



**TEXAS COTTON QUALITY EVALUATION  
CROP of 1995**

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**THE TEXAS FOOD AND FIBERS COMMISSION**

#### ACKNOWLEDGMENT

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# TEXAS COTTON QUALITY EVALUATION -- CROP OF 1995

## INTRODUCTION

This is the sixteenth in a series of annual reports to provide interested parties with information regarding the quality of cotton produced in Texas. All testing, processing and evaluations were performed on commercial-sized equipment at the International Textile Center.

A sample of sixteen representative cotton bales was obtained in collaboration with key people in the production and marketing sectors within Texas. Also, USDA data on cotton varieties planted were used to ensure that the sample included the dominant Texas varieties. An attempt was made to select at least two bales from each of the major production areas of Texas. All bales are identified by their ginning locations as well as by the production area. For the second time, we have included a bale of roller-ginned Pima cotton from the Rio Grande Valley area.

Fiber samples from each of the sixteen bales were tested using individual instruments, high-volume instruments (HVIs), the IIC/Shirley FMT-III, the Peyer Texlab AL-101, and the Zellweger Uster AFIS. In order to test for stickiness of the cotton, fiber samples were processed through a Hollingsworth card and the degree of sticking on the crush rolls was determined.

The sequence and types of machinery used for processing the fibers into yarns are shown in Figure 1. (The process for Pima bypassed both ERMs, was carded at 60 pounds per hour, included only combing, was spun from 1.80 hank roving and included ring spun  $N_e$  80/1. All typical for this type of cotton.) Also, six of the longer staple Upland cotton varieties were processed both with and without combing, in order to document the impact of combing on yarn quality. This marked the third consecutive year for selective combing of Upland cotton.

As always, both rotor and ring spinning were included; spinning specifications are summarized in Table 1. The Schlafhorst Autocoro SE-9 was used for rotor spinning tests, and a Saco-Lowell SF-3H was used for ring spinning tests. Results for the combed Pima cotton are shown in Table 2. Results for the six carded and combed Upland bales are shown in Tables 3-8 for the carded cottons and in Tables 3a-8a for the combed cottons. All other test lots were carded only.

## SUMMARY COMMENTS ON COMBING

For evaluating the combed yarns, a  $N_e$  30 yarn size was used. This count is on the high side of those usually spun commercially on the rotor spinning system, but is frequently produced on the ring spinning system. Therefore, this count should provide a good indicator of the improvements that may be obtained by combing.

Major impacts on combing of yarn properties are the following:

- The count-strength-product (CSP) by the skein method increased significantly for ring-spun yarns, but only marginally for rotor-spun yarns (Figure 2). The same conclusion applies to single-yarn strength as measured by the Uster Tensorapid (Figure 3).
- The non-uniformity (CV%) of rotor-spun yarns was unaffected by combing for rotor yarns, but it was greatly reduced for the ring-spun yarns (Figure 4). It is noteworthy that combing was needed to make the non-uniformity measurements for ring-spun yarns compare favorably with those for rotor-spun yarns.
- Neps were decreased in number for both types of spinning; the impact of combing was huge for ring spinning, but considerably less for rotor yarns (Figure 5).

The conclusion is that combing may be beneficial to some mills producing ring-spun yarns, but is of dubious value for those using rotor-spinning technology. These results corroborate the data reported previously for the 1993 and 1994 crops.

