

The Effect of Nanofiber Web on Thermal Conductivity, Air and Water Vapor Permeability

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Abstract : In this study, composite fabrics with polyacrylonitrile electrospun nanofiber deposited onto quilted polyester fabric have been produced in order to control the isolation properties such as water vapor permeability, air permeability and thermal conductivity. Different nanofiber webs were manufactured by changing polymer concentration from 10% to 16% and by changing the deposition time from 1 to 3 hours. Presence of nanofiber layer on the quilted fabric results to an increase of an isolation, i.e., a decrease of the moisture vapor transport rates at 20%, decrease of thermal conductivity at 15% and a decrease of air permeability values at 50%.

Keywords : nanofiber/fabric composites, electrospinning, isolation, thermal conductivity, moisture vapor transport, air permeability

Conference Title : ICTE 2016 : International Conference on Textile Engineering

Conference Location : Sydney, Australia

Conference Dates : December 15-16, 2016