

## Effect of some fabric structure factors on the functional properties of women summer boluses' fabrics

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### Abstract

Ladies fabrics are one of the most important woven fabrics types that are offered in the markets to the consumers, which requires attention and accuracy in its specifications so as to the final product quality, since such quality meets the requirements of functional performance and aesthetic appearance.

The research aims at studying the effect of structural factors on the fabrics' physical and mechanical properties in order to identify the most suitable properties of fabrics which suit its use as ladies' dressings. Four samples were produced using different specifications according to the specific variables of structural elements of woven fabrics using cotton materials, polyester, polyester lycra, as well as the different thickness of yarns, wefts and counts of warp and weft yarns in order to conduct the necessary tests to identify the effect of the samples structure applied on the properties of tensile strength, elongation, air permeability and hardness, using the fabric structure 1/1 in all Samples to fix the fabric structure property while comparing the tests results to the samples under study.

After testing the physical and mechanical properties (tensile strength, elongation, air permeability, hardness, thickness, weight, color stability for washing, friction dry and wet and lint resistance), results were statistically treated using unidirectional coefficient of variation, graphically represented by column forms and a total quality assessment method to identify the sample that gives the best level of functional performance in the samples under study

Summary of the Results

### - From the statistical analysis of the samples under study, we conclude the following:

1. The first sample attained the highest quality area, which means that it is characterized by the best structure that gives the highest quality of functional and aesthetic performance.
2. The sample was characterized thanks to its structure with a high degree of mechanical and natural properties such as tensile strength and elongation in wrap direction. This is due to the bonding of these properties by using the polyester material for wrap and weft as well as thick yarns count.
3. Installation of sample 1 from polyester for wrap and weft, using thin yarns, with yarns densities that allow for air permeable spaces to allow air permeability in the case of non-sweat absorbent fibers.
4. It is also characterized by Fabric pilling, resistance of high dry and wet friction, which gives this sample a distinct aesthetic performance rather than other samples.

5. Statistical analysis showed a weak relation between the samples' structure factors difference and the resistance to dry and wet friction.

Sample No. 3 was the lowest in the quality area, which means that it is the weakest in the mechanical and natural properties, resulting in a weak assessment of the functional and aesthetic properties.

**Keywords:** fabric construction-summer women fabrics- fabric physical properties- fabric mechanical properties