

Modelling of Hydric Behaviour of Textiles

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Abstract : The goal of this study is to analyze the hydric behaviour of textiles which can impact significantly the comfort of the wearer. Indeed, fabrics can be adapted for different climate if hydric and thermal behaviors are known. In this study, fabrics are only submitted to hydric variations. Sorption and desorption isotherms obtained from the dynamic vapour sorption apparatus (DVS) are fitted with the parallel exponential kinetics (PEK), the Hailwood-Horrobin (HH) and the Brunauer-Emmett-Teller (BET) models. One of the major finding is the relationship existing between PEK and HH models. During slow and fast processes, the sorption of water molecules on the polymer can be in monolayer and multilayer form. According to the BET model, moisture regain, a physical property of textiles, show a linear correlation with the total amount of water taken in monolayer. This study provides potential information of the end uses of these fabrics according to the selected activity level.

Keywords : comfort, hydric properties, modelling, underwears

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