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Review Of Research



PHYSICAL CHARACTERISTICS OF COTTON /POLYESTER CORE SPUN YARN PREPARED ON RING FRAME

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ABSTRACT:

Manufacture of yarn from Polyester-cotton core yarn is one of the most important developments in textile Industry. Use of core yarns is mainly aimed to improve the strength, comfort, durability, aesthetic and other functional properties of the final yarn. The article reports the results



of investigation on core spun yarns made from polyester filament as core and cotton as sheath material. Polyester filaments in different proportions were chosen for the core component and cotton as a sheath for the preparation of the final yarn. Total twelve different yarns were made on ring frame and Air jet machine. The results

were compared with 100% cotton Ring Spun yarn.

It is observed that core yarns are having improved physical properties like strength uniformity etc. over that of 100% cotton ring spun yarn.

KEY WORDS: Polyester Spun Yarn, Textile industry.

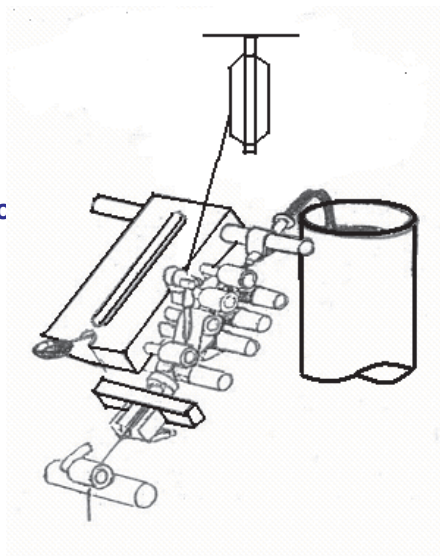
1. INTRODUCTION:

Core yarn structure consists of two components, one of which forms the center axis or core of the yarn and other is the covering. Continuous multifilament yarn generally used as a core while cotton staple fibers are used for covering the filaments or used as sheath material to improve the

comfort property of the yarn.

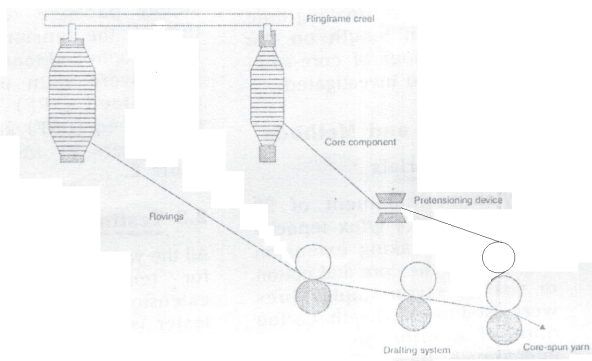
Core spun yarn shows some improved characteristics over 100% spun staple yarn. To improve

Fig.2 Cc



3. RESULTS & DISSECTION

Total six core yarn prepared on Murata Air compared with 100% cc different yarns were tested RKM values, Single yarn dynamate Ut3 model and



and six core yarn were tested and The results were not strength products of and shown in Table no 1. Tests were tested on uster

Table no 1. U%, Thick, Thin ,Neps were tested on uster evenness testing machine UT4 model and results were shown in Table no 2.

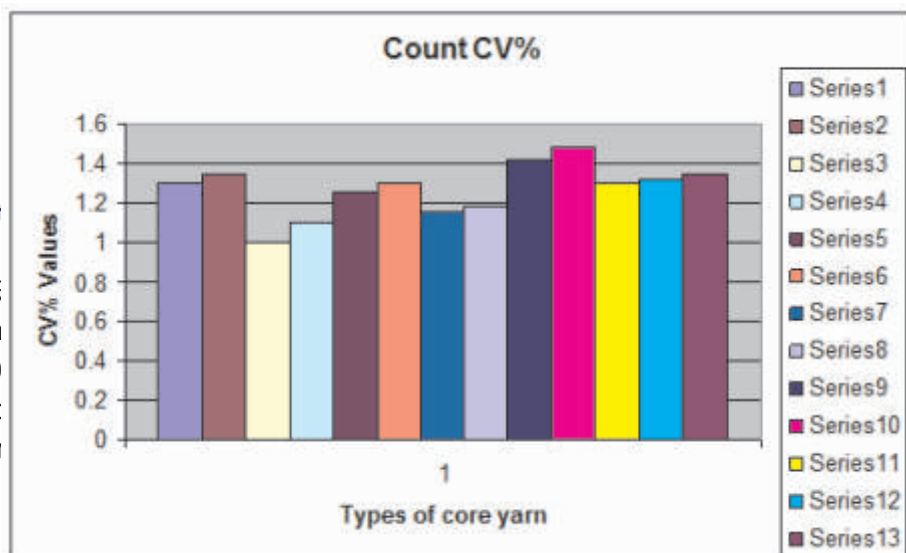
Core yarn code	Details of core yarn
a	30/24 drawn polyester/cotton core yarn prepared on ring frame spinning
b	30/24 crimped polyester/cotton core yarn prepared on ring frame spinning
e	30/24 drawn polyester/cotton core yarn prepared on air jet spinning
f	30/24 crimped polyester/cotton core yarn prepared on air jet spinning
i	44/36 drawn polyester/cotton core yarn prepared on ring frame spinning
j	44/36 crimped polyester/cotton core yarn prepared on ring frame spinning
m	44/36 drawn polyester/cotton core yarn prepared on air jet spinning
n	44/36 crimped polyester/cotton core yarn prepared on air jet spinning
q	70/36 drawn polyester/cotton core yarn prepared on ring frame spinning
r	70/36 crimped polyester/cotton core yarn prepared on ring frame spinning
u	70/36 drawn polyester/cotton core yarn prepared on air jet spinning
v	70/36 crimped polyester/cotton core yarn prepared on air jet spinning
y	100% cotton yarn produced on ring frame spinning

