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Test report 43/3/23 Ha 13/02/2023

Customer: Ms. Oda Nimmer
Assignment from: 03/02.2023
Received: 06/02/2023

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 1309 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: 07/02/2023 – 10/02/2023

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
$\bar{x}$	50.4	50.1
x_{max}	50.9	50.9
x_{min}	49.2	49.3

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
$\overline{x}$	20.2	20.5
x_{max}	20.8	20.8
x_{min}	19.7	20.2

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
$\overline{x}$	337.0	606.8
x_{max}	353.1	645.2
x_{min}	314.7	577.1

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