

Effect of low-quality and inexpensive cotton materials on yarn properties using rotor spinning system

Haitham Abdel Daim Mahmoud Ahmed

Lecturer-Spinning, Weaving, and knitting Department, Faculty of Applied Arts, Damietta University, Egypt.

Abstract:

The current search aimed to produce medium and coarse yarns using low-quality and inexpensive cotton materials under the rotor spinning at four yarn counts being 10.s, 16.s, 20.s and 24.s with 4.4 twist multiplier. The used cotton materials were the waste from spinning extra long-staple cotton such as combed wastes, Giza 80 lint grade fully good fair, Giza 90 lint grade fully good fair, Giza 80 lint grade good fair, Giza 90 lint grade good fair, imported china variety and carded wastes. The used cotton materials were prepared from the commercial cotton samples of season 2017. The studied yarn mechanical properties were yarn strength, yarn evenness C.V.%, number of neps, number of thin places and number of thick places. However, the average values of five fiber properties being fiber length 2.5 %, short fiber content %, coefficient of variation fiber C.V. %, fiber strength and micronaire reading were measured for all used cotton materials. Results showed significant differences among cotton materials and among yarn counts for all studied yarn properties. The effect of interaction between cotton materials and yarn counts was only significant for yarn strength and yarn evenness C.V. %. Generally, it is obvious that the mean values of yarn strength were in descending order considering cotton materials of combed wastes, Giza 95 lint grade fully good fair, Giza 90 lint grade fully good fair, Giza 95 lint grade good fair, Giza 90 lint grade good fair, china variety and carded wastes, respectively. On the contrary, the mean values of yarn evenness C.V. %, number of neps, number of thin places and number of thin places were in ascending order for the same aforementioned cotton materials. The mean values of yarn strength were gradually decreased when the yarn count was increased while the mean values of yarn evenness C.V. %, number of neps, number of thin places and number of thin places were gradually increased when the yarn count was increased.

Paper History

Paper received

8th August 2019,

Accepted

23th September 2019,

Published

1st of October 2019

Keywords:

Yarn Counts, Rotor Spinning, Yarn Properties, Evenness, Nep

Doi: