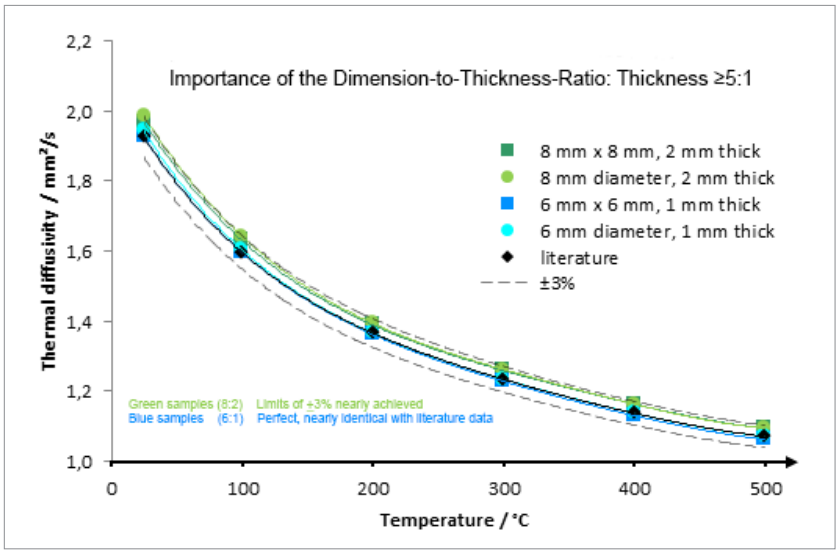
APPLICATION**SHEET**

Sample Dimension-to-Thickness-Ratio – LFA 467 *HyperFlash*

Importance of the Sample Geometry for LFA Measurements

For solid samples, LFA sample carriers are available in different sizes and geometries. The maximum sample thickness depends on the thermal diffusivity/conductivity of the material to be tested. In general, the sample thickness is recommended to be 6 mm at most. However, the sample dimension-to-thickness-ratio is decisive for precise measurement results. The following tests should demonstrate the influence of this ratio on the LFA results and present a guideline for the user.



In this example, four Pyroceram 9606 samples were used with different geometries:

Square area/diameter	Thickness
8 mm x 8 mm	2 mm
8 mm	2 mm
6 mm x 6 mm	1 mm
6 mm	1 mm

The LFA 467 *HyperFlash* was used with the *ZoomOptics* set to 70%.

The graph exhibits the measured thermal diffusivity compared to the literature values between room temperature and 500°C. The 3%-curve (gray, dashed) represents the deviation from literature values. It can be clearly observed that all measurement points are within the limits of ±3% indicating the high precision of the LFA 467 *HyperFlash*. However, it can also be seen that the test results of the large samples (green) are close to the literature deviation lines (gray) whereas the results of the small samples (blue) are nearly identical to the literature values (black). This clearly demonstrates that the precision is not only depending, as assumed, on the sample dimension but is mainly influenced by the dimension-to-thickness-ratio.

These tests prove that LFA measurements should be carried out on samples with a dimension-to-thickness ratio of ≥5:1. If this ratio is considered, the influence of the sample dimension on the results is insignificant.

NGB · AS-245-2013 · EN · 11/13 · Technical specifications are subject to change.

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