

()

Doubling , 가

가 .

가 가 .

, 가 Draft

가 .

Doubling

Single feed Double feed

. Double feed

. Single feed Double feed

가 가 Double

feed 가 . Double feed ,

roving break draft zone Strand(roving)

. Strand

condenser double feed .

(Minimum twist spinning test)

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가

가

Casablanca apron cradle Whitin long-draft Simpson[6,7,8]

draft가

draft

[1]

draft top arm drafting

doubling

drafting

Simpson [9] Whitin Casablanca drafting doubling

draft 4가 drafting

Ratnam[5] 40's single feed

double feed 가

30's double roving lea Uster evenness가

BTRA[2] , roving
 single feed double feed top arm drafting 16~40's
 .
 Double feed single feed
 가 -
 . doubling top arm drafting
 draft 가 strand drafting
 . [3] .
 draft single feed double feed
 draft
 .
 , doubling
 가
 .
 .
 front roller nip
 .
 . nip
 strand Strand가
 nip . double feed strand
 . 가 ,
 가 .
 가
 .

. Roving Size	Doubling
drafting	doubling
(Elpasó) 1 ,	가 (Table 1 No.1~5)
finisher drawing sliver	top arm
roving	3 (1 2)
single feed , 가	draft
draft가	roving roving 2 가
UT3 draft 가	3가 가
draft	double feed .
draft, roller setting, apron spacing	draft가 25~30 . top arm
lea uster	WST
Uster	SKF draft 가
Table	break
Kalyan, Digvijay CO ₂	draft가
Elpasó Giza 45	draft .
roving	roving

가

draft

roving

draft

<Table > Fiber properties of the cottons

Sr. Name of cotton No. or mixing	Fiber length (Baer sorter)				Fiber strength	
	Mean, mm	Effective, mm	Short fiber, %	Micro- naire value	Zero gauge, g tex	3-mm gauge, g tex
1. Kalyan	20.1	26.0	17.9	4.87	47.0	27.1
2. Digvi jay (A)	22.6	26.2	7.8	3.40	48.3	21.2
3. CO ₂ (A)	21.4	29.3	27.9	4.05	38.6	21.4
4. Elpaso	30.9	36.1	7.2	4.25	-	-
5. Giza 45	29.0	38.8	22.4	3.65	51.6	34.7
6. Digvi jay (B)	24.0	27.4	6.5	3.90	52.0	27.8
7. CO ₂ (B)	21.9	29.8	24.8	4.19	37.5	22.4
8. Menoufi	28.6	36.8	17.7	3.64	51.5	33.4
9. Digvi jay/L147	20.7	28.0	24.9	4.16	47.3	22.7
10. Sudan/African	26.8	36.6	25.8	4.17	48.7	31.8
11. Pima/Menoufi	31.1	37.2	25.0	3.82	45.1	30.4
12. L147/Kalyan	20.3	27.8	26.0	4.51	48.1	23.5
13 Sudan/Elpaso	27.9	37.2	23.7	4.35	45.0	27.3

double feed

Giza 45

(

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single feed

가

double feed

single feed

가

doubling

lea

<Table > Effect of hank of the ingoing material and doubling upon physical properties of yarn.

Sr. No.	Cotton	Hank of input material, No	Feed at ring-frame	Draft at ring-frame	Uster, U % of roving	Nominal count span, No	Actual count, No	Corrected count, No	Corrected single thread elongation, %	Uster, U %	
1	Kalyan	1	Single	26.5	7.2	24 s	25.6	1632	256.3	4.6	16.7
	carded	2	Single	13.3	8.5	24 s	23.7	1640	246.8	4.8	17.2
		2	Double	26.8	-	24 s	24.2	1930	207.7	4.7	14.6
2	Digvijay(A)	1.2	Single	30.1	6.4	34 s	33.4	1708	198.8	6.2	17.0
	carded	2.4	Single	16.0	8.3	34 s	34.7	1713	195.9	5.8	16.8
		2.4	Double	31.0	-	34 s	34.1	1911	209.2	6.1	16.4
3	CO ₂ (A)	1.4	Single	26.8	-	36 s	37.0	1868	187.6	5.6	16.3
	carded	2.8	Single	13.8	-	36 s	36.3	1838	191.7	6.2	16.5
		2.8	Double	27.6	-	36 s	36.9	2037	197.8	6.4	14.2
4	Elpaso	3.0	Single	27.5	6.0	80 s	77.2	2397	103.5	5.2	13.3
	combed	6.0	Single	13.6	6.7	80 s	88.1	2270	100.0	5.1	14.7
		6.0	Double	27.5	-	80 s	80.2	2570	122.8	5.4	12.8
5	Giza 45	3.3	Single	34.7	5.0	100 s	108.6	3120	92.2	5.6	13.6
	combed	6.6	Single	18.2	6.0	100 s	97.8	3011	93.0	5.4	13.9
		6.6	Double	35.0	-	100 s	102.1	3142	99.4	5.2	14.4

