

Technical Report**Design, Construction, and Performance Analysis of a Wood Thermal Conductivity Measurement Device using Flat Plate Heat Pipes****Seyed Moein Rassoulinejad Mousavi<sup>\*1</sup>, Mohammad Layeghi<sup>2</sup>, Saber Lotfi<sup>3</sup>****Abstract**

In this paper, the design, construction, and performance analysis of a wood thermal conductivity measurement device using flat plate heat pipes has been experimentally studied. The device was designed to measure the thermal conductivity of wood in various ranges of temperature. Thermal conductivity of hornbeam (*Carpinus betulus*) has been measured at various temperatures between 40-80 °C and a relationship has been recommended for the sample. The results show that the thermal conductivity of this species increases linearly with temperature. Also, it has been concluded that flat plate heat pipes distribute heat flux on the surface of the wood uniformly leading to a faster steady state condition, which can reduce time of the test and result in energy saving and more accurate results.

**Key words:** Design and Construction, Thermal Conductivity Measurement Device, Flat Plate Heat Pipe, Fourier's Law, Wood

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