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Customer: Ms Oda Nimmer
Assignment from: 18/02/2020
Received: 19/02/2020

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 1302

Sampling: The samples were taken by the customer.

Realisation of the test: The samples were taken und were tested by the prescriptions mentioned above.

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.

$$\lambda \text{ in } \frac{mW}{m \quad K}$$

mW Milliwatt
m meter
K Kelvin

	right side	reverse side
$\bar{x}_1$	40.1	41,0
x_{max}	41.1	44.3
x_{min}	39.4	38,7

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 in $\frac{mK\ m^2}{W}$

mK	Millikelvin
m²	square meter
W	Watt

	right side	reverse side
$\bar{x}_1$	32.6	30.9
x_{max}	33.2	32.7
x_{min}	32.2	28.7

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

mW	Milliwatt
s	seconds
K	Kelvin
m³	cubic meter

	right side	reverse side
$\bar{x}_1$	159.9	223.0
x_{max}	168.0	268.5
x_{min}	147.2	193.9

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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Dr. Klobes
Head of the Testing Centre