Produce Fanc Yarn blender of cotton and acrylic fibers on ring spinning machine system to synthetic fibers

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Abstract:

The fibers are the basic units for the formation of yarns and textiles, as the properties of fibers are reflected in a large degree, which makes studying the properties of fibers one of the basic necessities in the textile industry. And the study of textile filaments gives the different information on which to choose the appropriate technological methods for operation, because the efficient use of any type of raw material needs a good knowledge of the properties of these raw materials and their suitability for different uses. The textile industry no longer depends solely on inventions and engineering skills, but has become a modern scientific industry and scientific methods in this industry have become of great importance for solving technical problems and monitoring the quality of production and its development and improvement, and modern science and technology has presented us every day with something new, whether in raw materials or in Manufacturing machinery The garment industry has become a rapidly developing and innovative industry. The process of blending in the textile industry is defined as the compound, of fibers of different properties together in making yarns and blended fabrics well blended and homogeneous of different fibers, and blended yarns are defined as yarns made of two or more types. Hence, the problem of research can be summarized in how to get the best specification of yarn as a result of blend twisted cotton and acrylic. To achieve this goal,(9) samples of cotton and acrylic, were produced during the final spinning phase, to obtain new yarns with new properties. The research has resulted in some of the most important results:

1. When The higher of the count yarn and the cotton ratio increases, the tensile strength, the cut load and the elongation decrease
2. The uniformity of the yarns produced decreases by increasing the percentage of cotton and the count yarn.
3. The number of neps of the yarns produced increases by increasing the percentage of cotton and the count yarn.
4. The percentage of Migration of the fibers produced increases with the increase in the percentage of cotton, and decreases with the increase of the count yarn

Keywords:

Blend yarns-Folded yarns - Fancy yarns - Migration of the fibers

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Research Problem :-

Since the mixing operations in all yarn production systems take place in the stage of lightening and cleaning or the stage of drawing, where the raw materials are mixed in the form of ribbons, which affects the natural and mechanical properties of the yarn. Therefore, the choice of research was limited to the mixing system, where mixing is done on the ring spinning machine. With the synthetic fiber system, and by using polyacrylic fibers that are spun in lengths (100 mm) and mixed with cotton (35 mm) in different proportions, it is possible to study the system of arrangement and distribution of filaments with filaments produced in the synthetic fiber system and measure the phenomenon of migration of filaments, which is the distance between the drag cylinders on the basis of lengths Polyacrylic bristles. Thus, it is possible to study the system of arrangement and distribution of the hairs with the threads produced by the synthetic fiber system, and to measure the phenomenon of hair migration

Research Importance :-

1. Benefiting from mixing cotton with polyacrylic fibers on ring spinning machines dedicated to synthetic fibers to study the behavior of the filaments and their distribution in the produced yarns.
2. Take advantage of different mixing ratios of cotton with a stable ratio of mixing polyacrylic fibers to obtain decorative yarns
3. Studying the phenomenon of filament migration to find out the extent of its effect on the physical and mechanical properties of the produced filaments due to the lengths of the short cotton filaments in relation to the long polyacrylic filaments.

Research Aims:-

1. Obtaining the best yarn specification as a result of mixing Brominated Cotton and Acrylic
2. A study on the phenomenon of filament migration and the production of decorative yarns with different materials, colors and mixing ratios using the spinning system on annular spinning machines with the synthetic fiber system and cutting the polyacrylic fiber filaments with a length of 10 cm and mixing them with cotton filaments of 35 mm length.

Research Hypotheses:-

1. It is possible to benefit from the theory of hair migration in mixing cotton fibers with polyacrylic fibers in the production of decorative yarns using the synthetic fiber system.
2. Mixing Bromine (natural raw materials, synthetic raw materials) on the ring spinning machine dedicated to synthetic fibers affects the properties of the produced decorative yarns.

Research Methodology:-

The research uses the experimental method and the analytical method

Research Results :

1. When producing the threads, the higher the number of the thread and the percentage of the cotton twine, the lower the tensile strength, the shear load and the elongation, as a result of the

overlap of a large proportion of the cotton threads and their homogeneity because the cotton threads are floating but cohesive to each other.

2. When the percentage of the cotton twined bristles increases, the uniformity of the resulting thread decreases, due to the overlapping of the cotton filaments with each other, and this property decreases by increasing the number of the thread.

