

Abstract

There are various factors that influence yarn strength. Yarn breaking is due to fiber breakages and fiber's slippages. In reality, a part of the fibers slip while the other part breaks. In this study, we have shown that fatigue yarn, resulting in a fundamental way impact on the number of breaks on the weaving machine, and sometimes on the physical properties of fabrics. Given the importance of the issue and the very limited directed research number in this direction, a tests series were carried out with the aim to highlight the changes to the physical characteristics of the yarn resulting from mechanical treatment comparable to that which they are subjected on the weaving machine. In the first part of our investigation, the residual deformation, tensile strength, and elongation at break of combed and carded threads were measured. In the second part, the influence of the extensions number, their amplitudes, and frequencies were analyzed. In order to examine the influence of these parameters, carded and combed yarns, with different characteristics were prepared. Therefore, based on the separate treatment results of three test series, it appears that: the warp yarns subjected to repeated extensions undergo the phenomenon of fatigue. Yarns fatigue reduces their elasticity and resistance and it is the cause for break yarn during weaving. The fatigue of wool yarns is very low compared to other textile materials.