

Eco-Friendly Softener Extracted from Ricinus communis (Castor) Seeds for Organic Cotton Fabric

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Abstract : The processing of textiles to achieve a desired handle is a crucial aspect of finishing technology. Softeners can enhance the properties of textiles, such as softness, smoothness, elasticity, hydrophilicity, antistatic properties, and soil release properties, depending on the chemical nature used. However, human skin is sensitive to rough textiles, making softeners increasingly important. Although synthetic softeners are available, they are often expensive and can cause allergic reactions on human skin. This paper aims to extract a natural softener from Ricinus communis and produce an eco-friendly and user-friendly alternative due to its 100% herbal and organic nature. Crushed Ricinus communis seeds were soaked in a mechanical oil extractor for one hour with a 100g cotton fabric sample. The defatted cake or residue obtained after the extraction of oil from the seeds, also known as Ricinus communis meal, was obtained by filtering the raffinate and then dried at 103°C for four hours before being stored under laboratory conditions for the softening process. The softener was applied directly to 100% cotton fabric using the padding process, and the fabric was tested for stiffness, crease recovery, and drape ability. The effect of different concentrations of finishing agents on fabric stiffness, crease recovery, and drape ability was also analyzed. The results showed that the change in fabric softness depends on the concentration of the finish used. As the concentration of the finish was increased, there was a decrease in bending length and drape coefficient. Fabrics with a high concentration of softener showed a maximum decrease in drape coefficient and stiffness, comparable to commercial softeners such as silicon. The highest decrease in drape coefficient was found to be comparable with commercial softeners, silicon. Maximum increases in crease recovery were seen in fabrics treated with Ricinus communis softener at a concentration of 30gpl. From the results, the extracted softener proved to be effective in the treatment of 100% cotton fabric

Keywords : ricinus communis, crease recovery, drapability, softeners, stiffness

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