J. Basic. Appl. Sci. Res., 2(12)13177-13187, 2012
© 2012, TextRoad Publication
ISSN 2090-4304
Journal of Basic and Applied Scientific Research
www.textroad.com

Effect of Different spinning Methods on some Physical and Mechanical Properties of Cotton Fabrics Produced by Simple Weave Constructions

Hamed Abdel Raouf [1], Zeinab Ahmed Abdel Aziz[2], Doaa Mohamed Ragheb Salman[3]

[1]Textile dep. - Faculty of Applied Arts - Helwan University, Egypt
[2]Department of Home Economics - Faculty of Specific Education - Mansoura University, Egypt
[3]Department of Home Economics - Faculty of Education quality clothing and weaving, Egypt

ABSTRACT

This research can be summarized in studying the effect of different spinning methods of fabrics as 3 methods of yarn spinning were used, combed- carded– and compact for Cotton Yarns .These yarns were produced by different weave constructions (crepe weaves made by quadrant method twill 2/2 – plain Crepe 1/1 by adding mark - sateen weaves 4 - broken twill 4/4 creased and hucka back weave). Then these produced fabrics were bleached by eco-friendly ways (not harming for either environment or human) and then tests were made in order to measure the properties of produced fabrics .These tests are (Water absorption – crease resistance - square meter weight - air permeability - tensile strength and elongation test) and then the data were processed statistically by graphical representation - find textile coefficient in order to reach the regression line equation – evaluate the quality by radar Map then interpret and discuss these results.

KEY WORDS: Research construction Terms weaving -Weaving material - Ring Spinning - Compact spinning.

1. INTRODUCTION

Weaving fibers are the basic unit of yarn construction as it is consisting of high molecular weight strings[10]. The properties of these fibers depend on how these strings are binding with each other. Hence, the properties of yarns produced from these fibers will vary according to the type of fiber which these yarns are produced from such as cotton fiber that consist the cotton. There is no doubt that the cotton textile is one of materials that are commonly used because it achieves comfort as it absorbs sweat and helps to adapt with external environment that makes it one of the favorite used materials, especially in summer. Spinning cotton yarn can be made in several different methods that gives it different properties makes it more distinguished. Consequently yarn properties are affected by spinning style of these fibers. Spinning process is an arrangement of fibers inside thread strings that is made in the final stage of yarn manufacturing steps [1]. There are many ways of Spinning like "ring spinning style (combed- carded) – compact spinning - open end spinning and others [11]. Each one produces certain yarns with several purposes that vary according to the spinning way and purpose of use. Undoubtedly, the Textile construction plays an important and essential role on the properties of cloth product whether they are natural or mechanical in addition to the raw materials. Textile represents a joint relationship among the types of used raw materials and consequently woven fabrics as well [9].

Research problem:

Cotton fabrics are considered one of the of favorite fabrics that can be used in all seasons of the year, so they achieve the functional and aesthetical aspects that provide comfort and aesthetic aspect for cloth product that we miss in common fabrics in markets.. **The research problem can be stated in the following question**:

- What is the impact of different spinning methods on some natural and mechanical properties of cotton fabrics produced by simple weave construction?

These questions were ramified from the following question:

- What is the impact of different spinning methods for Cotton Yarn on the aesthetic and functional properties of cloth product?
- What is the impact of differences in weave constructions on the aesthetics of cotton fabrics with different Spinning methods?

Objectives of the study:

The present study tries to achieve the following objectives:

• Use some yarn different spinning methods to produce yarns that achieve the functional and aesthetic performance of cotton fabrics.
• Production of cotton fabrics with high quality and low cost in order to be used in achieving functional and aesthetic performance.
• Using different weave constructions to produce cotton fabrics that enjoy several properties and achieves the comfort and beauty while using.

***Corresponding Author:** Doaa Mohamed Ragheb Salman, Department of Home Economics - Faculty of Education quality clothing and textile, Egypt.

The importance of the study:

The importance of the study can be clarified in the following:

1. Direct the attention of researchers toward natural materials, especially cotton, which combines the aesthetic appearance and comfort in use.
2. Produce proposed Technological methods of cotton yarn spinning that provide fabrics with low-cost and high quality.
3. Produce some simple textile constructions to achieve the aesthetic aspect in appearance of produced cotton fabrics.

Hypotheses of the research:

1. There is a significantly statistical correlation between the raw material used in weave and functional performance of clothes made from it.
2. There is a significantly statistical correlation between different spinning methods of the yarn and aesthetic as well as functional properties of the product.
3. There is a significantly statistical correlation between the proposed weave constructions and properties of the produced fabrics.

RESEARCH METHODOLOGY

- Descriptive and the experimental method.

Research Tools:

Conducting the following tests in order to measure the quality of the produced fabrics:

- Water absorption test.- - Crease resistance test.- weight/ m^2test - Air permeability test - Tensile strength and elongation test.

Research Borders:

1 - Some methods of yarn spinning (Ring- combed -carded- compact).

2 - Natural materials “cotton"- 3 - Some weave constructions "(crepe weaves made by quadrant method twill 2/2 – plain Crepe 1/1 by adding mark - sateen weaves 4 - broken twill 4/4 creased- hucka back weave)- 4 - Warp Cotton yarn carded 100% - 2/40 stable in all samples

LITERATURA OF REVIEW

Adel Gamal l Hendawi (1995) study entitled: "The Impact of textile construction of simple weaves on some physical and mechanical properties and the possibility of using it in ready-made clothes industry,". The main goal is to study the effect of textile construction of simple weaves on the properties of tensile strength of fabrics in the direction of warp and weft – crease and crimping resistance of fabrics and drapbilty resistance –seam strength, as well as the possibility to benefit from these properties in the ready –made garment industry. One of the most important results of the research is conducting the relationships that show the impact of covering weft coefficient on the physical and mechanical properties of fabrics. There is a direct correlation between the increase in the number of interlacing in used textile construction and tensile strength of fabrics as well as there is a correlation between the increase in the number of interlacing in fabrics and prolapse and fabrics resistance to crease and crimple as well as sem strength of cotton yarn [(2)].

