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Analysis of Wrinkle Recovery and Stiffness Properties of Fabrics Treated with Homemade Substances

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Structured Abstract

Background: Fabric wrinkling has always been a problem with fabric performance and appearance. Traditionally, this issue has been addressed through chemical treatments, frequently containing formaldehyde, which can be harmful to health and the environment. This study explores alternative wrinkle-resistant treatments utilizing homemade materials such as vinegar and fabric softener. It evaluates the impact of these natural treatments on wrinkle recovery angle, stiffness, and physical properties, including weight, thickness, and density, on cotton, polycotton, and polyester fabrics.

Methods: Using common textile tools and procedures, the process involves careful experimental testing. Three different fabrics were used such as cotton, polyester, and polycotton. The samples are then cut into 8-inch x 8-inch, which made 51 samples in total. The, it will be immersed and air-dried for 24 hours. This was used to determined how each solution affects fabric behaviour, samples that have been treated and untreated are prepared and evaluated using five different ratios of vinegar, softener, and water. Descriptive and statistical analysis are carried out to confirm findings and identify performance correlations.

Results: Results should show how physical properties relate with wrinkle resistance. The study found that vinegar and softener solutions changed the fabric properties. Vinegar-rich solution made the fabric stiffer while softener-rich solutions reduce the recovery angle. Correlation results showed that fabric properties such as weight and thickness associate to stiffness and wrinkle recovery angle, with strong correlation in high ratios and weaker correlation in balanced ratios.

Conclusion: In conclusion, it was proved that vinegar and softener solutions can alter fabrics behavior and performance. The correlations between physical properties such as weight and thickness with stiffness and wrinkle recovery angle confirm that fabric behavior can be predicted through physical properties. Ultimately, this research promotes for cost-effective, environmentally friendly innovations in textile finishing. It supports the shift towards non-toxic, homemade solutions that reduce the dependance on chemical treatments by providing experimental evidence of the efficacy of these alternatives.

Keywords: Wrinkle, Stiffness, Softener, Vinegar.

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