

Abstract

In recent years, silicone water repellents have been used extensively in coating technical textiles. Canvas is one of the technical textiles made from different natural and synthetic blended fibers and is used for technical applications such as sails, tents, marquees, and Auto rickshaw covers. Even with Ethiopia's regional cities having an average of 5500 Auto rickshaws, all textile materials such as top cover fabrics, interior fabrics, side fabrics, door fabrics, and seat fabrics are imported. This research work aims to develop silicone-based finished waterproof polyester/cotton canvas for auto rickshaw side fabrics. 100% cotton and the different blended ratio of polyester/cotton canvas fabrics were produced with constant fabric parameters and finished with silicon-based repellents. The fabrics were characterized by their water repellency, water penetration, bursting strength, tear strength, and tensile strength. The result showed that as the polyester percentage increased, the bursting, tear and tensile strength increased but water penetration reduced while water repellency increased. From the six different types of developed samples, polyester/cotton (50/50) blended fabric had better strength but polyester/cotton (33/67) and polyester/cotton (18/82) had very good water resistance properties, respectively. The statistical analysis showed that the fiber blending ratio had a significant effect on silicon-based finished canvas fabrics' water resistance properties at a P value of 0.002. Polyester/cotton (33/67) silicon finished canvas fabric had the highest waterproof properties and was comparable with existing commercial Auto rickshaws cover fabrics.