Sabah Abdul Aziz Mohamed (1996) study entitled: "Effect of some factors of textile construction on the aesthetic properties of fabrics for some university students" This study aimed at determining the aesthetic properties of fabrics for some university students by controlling the factors of weave constructions and its physical measurable properties objectively. This study concluded a set of results and one of these most important results is to identify a set of physical coefficients such as optical properties (reflection - absorption - permeability), fabrics thickness, touch, drapbilty, and this leads to the possibility of assessing aesthetic properties and requirements objectively. At using plain weave construction, drapbilty factor will significantly increases, therefore, fabrics availability to drapbilty will decrease and this due to more numbers of interlacing that will increase the weave strength and in turn lead to less drapbilty. Contrarily, when using sateen weave, the factor of drapbilty will decrease that, in turn, lead to more efficiency of prolapse in the weave because the few number of weave interlacing and more extension of floats whether in weft or in warp and thus improves the amount of its drapbilty. When using plain weave construction the elongation of cloth in the warp direction reached its maximum degree due to high shrinkage in the textile construction that resulted from the increasing number of interlacing that in turn lead to more extension while exposing to tensile. [(3).]

Khaled Ezz El-Din Mahmud Study (1999) entitled: "Determining the most appropriate quality standards for some woven used in ready-made industry," This study aims at determining the most appropriate standards for the quality of some woven used in ready-made industry according to the purpose of end use as some require more tensile strength than other properties, while other requires more absorption and etc. It also aims at studying some models of women and the fabrics properties that affect the performance of women fabrics are determined as follows (strength- extension- friction resistance-air permeability- stream permeability - -fabrics texture – gloss - drapbilty - maintaining the form and appearance) .By analyzing all the elements of each property, we find that there are some materials that achieve some properties while do not achieve others etc.,. So other properties can be achieved by the textile construction of fabrics. Also by analyzing the elements of each property, we note that the property of strength in jacket got (3.8) degree, of the total (5) and this proved that the tensile strength in women jacket should be high or medium. Regarding the extension, it has got (3 degrees) as specialists view and this is evidence of average extension jacket. As for air permeability, it has got degree (1), indicating that low permeability of the jacket is preferable. [(4)]

Saadia Omar Khalil Ibrahim (2002) Study: entitled: "the impact of the difference in material type on physical and mechanical properties of the fabrics"

This study focused on weaving the proposed samples by a French shuttle loom. The study concluded that: the different raw material has an effective impact on the amount of air permeability of fabrics and this happen when all other textile standards were stable. Cotton is considered the best raw material in view of permeability, while poly propylene is the less permeable to air. The type of raw material has a clear effect on the percentage of water absorption of fabrics and this happens when all other textile specifications were constant. Wool is considered the most absorbable material, while polyester is the least absorbable material for water. There is a significant impact of the raw type on the thickness of woven fabrics. Cotton is considered the least material in thickness, while acrylic is the highest raw material in view of thickness. (5)

Mahmoud Rashid Harbi Study (2002) entitled: "A comparative study of the impact of weave textile construction of real and plain hucka back on thickness property" .The research aimed at studying the impact the variables of Textile construction that are represented in (numerical density of wefts in the measurement unit - the wefts numbers - textile construction “hucka back and plain”) on the property of thickness in fabrics and the most important findings of the research were :

Thickness rates in real netting weave increased gradually in the numeral density of wefts in measurement unit and also at the gradual increase in wefts numbers, while thickness rates in real netting weave decreased at the gradual increase in the floats length. It worthwhile to note that 89% of the changes in the netting thickness was achieved through the interaction among the variables of textile construction that represented in the(numeral density of wefts in measurement unit - wefts numbers- rates of the long floats of netting weave), where rates of weft thickness were the highest elements of weave construction that changed the thickness rates ((up 53.17%), followed by highest rates of long floats (25.47%) then the numeral density in weft measure units (10.3%). [(6)]

Haitham Abdel Dayem, Mahmoud Ahmed Study: (2007) entitled: "An analytical study of the mechanisms achieving the appearance of hucka bak weave and its impact on the technical dimension as well as physical and mechanical properties of the produced fabrics." The main aim of this research is to study the effect of weave textile construction elements on the properties of hucka back weave and determine the effectiveness of the impact of each element that represented in (coefficient of cover factor construction) to reach the best properties rates in fabrics represented in tensile strength , extension , tear , drapabibly resistance, and evaluating the impact of variables of weave construction on the properties of hucka back fabrics and studying operating economies and difficulties then comparing it to standard fabrics (brink extended 2/2 in both directions). So the main variables of weave textile construction which the researcher controlled their rates to study their effect on fabrics properties are as follows: cover factor (12 - 16 -20) weave construction (plain 2/2, hucka back 1, hucka back 2) . Experiment samples have been woven by using cotton yarns number 30/2 for both warp and weft. Also laboratory tests and results analysis were made by conducting the multi correlation coefficient between each of the independent variables cover factor wefts coefficient and floats length of used weave construction and the indicated properties as a dependent variable. The rates of multiple regression between the independent variables and the dependent have been conducted along with determining the contribution of each variable of independent through testing contribution rates for the independent variables logging onto the dependent variable .[(7)]

