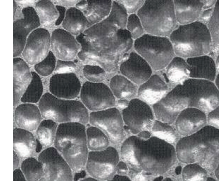


APPLICATION SHEET

Metals · Automotive
LFA 447 NanoFlash®

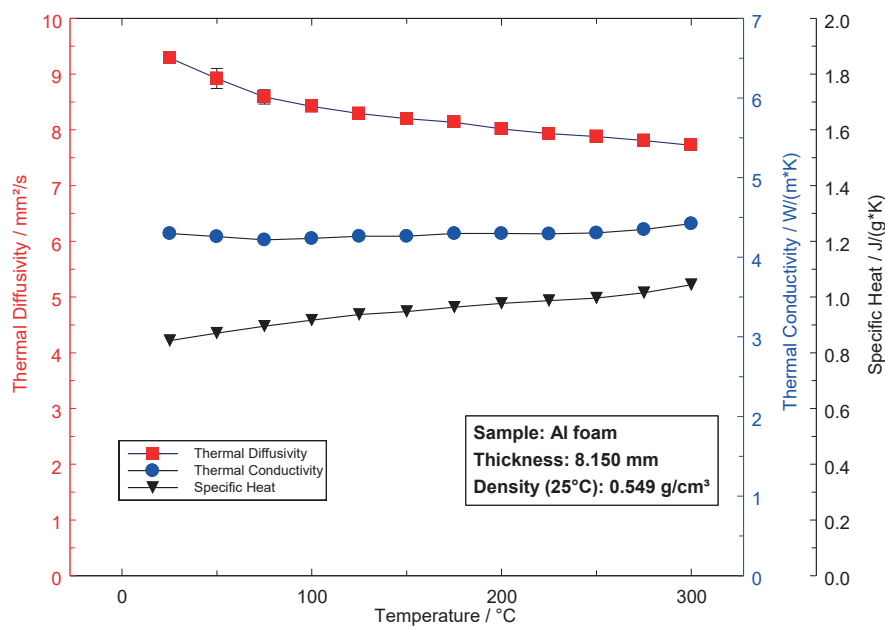
Al Foam (Closed Cell)



Introduction

Closed-cell metal foams have been developed since about 20 years, and are commonly made by injecting a gas or foaming agent into a molten metal. Closed-cell metal foams are primarily used as impact-absorbing material. For optimization of the manufacturing process and/or for the later application (e.g., car manufacturing), the mechanical and thermophysical properties are important.

Presented in this application sheet is an example for measurements of the thermophysical properties on an aluminum foam. For LFA measurements, a homogeneous sample surface is necessary. Therefore, the porous surface structure was closed using a special SiC paste. Concerning the heat transfer through the sample, no significant influence of the additional SiC material was expected due to the fact that only the free space within the surface structure was filled.



Test Conditions

Temperature range:	RT ... 300°C
Sample holder:	25.4 mm diameter
Sample thickness:	8.150 mm
Sample surface preparation:	SiC/graphite
c_p from LFA (base material)	
w/o porosities) standard:	Pure aluminum

Test Results

The thermal diffusivity decreases with increasing temperature. The specific heat increases over the entire temperature range as expected from the Debye theory. However, the thermal conductivity shows only slight changes up to 300°C. This example clearly demonstrates that the LFA 447 can analyze metal foams without any problems.