<Table > Effect of hank of the ingoing material and doubling upon physical properties of yarn

Count	Hank of input material, No	Feed at ring-frame	Draft at ring-frame	Fielder P. M. D. % of rov- ing	Nomi- nal count, No	Actual count, No	Cor- rected count, No	Fielder P. M. D. %	Draft at ring-frame	Nomi- nal count, No	Actual count, No	Cor- rected count, No	Fielder P. M. D. %
	1.0	Single	27.6	7.3	24s	23.5	2544	18.0	35.0	30s	29.8	2643	-
	1.5	Single	17.9	7.8	24s	23.3	2569	10.4	22.9	30s	30.2	2468	-
Digvijay(B)	2.0	Single	14.3	8.0	24s	25.6	2462	10.6	17.3	30s	31.4	2506	-
carded	1.5	Double	34.0	-	24s	24.3	2630	15.4	44.6	30s	30.4	2622	-
	2.0	Double	26.8	-	24s	25.1	1741	16.3	33.4	30s	30.1	2666	-
	1.2	Single	26.8	7.4	30s	30.8	1805	20.2	34.6	36s	36.9	1740	-
	1.8	Single	14.2	7.5	30s	30.6	1770	19.9	20.8	36s	36.1	1749	-
CO ₂ (B)	2.4	Single	13.0	8.1	30s	30.4	1793	19.9	16.2	36s	36.1	1728	-
carded	2.4a	Single	13.1	8.5	30s	30.0	1792	20.1	16.2	36s	36.1	1736	-
	1.8	Double	32.2	-	30s	30.4	1907	19.3	40.6	36s	36.4	1792	-
	2.4	Double	24.7	-	30s	29.8	1924	19.4	33.4	36s	36.0	1848	-
	2.25	Single	29.0	3.9	60s	62.9	3185	12.6	-	-	-	-	-
	3.0	Single	22.3	4.8	60s	61.1	3229	12.3	21.8	80s	81.3	3041	13.7
	4.5	Single	14.2	4.9	60s	60.0	3127	12.2	10.7	80s	79.9	3006	13.9
Menoufi	6.0	Single	-	6.5	-	-	-	-	14.0	80s	78.0	2838	13
combed	6.0a	Single	-	6.7	-	-	-	-	14.0	80s	81.8	2866	14.3
	3.0	Double	43.8	-	60s	62.0	3178	13.2	-	-	-	-	-
	4.5	Double	27.6	-	60s	61.4	3266	12.5	37.3	80s	80.1	3091	13.6
	6.0	Double	22.2	-	60s	62.3	3267	12.0	20.0	80s	76.5	3052	13.1

a. Prepared without alteration of the speedframe draft by making the finisher drawing sliver finer

P.M.D.=Per cent Mean Deviation

roving 가 roving
 . roving
 draft가 roving
 .
 2 (Digvijay CO₂) (Menoufi) .(Table
 No. 6~8).

Table
 . draft 가 roving .
 single feed double feed
 . roving draft .
 finisher drawing doubling 6 3
 sliver 2 가 .

roving . Roving Table
 Fielden walber ,
 50ft/min roving 5ft/min .
 draft가

draft가 .
 , draft roving
 roving 가 .
 drafting .
 , doubling
 draft .

draft double feed

40 draft

. , doubling

draft

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. Roving Size Doubling

가 300 가 . 3가

single feed

. Double feed 가 (feeding

arrangement) roving

roving break draft zone .

roving

strand . 가 가

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가

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가

roving creel 가

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roving back roller 가 roving

creel roving

. Roving guide , condenser가

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가 ,
가 가

· ,
30

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doffing 가 .
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가 , 10 bobbin

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1) (Minimum Twist spinning Test)

Textile Machinery Manufacturers(TMM)

가 “ ” .

Spintester

가 .

가 .

가 가

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TPI 3

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7

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가

Table

2) Digvijay/ L147

1Ne 2Ne intermediate roving 4.7
9,900rpm 26's

1,000 Spindle hours

가

가

500spindle hours

3) Sudan/African

2.6Ne 5.2Ne roving 70's 80's
4, 10,500rpm
1,000spindle hours

4) Pima/Menouri

3Ne 6Ne roving 80's .(
3.8, 11,000rpm) 2,000spindle hours

가

가

가

1,000 spindle hours

가

Table ,

doubling

. 12~30

draft가

<Table > Effect of hank of the ingoing material and doubling upon physical properties of yarns with different mixings.