Mona Ahmed Wageeh study :(2009) entitled: "Effect of different Applied styles to threads production on both functional and aesthetic properties of summer clothing fabrics." The Study tackles the Effect of different Applied styles to threads production " ring spinning , compact spinning , open –end spinning for yarn production on the functional and aesthetic properties . 18 woven samples were produced and 18 Knitting samples with different wefts were produced with spinning (ring- compact- open end) and yarn numbers were English 20-30-40. Densities as well were different fabric in view of woven fabrics that were, as for warp yarn it was stable cotton 24/2/ English. Regarding knitting fabrics, they used "Jersey – Rip” with different Bjoj 8/10/12. And the Results are: If the thread thickness and wefts density increases, weight/m^2 will increase of the woven. Also difference in the spinning type affects the air permeability and when the thread number increases, the permeability increases but decreases in the case of increase in weft density .If the yarn thickness and wefts density increases, the tensile strength of fabrics increase as well as extension in longitudinal direction . In addition, different spinning type affect the tensile strength and extension of fabric and crease resistance will increase when weft number increases and decreases when wefts density increases at the accidental direction.

Practical experience: - 12 weave cotton samples have been produced with three different spinning methods that are (ring spinning- (combed –carded) and compact spinning by using 5 weave constructions (crepe weaves made by quadrant method twill 2/2 – plain Crepe 1/1 by adding a mark – Sateen weave 4 - twill 4/4 fractured - hucka back weave . Additionally some tests were made to evaluate the quality of produced cotton fabrics that were produced from different weave constructions and these tests are water absorption - crease resistance – weight/m^2 - air permeability - tensile strength and extension. Different statistical methods were used in order to assess the results.

RESULTS AND DISCUSSION

Table (1) shows the specifications of produced fabrics

Sample No.	Weft material	Weave construction	Extension (mm)	Tensile strength (N)	Air permeabilitycm^3\cm^2.sec	Square meter weight (g\m^2)	Absorption (%)	Crease (degree
1	Cotton 100% combed	Crepe I 2/2	16.12	395.6	31.94	1.80983	0.1	141
2	Cotton 100% compact	Crepe I 2/2	16.12	308.7	31.06	1.72686	0.1	125
3	Cotton 100% carded	Crepe I 2/2	15.87	312.1	30	1.74573	0.13	136,6
4	Cotton 100% combed	Crepe II 1/1	19.03	381.3	14.68	1.806566667	0.56	148,33
5	Cotton 100% compact	Crepe II 1/1	18.92	375.2	13.94	1.796366667	0.6	147,33
6	Cotton 100% carded	Crepe II 1/1	16.74	242.1	13.02	1.822	0.22	155
7	Cotton 100% combed	Sateen 4	17.78	390.3	25.44	1.8081	0.98	146.33
8	Cotton 100% compact	Sateen 4	17.08	295.9	22.1	1.757533333	0.22	130
9	Cotton 100% carded	Sateen 4	19.43	266.7	19.1	1.8103	0.16	154
10	Cotton 100% combed	Imitation gauze	17.03	324.3	35.88	1.7606	0.56	145
11	Cotton 100% compact	Imitation gauze	16.38	297.6	34.66	1.749766667	0.46	131
12	Cotton 100% carded	Imitation gauze	15.43	233.8	32.08	1.64433333	0.48	138
13	Cotton 100% combed	Broken Twill	20.68	347.6	37.52	1.8186	0.56	153
14	Cotton 100% compact	Broken Twill	23.03	256.9	34.56	1.776366667	0.62	146
15	Cotton 100% carded	Hucka back	17.24	216.4	31.66	1.8021	0.5	151.667

1 – Representing data by using graphical charts:

Figure (1) shows the relationship between the tensile strength in weft direction and the used weave constructions and the results were: 100% cotton combed yarn gave the highest tensile strength in all weave constructions , followed by weft 100% cotton compact , then weft 100% carded except the weave construction crepe weaves made by quadrant method twill 2/2 and the carded cotton was stronger in tensile than the compact cotton .

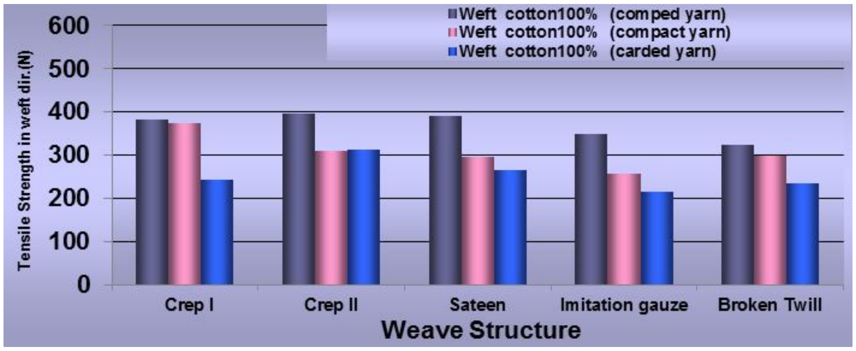

Figure (1) shows the relationship between the tensile strength and the weave construction

Figure (2) shows the relationship between the extension in weft direction and the used weave constructions and the results were: we note that the extension degree differed in each weave construction and every spinning style of the used yarn differed among all the constructions as in weave construction hucka back the cotton weft gave the most extension, then the combed, after that the carded. As for sateen weave, the carded yarn was the most extensive, then the combed cotton, after that the compact and the weave construction. Also the highest degree of extension for the combed cotton was in the weave construction imitation gauze and plain crepe then the compact followed by the carded. As for the crepe weaves made by quadrant method Twill 2/2, the extension of all the three spinning methods was near.

