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Test report 100/23 Ha 27/03/2023

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

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	Woven fabric Article 10963 Material composition: 100% PES CS

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**
$\bar{x}$	39.9	36.5
x_{max}	42.8	37.2
x_{min}	37.6	35.1

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**
$\overline{x}$	28.4	31.3
x_{max}	29.9	32.2
x_{min}	26.4	30.8

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**
$\overline{x}$	258.9	216.6
x_{max}	291.1	227.4
x_{min}	238.7	198.6

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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p.p. S. Haase

Dr Klobes
Head of the Testing Centre