	Particulars of filament at the core	a 30/24D Drawn	b 30/24D Crimped	e 30/24D Drawn	f 30/24D Crimped	i 44/36D Drawn	j 44/36D Crimped	m 44/36D Drawn	n 44/3D Crimped	q 70/3D Drawn	r 70/36D Crimped	u 70/3D Drawn	v 70/3D Crimped	y 100% cotton
1	Avg. Count (2/30Ne)	15.48	15.13	15.45	15.2	15.31	15.30	15.73	15.83	15.32	15.30	15.23	15.21	15.21
2	CountCV %	1.3	1.35	1.00	1.10	1.26	1.30	1.16	1.18	1.42	1.48	1.30	1.32	1.35
3	C. S. P.	3579	3780	2179	2379	3801	3850	2207	2379	3979	4125	2403	2608	2700
4	RKM	25.35	27.46	17.25	18.65	27.60	28.01	18.70	19.35	28.85	29.87	19.50	19.75	19.9
5	Single Yarn Strength (Gram)	350.1	360.2	210.1	225.1	435.1	438.06	305.1	300.1	610.83	613.64	360.1	395.1	300.2
6	Elongation %	23.3	22.9	6.089	5.34	27.64	21.69	10.3	9.73	34.57	33.57	23.48	20.48	4.5
7	Core sheath ratio	83/17 C/P	83/17 C/P	17/83 (P/C)	17/83 (P/C)	75/25 C/P	75/25 C/P	25/75 (P/C)	25/75 (P/C)	60/4 C/P	60/40 (P/C)	40/60 (P/C)	40/60 (P/C)	100% C

Particulars	a 30/24D Drawn	e 30/24D Crimped	f 30/24D Crimped	i 44/36D Drawn	j 44/36D Crimped	m 44/36D Drawn	n 44/36D Crimped	q 70/36D Drawn	r 70/36D Crimped	u 70/36D Drawn	v 70/36D Crimped	y 90% cotton
1 U%	8.47	8.64	7.63	7.72	8.5	9.0	7.83	7.95	9.01	9.25	7.93	7.93
2 Thin	10	8	0	0	6	7	0	0	5	8	0	0
3 Thick	62	48	12	15	28	53	18	16	28	30	23	23
4 Neps	108	87	23	25	66	55	27	24	63	76	37	37
5 Total Imperfection	143	180	35	40	90	115	45	40	96	114	60	60

3.2. Count Strength

Yarn least found that as the that by using crin shows that in 40- clear that using c inter fibre friction yarn made from A



