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Testreport 346/22

Ha

26/08/2022

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Customer: Ms Oda Nimmer
Assignment from: 18/08/2022
Received: 18/08/2022

Assignment:

No.	Test	Standard
		Test conditions
1.	specific thermal conductivity λ	Alambeta method
		Temperature difference 10 K contact pressure of the plunger 10 cN/cm ² Number of test specimen: 5
2.	thermal resistance r	Alambeta method
		Temperature difference 10 K contact pressure of the plunger 10 cN/cm ² Number of test specimen: 5
3.	specific heat capacity c_v	Alambeta method
		Temperature difference 10 K contact pressure of the plunger 10 cN/cm ² Number of test specimen: 5

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Samples:

Coding for test	Identification by customer
Sample 1	<u>woven fabric</u> Article 1360 Order No.: 3670469 Piece No.: FS1008712

Sampling: The samples were taken by the customer.

Realisation
of the test:

The measurement samples were taken und tested in compliance with the above-mentioned regulations.

Testing period: 25/08/2022

Test results:1. Specific thermal conductivity λ

λ = Quantity of heat, which is passing a material with 1 m² surface and 1 m thickness per second, if there is a temperature difference of 1K between both sides.

$$\lambda \text{ in } \frac{\text{mW}}{\text{m} \cdot \text{K}} \quad \text{mW} \quad \text{m} \quad \text{K} \quad \begin{matrix} \text{Milliwatt} \\ \text{meter} \\ \text{Kelvin} \end{matrix}$$

	dense side	open side
$\bar{x}$	41.1	39.2
$x_{\max}$	44.6	40.2
$x_{\min}$	38.8	37.9

The lower the value of the specific thermal conductivity, the less heat is transported and dissipated, the better the thermal insulation.

2. Thermal resistance r

r = Temperature difference between the upper side and the reverse side of a material with a surface area of 1 m² and a given thickness, if a heat flux of 1 Watt is passing through.

$$r \text{ in } \frac{\text{mK m}^2}{\text{W}} \quad \text{mK m}^2 \text{ Watt}$$

	dense side	open side
$\bar{x}$	18.4	18.9
$x_{\max}$	19.3	19.1
$x_{\min}$	17.2	18.4

The higher the value of the heat resistance, the poorer the heat is transported and dissipated.

3. Specific heat capacity

c_v = volumic heat storage capacity of a material

$$c_v \text{ in } \frac{\text{mW s}}{\text{K m}^3} 10^3 \quad \text{mW s K m}^3 \text{ Milliwatt seconds Kelvin cubic meter}$$

	dense side	open side
$\bar{x}$	236.6	317.9
$x_{\max}$	258.7	348.4
$x_{\min}$	213.7	293.3

The higher the value of the heat capacity, the more heat can be stored in volume.

The testing results are exclusively related to the sample under conditions as received.

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J.V. S. Zlaase

Dr Klobes
Head of the Testing Centre