

Data sheet

ENGLISH

Vacupor® NT-B2-S

Building authorities approved Vacuum-Insulation-Panel

Description

Vacupor® NT-B2-S is a microporous insulation material which has an extremely low thermal conductivity coefficient giving it very good insulating properties.

Vacupor® NT-B2-S consists of inorganic oxides. The main constituent is fumed silica, the other components are opacifiers for minimizing infrared radiation, and silicates

Vacupor® NT-B2-S is approved by DIBT under the certification number Z-23.11-1662. The approval is valid for construction applications DAD, DAA, DZ, DI, DEO, WAB, WAA, WH, WTR and WI according to standard DIN 4108-10, and prefabricated facade panels with insulated glass character.

Vacupor® NT-B2-S corresponds to the material class B2. The examination of fire behaviour according to DIN 4102-1, May 1998, building material B2; no test certificates. H.3-145/07 and H.3-146/07, was issued by the Research Institute for heat protection in Munich. The core material of Vacupor® NT-B2-S is not flammable and classified A1 according to DIN ISO EN 13501-1.

Vacupor® NT-B2-S has been tested using the ASTM E 84-15b, Standard Test Method for Surface Burning Characteristics of Building Materials. The results are:

| | |
|------------------------|----|
| Flame spread Index: | 40 |
| Smoke developed Index: | 35 |

Application

Vacupor® NT-B2-S was specially developed for applications in the building and construction industry where an approval by the building authorities is required.

By using a special metallized multi-layer plastic film, the panel is suitable for applications where there is an increased demand for fire protection. The low density and IR opacifiers contained in these grades, greatly reduce the thermal conductivity of Vacupor® NT-B2-S Systems.

Typical applications

Vacupor® NT-B2-S is successfully used as insulation material in the following areas:

- Terrace insulation
- Flat roof insulation
- Cold storage floor insulation
- Facade elements
- Fire protection / Cold storage doors

Form of delivery

Standard sizes:

| | |
|-----------|---------|
| 1200 mm x | 1000 mm |
| 1200 mm x | 500 mm |
| 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 |

Standard thicknesses:

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

Special formats available on request

Restrictions on applications

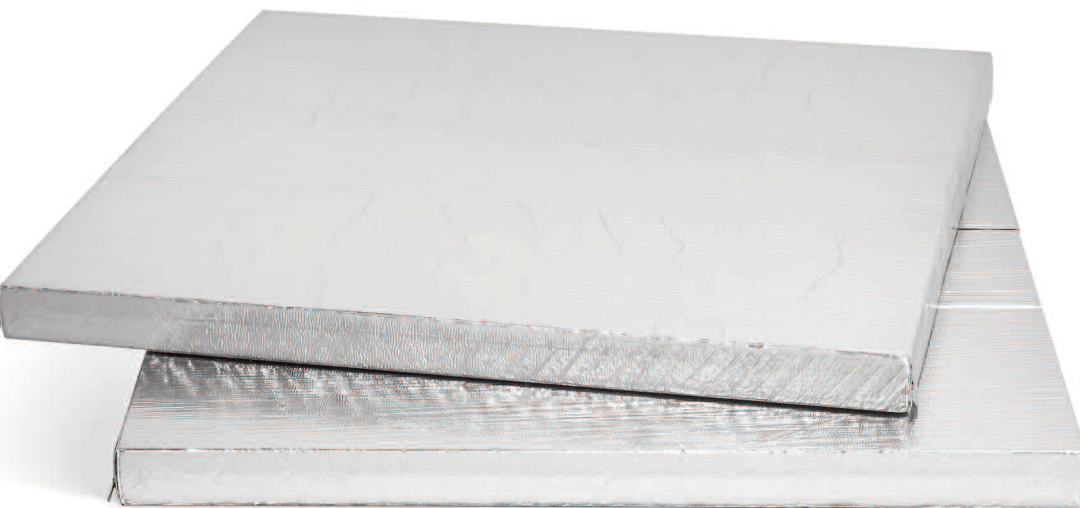
The metallized, multilayer plastic film of the Vacupor® NT-B2-S must not be damaged by drilling, cutting, milling, nailing, otherwise the internal pressure of the panel will rise and the special properties of the panel will be lost.

Shelf life

Vacupor® NT-B2-S has a very long shelf life. Please also refer to our pressure rise table: Thermal conductivity as a function of interior pressure.

Safety directions

Vacupor® NT-B2-S is not a hazardous substance according to the EU directive 2006/1907/EEC. Please refer to the material safety data sheet. Vacupor® NT-B2-S does not use any dangerous decomposition products and according to current knowledge, it does not cause any problems to human health or the environment.



Data sheet

Vacupor® NT-B2-S

| Physical Properties | |
|---|--|
| Colour | Silver |
| Density (kg/m ³) ⁽¹⁾ | 170-210 |
| Thermal Conductivity at mean temperature of 22.5°C (72.5°F) (W/m·K) | |
| @ 1 mbar | ≤0.005 |
| ambient pressure | ≤0.019 |
| Rated Value (W/m.K) | 0.007 |
| Temperature Resistance (°C) ⁽²⁾ | -50 < T < 120 |
| Maximum Film Projection (mm) | 150 |
| Interior Pressure (mbar) ⁽²⁾ | ≤5 |
| Theoretical Pressure Rise (mbar) | ~1.0 |
| Maximum Panel Dimensions | |
| Length (mm) | 150-1500 |
| Width (mm) | 150-1000 |
| Thickness (mm) | 10-50 |
| Length Tolerances (mm) | |
| 0 to 500 | +1.0 / -2.0 |
| 501-1000 | +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 | The corematerial of Vacupor® NT-B2-S is insensitive to high and low temperature thermal shocks |

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.