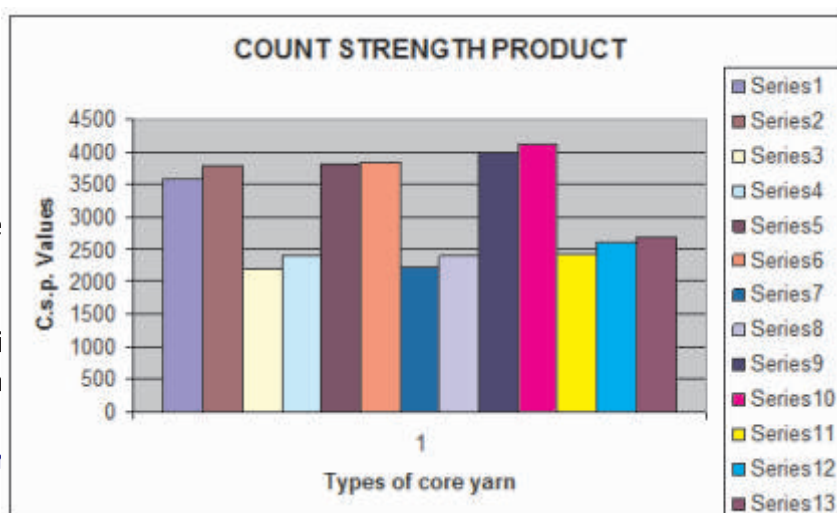
mpared. It is s also found ed. Graph 2 e 1 it is also use of more duct of core

Graph 2. CSP values of different core spun polyester yarn.

3.3. RKM:-

RKM values we is observed that as % values of RKM are also more inter fibre cohesi compare to core yarn n

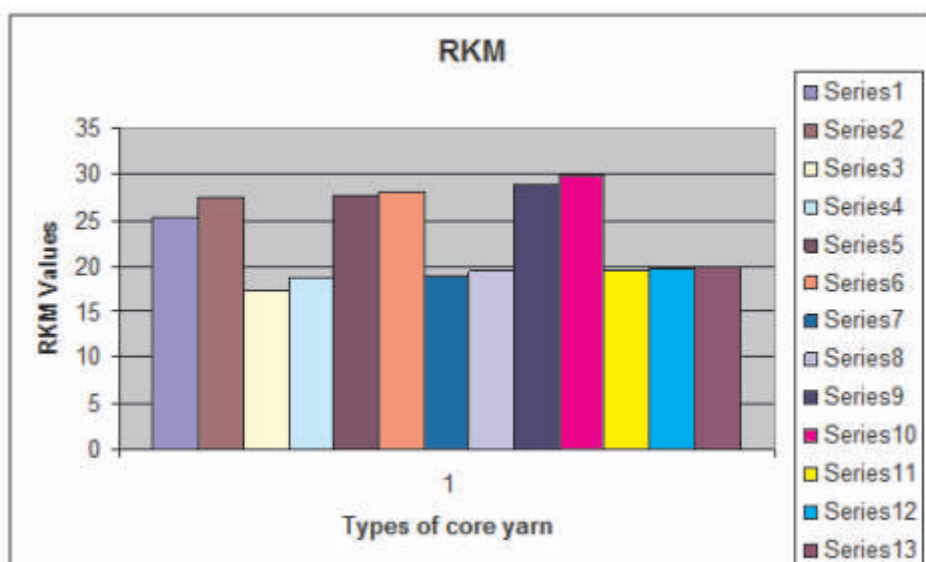
Gr



in Table 1. It d. Increased o because of as less RKM ning.

3.4. Single yarn

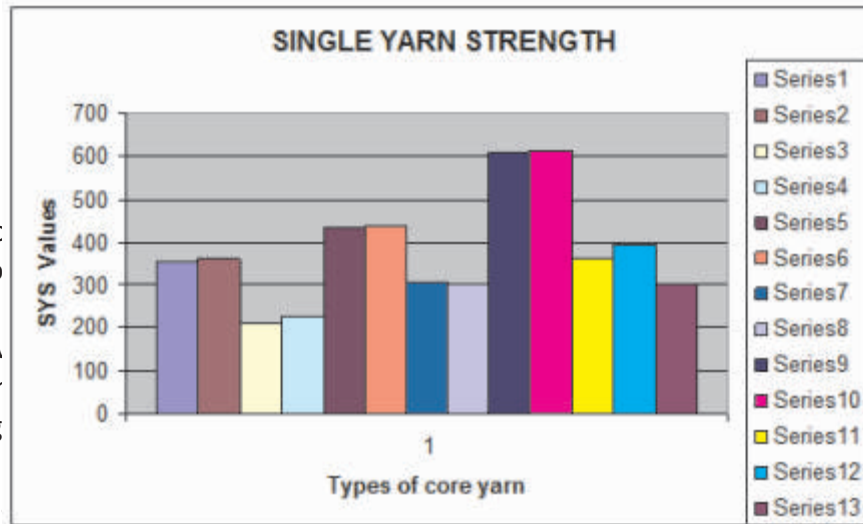
Single y shown in Table amount of filan strength than th It is due to the drawn yarns use



d results are the increase lows greater ast strength. crimped and or strength.

