



EFFECTS OF FABRIC SOFTENER AND MOISTURE ON FABRIC HANDLE

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Softeners affect fabric handle due to the effect of chemicals on the fiber/fabric properties. Changes of the microclimate humidity can also alter fabric handle-related physical characteristics. The handle forces of plain weave fabrics (100% cotton, 100% nylon, and 100% polyester) untreated and treated with a commercial fabric softening agent were evaluated using a simple fabric extraction method. Two different humidity conditions, i.e., standard testing conditions and a high humidity condition, were used. The extraction measurement was used for the study because withdrawing a circular fabric specimen through a highly polished metal nozzle is similar to a complex deformation process when human hands touch and manipulate fabrics.

Analysis of Variance (ANOVA) results revealed that both softener treatment and humidity had significant effects on fabric handle forces. The softener caused a decrease in fabric handle forces of the cotton fabrics, but handle values were increased with synthetic fabrics, especially those with filament yarns. The higher humidity tended to reduce the handle forces of the fabrics. This decrease in the handle values for fabrics with higher moisture content was due to the increases in the flexibility resulting from the relaxation of the fibers. Analysis of the relationship of fabric handle measured by the extraction method with selected physical properties showed that weight, thickness, stiffness, and frictional resistance correlate positively with handle forces. The regression model established for the group of fabrics similar in weight and thickness demonstrated that among selected physical properties, fabric thickness, weight, and drapeability were the most important parameters in predicting fabric handle forces measured by the extraction method.