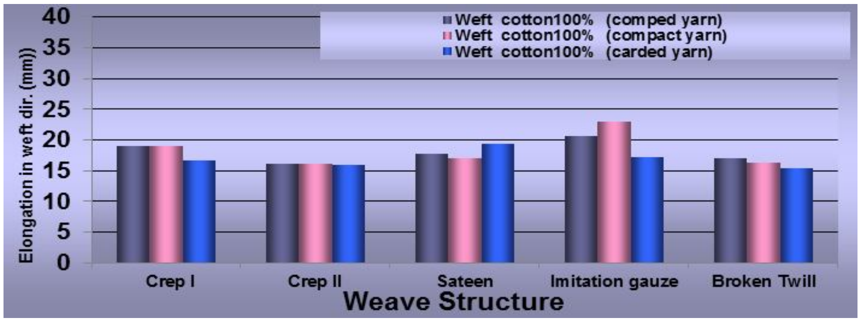

Figure (2) shows the relationship between the extension and the used weave constructions

Figure (3) shows the relationship between the air permeability and the used weave constructions .The results were: The most preamble to air of woven materials was the weave construction imitation gauze and hucka back, then crepe weaves made by quadrant method, followed by plain crepe with adding mark. Also we note that the combed cotton was the most preamble yarn to air followed by the compact and the carded.

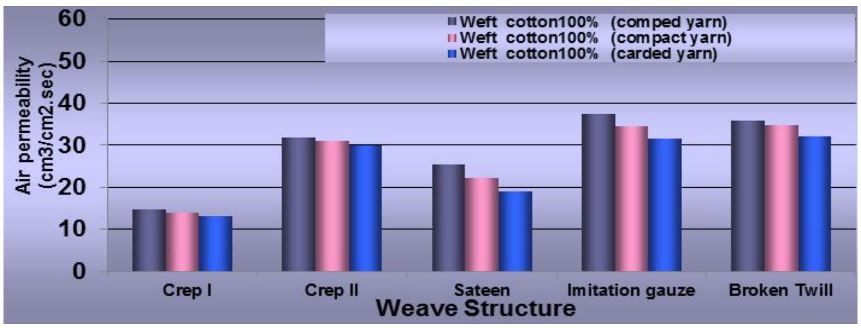

Figure (3) shows the relationship between the air permeability and the used weave constructions

Figure (4) shows the relationship between weight\m^2 and the used weave constructions. We note that square meter weight in all weave constructions was very near and almost equal.

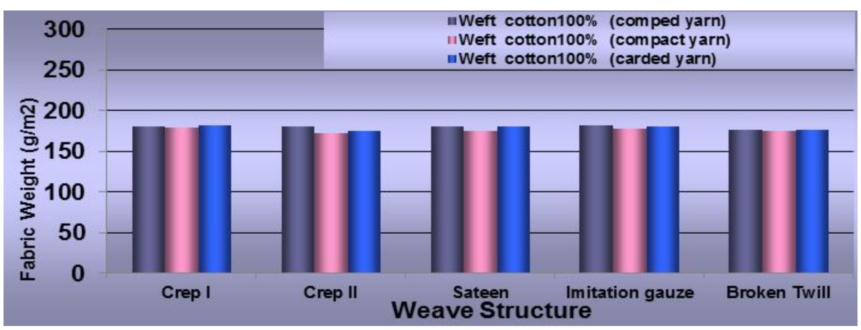

Figure (4) shows the relationship between weight\m^2 and the used weave constructions

Figure (5) shows the relationship between the water absorption and the used weave constructions and the results were: the most absorbable yarn of water was thread weft cotton combed in sateen weave followed by thread weft cotton carded in broken twill weave construction then weft yarn compact cotton in hucka back weave construction and we note that crepe weaves made by quadrant method twill was less absorbable.

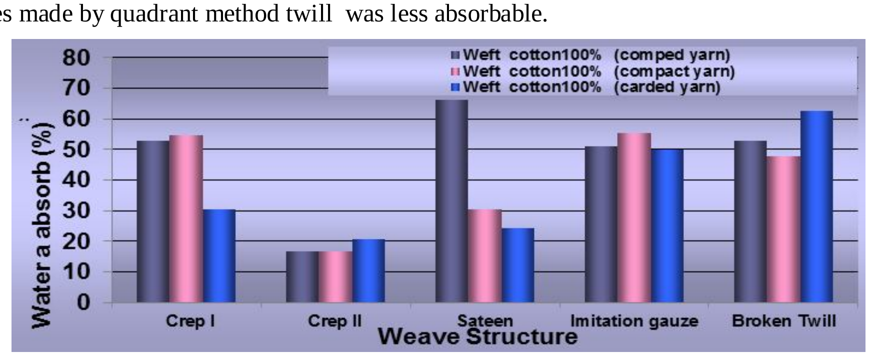

Figure (5) shows the relationship between the water absorption and textile structures used

Figure (6) shows the relationship between the crease degree and the used weave constructions. The results were: that the highest degree of crease in carded weft cotton was in all the weave construction and reach its maximum in the plain crepe weave construction, then sateen weave, after that hucka back. But the minimum degree was in the carded yarn in the weave construction crepe weaves made by quadrant method twill while weft cotton follow carded weft cotton and reach its maximum in the weave construction plain crepe, then hucka back. We note that the least degree of crease was in crepe weaves made by quadrant method twill especially in compact cotton.

