Morgan Advanced Materials

POREXTHERM

Data sheet

VACUSPEED®

ENGLISH

Modular vacuum insulation system ex stock.

Description

VACUSPEED® is a Microporous insulation material which has an extremely low thermal conductivity coefficient giving it very good insulating properties. VACUSPEED® consists of inorganic oxides. The main constituent is fumed silica, the other components are opacifiers for minimizing infrared radiation, and silicates.

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

VACUSPEED® corresponds to the material class B2. The examination of fire behaviour according to DIN 4102-1, May 1998, building material B2; no test certicates.H.3-145/07 and H.3-146/07, was issued by the Research Institute for heat protection in Munich.

The foil wrapping of VACUSPEED® is designed to form of a double-middle seam.This allows a good surface quality. As it has no side flaps so the panels can be assembled to form fit into a joint.The core material of VACUSPEED® is not flammable and is classified A1 according to DIN ISO EN 13501-1.

VACUSPEED® is heat sealed 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

VACUSPEED® 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 VACUSPEED® systems.

VACUSPEED® is a version of our well-known vacuum insulation product line: VACUPOR®.

The new VACUSPEED® system was developed to better meet the specific requirements of the building practice. With the smart VACUSPEED® modular system, consisting of seven standardised panel sizes, various surface geometries can be insulated faster and in a more effective way.

Typical applications

VACUSPEED® is successfully used as insulation material in the following areas:

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

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:

20 mm, 30 mm and 40mm

Restrictions on applications

The metallized, multilayer plastic film of the VACUSPEED® 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

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

Safety directions

VACUSPEED® is not a hazardous substance according to the EU directive 2006/1907/EEC.

Please refer to the material safety data sheet. VACUSPEED® 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/m³) (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)	0.008
Temperature Resistance (3)	-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	20, 30, 40
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 core material of VACUSPEED® is insensitive to high and low temperature thermal shocks

Please note:

(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):

Thermal conductivity

Thermal Conductivity as a function of internal pressure.

Gas Pressure (hPa)	U value (W/m²K)	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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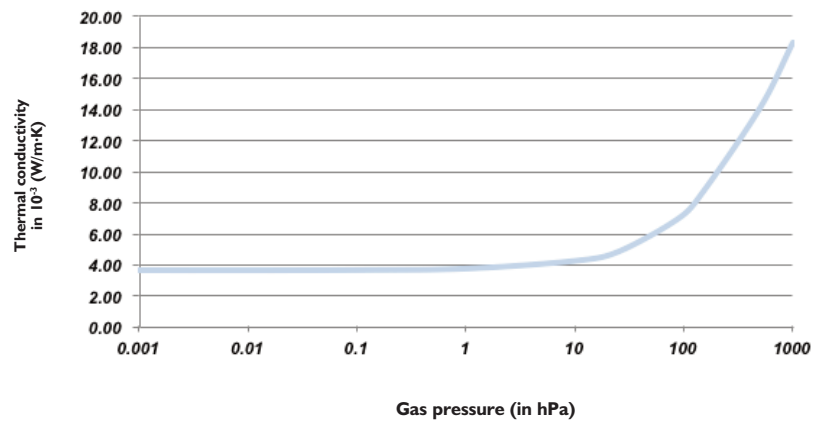
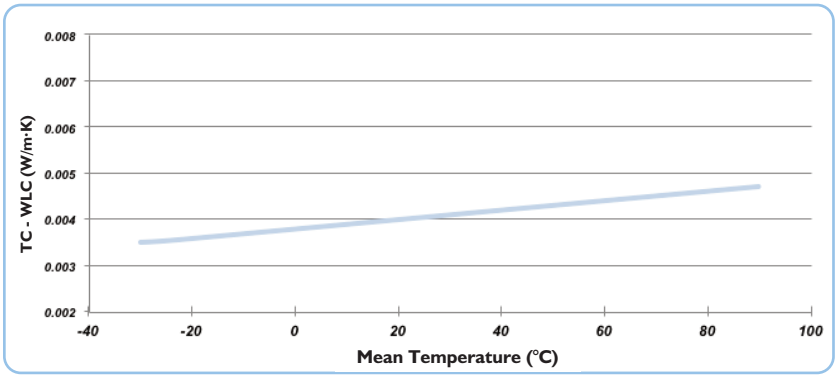
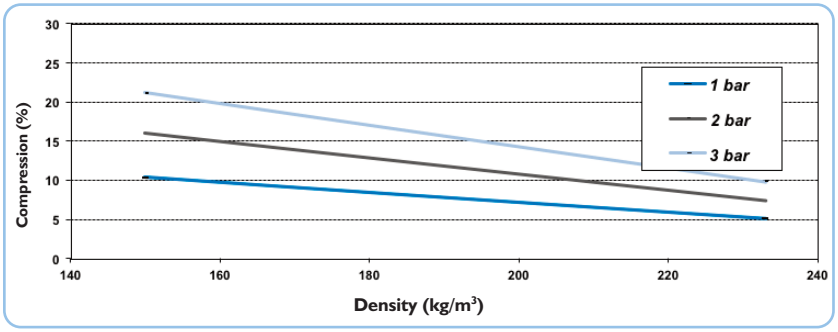
Thermal Conduct as a function of internal pressure (DIN 52612)



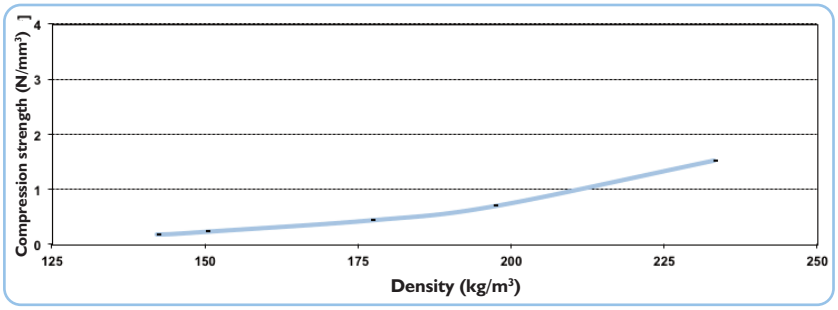
Thermal Conductivity (Panel Core) DIN 52612



Compression Behaviour (Panel Core)



Low-temp. Compression Strength



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