FIGURE 1: OUTLINE OF MECHANICAL PROCESSES

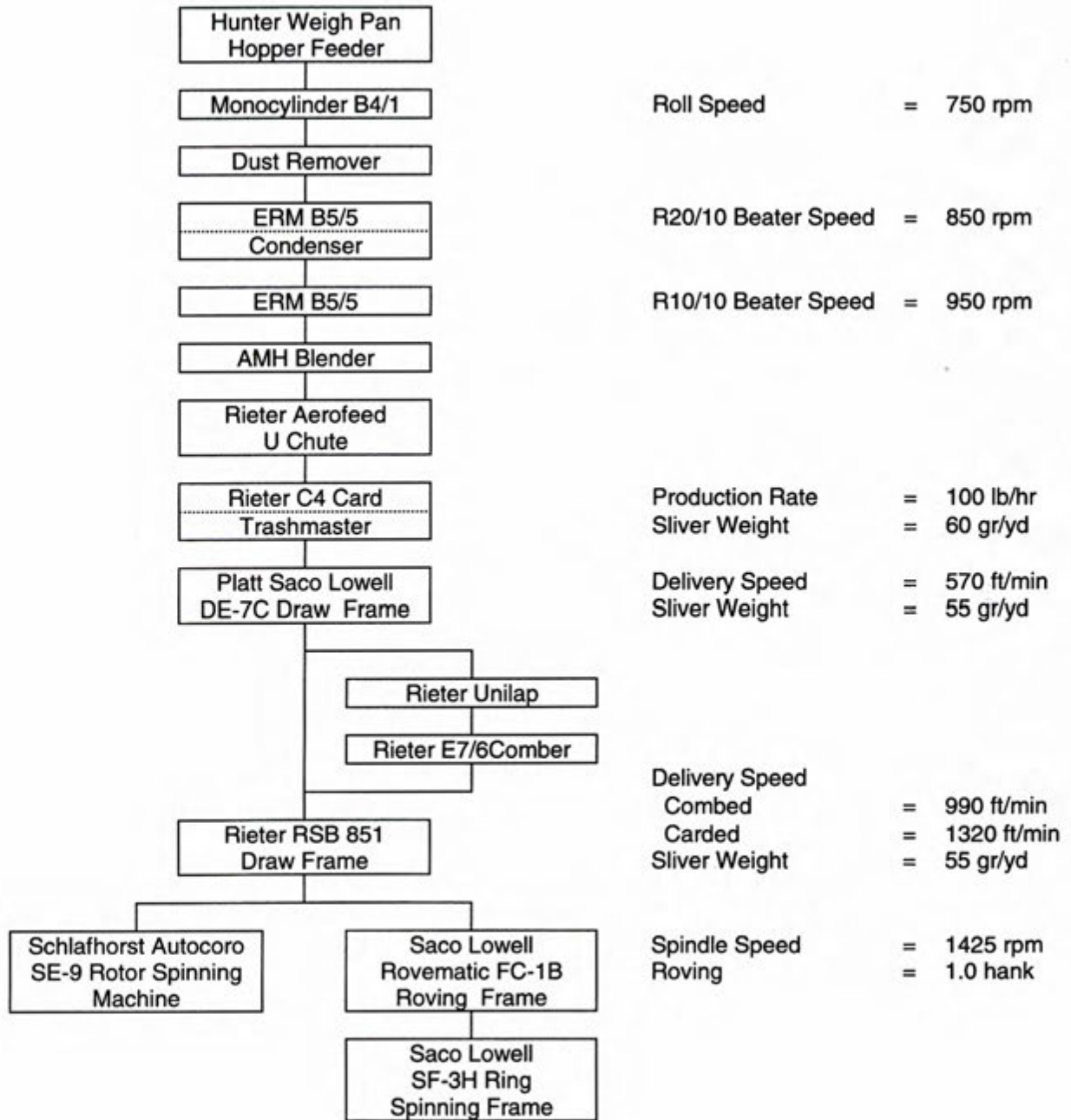


TABLE 1

SPINNING SPECIFICATIONS

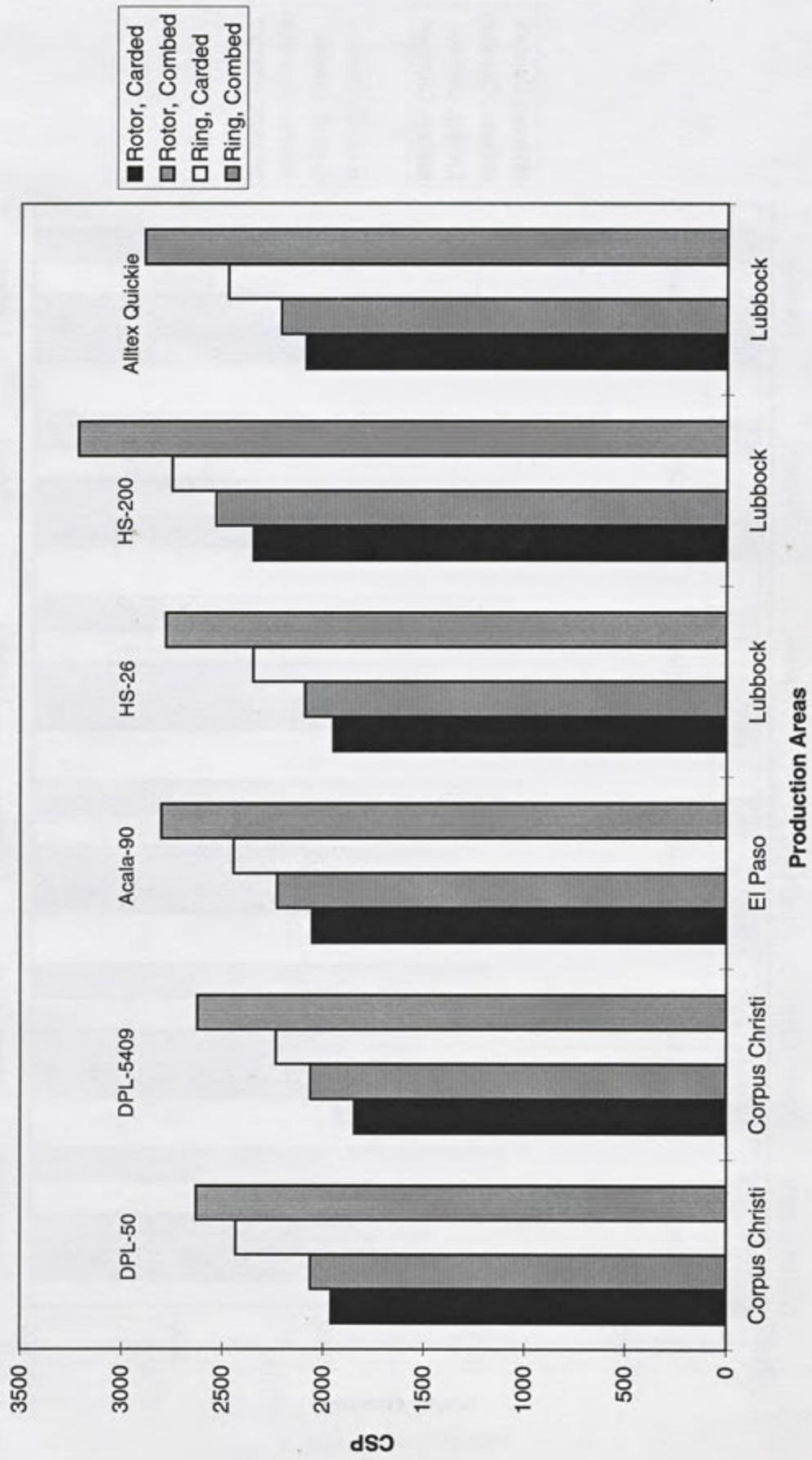
(a) ROTOR SPINNING

Sliver	55 gr./yd Finisher Drawframe		
Machine	Schlafhorst Autocoro SE-9		
Nominal Yarn Size	10	22	30
Rotor Type	T 231 D		
Rotor Speed (rpm)	100,000		
Opening Roller Type	B 174 DN		
Opening Roller Speed (rpm)	7,500		
Draft (approximate)	66	145	198
Twist Multiplier	4.80	4.80	4.80
Yarn Speed (yd/min.)	167.8	123.6	105.5
Navel	4-grooved Ceramic (KN4) + 1.5		
Torque Stop	TS 37		

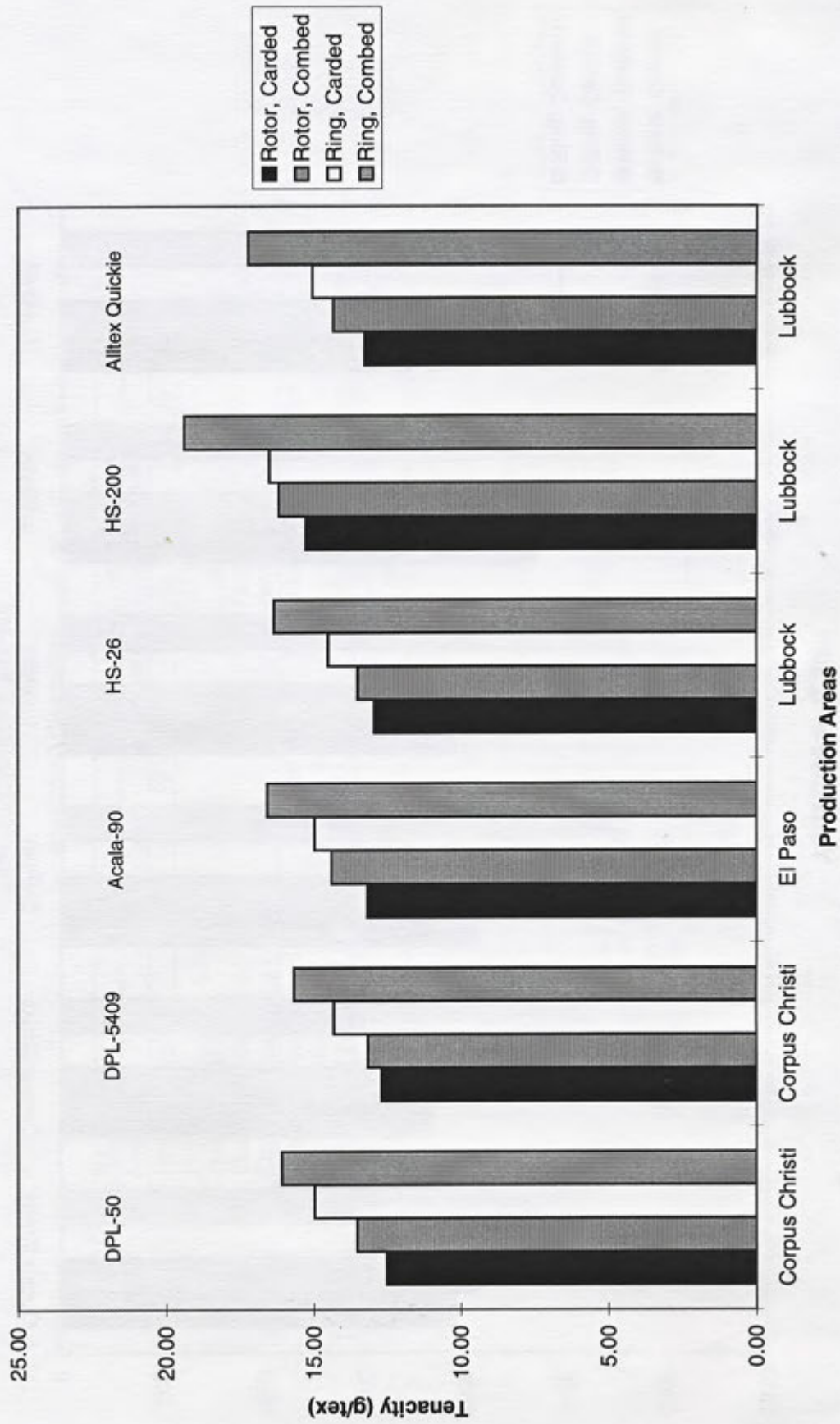
(b) RING SPINNING

Roving Frame	Saco Lowell FC-1B	
Flyer Speed (rpm)	1425	
Roving	1.0 hank	
Ring spinning Frame	Saco Lowell SF-3H	
Spindle Speed (rpm)	10,000	
Ring Diameter (in)	2	
Twist Multiplier	4.00	

