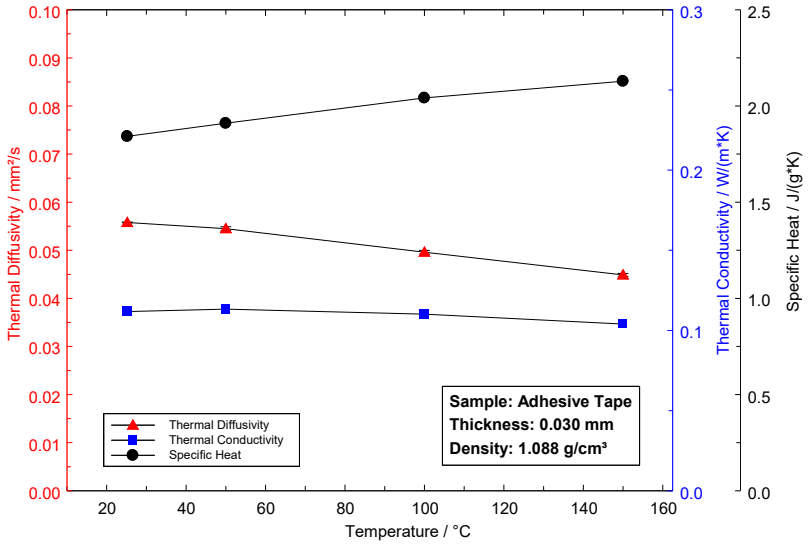
APPLICATION**SHEET**

Polymers · Adhesives
LFA 447 *NanoFlash*™

Thin Samples – Adhesive Type

Introduction

Optimization of manufacturing processes and specifying the future application of products requires knowledge of the thermophysical properties. In this application sheet, the measurement of the thermal diffusivity of a thin adhesive tape is described and the results are presented. For LFA measurements, a homogeneous sample surface is necessary. It must be ensured that the flash lamp energy will be absorbed on the front side of the film sample. An optical tightness can be realized using a sputtering device (e.g., gold sputtering). The thin gold coating will not influence the heat transfer significantly due to the relatively high thermal conductivity of gold and the thin thickness of the gold layer (approx. 5 µm). In order to increase the absorption and emissivity of the sample´s front and back surface, additional graphite coatings were used (graphite spray).



Test Conditions

Temperature range:	RT ...150°C
Sample holder:	12.7 mm diameter
Sample thickness:	0.030 mm
Sample surface preparation:	Gold / graphite
c_p from DSC, standard:	Sapphire

Test Results

The results show a decreasing thermal diffusivity with increasing temperature. The level of the values, however, is lower in comparison with literature values of the base material. This is typical for thin films due to the increased influence of the surfaces with structural defects (surface roughness). Furthermore, the additional adhesive layer leads to an increasing thermal resistance (e.g., contact resistance). The specific heat was measured using a DSC. The example clearly demonstrates that also thin films with a high level of transparency can be analyzed with the LFA 447 without any problems.

NGB · Application Sheet 012 · E · 0621 · Technical specifications are subject to change.

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