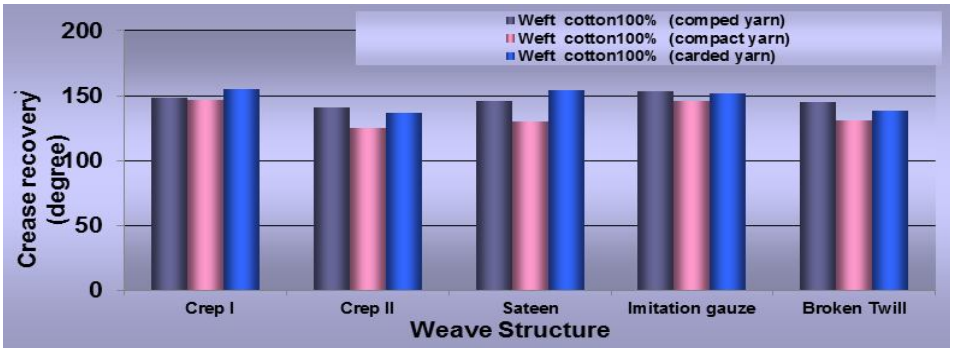

Figure (6) shows the relationship between the crease degree and the used weave constructions

2 – Representing the graphical relationship by finding the textile coefficient that is the result of the equation = **(numbers of weft yarn in unit /number of yarn iterlasing inunit)^n** where n vary according to the weave construction to get the regression line equation.

1-fabric strength test: **y= 483.6-86.4x**

Where: Y= strength properties

x= weaving factor

This Table shows the finding of the textile coefficient for used materials and their relation to the tests results . From the table, we conclude correlation type as well as the relation type from the relation between F and tabular f where if F < F , the correlation will be significant and vice versa.

Table (2)

Weft yarns material	R^2	Textile Coefficient y	F	tabular f	Relation type
Combed cotton100%	0.520213	-86.4202	3.252769	3.252769	Insignificant
Compact cotton100%	0.466302	-114.57	2.621151	2.621151	Insignificant
carded cotton100 %	0.016663	-18.7023	0.050835	0.050835	Significant

Data was graphically represented in Figure (7), which shows the relationship between the textile coefficient and the strength of all used constructions . It is worthwhile to note that the highest degree of strength was in combed cotton weft, followed by compact cotton and then the carded cotton. Also, We note also that crepe weaves made by quadrant method twill give the highest strength in the three yarns of spinning methods.

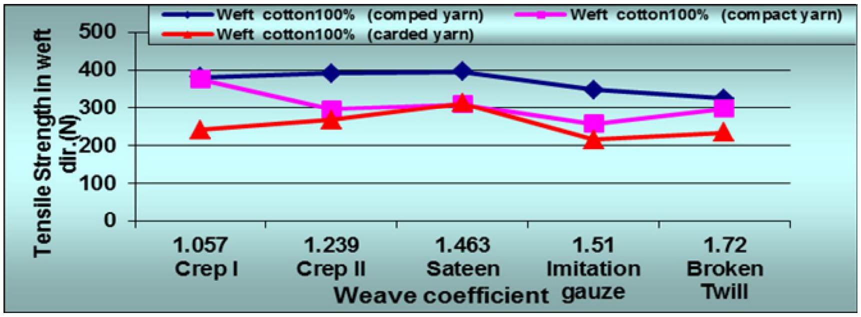

Figure (7) shows the relationship between the weaving coefficient and the strength of all the used constructions

2 - Extension Test:

Table (3)

Weft yarns material	R2	Textile Coefficient y	F	tabular f	Relation type
Combed cotton100%	0.061062	-1.71938	0.195101	0.688604	significant
Compact cotton100 %	0.00716	-0.94504	0.021634	0.892396	significant
carded cotton100 %	0.28259	-0.24363	1.181708	0.356545	In significant

Data was graphically represented in Figure (8), which shows the relationship between the weave coefficient and the extension degree of all the used constructions . We noted that the highest material of weft in view of extension was compact cotton weft in the hucka back weave construction, followed by combed weft cotton then carded weft cotton in the same weave construction. It worthwhile to note that there is a convergence in results of other constructions materials. Also the least degree of extension was in carded weft cotton in the weave construction plain crepe with adding mark.

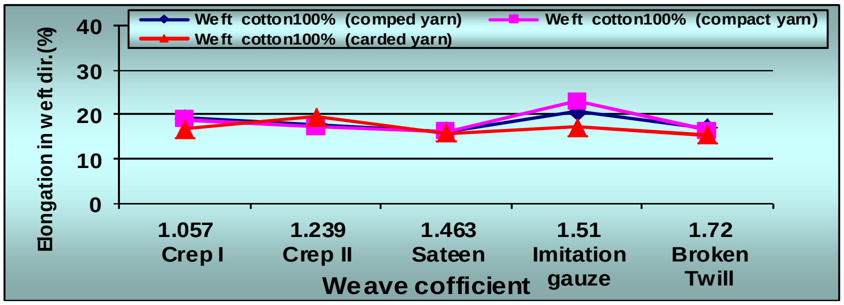

Figure (8), shows the relationship between the weaving coefficient and the extension degree of all the used constructions

3 - Air permeability test:

Table (4)

Weft yarns material	R2	Textile Coefficient y	F	tabular f	Relation type
Combed cotton100%	0.855493	33.62387	17.7602	0.024412	In significant
Compact cotton100 %	0.90717	33.62392	29.31724	0.012356	In significant
carded cotton100 %	0.899139	31.96053	26.74386	0.01403	In significant

Data was graphically represented in Figure (9), which shows the relationship between the textile coefficient and the air permeability of all the used constructions. We note that the highest degree of air permeability of weft material was in combed cotton weft, followed by compact cotton, and then carded cotton in the weave construction hucka back. Also it is notable that the test results were convergent in weft material especially in compact and carded cotton of the weave construction broken twill. Regarding the least degree of air permeability was in the weave construction plain crepe weaves made by quadrant method twill.

