

Abstract

Wrinkling effect in cellulose fiber-made fabrics has a major setback for their use as apparels necessitating the use of crease resistance finish. For a while, formaldehyde-based-finished dimethyl dihydroxy ethylene urea has been used as crease resistance finish. DMDHEU finished fabric will releases formaldehyde during its application, that affects both user's health and the environment. This research optimized citric acid (CA) and silk fibroin solution as a crease resistance finishing agent. CA was identified as a non-formaldehyde-based cross-linking agent but causes yellowing in cotton fabrics. To steer clear of this, silk fibroin solution was added with CA to increase the crease resistant in avoiding yellowing of the fabric caused by CA. The optimum combination of the processing parameters obtained was 6% silk fibroin solution, 30 g/L of CA, and 6% sodium dihydrogen phosphate, at a finishing bath at pH of 5.5 with curing temperature of 150°C. These optimized finishing parameters achieved a dry crease recovery angle of 252° while obtaining an 84% tensile strength retention, 96% tearing strength retention, and 75 WI (93%) whiteness index.