

Improved Dyeability of DP Finished Cotton by Chitosan

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The use of chitosan has been attempted to improve dyeability of DP finished cotton fabric. Depolymerization of chitosan was performed to obtain five samples of different molecular weight by using various amount of sodium nitrite. Dimethyloldihydroxyethylene urea (DMDHEU) was used as a DP finishing agent, and fabric was treated in a single step. The samples padded with mixtures of chitosan, DMDHEU, catalyst, and wetting agent were dried at 110 °C for 3 min and cured at 150 °C for 5 min. Performance properties including dyeability, wrinkle recovery angle and physical properties were evaluated. Dyeability of chitosan/DMDHEU was also investigated by using three direct dyes, three acid dyes and two reactive dyes and compared to those of chitosan treated, DMDHEU treated and untreated samples.

The results showed that chitosan only and chitosan/DMDHEU treated samples show higher dye sorption of direct and acid dyes than untreated and DMDHEU treated samples. The higher molecular weight of chitosan, the higher dye sorption we obtained. Chitosan/DMDHEU treated samples did not show any affinity for reactive dyes in alkaline conditions but showed affinity in neutral or acidic conditions.