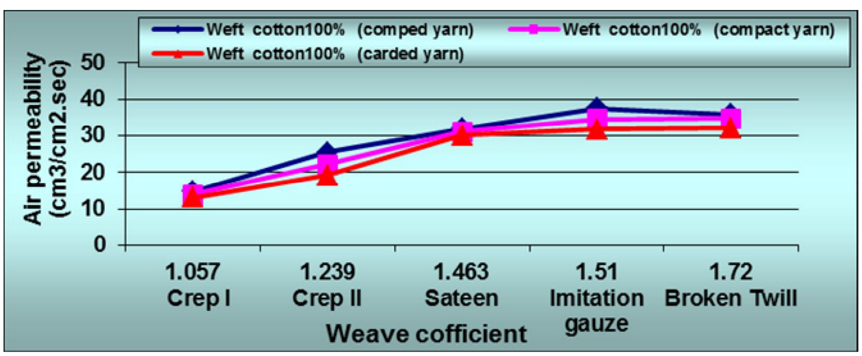

Figure (9) shows the relationship between the weaving coefficient and the air permeability of all the used constructions

4- Absorption Test

Table (5)

Weft yarns material	R2	Textile Coefficient y	F	tabular f	Relation type
Combed cotton 100%	0.61346	-17.904	0.196067	0.687896	significant
Compact cotton 100 %	0.001665	-2.69002	0.005004	0.948059	significant
carded cotton 100 %	0.488185	49.19561	2.861489	0.189302	In significant

Data was graphically represented in Figure (10), which shows the relationship between the textile coefficient and the absorption ratio of all the used constructions. We note that the highest degree of absorption of combed weft cotton was in weave construction sateen weave, then carded weft cotton in the weave construction broken twill, then compact in the weave construction hucka back. On the other hand the least degree of water absorption was in crepe weaves made by quadrant method twill.

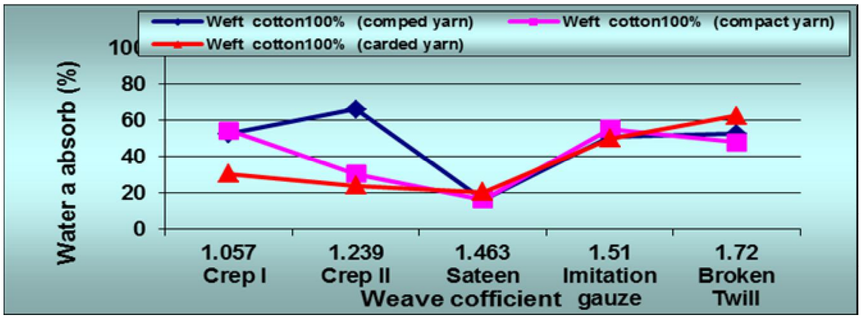

Figure (10), which shows the relationship between the weaving coefficient and the absorption ratio of all the used constructions.

5 – **Square meter weight**

Table (6)

Weft yarns material	R2	Textile Coefficient y	F	tabular f	Relation type
Combed cotton100%	0.34651	-5.23215	1.590734	0.296378	In significant
Compact cotton100 %	0.318912	-5.89303	1.404715	0.321267	In significant
carded cotton100%	0.518139	-901775	3.225862	0.170349	In significant

Data was graphically represented in Figure (11), which shows the relationship between the textile coefficient and the Square meter weight in all the used constructions. We note that the highest Square meter weight was in combed cotton in hucka back weave construction, then worsted cotton in the weave construction plain crepe with adding mark. Square meter weight converges in all materials of constructions. It is worthwhile to note that the least square meter weight is in carded cotton of crepe weaves made by quadrant method.

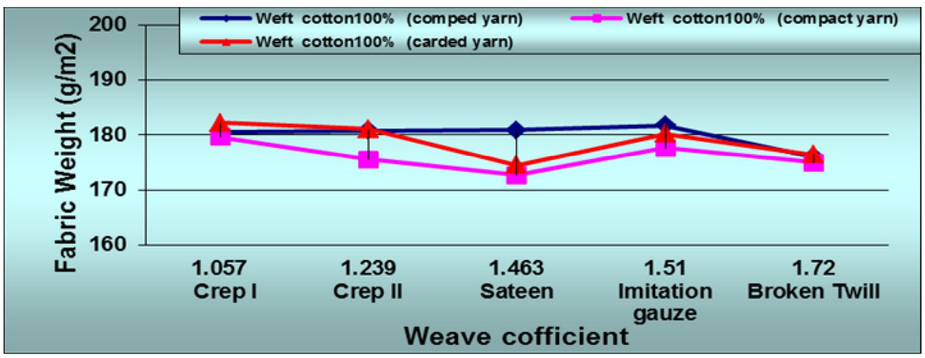

Figure (11), shows the relationship between the weaving coefficient and the weight /m^{2} ^{2}constructions

6 – Crimp test

Table (7)

Weft yarns material	R2	Textile Coefficient y	F	tabular f
Combed cotton100%	0.016379	2.196822	0.049957	0.837494
Compact cotton100 %	0.078711	-11.0001	0.256306	0.647531
carded cotton100 %	0.109245	-11.5291	0.367928	0.58696

Data was graphically represented in Figure (12), which shows the relationship between the textile coefficient and crimp in all the used constructions. We note that the highest crimp was in carded weft cotton in both plain weaves and weaves made by quadrant method, and the least crimp was in compact weft cotton in all weave construction.

