup>2</sup> K)	λ 10 <sup>-3</sup> (W/m·K)
< 10 <sup>-3</sup>	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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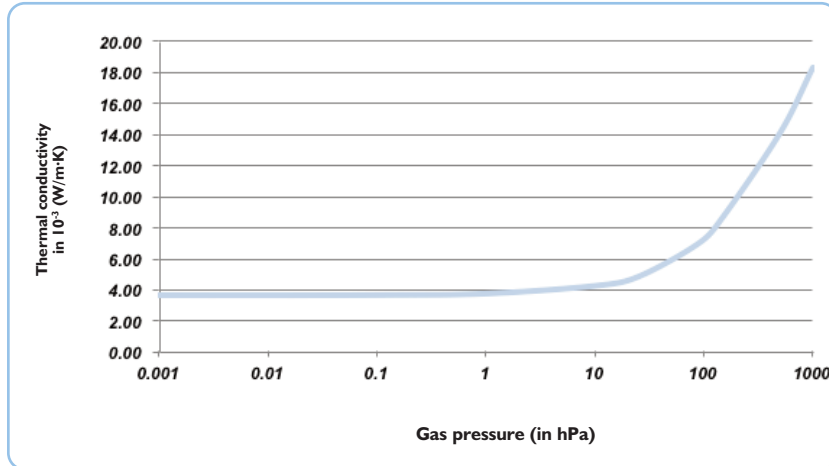
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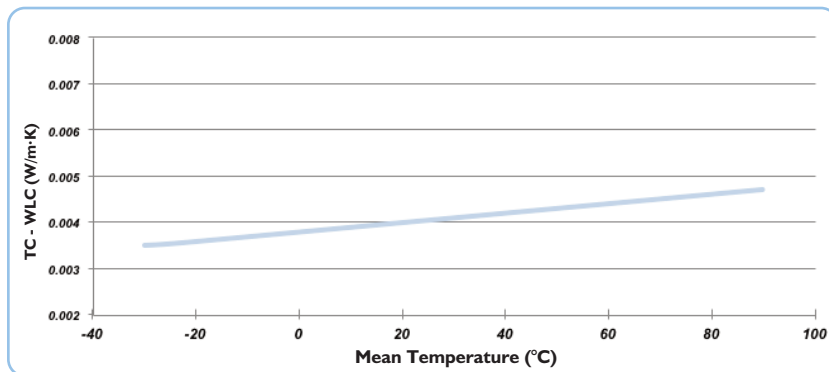
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# Vacupor<sup>®</sup> Insert NT

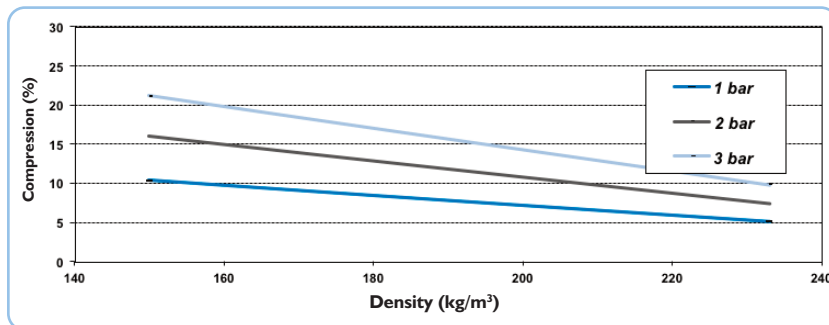
## Thermal Conduct as a function of internal pressure (DIN 52612)



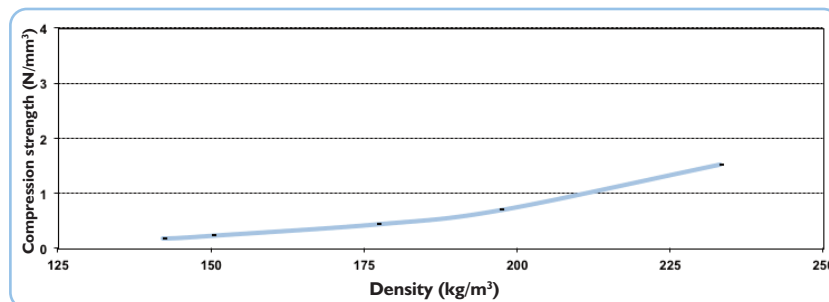
## Thermal Conductivity (Panel Core) DIN 52612



## Compression Behaviour (Panel Core)



## Low-temp. Compression Strength



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