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Test report 387/5/22 Ha 10/10/2022

Customer: Ms Oda Nimmer
Assignment from: 29/09/2022
Received: 04/10/2022

Assignment:

No.	Test	Standard / Test conditions
1.	specific thermal conductivity λ	Alambeta method Temperature difference 10 K contact pressure of the plunger 10 cN/cm² Number of test specimen: 5
2.	thermal resistance r	Alambeta method Temperature difference 10 K contact pressure of the plunger 10 cN/cm² Number of test specimen: 5
3.	specific heat capacity c_v	Alambeta method Temperature difference 10 K contact pressure of the plunger 10 cN/cm² Number of test specimen: 5

Samples:

Coding for test	Identification by customer
Sample 1	knitted fabric Passenger FR Article 10-10932-887 Order No.: 5197413 Piece No.: ZS325226

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: 04/10/2022 – 06/10/2022

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.

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

mW Milliwatt
m meter
K Kelvin

	right side	**reverse side**
$\bar{x}$	48.4	48.5
x_{max}	49.0	50.1
x_{min}	47.7	47.7

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.

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

mK Millikelvin
m² square meter
W Watt

	right side	**reverse side**
$\bar{x}$	32.1	32.0
x_{max}	32.7	32.7
x_{min}	31.7	31.3

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

mW	Milliwatt
s	seconds
K	Kelvin
m^3	cubic meter

	right side	**reverse side**
$\overline{x}$	232.3	253.4
x_{max}	241.1	275.3
x_{min}	220.3	237.5

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

i.V. S. Klobes

Dr Klobes
Head of the Testing Centre