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Test report 423/22

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27/10/2022

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Customer: Ms Oda Nimmer
 Assignment from: 25/10/2022
 Received: 26/10/2022

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

Samples:

Coding for test	Identification by customer
Sample 1	<u>knitted fabric</u> Downtown Article 10-10786-900 Order No.: 5203866 Piece No.: ZS334844

Durch die DAkkS
 Deutsche Akkreditierungsstelle GmbH
 akkreditiertes Prüflaboratorium

In der Anlage zur Akkreditierungsurkunde sind alle akkreditierten Prüfverfahren aufgeführt. Auf Wunsch wird die Urkunde zugestellt.



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: 26/10/2022 – 27/10/2022

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.

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

	pile side	smooth side
\bar{x}	37.4	41.3
x_{\max}	40.4	42.2
x_{\min}	35.4	39.9

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.

$$r \text{ in } \frac{\text{mK m}^2}{\text{W}} \quad \begin{matrix} \text{mK} & \text{Millikelvin} \\ \text{m}^2 & \text{square meter} \\ \text{W} & \text{Watt} \end{matrix}$$

	pile side	smooth side
\bar{x}	19.8	20.2
x_{\max}	20.6	20.8
x_{\min}	18.6	19.3

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

$$c_v \text{ in } \frac{\text{mW s}}{\text{K m}^3} \cdot 10^3 \quad \begin{array}{ll} \text{mW} & \text{Milliwatt} \\ \text{s} & \text{seconds} \\ \text{K} & \text{Kelvin} \\ \text{m}^3 & \text{cubic meter} \end{array}$$

	pile side	smooth side
\bar{x}	221.1	368.6
x_{\max}	245.8	384.5
x_{\min}	201.4	359.1

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

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

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Dr Klobes
Head of the Testing Centre