Abstract of Ph D Thesis

Conventionally decorative quality jute furnishing fabrics are dyed and then chemically finished as per functional requirement by two step sequential process. The present thesis constitutes the following three major part of research work related to development of simultaneous dyeing and finishing of jute fabric

In the first part of the study an attempt has been made to develop concurrent dyeing and fire-retardant finishing process by pad-dry-cure method. H2O2 bleached jute fabric has been dyed with selective acid dyes (1%) and chemically finished with different concentrations of Ortho-Phosphoric Acid, Ammonium sulphamate and Di-ammonium phosphate for fire retardant finish. DSC, TGA, SEM analysis and important textile related properties and colour yield have also been evaluated. Concurrent pad-dye-cure process shows an improvement in the surface colour strength and at par fire retardant performance compared to that of bleached jute fabric when separately dyed with acid dye and subsequently finished with the same fire retardant agent.

In the second part of the study, an attempt has been made to develop concurrent dyeing and anti microbial finishing process by pad-dry-cure method with selective acid dye (1%) and different concentrations of Citric Acid and Polyethylene Glycol in presence of Sodium hypophosphite monohydrate. Jute fabric cross linked with CA alone also showed good crease and rot resistance properties, but, CA/PEG 400 combined treatment imparted somewhat increased functional properties considering enhancement in anti-microbial and crease resistance property and colour strength, which was also supported by FTIR, AATCC 100 and soil burial test.

In third part of this study, an attempt has been made to develop concurrent dyeing and aroma finishing process in one step by pad-dry-cure method, with selective acid dye (1%) and rose oil microencapsulated in beta-cyclodextrin(along with CA), DMDHEU and Dextrin. Finally it was found that, among all formulations rose oil microencapsulated in beta-cyclodextrin shows good fragrance retention property (40% after storing of 100 days) and good colour value which is also supported by chromatographic studies.

This single bath technique thus offers advantages of reduction in processing cost, saving in energy and reduction in time of treatments as well as better colour value and good Fire retardant/crease and anti microbial/ aroma finishing property.