3. When producing yarns, the higher the percentage of cotton twined filaments and the number of yarns, the greater the number of knots of the produced yarns.

4. When producing threads, the higher the percentage of cotton twined filaments, the higher the percentage of filaments, because the cotton bristles are free, uncaught and numerous, and this characteristic decreases by increasing the number of threads.

References:

1 – Eabd Alsalam ,Muhamad alsyd: " tkanulwjy aalghazla- aljuz' al'awla" , al hayyata leamat lilkitab , 1984.

2 - Salman , 'Ahmad Alay: "a liaf alnasij" , al hayyat aleamat lilkitab , 1985 m.

3 -Sultan ,Muhamad Ahmed: "aliaf alnasij" , munsha' atalmaearif , 1990 m.

4 -Oumar ,Jamal Mustafaa Kamal Ealwan: "drastta thir hijrat alshaeirat ealaaalk huwwasaltabieiatwalmikanikiatlibaedalkhuyutalmakhlutatwalaqmshtalkhafifa" , risalatmajstyr ,1992 m.

5 -Sabir, Salah alden: "isnaeatalghazlwalmansujat", markaztatwiralsinaeatalnasijiat, albaramijaltadribiatalnasijiat, 2004 m.

6 - Eamara ,Wafa' Muhamad Mustafa: "drast bed aleawamil almuatharate ala ahijrat alshaeirat watahdidiha el alkhawas alfayziqiat lilkhuyut , min kuliyat alghazil altatbiqia (qtana - lwlystr) ", majstir , kuliyat alfunun altatbiqiat , jamieatan hulwan , 2010 m.

7 – Tantawi , Samir ahmad , sydealaaalsyd "tknwlwjya 'intaj alkhywt", alshinhabi liltibaeat walnishri, (2011) m .

8- Hassan , Yasser Mohammed Eid :" tiknulujia alnasij waltarakib alnasjia " , qasam tasmim al'azya , kuliyat altasamim , jamieat 'am alqra , (2017) m .

9- 'Iismaeil ,Muhamadsabry: "khamatalnasij" , kuliyata lfunun altatbiqiat , 2015 m.

10- Altantawiu, Samir Ahmd: "tknwlwjya 'intaj alkhywt", alshinhabi liltibaeat walnishri, 2016 m.

11- Amer Hamdey Ahmed el Lethy – "el estefada men emkanet el zwey el modaef lentag koyot beasaleb mostahdsa Toacab bad el akmhat el mafrohat . " , bahes – kolet el fenon el tatbey – Gamet helon – 2010 m .

12- Mohmed Ahmed Mohamed abd el Maqsoed –" tatwer entag makent el gazel el halakey llhosol ala bad kyot mazwea wa zokrofa ysloh astktamha ft akmht motanoa " , risalatmajstyr - kolet el fenon el tatbey – Gamet helon – 2013m .

13- Asem Ali Mohmed Ahmed " ebtekar koyot frdey zokrofa begraa amelat kalt fe marhlt el barm "- risalat dukturat - kuliyat alfunun altatbiqiat - jamieat hulwan - 2016 m.

14 - maebad , husayn syd eali :" 'iimkaniat tashghil alqatn alburkinii bimasanie alghazl almisriat watathir dhlk ealaa khawas alkhuyut almuntija ", majalat aleamarat walfunun - almujalid 4, aleadad 17, sibtambar w 'uktubar 2019.

15 - aljml, firuz 'abu alfutuh :" tathir bed altarakib albinayiyat ljakard trykw alluhmat ealaa bed alkhawwas alwazifiat li'aqmshat almalabis alkharijia ", majalat aleamarat walfnun- almujalid 2, aleadad 8, alkharif 2017

1.Bogdan, J.F., "Measurement of Fiber Blending in Yarn" extile Research Journal, No.5, "1970", PP. (415).

2.Bernard, P.Corbman: " Textiles Fiber,Mc Crow" Hill book Company,NewYork,1983.

3.Construction", The Textile Institute, Manchester, England,1973.

4.J.W.S. Hearle, B.S. Gupta and V.B . Merchant , , Text , Res . J . Vol.35 , 1965 , April , pp . 329 – 334 p,p Townend , Ciba Review , No . 3, 1965 , pp . 16-21

5.Composed of Yarns Spun on the Cotton System "Textile Research Journal, No. 2, "1984",PP.(82).