**Figure 2: Count-Strength-Product for Texas Cottons, Carded and Combed**  
**Yarn Size =  $N_e$  30/1**

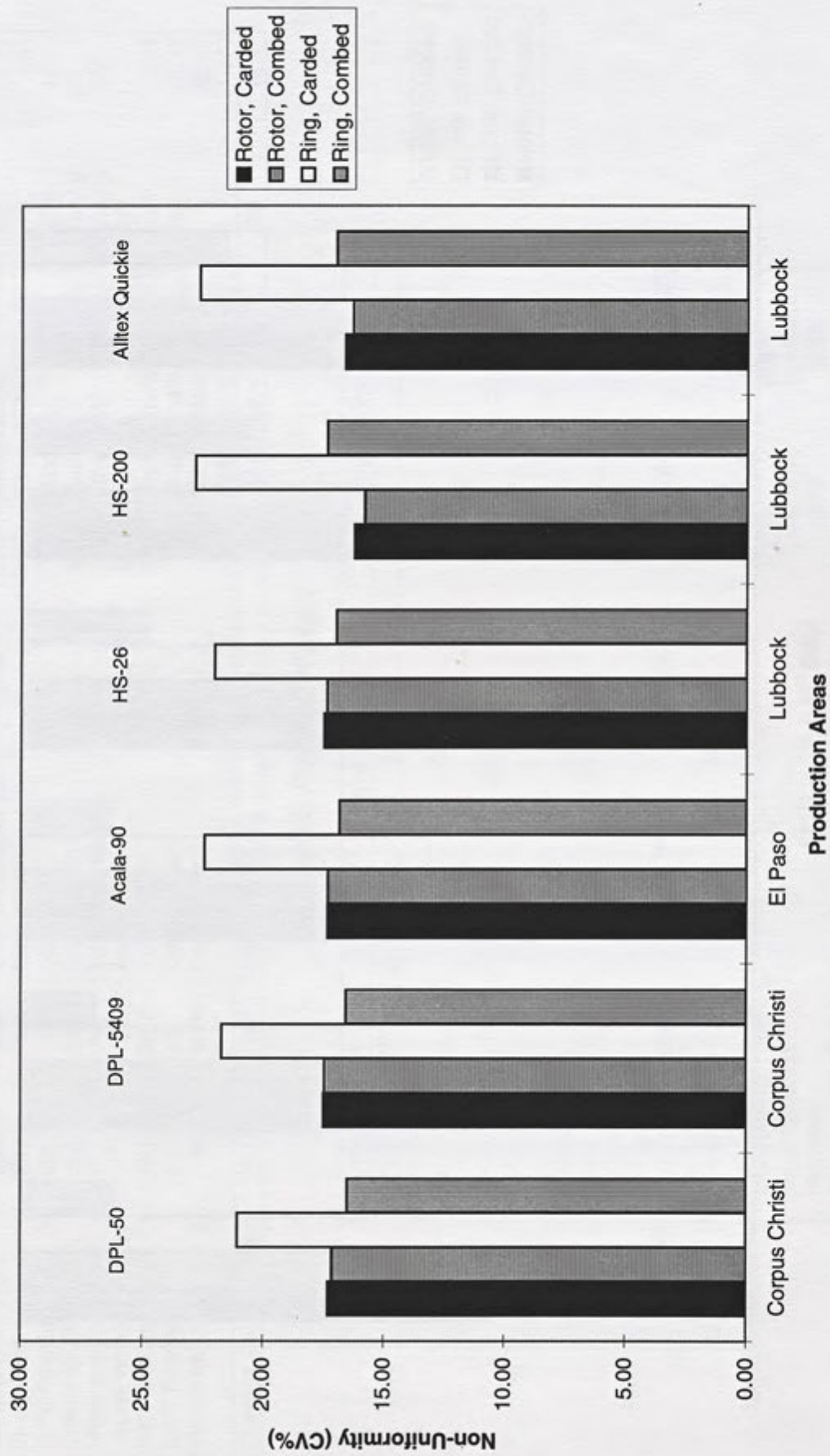


**Figure 3: Tenacity for Texas Cottons, Carded and Combed  
Yarn Size =  $N_6$  30/1**

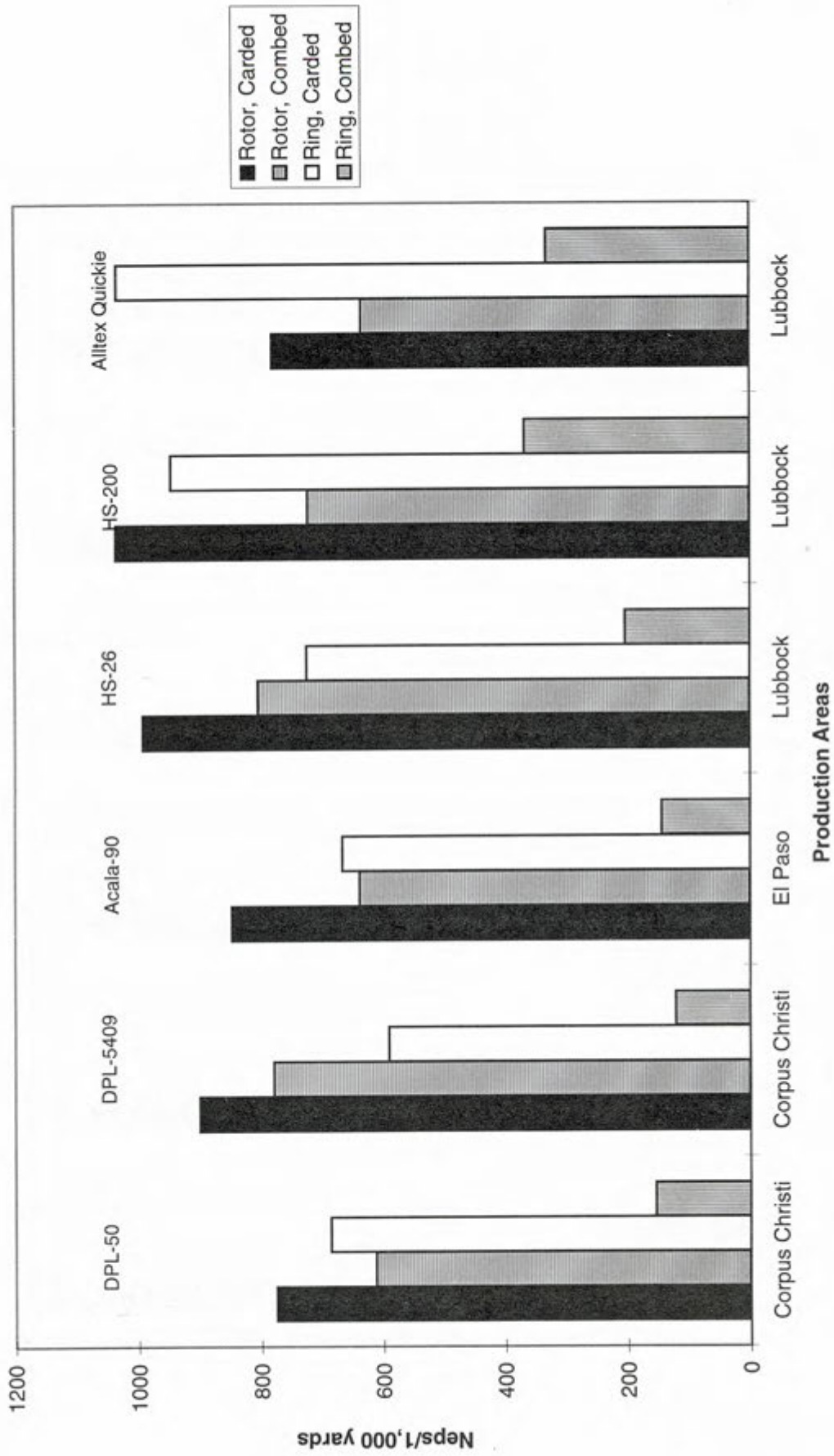




**Figure 4: Non-Uniformity for Texas Cottons, Carded and Combed**  
**Yarn Size =  $N_e$  30/1**



**Figure 5: Neps for Texas Cottons, Carded and Combed**  
 Yarn Size =  $N_e$  30/1



FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex)	1/8" Gauge Strength	(g/tex)	Upper Quartile Length (w)	(in)
Elongation	(%)	Elongation	(%)	Mean Length	(in)
2.5% Span Length	(in)	Length	(in)	Percent Short Fibers	(in)
Uniformity Ratio	(%)	Uniformity Index	(in)	Diameter	(µm)
Micronaire Index		Micronaire Index		Neps	(no./g)
Shirley Non-Lint Content		Reflectance	(Rd)	Total Trash	(no./g)
F/MT Maturity	(%)	Yellowness	(+b)		
F/MT Fineness	(mtex)	Color Grade			
Stickiness	very slightly sticky	Leaf Grade			
Opening, Carding Waste (%)	6.0	Combing Waste (%)	11.3	Upper Quartile Length (w)	(in)
				Mean Length	(in)
				CV% of Mean	
				Percent Short Fibers	
				Total Waste (%)	

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning		Ring Spinning	
	30/1	30/1	30/1	80/1
Nominal Yarn Number (N <sub>e</sub> )				
Skein Test:				
Yarn Number (N <sub>e</sub> )	30.4		30.0	79.3
CV% of Count	.60		.79	1.74
Count-Strength-Product	2895		4164	3101
CV% of CSP	2.09		9.21	3.79
Single-Yarn Test:				
Tenacity (g/tex)	18.50		25.12	22.41
Mean Strength (g)	360		494	167
CV% of Break	7.5		7.0	11.3
Elongation (%)	6.28		6.80	5.13
CV% of Elongation	5.6		6.7	10.1
Uster Evenness Test:				
Non-Uniformity (CV%)	15.36		12.83	17.64
Thin Places/1,000 yds	50		3	184
Thick Places/1,000 yds	131		11	249
Neps/1,000 yds	165		15	184
Hairiness	3.21		3.49	2.50
ASTM Yarn Grade	A		A	A

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	25.3	1/8" Gauge Strength (g/tex)	28.9	Upper Quartile Length (w) (in)	1.19
Elongation (%)	6.8	Elongation (%)	5.8	Mean Length (in)	.98
2.5% Span Length (in)	1.12	Length (in)	1.15	Percent Short Fibers	8.3
Uniformity Ratio (%)	46.0	Uniformity Index	83.1	Diameter (µm)	14.2
Micronaire Index	4.4	Micronaire Index	4.4	Neps (no./g)	267
Shirley Non-Lint Content (%)	4.00	Reflectance (Rd)	76.9	Total Trash (no./g)	90
F/MT Maturity (%)	80.7	Yellowness (+b)	9.4	Peyer AL 101	
F/MT Fineness (mtex)	189	Color Grade	31-3	Upper Quartile Length (w) (in)	1.18
Stickiness	not sticky	Leaf Grade	3	Mean Length (in)	1.01
Opening, Carding Waste (%)	7.6			CV% of Mean	25.0
				Percent Short Fibers	2.5

