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TEST REPORT 176/4/22

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14/04/2022

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Customer: Ms Oda Nimmer
Assignment from: -
Received: 08/04/2022

Assignment:

1. Determination of specific thermal conductivity λ , temperature difference 10 K, contact pressure of the plunger 10 cN/cm², Alambeta method, n = 5, right side and reverse side
2. Determination of the thermal resistance r, temperature difference 10 K, contact pressure of the plunger 10 cN/cm², Alambeta method, n =5, right side and reverse side
3. Determination of specific heat capacity c_v , temperature difference 10 K, contact pressure of the plunger 10 cN/cm², Alambeta method, n = 5, right side and reverse side

Samples: 1 piece of fabric, article 10943

Sampling: The samples were taken by the customer.

**Realisation
of the test:**

The samples were taken und were tested by the prescriptions mentioned above.

Durch die DAkkS
Deutsche Akkreditierungsstelle GmbH
akkreditiertes Prüflaboratorium

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



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.

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

	right side	reverse side
\bar{x}	46.0	46.5
x_{max}	46.4	47.6
x_{min}	45.4	45.6

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.

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

	right side	reverse side
\bar{x}	26.2	26.0
x_{max}	26.4	26.8
x_{min}	26.1	25.4

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

$$c_v \text{ in } \frac{\text{mW s}}{\text{K m}^3} \cdot 10^3$$

mW	Milliwatt
s	seconds
K	Kelvin
m ³	cubic meter

	right side	reverse side
\bar{x}	273.4	256.4
x_{\max}	296.6	284.1
x_{\min}	258.0	243.3

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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i.v. S. Klobes

Dr. Klobes
Head of the Testing Centre