

Measurement of Thermal Conductivity of Film Steady State Heat Flow Meter Method

Summary

The thermal conductivity measurement technique using the steady state heat flow meter method, unlike unsteady methods (the laser flash method and the periodic heating method), makes the measurement of thermal conductivity possible even if the specific heat and density of the sample is unknown.

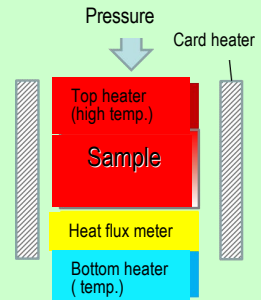
$$\text{Thermal conductivity } (\lambda) = 1/\text{thermal resistance } (R) \times \text{sample thickness } (d)$$

If a sample is approximately 100 μm or more in thickness, it can be measured as it is without putting it over another sample. Furthermore, it is also possible to estimate the contact thermal resistance of a number of film samples by making measurement with the samples put on top of one another.

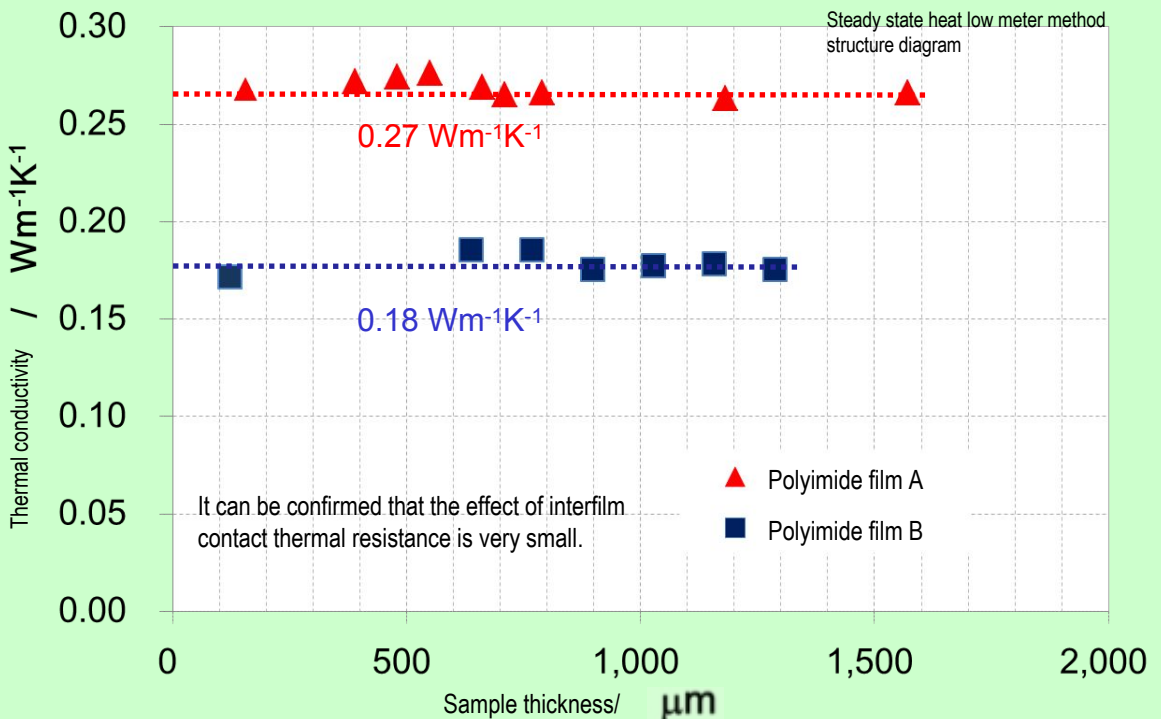
* The sample thickness that can be measured depends on the thermal resistance of the sample.

Actual results of measurement

- Electrode film for fuel cells (metal/resin laminates)
- Metallized foam film
- Adhesive film
- Many other materials including multi-layer and ununiform materials



Example of measurement: Polyimide film put over one another



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