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	9.9	22.2	30.2	16.1	29.5
CV% of Count	.32	.35	.79	1.14	1.38
Count-Strength-Product	2496	2090	1959	2689	2434
CV% of CSP	2.33	3.11	2.19	3.52	3.63
Single-Yarn Test:					
Tenacity (g/tex)	14.80	13.15	12.52	16.28	14.96
Mean Strength (g)	878	351	245	595	300
CV% of Break	5.4	7.7	8.4	8.1	8.7
Elongation (%)	7.28	5.89	5.65	6.73	6.59
CV% of Elongation	5.7	7.5	8.8	8.0	6.2
Uster Evenness Test:					
Non-Uniformity (CV%)	12.62	15.33	17.30	16.44	21.05
Thin Places/1,000 yds	0	33	146	32	479
Thick Places/1,000 yds	14	151	270	263	1213
Neps/1,000 yds	10	227	775	120	686
Hairiness	4.00	3.82	3.43	5.50	4.66
ASTM Yarn Grade	A	B	B	B	C

FIBER PROPERTIES

<u>Individual Instrument Data</u>		<u>HVI Data</u>		<u>Uster AFIS</u>	
Stelometer Strength (g/tex)	25.3	1/8" Gauge Strength (g/tex)	28.9	Upper Quartile Length (w) (in)	1.19
Elongation (%)	6.8	Elongation (%)	5.8	Mean Length (in)	.98
2.5% Span Length (in)	1.12	Length (in)	1.15	Percent Short Fibers	8.3
Uniformity Ratio (%)	46.0	Uniformity Index	83.1	Diameter (µm)	14.2
Micronaire Index	4.4	Micronaire Index	4.4	Neps (no./g)	267
Shirley Non-Lint Content	4.00	Reflectance (Rd)	76.9	Total Trash	90
F/MT Maturity (%)	80.7	Yellowness (+b)	9.4	Peyer AL 101	
F/MT Fineness (mtex)	189	Color Grade	31-3	Upper Quartile Length (w) (in)	1.18
Stickiness	not sticky	Leaf Grade	3	Mean Length (in)	1.01
Opening, Carding Waste (%)	7.6	Combing Waste (%)	12.3	CV% of Mean	25.0
				Percent Short Fibers	2.5
				Total Waste (%)	19.0

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>e</sub> )	30/1	30/1
Skein Test :		
Yarn Number (N <sub>e</sub> )	30.2	30.4
CV% of Count	.63	1.96
Count-Strength-Product	2063	2630
CV% of CSP	3.25	4.33
Single-Yarn Test:		
Tenacity (g/tex)	13.52	16.08
Mean Strength (g)	263	313
CV% of Break	7.5	9.0
Elongation (%)	5.84	6.33
CV% of Elongation	7.4	6.9
Uster Evenness Test:		
Non-Uniformity (CV%)	17.13	16.49
Thin Places/1,000 yds	144	53
Thick Places/1,000 yds	292	295
Neps/1,000 yds	612	154
Hairiness	3.62	4.16
ASTM Yarn Grade	B+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex)	1/8" Gauge Strength	(g/tex)	Upper Quartile Length (w)	(in)
Elongation	(%)	Elongation	(%)	Mean Length	(in)
2.5% Span Length	(in)	Length	(in)	Percent Short Fibers	
Uniformity Ratio	(%)	Uniformity Index		Diameter	(µm)
Micronaire Index		Micronaire Index		Neps	(no./g)
Shirley Non-Lint Content		Reflectance	(Rd)	Total Trash	(no./g)
F/MT Maturity	(%)	Yellowness	(+b)		
F/MT Fineness	(mtex)	Color Grade			
Stickiness	not sticky	Leaf Grade			
Opening, Carding Waste (%)	7.3				

