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**Test report 387/4/22** 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<br>contact pressure of the plunger 10 cN/cm²<br>Number of test specimen: 5 |
| 2. | thermal resistance r | Alambeta method |
| | | Temperature difference 10 K<br>contact pressure of the plunger 10 cN/cm²<br>Number of test specimen: 5 |
| 3. | specific heat capacity $c_v$ | Alambeta method |
| | | Temperature difference 10 K<br>contact pressure of the plunger 10 cN/cm²<br>Number of test specimen: 5 |

Samples:

| Coding for test | Identification by customer |
|---|---|
| Sample 1 | knitted fabric<br>Penthouse FR<br>Article 10-10911-454<br>Order No.: 5197413<br>Piece No.: ZS325270 |

<u>Sampling:</u> The samples were taken by the customer.

<u>Realisation of the test:</u> The measurement samples were taken und tested in compliance with the above-mentioned regulations.

<u>Testing period:</u> 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.

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

mW Milliwatt
m meter
K Kelvin

| | right side | reverse side |
|---|---|---|
| $\overline{x}$ | 42.5 | 47.4 |
| $x_{max}$ | 43.5 | 48.9 |
| $x_{min}$ | 41.3 | 44.0 |

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.

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

mK Millikelvin
m² square meter
W Watt

| | right side | reverse side |
|---|---|---|
| $\overline{x}$ | 27.2 | 27.0 |
| $x_{max}$ | 27.9 | 27.5 |
| $x_{min}$ | 26.8 | 26.1 |

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

| | |
|---|---|
| mW | Milliwatt |
| s | seconds |
| K | Kelvin |
| $m^3$ | cubic meter |

| | **right side** | **reverse side** |
|---|---|---|
| $\bar{x}$ | 138.8 | 296.1 |
| $x_{max}$ | 160.6 | 293.4 |
| $x_{min}$ | 131.3 | 269.0 |

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

The testing results are exclusively related to the samples under conditions as received.

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i.V. S. Haase

Dr Klobes
Head of the Testing Centre