Research Paper | Asian Journal of Home Science | December, 2011 | Volume 6 Issue 2 :124-126

Effect of starches and PVA binder on tear strength of bleached cotton material

K. BHAVANI

Author for correspondence:
K. BHAVANI
Krishi Vigyan Kendra
BIDAR (KARNATAKA)
INDIA
bhavanikammar@gmail.com

ABSTRACT

Tearing strength is one of the most important properties of fabric and while assessing the fabric quality, emphasis should be laid on this property as it directly affects the serviceability of a fabric. Results of the study indicated that, as the concentration of PVA was increased, there was moderate increase in fabric weight and thickness. Tear strength was higher for 1.5 per cent PVA treated samples. There was decrease in tear strength values as the percentage concentration of PVA increased.

KEY WORDS : Starch, PVA binder, Tear strength, Concentration

How to cite this paper: Bhavani, K. (2011). Effect of starches and PVA binder on tear strength of bleached cotton material. *Asian J. Home Sci.,* **6** (2) : 124-126.

Article chronicle: Received: *29.04.2011*; **Revised:** *06.08.2011*; **Accepted:** *10.10.2011*

A number of finishing agents used in various processes to which grey, bleached, dyed and /printed fabrics are subjected to get a variety of useful effects suiting different end uses. These chemicals are applied onto or deposited in the textile materials and retained there either by mechanical deposition or held therein by physical forces or chemical reaction thereby having durability to various degrees to the after treatments involving washing, dry cleaning, exposure to sunlight, perspiration, heat etc. Such finishing chemical and stiffening agents are starch and PVA binders which produce full and stiff finish on textile materials. Acrylics can impart desirable modification and still not change the appearance of the fabric because of their transparency. Flimsy fabric can be given a firm full hand and a heavy body by their use, weak weaves can be increased in tensile strength and made to hold their shape with acrylate treatment.

Tear strength is the work done in tearing the test samples through a fixed distance. The tearing strength is one of the most important properties of fabric and while assessing the fabric quality emphasis should be laid on this property as it directly affects the serviceability of a fabric. Tear strength is highly sensitive to slight variations in fabric construction and finishing. Hence, the study on effect of starches and PVA binder on tear strength of bleached cotton material was taken up.

RESEARCH METHODS

Bleached white cotton material was selected for the study. Sizing agents arrowroot powder, sago, commercial starch revive were selected for the study. Fabric samples were cut into 40 x 40 cms and were starched using arrowroot powder, sago, sago combined with arrowroot (50: 50), and commercial starch revive (Dantayagi). The fabric was treated with 1, 2, 3, 4 and 5 per cent concentrations using hot and cold processes. To treat the fabric with PVA solution, 1.5 to 4.5 per cent concentrations were prepared and fabric was treated and further tested.

Preparation of fabric samples for testing:

After starching, the fabric samples were cut the warp and the weft way to the test specimen of the required size with the help of template from different portions of the sample under the test. Prior to testing, the specimens were conditioned to moisture equilibrium and tested in standard atmospheric conditions of 65 ± 2 per cent relative humidity and 27 ± 2º temperature in conditioning cabinet. Then the preconditioned samples were tested for tear strength. The PVA treated fabric was tested for weight, thickness, crease recovery, bending length and tear strength.

Statistical analysis:

Percentages and ANOVA tests were used for statistically analyzing the data.

RESEARCH FINDINGS AND DISCUSSION

The effect of sizing agents on cloth tear strength using cold method of starching is presented in Table 1. Results revealed that warp tearing strength of fabric samples starched with revive and sago was higher when compared to sago + arrowroot and arrowroot starched samples. The tearing strength of sago starched fabric samples was more compared to revive in weft direction for all different size concentrations. Weft tearing strength was same for arrowroot and Sago + Arrowroot starched