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## TEST REPORT 365/21

Ha 07/07/2021

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Customer: Ms Oda Nimmer  
Assignment from: 02/07/2021  
Received: 06/07/2021

Assignment: 1. Determination of specific thermal conductivity  $\lambda$ , temperature difference 10 K, contact pressure of the plunger 10 cN/cm<sup>2</sup>, 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/cm<sup>2</sup>, 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/cm<sup>2</sup>, Alambeta method, n = 5, right side and reverse side

Samples: 1 piece of woven fabric, article 1043  
100 % PES FR

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 $\lambda$

$\lambda$  = Quantity of heat, which is passing a material with 1 m<sup>2</sup> surface and 1 m thickness per second, if there is a temperature difference of 1K between both sides.

$\lambda$ in	mW	mW	Milliwatt
	-----	m	meter
	m	K	Kelvin

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	<b>right side</b>	<b>reverse side</b>
$\bar{x}_1$	41.7	39.2
$x_{\max}$	44.1	39.9
$x_{\min}$	38.1	37.9

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 m<sup>2</sup> and a given thickness, if a heat flux of 1 Watt is passing through.

$$r \text{ in } \frac{\text{mK m}^2}{\text{W}} \quad \begin{array}{ll} \text{mK} & \text{Millikelvin} \\ \text{m}^2 & \text{square meter} \\ \text{W} & \text{Watt} \end{array}$$

	<b>right side</b>	<b>reverse side</b>
$\bar{x}_1$	33.1	35.6
$x_{\max}$	36.1	36.1
$x_{\min}$	31.7	34.9

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

$$c_v \text{ in } \frac{\text{mW s}}{\text{K m}^3 10^3} \quad \begin{array}{ll} \text{mW} & \text{Milliwatt} \\ \text{s} & \text{seconds} \\ \text{K} & \text{Kelvin} \\ \text{m}^3 & \text{cubic meter} \end{array}$$

	<b>right side</b>	<b>reverse side</b>
$\bar{x}_1$	196.8	168.1
$x_{\max}$	229.8	182.0
$x_{\min}$	160.1	159.2

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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i.V. Klobes

Dr. Klobes  
Head of the Testing Centre