

Determination of Egyptian cotton fiber properties of Giza 95 using the standard specifications of temperature and relative humidity according to different standard methods

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Abstract

This study was carried out at Plant Production Department, Faculty of Agriculture (Saba Basha), Alexandria University, Egypt, during 2016/2017 season to compare three different cotton grades with four temperature levels and investigate their effect on HVI fiber properties. Three cotton grades; namely, Good to Fully Good (G/FG), , Good (G) and Fully Good Fair to Good (FGF/G) were used, belonged to one commercial Egyptian long staple cotton variety; namely, Giza 95. Four temperature degrees Celsius were used in this study; i.e., 21 OC, 23 OC, 25 OC and 27 OC. The obtained results indicated that the cotton grade, Good to Fully Good (G/FG) surpassed the other two cotton grades and gave the highest mean values of upper half mean length (U.H.M.), length uniformity index (U.I.), fiber bundle strength, fiber elongation (%), maturity index (%), micronaire reading, HVI color attributes (fiber reflectance degree (Rd %)) were obtained from the highest cotton grade, Good to Fully Good (G/FG). While, the lowest mean values of short fiber index (%), yellowness degree (+b) and trash properties (trash count and trash area (%)) were attained from the same cotton grade. The highest mean value of the fiber bundle strength (%) was reached by the cotton grade, Good to Fully Good (G/FG) of the temperature degree Celsius 27 OC.

Likewise, highly significant differences among the studied temperature degrees Celsius in the fiber mechanical properties (fiber bundle strength and elongation (%)) were found and insignificant effect for the HVI fiber length parameters, ; i.e., upper half mean length (U.H.M.) , length uniformity index (U.I.) and short fiber index(%).

Key words: Cotton grade, Cotton, Giza 95, Temperature, HVI properties

EFFECT OF SPINNING SYSTEMS AND SPINNING PROCESSING ON THE FIBER AND YARN PROPERTIES OF EGYPTIAN COTTON

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Abstract

Yarn characteristics extensively influence by spinning process. The aim of this study is to observe that each processing stage in spun yarn production changes both the single fiber properties and the bundle tensile tested by HVI and AFIS and other quality characteristics and the effect of conventional ring and compact spinning processes, on carded and combed properties of yarn. 100% Giza 86 Egyptian cotton variety was used to produce conventional ring card yarn and card compact yarn. The were settled to fabricate 40 Ne count of yarn respectively both for conventional ring and compact spinning. The positive effect of spinning process on the yarn properties were evaluated by co-efficient of variation (CVm %), imperfection index (IPI), hairiness, tenacity, and elongation (%). The results exposed that yarn qualities of compact spinning were exhibited higher than conventional ring spinning.

Multifunctional Viscose Fabric Through Loading with Organic and Inorganic Nanostructural Materials

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Abstract

The main goal of this research is to produce multifunctional viscose fabric through using nanoparticles materials namely; Nano clay, nano chitosan and nano cellulose. To achieve this target the mentioned nanoparticles were mixed with reactive cyclodextrin (RCD) in presence of sodium carbonate (Na_2CO_3). Viscose Fabric was treated with this solution in one step and/or two steps using pad-dry-cure technique.

Particle size of the nanomaterials along with chemical composition, mechanical properties, physical properties and dyeability of the treated viscose were performed using world class tools and facilities. The FTIR spectra of treated fabrics are also examined to suggest changes in the treated viscose fabrics.

Key words: Viscose fabrics, eco-friendly, nano- materials, (Nano clay nano chitosan and nano cellulose) functional finishing, clothing performance.