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning		Ring Spinning	
	10/1	22/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )				
Skein Test:				
Yarn Number (N <sub>e</sub> )	10.1	22.0	16.1	29.8
CV% of Count	.37	.36	.95	1.01
Count-Strength-Product	2456	2050	2564	2235
CV% of CSP	1.33	3.06	3.40	2.54
Single-Yarn Test:				
Tenacity (g/tex)	14.20	12.60	15.81	14.31
Mean Strength (g)	833	337	580	283
CV% of Break	6.1	8.0	8.8	7.9
Elongation (%)	7.13	6.16	6.64	6.44
CV% of Elongation	5.8	8.4	8.2	6.5
Uster Evenness Test:				
Non-Uniformity (CV%)	12.71	15.26	17.12	18.82
Thin Places/1,000 yds	1	29	56	134
Thick Places/1,000 yds	20	121	334	665
Neps/1,000 yds	14	173	82	153
Hairiness	3.62	3.95	5.74	5.30
ASTM Yarn Grade	A	B	B	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	25.2	1/8" Gauge Strength (g/tex)	28.7	Upper Quartile Length (w) (in)	1.18
Elongation (%)	6.5	Elongation (%)	6.1	Mean Length (in)	.96
2.5% Span Length (in)	1.13	Length (in)	1.16	Percent Short Fibers	8.8
Uniformity Ratio (%)	44.0	Uniformity Index	82.7	Diameter (µm)	14.3
Micronaire Index	4.2	Micronaire Index	4.2	Neps (no./g)	323
Shirley Non-Lint Content (%)	3.00	Reflectance (Rd)	76.0	Total Trash (no./g)	69
F/MT Maturity (%)	78.8	Yellowness (+b)	8.5	Peyer AL 101	
F/MT Fineness (mtex)	184	Color Grade	31-4	Upper Quartile Length (w) (in)	1.16
Stickiness	not sticky	Leaf Grade	2	Mean Length (in)	.98
Opening, Carding Waste (%)	7.3	Combing Waste (%)	14.8	CV% of Mean	26.0
				Percent Short Fibers	3.3
				Total Waste (%)	21.0

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>e</sub> )	30/1	30/1
Skein Test :		
Yarn Number (N <sub>e</sub> )	30.0	30.6
CV% of Count	.49	.91
Count-Strength-Product	2062	2624
CV% of CSP	1.71	2.77
Single-Yarn Test:		
Tenacity (g/tex)	13.15	15.66
Mean Strength (g)	259	303
CV% of Break	8.2	10.0
Elongation (%)	5.63	6.37
CV% of Elongation	8.6	7.6
Uster Evenness Test:		
Non-Uniformity (CV%)	17.44	16.56
Thin Places/1,000 yds	156	49
Thick Places/1,000 yds	337	286
Neps/1,000 yds	779	121
Hairiness	3.78	4.26
ASTM Yarn Grade	B+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	27.1	1/8" Gauge Strength (g/tex)	31.8	Upper Quartile Length (w) (in)	1.14
Elongation (%)	6.2	Elongation (%)	6.2	Mean Length (in)	.93
2.5% Span Length (in)	1.13	Length (in)	1.15	Percent Short Fibers	10.0
Uniformity Ratio (%)	44.0	Uniformity Index	82.4	Diameter (µm)	14.0
Micronaire Index	4.8	Micronaire Index	4.8	Neps (no./g)	290
Shirley Non-Lint Content	2.15	Reflectance (Rd)	78.1	Total Trash	24
F/MT Maturity (%)	86.3	Yellowness (+b)	8.6	PeyerAL 101	
F/MT Fineness (mtex)	191	Color Grade	31-1	Upper Quartile Length (w) (in)	1.11
Stickiness	not sticky/very slightly sticky	Leaf Grade	2	Mean Length (in)	.89
Opening, Carding Waste (%)	4.8			CV% of Mean	34.5
				Percent Short Fibers	11.6

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.1	22.1	30.0	16.2	30.4
CV% of Count	.38	.47	.54	1.01	.87
Count-Strength-Product	2579	2244	2055	2770	2445
CV% of CSP	2.38	3.43	2.28	3.18	2.32
Single-Yarn Test:					
Tenacity (g/tex)	15.32	13.88	13.17	16.89	14.96
Mean Strength (g)	896	371	259	616	290
CV% of Break	6.0	8.3	8.9	7.7	10.3
Elongation (%)	6.52	5.94	5.37	6.30	5.42
CV% of Elongation	6.9	7.6	8.3	6.4	7.4
Uster Evenness Test:					
Non-Uniformity (CV%)	12.61	15.36	17.33	17.53	22.43
Thin Places/1,000 yds	1	32	144	64	509
Thick Places/1,000 yds	17	128	300	402	1504
Neps/1,000 yds	8	202	847	80	666
Hairiness	4.37	3.96	3.73	5.66	4.80
ASTM Yarn Grade	B+	B+	B	B	C



FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 27.1	1/8" Gauge Strength	(g/tex) 31.8	Upper Quartile Length (w)	(in) 1.14
Elongation	(%) 6.2	Elongation	(%) 6.2	Mean Length	(in) .93
2.5% Span Length	(in) 1.13	Length	(in) 1.15	Percent Short Fibers	10.0
Uniformity Ratio	(%) 44.0	Uniformity Index	82.4	Diameter	(µm) 14.0
Micronaire Index	4.8	Micronaire Index	4.8	Neps	(no./g) 290
Shirley Non-Lint Content	2.15	Reflectance	(Rd) 78.1	Total Trash	(no./g) 24
F/MT Maturity	(%) 86.3	Yellowness	(+b) 8.6	Peyer AL 101	
F/MT Fineness	(mtex) 191	Color Grade	31-1	Upper Quartile Length (w)	(in) 1.11
Stickiness	not sticky/very slightly sticky	Leaf Grade	2	Mean Length	(in) .89
Opening, Carding Waste	(%) 4.8	Combing Waste	(%) 14.3	CV% of Mean	34.5
				Percent Short Fibers	11.6
				Total Waste	(%) 18.4

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>e</sub> )	30/1	30/1
Skein Test:		
Yarn Number (N <sub>e</sub> )	30.0	30.4
CV% of Count	.60	.83
Count-Strength-Product	2228	2804
CV% of CSP	1.95	2.39
Single-Yarn Test:		
Tenacity (g/tex)	14.38	16.57
Mean Strength (g)	283	322
CV% of Break	7.5	11.0
Elongation (%)	5.44	5.90
CV% of Elongation	7.2	10.0
Uster Evenness Test:		
Non-Uniformity (CV%)	17.32	16.84
Thin Places/1,000 yds	136	62
Thick Places/1,000 yds	320	330
Neps/1,000 yds	638	144
Hairiness	3.80	4.19
ASTM Yarn Grade	B+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	26.9	1/8" Gauge Strength (g/tex)	30.5	Upper Quartile Length (w) (in)	1.09
Elongation (%)	6.7	Elongation (%)	6.0	Mean Length (in)	.89
2.5% Span Length (in)	1.11	Uniformity Index (in)	1.10	Percent Short Fibers	10.1
Uniformity Ratio (%)	44.0	Micronaire Index	81.4	Diameter (µm)	13.9
Micronaire Index	4.3	Reflectance (Rd)	4.3	Neps (no./g)	380
Shirley Non-Lint Content	2.43	Yellowness (+b)	75.8	Total Trash	60
F/MT Maturity (%)	82.3	Color Grade	9.6	Peyer AL 101	
F/MT Fineness (mtex)	182	Leaf Grade	31-3	Upper Quartile Length (w) (in)	1.06
Stickiness	not sticky		1	Mean Length (in)	.87
Opening, Carding Waste (%)	5.1			CV% of Mean	31.1
				Percent Short Fibers	10.3