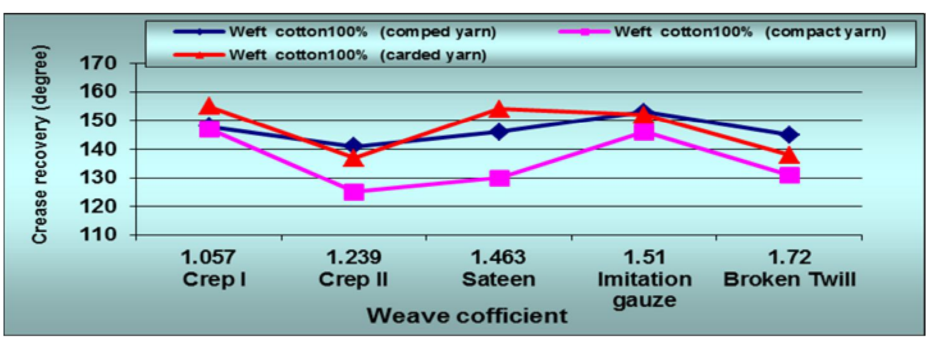

Figure (12), shows the relationship between the weaving coefficient and crimp in all the used the constructions

3 - Quality was measured by radar chart:

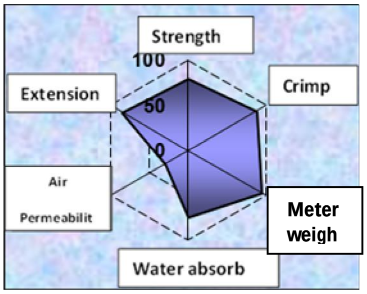

Fig. 13 for sample combed cotton 100% crepe II 2/2

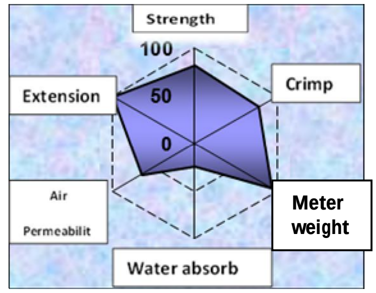

Fig. 14 for sample compact cotton 100% crepe II 2/2

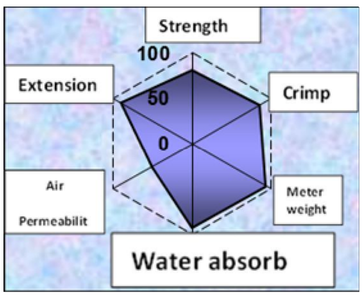

Fig. 15 for sample carded cotton 100% crepe II 2/2

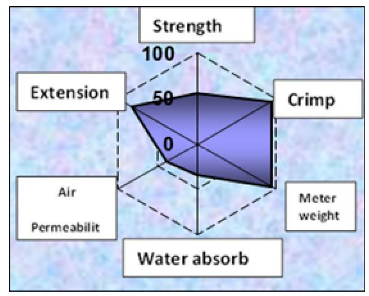

Fig. 16 for sample combed cotton 100% crepe I 1/1

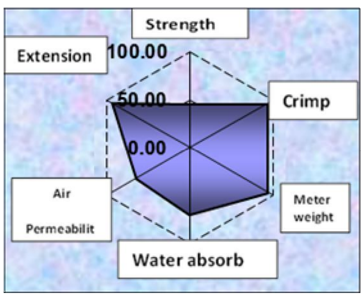

Fig. 17 for sample compact cotton 100% crepe I 1/1

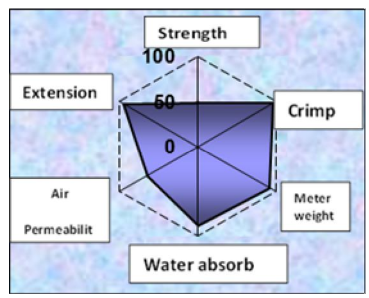

Fig. 18for sample carded cotton 100% crepe I 1/1

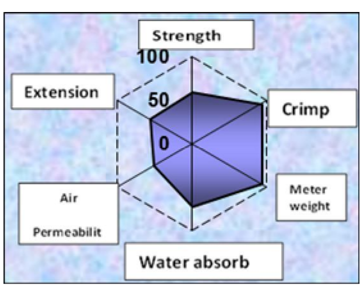

Fig. 19for sample combed cotton 100% Sateen weave 4

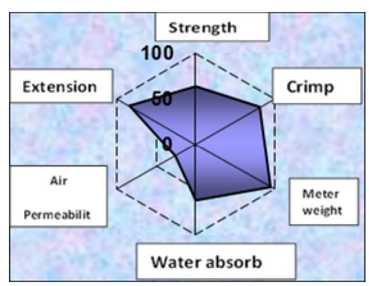

Fig. 20 for sample compact cotton 100% Sateen 4

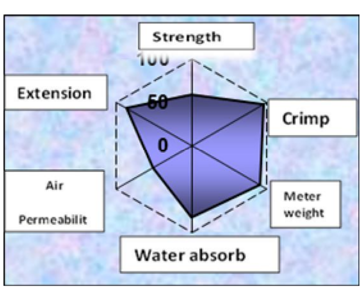

Fig. 21 for sample carded cotton 100% sateen weaves 4

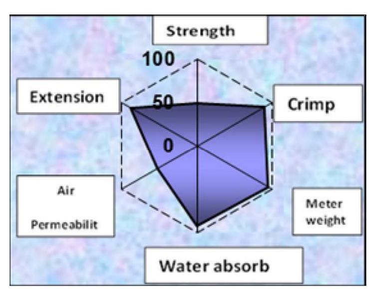

Fig. 22 for sample combed cotton 100% broken twill 4/4

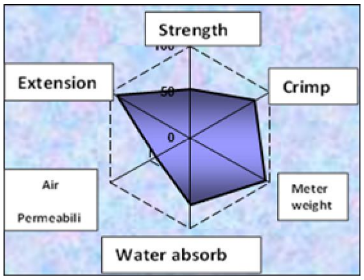

Fig. 23 for sample compact cotton 100% broken twill 4/4

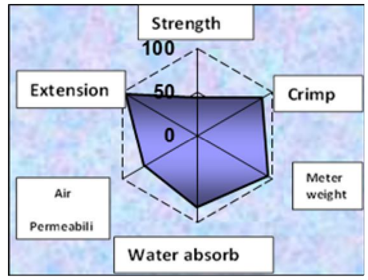

Fig. 24 for sample carded cotton 100% broken twill 4/4

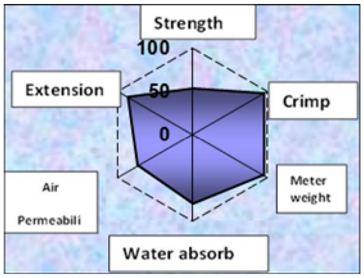

Fig. 25 for sample combed cotton 100% hucka back weave

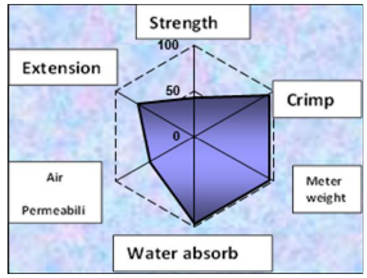

Fig. 26for sample compact cotton 100% hucka back weave

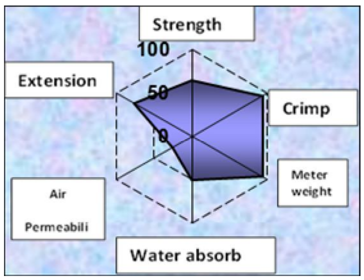

Fig. 27 for sample carded cotton 100% hucka back weave

Samples of the study is measured by using Quality Assessment which means comparing the spaces of Radar which represents some physical and mechanical properties of each sample and that also determine its quality while using . By comparing the spaces of all samples, we arranged them from the largest space to the least one as in the following table:

Table (8) show the descending arrangement of research samples in view of quality evaluation

Sample No.	Weft material	Weave construction	Figure space	Figure percentage
3	Weft combed cotton 100%	Sateen weave 4	19355.02	67.91236
5	Weft combed cotton 100%	Broken twill 4/4	19345.47	67.87883
15	Weft carded cotton 100%	Broken twill 4/4	18226.38	63.95221
4	Weft combed cotton 100%	Imitation gauze	17354.49	60.89293
10	Weft compact cotton 100%	Broken twill 4/4	17074.21	59.90951
6	Weft compact cotton 100%	Plain crepe 1/1	16282.23	57.13063
14	Weft carded cotton 100%	Imitation gauze	16233.1	56.95823
1	Weft combed cotton 100%	Plain crepe	16069.56	56.38442
9	Weft compact cotton 100%	Imitation gauze	15659.12	54.94428
2	Weft combed cotton 100%	quadrant crepe twill 2/2	15334.81	53.80634
12	Weft carded cotton 100%	quadrant crepe twill 2/2	14148.85	49.64509
