

An Approach for Thermal Resistance Prediction of Plain Socks in Wet State

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Abstract : Socks comfort has great significance in our daily life. This significance even increased when we have undergone a work of low or high activity. It causes the sweating of our body with different rates. In this study, plain socks with differential fibre composition were wetted to saturated level. Then after successive intervals of conditioning, these socks are characterized by thermal resistance in dry and wet states. Theoretical thermal resistance is predicted by using combined filling coefficients and thermal conductivity of wet polymers instead of dry polymer (fibre) in different models. By this modification, different mathematical models could predict thermal resistance at different moisture levels. Furthermore, predicted thermal resistance by different models has reasonable correlation range between (0.84 -0.98) with experimental results in both dry (lab conditions moisture) and wet states. "This work is supported by Technical University of Liberec under SGC-2019. Project number is 21314".

Keywords : thermal resistance, mathematical model, plain socks, moisture loss rate

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