3.5. Elongation % of

Elongation percentage in the core depends on the type of core filament. Elongation is observed to be further 15% (i.e. from 30% to 45%) as compared to ring spun yarn with 30D core yarn. It is due to sheath yarn breaks earlier. Therefore, it can be concluded that % increase of filament in the core shows increased elongation properties. Results also show that drawn yarn in the core shows more elongation property than the crimped yarn in the core. It is obvious that crimped filament yarns provide more friction with the cotton sheath fibres than that of the parallel drawn filament yarns for which extension is observed less with crimped yarn at the core.

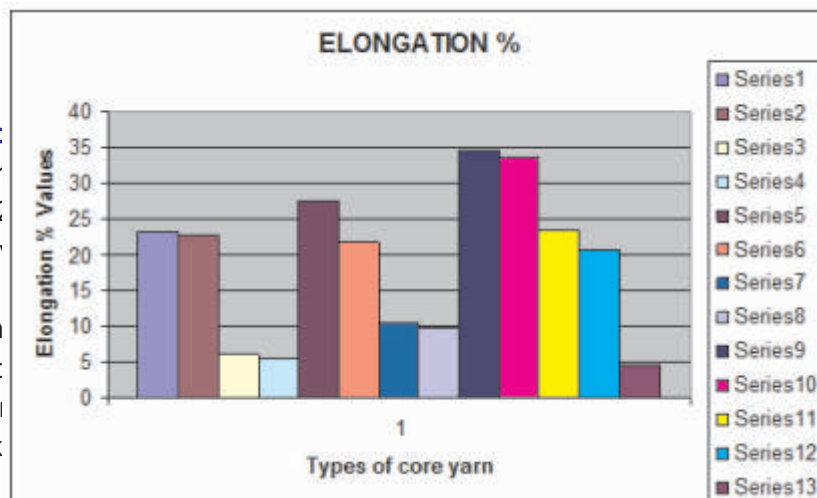


core. When depended on to 25%) the increased by observed that 400% higher yarn at the surface cotton

Graph no 5 Elongation % of yarn

3.6. U% & Total imp

USTER even are shown in table that of ring spun Uniformity is more fibers at the sheath of core to sheath. It of 100% ring spinning the core) the thick between 21-23 wh

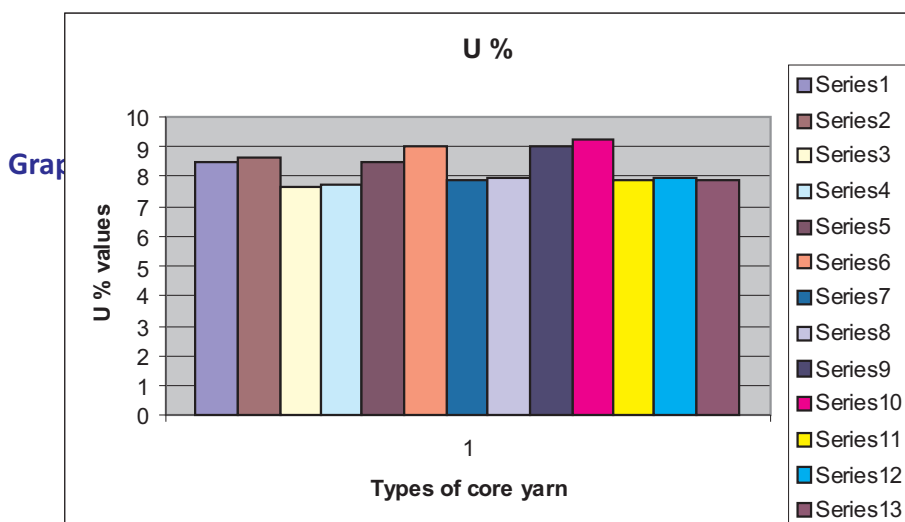


model and result more uniform . amount of staple force contribution i.e. 7.63 and that rn is least (17% at same value is in mped and drawn

yarn does not show any clear trend .It is also seen that when the % of filament at the core is least Neps are also least in the core yarn. This is due to more wrapping of staple fibres around the filament yarns. Thin place do not show any specific trend.

As compared to ring core yarn air jet core spun yarn shows all round improvements in minimizing the yarn faults.

Graph 6. U% values of different core spun polyester yarn.

