

# APPLICATION NOTE

## Elastomers – LFA 467 HyperFlash®

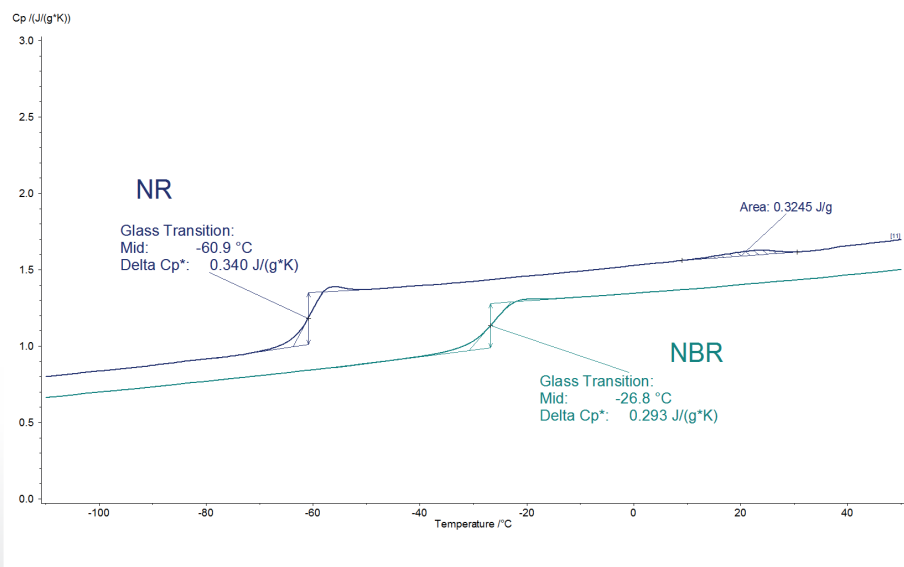
### Measurement of the Thermal Conductivity of Elastomers by Means of the LFA 467 HyperFlash®

Fabia Beckstein and Dr. Stefan Schmolzer

For elastomers, it is often the case that information is needed about the thermophysical properties below room temperature. The LFA 467 HyperFlash® can cover a temperature range of -100°C to 500°C with only one furnace.

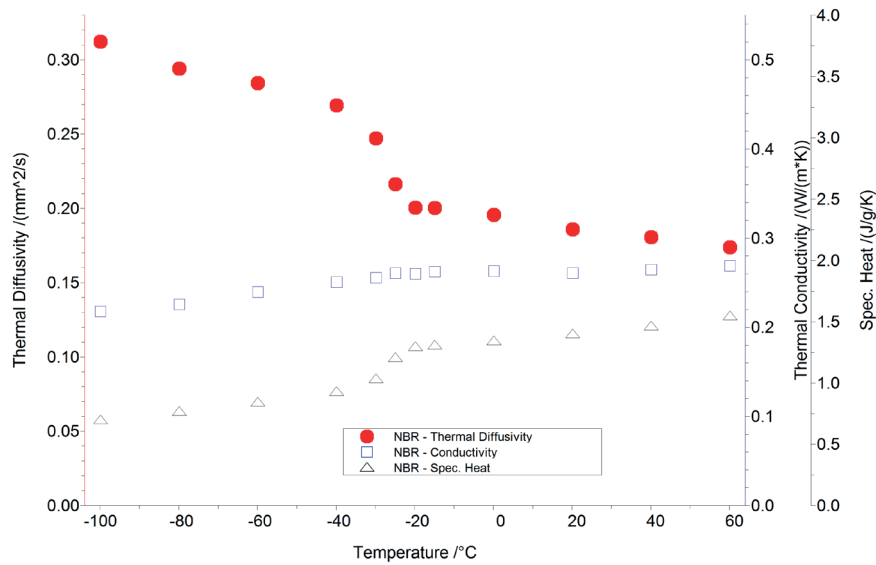
The following measurements show the thermal conductivity of two elastomers (NBR and NR) which were investigated between -100°C and 60°C. For measurements in the low-temperature range ( $T < 0^\circ\text{C}$ ), the MCT detector (mercury-cadmium-telluride) and the CC300 cooling system are needed; however, no modifications to the furnace are necessary. The specific heat capacity was determined by means of the DSC 204 F1 Phoenix®.

Figure 1 shows the specific heat capacity of both samples. Typical for elastomers, the glass transition was below RT (NR = -60.9°C; NBR = -26.8°C). The thermophysical properties of the elastomers are depicted in figures 2 and 3. The glass transition can be identified by means of the decrease in thermal diffusivity. The thermal conductivity, on the other hand, increases with increasing temperature almost linearly and exhibits no significant step.

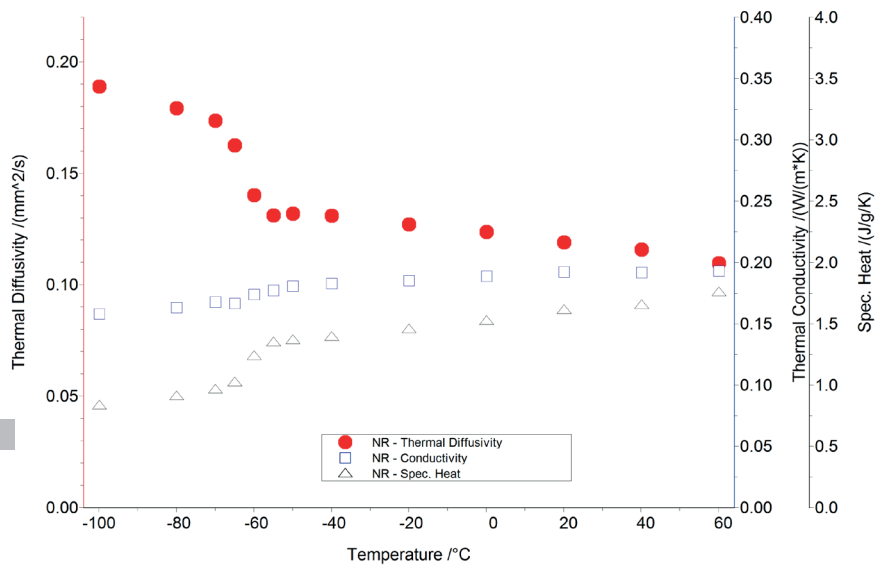


1 Specific heat capacity of NR and NBR

**APPLICATION NOTE** Measurement of the Thermal Conductivity of Elastomers by Means of the LFA 467 HyperFlash®



**2** Thermophysical properties of NBR



**3** Thermophysical properties of NR