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 Author:  [ADVANCED](#) | Volume  Page   
 Keyword:   |   

[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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## Vapor Transport Properties of Polyurethane Coated Nylon Fabrics

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**Abstract:** Water transporting properties of waterproof/moisture-permeable nylon fabrics were studied by analyzing the structure of cross-section of fabrics. Samples of nylon fabrics were prepared by two-steps of processing, i.e., casting of the polyester-type polyurethane by wet-coagulation process and the after-treatment of hydrophilic/hydrophobic agents on the surface of polyurethane layer which exists in the inner side of clothes when wearing.

The fabrics consist of three layers: (1) Inner surface which comes into contact with wearer's skin has micro-networks formed by using hydrophilic soil release agents or hydrophobic water repellent agents. (2) Intermediate porous layer is the polyurethane one useful for moisture transportation. (3) Outer surface is composed of hydrophobic nylon fabric combined with water repellent treatment.

The results obtained from the research are as follows: Dew condensation and water-vapor resistance, which have a correlation with water transporting properties, decreased with forming hydrophobic micro-networks on the inner surface. This fact suggests possibility of developing more comfortable fabrics suitable for sports-wear, etc.. Furthermore, dew condensation had a relation with water-vapor resistance in the water transport evaluation.

**Key Words:** [Dew condensation](#), [Moisture permeability](#), [Polyurethane](#), [Coated fabric](#), [Water-vapor resistance](#)

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