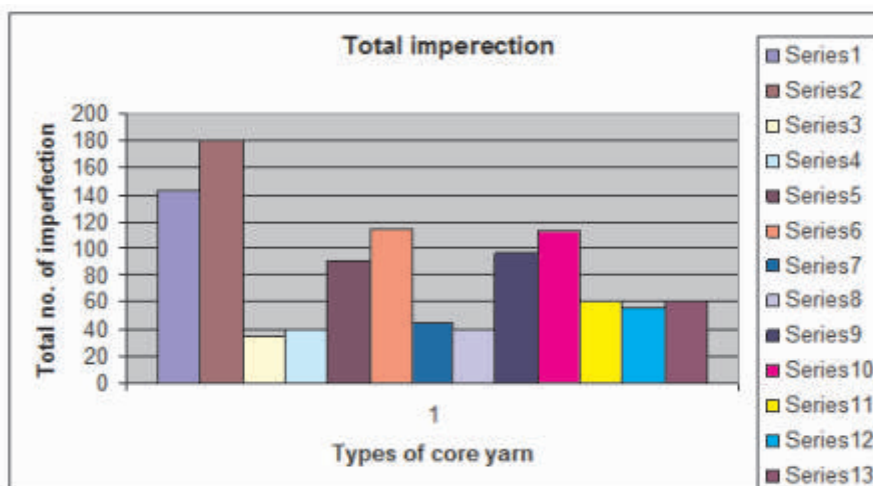


Graph

As compared to ring core yarn because of presence of cotton fibre the total imperfection is minimized.

3.7. Observation :

When all different filament at the core of 70D filament at the core of the yarn used for weaving it is observed that the imperfection is minimized due to non-



the yarn faults so increasing imperfection with the

ring core yarn (using cotton fibre) was used for weaving it is observed that the imperfection is minimized due to non-

drastically with 25% filaments at the core and with 17 % filament at the core no traces of white spots could be observed at the surface. It is therefore concluded that best covering of cotton was observed by 17% filament at the core. The matter can be cross checked by other dyeing procedures, but because of lack of timing of the project further investigations could not be done.

4. SUMMARY & CONCLUSION:

- i. It is concluded that using filament yarn at the core improved tensile strength, Elongation, RKM values of the core yarns as compared to 100% ring spun yarn.
- ii. When the amount of filaments are increased at the core in Ring spinning it is observed that U%, values are decreased in the resultant core yarn.
- iii. Crimped fibres always show better yarn strength as compared to drawn filaments at the core. Where as the elongation property shows opposite trend.
- iv. Drawn fibres at the core shows reducing yarn imperfection
- v. As compare to ring frame core yarn the air jet core yarn has less strength but uniformity is better.
- vi. It is concluded that using filament yarn at the core improved tensile strength, Elongation, RKM values of the core yarns are obtained as compared to 100% ring spun yarn.
- vii. When the amount of filaments are increased at the core in air jet spinning it is observed that U%, Thick place & Neps values are increased in the resultant core yarn but when we compared with Ring spinning yarn the values obtained on air jet yarns are far at the lower side. 100% cotton spun yarn could not be obtained on air jet spinning because of mismatch staple length with the machine requirement. But the same fibres could be processed on the same air-jet machine using only a filament at the core and cotton at the sheath.
- viii. Crimped fibres always show better yarn strength as compared to drawn filaments at the core. Where as the elongation property shows opposite trend.
- ix. As compared to ring core yarn air jet core spun yarn shows all round improvements in minimizing the yarn faults.

5. BIBLIOGRAPHY

- 1) Graham,C. O. and Ruppenicker,G.F.,Cotton outdoor fabric reinforced with glass fiber ,Textile Res. J. 53,120-125(1983)
- 2) Harper ,R.J., Jr. Ruppenicker,G.,Jr.,and Donaldson,D.,Cotton blend fabrics from polyester core yarns,Textle Res. J. 56,80-86(1986)
- 3) Textile Research Journal Feb. 1983, Feb. 1986, Sept. 1989.
- 4) Textile Research Journal Feb 92, Dec. 1993.
- 5) Textile Research Journal Apr. 2001
- 6) Cotton blend Fabrics from Polyester core yarns. Robert J. Harper, J.R. George Ruppenicker, J.R. and darrel denaldson USDA, ARS Southern Regional Research Centre, New Orleans, Louisiana 70179, USA.
- 7) The effect of fabric structure on the properties of two –way stretch fabrics mode from elastic core-span yarns of cotton and wool blend Textile Res. J. 44: 506– 512 (1974).
- 8) Device for producing staple-core cotton –wrap ring spun yarns. A.P.S. Swatney, K.R. Robert, and G.F. Ruppenicker USDA ARS. Southern Regional Research center, New Orleans Louisiana 70179 U.S.A.
- 9) Method of producing a polyester/viscose core span yarn containing spaudax using a modified ring spinning frame. Usman Babaarslan Cukurova University Department of Textile Engineering, 01330 Baleali-Adana Tunkey.

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