



EFFECT OF DYEING METHODS ON MECHANICAL PROPERTIES OF SILK FABRICS

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ABSTRACT

The effect of dye-fibre interaction in respect of acid, metal complex and reactive dyes on the mechanical properties of the degummed silk material was studied in detail. For this, the mulberry bivoltine raw silk fabric was woven and subjected to optimum degumming process. The degummed silk fabric was then dyed using acid, metal complex and reactive dyes in three different concentrations viz., 0.3, 1 and 3 %. Simultaneously, control samples were treated under conditions identical to those of dyeing except that the dye was omitted (blank) for comparison to study the dye - fibre interaction in respect of all three different processes of dyeing. The effect of reaction of different types of dye molecules with silk fibre in the dye bath, salt concentration, fixing agent and combination of all these factors on their mechanical properties was studied. Finally, the dyed and control samples were conditioned and analysed for mechanical properties. The test results were compared and analysed statistically. It was found that reactive colour dyed silk fabrics exhibited a substantial difference between warp and weft in tensile strength and also the lowest flexural rigidity and higher drape values implying that the drape is poor compared to either acid or metal complex dyed samples.

Key words: Bivoltine silk fabric, dye-fibre interaction, flexural rigidity, mechanical properties, tensile properties.