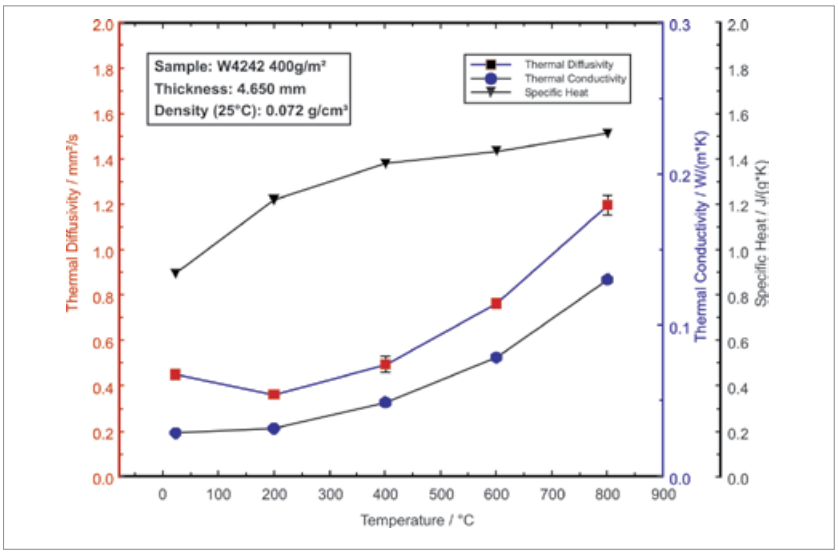
APPLICATION**SHEET**

FIBER INSULATION – CHEMISTRY

CARBON FIBER FELT

Soft graphite felts are long time standards for use as thermal insulators in high-temperature, vacuum furnaces and inert gas furnaces. The low thermal conductivity offers excellent insulation properties. In addition, the low density of felt structures enhances the furnace performance by allowing fast heating and cooling rates thus resulting in more cycles per given period of time. This application sheet shows the LFA measurement results for a carbon fibre felt from room temperature up to 800°C. For the measurements, the surfaces were coated with a special SiC paste to prevent penetration of laser light into the sample structure and to get a homogeneous surface. Due to small thicknesses and a quite high thermal conductivity compared to the felt layer, the influence of additional SiC layers was minimized.



Instrument

LFA 457 *MicroFlash®*

Test Conditions

Temperature range	RT … 800°C
Sample holder	12.7 mm diameter
Sample thickness	4.650 mm
Sample surfce preparation	SiC / graphite
cp from DSC, standard	sapphire
Atmopshere	argon

Results

The thermal diffusivity and thermal conductivity behavior over the temperature is typical for fiber structures. In dependence on the dominant heat transfer contributions (lattice structure, gas phase, radiation, interactions), the properties increase stronger at higher temperatures. The example clearly demonstrates that the LFA 457 can analyze carbon fiber felts without any problems.

NGB · AS · 179-2008 · EN · 07/13 · Technical specifications are subject to change.

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