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.2	22.2	30.4	16.2	29.5
CV% of Count	.28	.44	.53	.69	.75
Count-Strength-Product	2489	2139	1950	2642	2348
CV% of CSP	2.19	2.19	2.91	2.77	6.59
Single-Yarn Test:					
Tenacity (g/tex)	14.66	13.43	12.93	16.27	14.50
Mean Strength (g)	851	357	251	593	291
CV% of Break	5.9	7.1	8.3	9.1	11.8
Elongation (%)	6.57	5.77	5.17	6.13	5.39
CV% of Elongation	6.5	7.5	8.3	8.0	11.3
Uster Evenness Test:					
Non-Uniformity (CV%)	12.65	15.38	17.48	17.53	22.03
Thin Places/1,000 yds	1	26	138	75	455
Thick Places/1,000 yds	20	141	318	412	1409
Neps/1,000 yds	12	259	992	132	724
Hairiness	4.36	4.05	3.82	5.80	4.92
ASTM Yarn Grade	B+	B+	B+	C+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	26.9	1/8" Gauge Strength (g/tex)	30.5	Upper Quartile Length (w) (in)	1.09
Elongation (%)	6.7	Elongation (%)	6.0	Mean Length (in)	.89
2.5% Span Length (in)	1.11	Length (in)	1.10	Percent Short Fibers	10.1
Uniformity Ratio (%)	44.0	Uniformity Index	81.4	Diameter (µm)	13.9
Micronaire Index	4.3	Micronaire Index	4.3	Neps (no./g)	380
Shirley Non-Lint Content (%)	2.43	Reflectance (Rd)	75.8	Total Trash	60
F/MT Maturity (%)	82.3	Yellowness (+b)	9.6	Peyer AL 101	
F/MT Fineness (mtex)	182	Color Grade	31-3	Upper Quartile Length (w) (in)	1.06
Stickiness	not sticky	Leaf Grade	1	Mean Length (in)	.87
Opening, Carding Waste (%)	5.1	Combing Waste (%)	14.3	CV% of Mean	31.1
				Percent Short Fibers	10.3
				Total Waste (%)	18.7

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>a</sub> )	30/1	30/1
Skein Test:		
Yarn Number (N <sub>a</sub> )	30.2	30.3
CV% of Count	.46	.56
Count-Strength-Product	2091	2781
CV% of CSP	2.48	1.56
Single-Yarn Test:		
Tenacity (g/tex)	13.50	16.34
Mean Strength (g)	264	319
CV% of Break	7.1	9.3
Elongation (%)	5.37	5.95
CV% of Elongation	7.1	7.7
Uster Evenness Test:		
Non-Uniformity (CV%)	17.36	16.98
Thin Places/1,000 yds	130	67
Thick Places/1,000 yds	335	349
Neps/1,000 yds	804	203
Hairiness	3.88	4.29
ASTM Yarn Grade	B+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	29.2	1/8" Gauge Strength (g/tex)	29.9	Upper Quartile Length (w) (in)	1.12
Elongation (%)	6.7	Elongation (%)	5.7	Mean Length (in)	.92
2.5% Span Length (in)	1.10	Length (in)	1.13	Percent Short Fibers	9.6
Uniformity Ratio (%)	44.0	Uniformity Index	81.4	Diameter (µm)	11.9
Micronaire Index	2.9	Micronaire Index	2.8	Neps (no./g)	532
Shirley Non-Lint Content	2.42	Reflectance (Rd)	81.8	Total Trash	59
F/MT Maturity (%)	69.4	Yellowness (+b)	8.4	Peyer AL 101	
F/MT Fineness (mtex)	130	Color Grade	11-2	Upper Quartile Length (w) (in)	1.09
Stickiness	not sticky	Leaf Grade	1	Mean Length (in)	.87
Opening, Carding Waste (%)	5.9			CV% of Mean	33.0
				Percent Short Fibers	12.8

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.0	22.2	30.1	16.3	30.2
CV% of Count	.21	.55	.63	.89	.98
Count-Strength-Product	2936	2548	2348	3102	2752
CV% of CSP	2.39	1.97	1.60	2.36	4.87
Single-Yarn Test:					
Tenacity (g/tex)	16.98	15.96	15.27	18.48	16.50
Mean Strength (g)	1006	425	300	668	323
CV% of Break	5.4	7.9	7.0	7.0	10.3
Elongation (%)	7.54	6.46	6.26	6.82	6.04
CV% of Elongation	5.4	7.6	6.2	6.6	7.2
Uster Evenness Test:					
Non-Uniformity (CV%)	12.19	14.37	16.24	18.11	22.83
Thin Places/1,000 yds	0	8	43	90	507
Thick Places/1,000 yds	15	84	224	499	1625
Neps/1,000 yds	16	198	1036	138	946
Hairiness	3.79	3.93	3.64	5.91	5.07
ASTM Yarn Grade	B+	B	B	C	D+

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex)	1/8" Gauge Strength	(g/tex)	Upper Quartile Length (w)	(in)
Elongation	(%)	Elongation	(%)	Mean Length	(in)
2.5% Span Length	(in)	Length	(in)	Percent Short Fibers	
Uniformity Ratio	(%)	Uniformity Index		Diameter	(µm)
Micronaire Index		Micronaire Index		Neps	(no./g)
Shirley Non-Lint Content		Reflectance	(Rd)	Total Trash	(no./g)
F/MT Maturity	(%)	Yellowness	(+b)		
F/MT Fineness	(mtex)	Color Grade			
Stickiness	not sticky	Leaf Grade			
Opening, Carding Waste	(%)	Leaf Grade			
	5.9	Combing Waste	(%)		
			16.3	Total Waste	(%)
					21.3

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>e</sub> )	30/1	30/1
Skein Test :		
Yarn Number (N <sub>e</sub> )	30.1	29.9
CV% of Count	.54	1.05
Count-Strength-Product	2534	3215
CV% of CSP	2.31	1.42
Single-Yarn Test:		
Tenacity (g/tex)	16.17	19.38
Mean Strength (g)	317	383
CV% of Break	7.5	8.5
Elongation (%)	6.23	6.70
CV% of Elongation	7.4	7.1
Uster Evenness Test:		
Non-Uniformity (CV%)	15.83	17.37
Thin Places/1,000 yds	33	49
Thick Places/1,000 yds	209	487
Neps/1,000 yds	722	367
Hairiness	3.74	4.38
ASTM Yarn Grade	B	C+

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	27.7	1/8" Gauge Strength (g/tex)	31.4	Upper Quartile Length (w) (in)	1.15
Elongation (%)	7.2	Elongation (%)	6.4	Mean Length (in)	.92
2.5% Span Length (in)	1.13	Length (in)	1.16	Percent Short Fibers	10.2
Uniformity Ratio (%)	43.0	Uniformity Index	82.4	Diameter (µm)	13.1
Micronaire Index	3.4	Micronaire Index	3.3	Neps (no./g)	528
Shirley Non-Lint Content (%)	4.13	Reflectance (Rd)	77.4	Total Trash (no./g)	102
F/MT Maturity (%)	76.5	Yellowness (+b)	8.8	Peyer AL 101	
F/MT Fineness (mtex)	151	Color Grade	31-3	Upper Quartile Length (w) (in)	1.10
Stickiness	sticky	Leaf Grade	2	Mean Length (in)	.86
Opening, Carding Waste (%)	6.8			CV% of Mean	36.6
				Percent Short Fibers	16.0