- (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 |

Contact

Europe:

Telephone:
+44 (0) 151 334 4030

E-mail:
marketing.tc@morganplc.com

North America:

Telephone:
+1 (706) 796 4200

E-mail:
northamerica.tc@morganplc.com

South America:

Telephone:
+54 (11) 4373 4439

E-mail:
marketing.tc@morganplc.com

Asia:

Telephone:
+65 6595 0000

E-mail:
asia.mc@morganplc.com

Porextherm:

Porextherm
Dämmstoffe GmbH
Heisinger Straße 8/10
D-87437 Kempten

Telephone:
+ 49 (0)831 - 575360
Fax:
+ 49 (0)831 - 575363

E-mail:
info@porextherm.com

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.

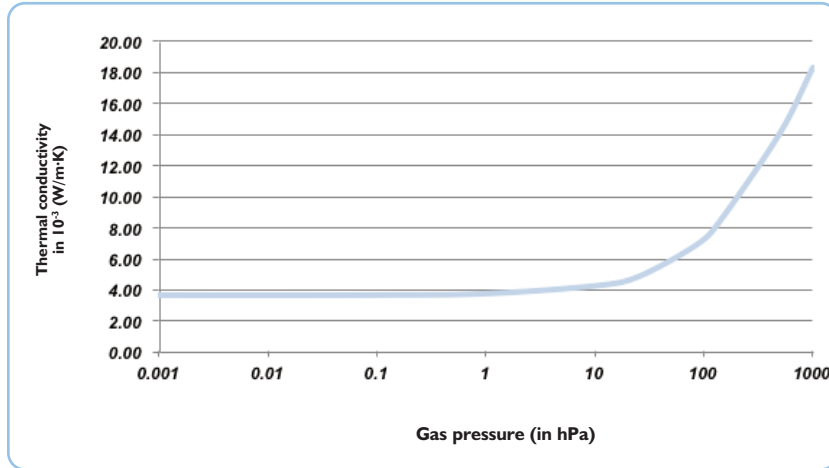
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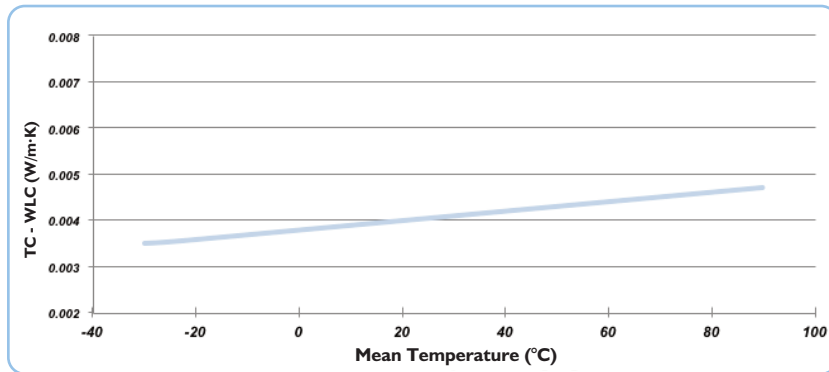
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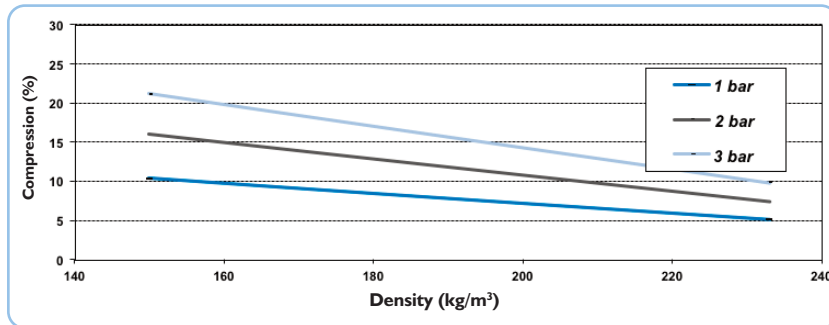
Thermal Conduct as a function of internal pressure (DIN 52612)



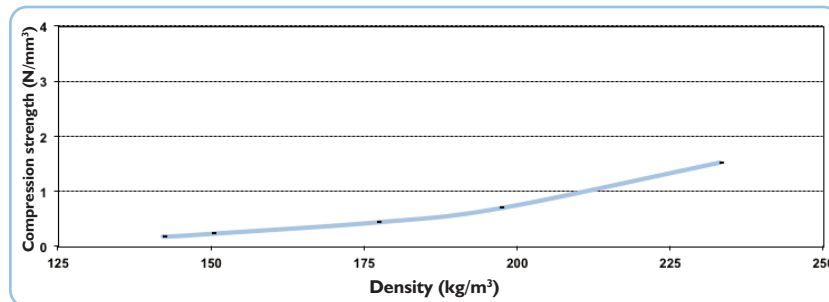
Thermal Conductivity (Panel Core) DIN 52612



Compression Behaviour (Panel Core)



Low-temp. Compression Strength



Contact

Europe:

Telephone:
+44 (0) 151 334 4030

E-mail:
marketing.tc@morganplc.com

North America:

Telephone:
+1 (706) 796 4200

E-mail:
northamerica.tc@morganplc.com

South America:

Telephone:
+54 (11) 4373 4439

E-mail:
marketing.tc@morganplc.com

Asia:

Telephone:
+65 6595 0000

E-mail:
asia.mc@morganplc.com

Porextherm:

Porextherm
Dämmstoffe GmbH
Heisinger Straße 8/10
D-87437 Kempten

Telephone:
+ 49 (0)831 - 575360
Fax:
+ 49 (0)831 - 575363

E-mail:
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