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Study of Color Fastness Properties onto Bleached Sulfonated Jute-cotton Blended Fabrics with Basic Dyes

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ABSTRACT

Raw jute fiber has been sulfonated with sodium sulfite in presence of ethylinediamine (EDA) and blended with 40% cotton for production of fine yarn and fabric. Bleached raw jute fiber, bleached sulfonated jute fiber, bleached sulfonated jute-cotton blended fabric and bleached cotton fabric has been dyed with basic dyes (e.g. Crystal Violet, Chrysodine Y, Auramine O and Magenta). The light and wash fastness of the dyed sample has been studied. Bleached sulfonated jute fiber and bleached sulfonated jute-cotton blended fabric showed much better wash fastness, less staining and resistance to photo fading than that of bleached raw jute fiber, and it was almost as same as bleached cotton fabric. Magenta dye showed better light and wash fastness than other dyes. On exposure to UV, light loss in breaking strength of bleached sulfonated jute-cotton blended fabrics with Magenta is minimum in comparison with other dyes.

Keywords: Sulfonation, jute, jute-cotton blended, color fastness and breaking strength.

Introduction

Basic dyes are available as cheap synthetic dyes amongst the commercial dye range. They are still the brightest and the most brilliant in hue of the synthetic dyes (Basic Dyestuffs, 1951). They have no direct affinity for cellulose. But jute fiber possesses good affinity for basic dyes due to the presence of lignin (12%) and hemicellulose containing peripheral–COOH in the fiber and requires no mordanting prior to dyeing. Their tinctorial power is very high. But from the practice, it has been observed that they possess very poor light fastness on jute. Some investigators (Carpmaels, 1942; Carpmaels, 1928) were able to improve the light fastness of cellulose dyeing by forming lake with basic dyes. But they are of very limited use. The fastness to light of lakes produced with acid dyestuffs was improved which contain both sulpho groups and amino groups or with basic dyes by the use of phospho-tungsto-molybdenum compounds. In the study of the physical state of dyes upon their light fastness, some investigators (Richards, 1936) also worked with basic dyes and two lakes, one from an exact precipitation with phospho-tungstic acid and the other one from a precipitation with phospho-molybdic acid in order to make cellulosic dyed material photostable. A formulation was invented for simultaneous dyeing and cross-