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Test report 101/23 Ha 27/03/2023

Customer: Ms. Oda Nimmer
Assignment from: 23/03/2023
Received: 24/03/2023

Assignment:

No.	Test	Standard / Test conditions
		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	Woven fabric Article 1024 Material composition: 100% PES

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: 24/03/2023 – 27/03/2023

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 1 K between both sides.

λ in $\frac{mW}{m \cdot K}$

mW Milliwatt
m meter
K Kelvin

λ	Sample 1	
	right side	**reverse side**
$\bar{x}$	41.3	41.9
x_{max}	42.7	42.7
x_{min}	40.7	41.1

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

mK Millikelvin
m² square meter
W Watt

Thermal resistance r

r	Sample 1	
	right side	**reverse side**
$\overline{x}$	29.3	29.1
x_{max}	29.9	29.9
x_{min}	28.3	28.3

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

mW	Milliwatt
s	seconds
K	Kelvin
m^3	cubic meter

c_v	Sample 1	
	right side	**reverse side**
$\overline{x}$	264.1	277.1
x_{max}	288.1	289.5
x_{min}	229.4	265.4

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.

p.p. S. Haase

Dr Klobes
Head of the Testing Centre