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.0	21.7	30.3	15.9	29.5
CV% of Count	.29	.26	.47	.86	1.49
Count-Strength-Product	2643	2234	2089	2746	2476
CV% of CSP	1.62	2.31	4.04	2.44	2.10
Single-Yarn Test:					
Tenacity (g/tex)	15.29	13.98	13.27	16.90	15.04
Mean Strength (g)	905	380	259	626	301
CV% of Break	5.6	7.2	9.3	9.0	11.5
Elongation (%)	7.72	6.53	5.98	6.99	6.18
CV% of Elongation	4.8	6.0	9.1	6.8	9.4
Uster Evenness Test:					
Non-Uniformity (CV%)	12.29	14.29	16.63	17.77	22.66
Thin Places/1,000 yds	0	8	72	70	491
Thick Places/1,000 yds	9	76	227	463	1639
Neps/1,000 yds	14	154	780	144	1034
Hairiness	4.02	3.93	3.56	5.81	4.98
ASTM Yarn Grade	B+	B+	B	D+	D+
				C	

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex)	1/8" Gauge Strength	(g/tex)	Upper Quartile Length	(in)
Elongation	(%)	Elongation	(%)	Mean Length	(in)
2.5% Span Length	(in)	Length	(in)	Percent Short Fibers	
Uniformity Ratio	(%)	Uniformity Index		Diameter	( $\mu$ m)
Micronaire Index		Micronaire Index		Neps	(no./g)
Shirley Non-Lint Content		Reflectance	(Rd)	Total Trash	(no./g)
F/MT Maturity	(%)	Yellowness	(+b)		
F/MT Fineness	(mtex)	Color Grade			
Stickiness	sticky	Leaf Grade			
Opening, Carding Waste	(%)	Leaf Grade			
	6.8	Combing Waste	(%)		
			16.5	Total Waste	(%)
					22.2

COMBED YARN PROPERTIES

Spinning Machine	Rotor Spinning	Ring Spinning
Nominal Yarn Number (N <sub>e</sub> )	30/1	30/1
Skein Test:		
Yarn Number (N <sub>e</sub> )	30.3	30.1
CV% of Count	.58	.71
Count-Strength-Product	2212	2889
CV% of CSP	2.81	2.11
Single-Yarn Test:		
Tenacity (g/tex)	14.33	17.22
Mean Strength (g)	280	338
CV% of Break	8.2	7.3
Elongation (%)	6.12	6.75
CV% of Elongation	8.2	5.3
Uster Evenness Test:		
Non-Uniformity (CV%)	16.31	16.99
Thin Places/1,000 yds	70	43
Thick Places/1,000 yds	217	438
Neps/1,000 yds	634	331
Hairiness	3.57	4.21
ASTM Yarn Grade	B	C+

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS		
Stelometer Strength	(g/tex)	25.7	1/8" Gauge Strength	31.1	Upper Quartile Length (w) (in)	1.08
Elongation	(%)	7.4	Elongation	6.6	Mean Length	.89
2.5% Span Length	(in)	1.09	Length	1.10	Percent Short Fibers	11.2
Uniformity Ratio	(%)	45.0	Uniformity Index	81.9	Diameter	13.8
Micronaire Index		3.5	Micronaire Index	3.5	Neps	454
Shirley Non-Lint Content	(%)	3.90	Reflectance	76.8	Total Trash	114
F/MT Maturity	(mtex)	70.7	Yellowness	8.7		
F/MT Fineness		168	Color Grade	31-3	Upper Quartile Length (w) (in)	1.03
Stickiness		very slightly sticky	Leaf Grade	4	Mean Length	.82
					CV% of Mean	34.5
Opening, Carding Waste (%)		7.0			Percent Short Fibers	15.5

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.2	22.3	30.2	16.1	30.2
CV% of Count	.38	.46	.58	1.02	1.39
Count-Strength-Product	2472	2147	1963	2648	2363
CV% of CSP	2.08	2.65	1.93	2.15	3.42
Single-Yarn Test:					
Tenacity (g/tex)	14.50	12.85	12.67	15.88	14.17
Mean Strength (g)	844	341	248	583	278
CV% of Break	6.2	7.3	8.0	8.6	10.5
Elongation (%)	7.83	6.55	6.00	7.22	6.43
CV% of Elongation	7.4	7.1	10.2	7.0	9.0
Uster Evenness Test:					
Non-Uniformity (CV%)	12.54	15.08	17.28	17.61	22.40
Thin Places/1,000 yds	0	22	118	66	520
Thick Places/1,000 yds	19	113	310	423	1532
Neps/1,000 yds	14	217	1113	135	843
Hairiness	4.23	3.93	3.67	5.76	4.83
ASTM Yarn Grade	A	B	B	C	D+



FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 26.9	1/8" Gauge Strength	(g/tex) 29.1	Upper Quartile Length (w)	(in) 1.01
Elongation	(%) 6.8	Elongation	(%) 5.9	Mean Length	(in) .83
2.5% Span Length	(in) 1.04	Length	(in) 1.00	Percent Short Fibers	11.1
Uniformity Ratio	(%) 45.0	Uniformity Index	80.5	Diameter	(µm) 14.0
Micronaire Index	4.0	Micronaire Index	4.0	Neps	(no./g) 420
Shirley Non-Lint Content	(%) 3.00	Reflectance	(Rd) 75.6	Total Trash	(no./g) 76
F/MT Maturity	(mtex) 80.8	Yellowness	(+b) 9.7	Peyer AL 101	
F/MT Fineness	177	Color Grade	31-3	Upper Quartile Length (w)	(in) .97
Stickiness	slightly sticky/sticky	Leaf Grade	2	Mean Length	(in) .80
Opening, Carding Waste (%)	8.7			CV% of Mean	35.7
				Percent Short Fibers	14.7

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning		
	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (N <sub>e</sub> )						
Skein Test:						
Yarn Number (N <sub>e</sub> )	10.0	22.1	30.4	16.6	22.0	30.0
CV% of Count	.25	.70	.64	.58	1.01	.89
Count-Strength-Product	2672	2303	2019	2622	2388	2323
CV% of CSP	1.25	2.33	3.99	1.85	2.53	5.08
Single-Yarn Test:						
Tenacity (g/tex)	15.61	14.06	13.09	16.12	15.53	13.99
Mean Strength (g)	918	375	254	575	417	276
CV% of Break	6.8	8.4	8.9	10.1	13.8	13.9
Elongation (%)	7.26	6.05	5.54	6.17	6.17	5.45
CV% of Elongation	5.2	8.1	8.8	8.1	12.4	10.4
Uster Evenness Test:						
Non-Uniformity (CV%)	12.95	15.01	17.07	19.18	20.65	23.55
Thin Places/1,000 yds	1	21	107	176	319	812
Thick Places/1,000 yds	22	102	255	549	938	1676
Neps/1,000 yds	14	136	757	102	198	653
Hairiness	4.64	4.12	3.87	6.16	5.59	5.30
ASTM Yarn Grade	B	A	B	C+	B	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 24.6	1/8" Gauge Strength	(g/tex) 28.1	Upper Quartile Length (w)	(in) 1.08
Elongation	(%) 7.7	Elongation	(%) 6.6	Mean Length	(in) .87
2.5% Span Length	(in) 1.07	Length	(in) 1.07	Percent Short Fibers	12.1
Uniformity Ratio	(%) 43.0	Uniformity Index	81.7	Diameter	(µm) 13.8
Micronaire Index	4.0	Micronaire Index	3.9	Neps	(no./g) 442
Shirley Non-Lint Content	2.00	Reflectance	(Rd) 79.9	Total Trash	(no./g) 40
F/MT Maturity	(%) 77.5	Yellowness	(+b) 9.0	PeyerAL 101	
F/MT Fineness	(mtex) 174	Color Grade	21-1	Upper Quartile Length (w)	(in) 1.06
Stickiness	very slightly sticky	Leaf Grade	3	Mean Length	(in) .87
Opening, Carding Waste (%)	7.3			CV% of Mean	31.4
				Percent Short Fibers	11.7