Sr. No.	Mixing	Hank of ingoing material, No	Feed at ring-frame	Spindle speed, rpm	Nominal count, No	Actual count, No	Correctedlea, CSP	Uster, U%	Nominal count, No	Actual count, No	Correctedlea, CSP
1	Digvijay/	1	Single	9,900	26s	25.0	1945	15.1	-	-	-
	L147	2	Single	9,900	26s	25.3	1933	14.9	30s	32.2	1792
	carded	2	Double ^a	9,900	26s	26.7	2168	13.0	30s	31.4	1997
		2	Double ^b	9,900	26s	25.4	2239	13.5	30s	31.5	2068
2	Sudan/	2.6	Single	10,500	80s	80.1	2300	14.5	70s	71.7	2497
	African	5.2	Single	10,500	80s	79.7	2360	14.7	-	-	-
	combed	5.2	Double ^a	10,500	80s	80.4	2325	14.5	70s	70.8	2507
		5.2	Double ^b	10,500	80s	80.4	2352	14.5	70s	71.2	2599
3	Pima/	3.0	Single	11,000	80s	79.0	2889	12.5	100s	97.5	2315
	Mencuri	6.0	Single	11,000	80s	79.4	2874	13.6	100s	100.9	2195
	combed	6.0	Double ^a	11,000	80s	78.7	2873	13.0	100s	100.7	2339
		6.0	Double ^b	11,000	80s	76.6	2924	12.4	100s	100.7	2279

a. Rovings fed with a crossover.

b. Rovings fed side by side.

<Table > End breakage rate under different feeding conditions

Mixing	Hank of input material, No	Feed	Count, No	Spindle speed, rpm	Test1	Count, No	Spindle speed, rpm	Test2	Count, No	Spindle speed, rpm	Test3	Count, No	Spindle speed, rpm
					End breaks, 100 spindle/hr			End breaks, 100 spindle/hr			End breaks, 100 spindle/hr		
Digvijay/L147	1	Single	26 s	9,900	11.3	26s	11,500	21.2	-	-	-	-	-
	2	Single	26 s	9,900	7.9	26s	11,500	13.4	30s	9,900	19.2	-	-
		Double ^a	26 s	9,900	10.2	26s	11,500	27.2	30s	9,900	25.6	-	-
		Double ^b	26 s	9,900	23.6	26s	11,000	129.4	30s	9,900	124.0	-	-
Sudan/African	2.6	Single	70 s	10,500	5.1	80s	10,500	13.9	-	-	-	-	-
	5.2	Single	-	-	-	80s	10,500	11.2	-	-	-	-	-
		Double ^a	70 s	10,500	7.1	80s	10,500	14.4	-	-	-	-	-
		Double ^b	70 s	10,500	8.0	80s	10,500	22.5	-	-	-	-	-
Pima/Mencuri	3	Single	80 s	11,000	5.7	-	-	-	-	-	-	-	-
	6	Single	80 s	11,000	9.1	80s	13,000	15.5	100s	11,000	13.7	-	-
		Double ^a	80 s	11,000	4.1	80s	13,000	10.4	100s	11,000	19.0	-	-
		Double ^b	80 s	11,000	3.8	80s	13,000	20.2	100s	11,000	35.4	-	-

a. Rovings fed with a crossover.

b. Rovings fed side by side

<Table > Minimum twist under different feeding conditions

Mixing	Hank of input material, No	Feed	Spindle speed, rpm	Count, No	Test1 Minimum twist, turns/in.	Count, No	Test2 Minimum twist, turns/in.
Digvijay/L147 carded	1	Single	9,900	240	19.0	300	22.3
	2	Single	9,900	240	19.1	300	21.8
	2	Double ^a	9,900	240	18.4	300	21.4
	2	Double ^b	9,900	240	19.9	300	24.5
Sudan/African combed	2.6	Single	10,500	-	-	800	27.1
	5.2	Single	10,500	-	-	800	27.9
	5.2	Double ^a	10,500	-	-	800	26.3
	5.2	Double ^b	10,500	-	-	800	27.2
Fima/Menoufi combed	3	Single	11,000	800	22.6	1000	28.6
	6	Single	11,000	800	24.9	1000	29.1
	6	Double ^a	11,000	800	20.2	1000	23.9
	6	Double ^b	11,000	800	21.1	1000	25.2

a. Rovings fed with a crossover.

b. Rovings fed side by side.

가

가

draft

drafting

가 .

doubling

. Double feed

가 roving

strand

break draft zone drafting

. Single feed double feed

. draft , double feed 가

single feed 가 . (1) double feed Strand

single feed

. (2) double feed

drafting zone

가

(1)

double feed . double feed
single feed 가 feed
가 .
(delivery point)
strand .
Single feed , 가
.
strand
.
Sudan/African , 가
Pima/Menoufi 가 .
Double feed strand ,
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single feed double feed
double feed single
feed 가 가
가 , double feed
single feed 가 double feed
가 .
가 double feed
strand roving (double feed)
roving

(

)

strand

strand

strand front roller nip

double feed

strand

가 가

single feed double feed ,

single feed