7	Weft compact cotton 100%	quadrant crepe twill 2/2	13669.92	47.96464
8	Weft compact cotton 100%	Sateen weave 4	13362.8	46.88703
13	Weft carded cotton 100%	Sateen weave 4	12488.96	43.82093
11	Weft carded cotton 100%	Plain crepe 1/1	10853.45	38.08227

Sample (3) achieved the highest space of in the radar chart combed weft cotton 100% of the weave construction sateen weave comparing to other samples. However, as the chart shows, there are some insufficiencies in some other properties such as air permeability and this due to the used weave construction

REFERENCES

1 – "Textil consolidation fand, taxtile interational bulletin" : spinning technology Book (2005) .

2 - Adel Gamal Hendawi: "The Impact of textile construction of simple weaves on some physical and mechanical properties and the possibility of using it in ready-made clothes industry, Ph.D. thesis, Faculty of Home Economics, Menoufia University, 1995.

3 - Sabah Abdul Aziz Mohammed: "The Impact of some textile construction on the aesthetic properties of university students' fabrics" , PhD. Thesis, Faculty of Applied Arts, Helwan University, 1996.

4 – Khaled Izz Al-Din Mahmoud: "Determining the most appropriate quality standards for some woven used in ready-made clothes industry" , PhD, Faculty of Applied Arts, Helwan University, 1999.

5 - Sadia Omar Khalil Ibrahim: "The impact of the difference in material type on the physical and mechanical properties of the fabrics, Research in the Arts, Volume XIV, Third Issue, July 2002.

6 - Mahmoud Rashid Harbi , Mohamed Mahmoud Kassem: "A comparative study of the impact of weave textile construction of hucka back weave on thickness property", research in the arts, Volume XIV, Third number , July 2002.

7 - Haitham Abdel Dayem Mohamed Ahmed: "An analytical study of the mechanisms achieving the appearance of traditional netting weave and their impact on the technical and physical dimension as well as mechanical properties of the produced fabrics" , Master Thesis, Faculty of Applied Arts, Helwan University, 2007.

8 - Mona Ahmed and J. ": Effect of different Applied styles to threads production on both functional and aesthetic properties of summer clothing fabrics", PhD, Thesis Faculty of Applied Arts, Helwan University, 2009.

9 -Gamal Hassan Mohammed Zaid: "Determining the most appropriate structural standards of weave construction to be used in ladies' fashion", PhD, Faculty of Specific Education, Mansoura University, 2009.

10 – Youssif Subhi Nana, Ayman Abdul Hannan Al-Gazori: "Constructions and color effects", Halab University, Syria, 2009.

11 – Ayman El- Sayed Ibrahim Ramadan: "production of different properties yarns influenced by of several factors by using compact spinning", Ph.D Thesis., Faculty of Applied Arts, Helwan University, 2008 .