Akkreditierte Prüfstelle – TITV e. V. • Zeulenrodaer Str. 42 • 07973 Greiz

ADO Goldkante GmbH & Co. KG
Zimmersmühlenweg 14-18
61440 Oberursel / Taunus

Textilforschungsinstitut
Thüringen-Vogtland e. V.
Akkreditierte Prüfstelle

Zeulenrodaer Str. 42
07973 Greiz - Germany

TEST REPORT 365/21 Ha 07/07/2021

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

Assignment:
1. Determination of specific thermal conductivity λ, temperature difference 10 K, contact pressure of the plunger 10 cN/cm², 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/cm², 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/cm², 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 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
$\bar{x}_1$	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 m² and a given thickness, if a heat flux of 1 Watt is passing through.

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

mK	Millikelvin
m^2	square meter
W	Watt

	right side	reverse side
$\bar{x}_1$	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 in $\frac{mW\ s}{K\ m^3} 10^3$

mW	Milliwatt
s	seconds
K	Kelvin
m^3	cubic meter

	right side	reverse side
$\bar{x}_1$	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. Haase

Dr. Klobes
Head of the Testing Centre