

## **Effect of Different Constructions of Elastic Bands Produced by Crochet Warp Knitting Machine On its Functional Properties as Clothing Supplements**

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### **Summary**

Clothing Supplements Word refers to everything that attracts attention to a particular place. The eye stops in front of it like jewelry, headbands, ribbons, etc. There are two types of clothing supplements, separate supplements (such as ornaments, headgear, bags) and related supplements such as (buttons, embroidery, tapes).

The design of clothing supplements has become an important center in the field of design, because it has a significant impact on the appearance of beauty and elegance and appearance always renewed, as reflected on the economic aspects, where complementary is among the means of rationalization in the field of clothing.

The forms and types of bands are varied, and are used as an aesthetic touch to decorate pieces of clothing such as fixing them around the pockets, sleeves, collars, bracelets, bracelets, etc. in addition to their function in finishing the edges of the threads of clothing cut and finishing to obtain aesthetics and functional together.

The bands are selected as prefabricated or other depending on the type of cloth used with it and its purpose, preferably when installing the strips on the clothes pieces to move away from the areas desired to hide.

The types of tapes currently in the market: - Woven tapes - Crochet tapes.

Woven tapes are produced on close machines similar to textile machines, which are the thickness of the threads of clothing and clothing, but with small offers suitable for the width of the desired tape and characterized by woven tapes with high durability and stability of dimensions and can be added to the elastic yarns during the fabric process to give it the flexibility required,

but flawed it needs to operations Vesting such as weaving looms resulting in longer time and higher cost, can run natural fibers such as cotton or synthetic fibers such as polyester and others.

Crochet tapes are produced on crochet machines, one of the types of warp knitting machines, but the difference here is that the yarn guide movement is one fixed movement and thus one longitudinal stitch series.

These long stitches are connected by the weft, and the strips produced on these machines are less in dimensional stability than Woven tapes are formed by means of stitches, and the elastic yarns can be added to give them the flexibility required.

Crochet ribbons have no need for preparatory processes such as woven tapes. Industrial fibers are often applied to these machines because using natural fibers such as cotton leading to increased lumps and defects because of the friction between cotton with the parts of the machine continuously.

This research deals with the improvement of the functional properties of the elastic tapes used as supplements for the internal and external garments produced using the crochet warp knitting machine by controlling the machine's settings, the quality of the raw materials used, the percentage of the elastic yarns and the different constructions used.

### **This search consists of three chapters: -**

**Chapter I:** The previous studies have dealt with the talk about clothing supplements and their importance, and the most common important types of warp knitting machines.

**Chapter 2:** The experiments were conducted to investigate the purpose of the research and explain the specifications of the machine used in the preparation of samples and the method of production and specifications of raw materials used and ratios of mixing, and explained the laboratory tests carried out on the samples (elongation test - Tensile test - shrinkage ratio test - thickness test - weight test- fabric surface roughness test- Tension Decay test).

**Chapter 3:** The tests results, statistical analysis and the creation of statistical and statistical relations between the variables are presented. Discuss these results have taken place to reach the best specification for the produced tapes as complementary to the clothing in accordance with the performance of the function of the results of laboratory tests.

18 samples of different crochet warp knitting tapes were produced, various construction, materials and stitches density are used on the same crochet machine. The effect of those variables on the functional properties of produced tapes were studied. The results of the tests **proved that:**

**First,** the construction effect of produced tapes on its functional properties was examined.

Other factors of production (yarn count and quality - the stitch density) were fixed on the same machine and using same settings. It was found that the open lap structure (0-1-1-0) of samples (1), (2) achieved the lowest weight per square meter and thickness of the product tape, which contributes to greater comfort when used in the clipping, It is clear that the polyester yarns are lighter and thinner than the cotton polyester tapes.

While the closed lap structure (1 - 0/1 - 0) of samples (13, 14) achieved the highest tensile strength, elongation and stability of the dimensions and softness and low percentage of Tension Decay.

The use of polyester material improved all the previous properties of the same structure.

**Second**, the effect of different stitches density of produced tapes on their functional properties was investigated with the addition of the other factors of production (yarn count and quality - used construction) on the same machine and using same settings.

It was found that the more stitches densities, the greater the weight per square meter, the thickness, the tensile strength, the smoothness of the strips executed and vice versa.

The results also showed that the higher the stitches density, the lower the rate of Tension Decay and the shrinkage rate after washing for the tapes executed and vice versa.

Based on the analysis and discussion of the previous results, the best specification for the elastic produced tapes as clothing supplements can be determined to suit their functional performance from the results of the laboratory tests and thus contribute to the development of the local product of the elastic produced tapes as clothing supplements to be able to compete in foreign markets.

The forms and types of bands are varied, and are used as an aesthetic touch to decorate pieces of clothing such as fixing them around the pockets, sleeves, collars, bracelets, etc.

in addition to their function in finishing the edges of the threads of clothing cut and finishing to obtain aesthetics and functional together.

**The types of bands currently in the market:** - Woven tapes - Crochet tapes.

Woven tapes are produced on close machines similar to textile machines, with small offers suitable for the width of the desired tape.

Woven tapes characterized with high durability and stability of dimensions, but its needs to preparatory processes such as warping which resulting more time and higher cost. While, Crochet tapes are produced on crochet machines, one of the types of warp knitting machines, the strips produced on these machines are less in dimensional stability than woven tapes due to its stitches formation. on the other hand, industrial fibers are often applied to these machines because using natural fibers such as cotton leading to increased lumps and defects because of the friction between cotton with the parts of the machine continuously.

This research deals with the improvement of the functional properties of the elastic tapes used as supplements for the internal and external garments produced using the crochet warp knitting machine by controlling the machine's settings, the quality of the raw materials.

18 samples of different crochet warp knitting tapes were produced, various construction, materials and stitches density are used on the same crochet machine. The effect of those variables on the functional properties of produced tapes were studied.

The results declared that the open lap structure (0-1-1-0) of samples (1), (2) achieved the lowest weight per square meter and thickness of the product tape, which contributes to greater comfort when used in the clipping, it is clear that the polyester yarns are lighter and thinner than the cotton polyester tapes.

While the closed lap structure (1 - 0/1 - 0) of samples (13, 14) achieved the highest tensile strength, elongation and stability of the dimensions and softness and low percentage of Tension Decay. The use of polyester material improved all the previous properties of the same structure.

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