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.1	22.2	29.8	16.2	30.1
CV% of Count	.29	.23	.64	.83	.99
Count-Strength-Product	2402	1993	1794	2416	2136
CV% of CSP	2.25	2.69	2.64	2.41	2.62
Single-Yarn Test:					
Tenacity (g/tex)	13.83	12.17	12.33	14.72	13.41
Mean Strength (g)	807	324	244	537	263
CV% of Break	5.9	9.0	9.3	11.9	10.5
Elongation (%)	7.69	6.47	6.06	6.94	6.32
CV% of Elongation	5.5	8.1	10.0	10.2	8.1
Uster Evenness Test:					
Non-Uniformity (CV%)	12.66	15.86	17.72	17.88	22.25
Thin Places/1,000 yds	1	44	159	101	522
Thick Places/1,000 yds	17	150	353	411	1424
Neps/1,000 yds	5	194	1074	82	562
Hairiness	4.22	4.00	3.76	5.84	4.94
ASTM Yarn Grade	B+	B	B+	C+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 26.8	1/8" Gauge Strength	(g/tex) 29.1	Upper Quartile Length (w)	(in) 1.01
Elongation	(%) 6.3	Elongation	(%) 5.3	Mean Length	(in) .83
2.5% Span Length	(in) .98	Length	(in) 1.03	Percent Short Fibers	11.0
Uniformity Ratio	(%) 44.0	Uniformity Index	80.7	Diameter	(µm) 13.3
Micronaire Index	3.7	Micronaire Index	3.7	Neps	(no./g) 476
Shirley Non-Lint Content	2.07	Reflectance	(Rd) 76.9	Total Trash	(no./g) 37
F/MT Maturity	(%) 80.8	Yellowness	(+b) 9.4	Peyer AL 101	
F/MT Fineness	(mtex) 156	Color Grade	21-4	Upper Quartile Length (w)	(in) .95
Stickiness	very sticky	Leaf Grade	2	Mean Length	(in) .73
Opening, Carding Waste (%)	6.8			CV% of Mean	40.4
				Percent Short Fibers	24.3

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning		Ring Spinning	
	10/1	22/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )				
Skein Test:				
Yarn Number (N <sub>e</sub> )	10.0	22.1	16.3	30.2
CV% of Count	.39	.85	.53	.81
Count-Strength-Product	2658	2271	2549	2199
CV% of CSP	1.45	2.95	3.42	1.68
Single-Yarn Test:				
Tenacity (g/tex)	15.78	14.36	15.77	14.02
Mean Strength (g)	932	383	573	274
CV% of Break	6.4	8.1	10.9	12.1
Elongation (%)	6.92	5.71	5.75	5.09
CV% of Elongation	5.3	6.3	10.3	8.4
Uster Evenness Test:				
Non-Uniformity (CV%)	12.80	14.98	20.10	25.01
Thin Places/1,000 yds	1	17	256	1083
Thick Places/1,000 yds	16	101	768	2117
Neps/1,000 yds	21	185	212	1172
Hairiness	4.70	4.19	6.44	5.51
ASTM Yarn Grade	B+	B+	C	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 28.0	1/8" Gauge Strength	(g/tex) 31.4	Upper Quartile Length (w)	(in) 1.09
Elongation	(%) 8.3	Elongation	(%) 6.7	Mean Length	(in) .91
2.5% Span Length	(in) 1.06	Uniformity Index	(in) 1.10	Percent Short Fibers	8.7
Uniformity Ratio	(%) 48.0	Micronaire Index	(Rd) 83.4	Diameter	(µm) 13.5
Micronaire Index	4.0	Reflectance	(+b) 4.1	Neps	(no./g) 357
Shirley Non-Lint Content	(%) 4.35	Color Grade	31-1	Total Trash	(no./g) 96
F/MT Maturity	(mtex) 78.4	Leaf Grade	3		
F/MT Fineness	182				
Stickiness	very sticky				
Opening, Carding Waste (%)	7.9				

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.2	22.2	30.5	16.3	30.5
CV% of Count	.27	.36	.69	.69	.95
Count-Strength-Product	2687	2265	2082	2876	2532
CV% of CSP	1.68	3.22	3.00	2.44	3.00
Single-Yarn Test:					
Tenacity (g/tex)	15.57	14.21	13.25	16.77	15.25
Mean Strength (g)	905	378	256	607	295
CV% of Break	5.1	8.0	8.5	9.6	10.3
Elongation (%)	8.20	6.50	6.24	7.18	6.40
CV% of Elongation	4.8	7.0	7.9	8.4	8.1
Uster Evenness Test:					
Non-Uniformity (CV%)	12.65	15.09	17.32	16.63	21.00
Thin Places/1,000 yds	2	26	144	48	327
Thick Places/1,000 yds	20	128	288	272	1134
Neps/1,000 yds	15	190	873	121	554
Hairiness	1.84	3.86	3.63	5.46	4.49
ASTM Yarn Grade	B+	A	B	C+	C+

FIBER PROPERTIES

Individual Instrument Data		HVI Data		UsterAFIS	
Stelometer Strength (g/tex)	27.8	1/8" Gauge Strength (g/tex)	30.1	Upper Quartile Length (w) (in)	1.07
Elongation (%)	6.9	Elongation (%)	6.1	Mean Length (in)	.89
2.5% Span Length (in)	1.04	Length (in)	1.07	Percent Short Fibers	8.5
Uniformity Ratio (%)	45.0	Uniformity Index	82.0	Diameter (µm)	13.7
Micronaire Index	4.2	Micronaire Index	4.2	Neps (no./g)	337
Shirley Non-Lint Content (%)	3.69	Reflectance (Rd)	76.5	Total Trash	92
F/MT Maturity (%)	78.2	Yellowness (+b)	8.9	Peyer AL 101	
F/MT Fineness (mtex)	182	Color Grade	31-3	Upper Quartile Length (w) (in)	1.02
Stickiness	sticky	Leaf Grade	3	Mean Length (in)	.84
Opening, Carding Waste (%)	7.0			CV% of Mean	29.8
				Percent Short Fibers	11.0

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning		
	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (N <sub>e</sub> )						
Skein Test:						
Yarn Number (N <sub>e</sub> )	10.1	22.1	30.3	16.2	22.0	30.1
CV% of Count	.35	.57	.50	.89	1.07	.71
Count-Strength-Product	2643	2218	2042	2705	2489	2377
CV% of CSP	2.27	1.85	3.03	3.98	3.41	4.58
Single-Yarn Test:						
Tenacity (g/tex)	15.50	13.81	13.14	16.33	15.54	14.73
Mean Strength (g)	910	369	256	595	417	289
CV% of Break	6.1	8.5	9.4	9.5	10.7	11.7
Elongation (%)	6.96	5.66	5.48	6.14	6.16	5.58
CV% of Elongation	5.4	9.3	9.4	7.6	7.4	9.9
Uster Evenness Test:						
Non-Uniformity (CV%)	12.91	15.20	17.31	17.91	19.68	22.33
Thin Places/1,000 yds	1	23	128	85	197	518
Thick Places/1,000 yds	23	111	260	406	761	1428
Neps/1,000 yds	20	168	742	111	214	612
Hairiness	4.47	4.09	3.90	5.90	5.41	5.00
ASTM Yarn Grade	B+	B+	B	B	C	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength	(g/tex) 26.4	1/8" Gauge Strength	(g/tex) 28.0	Upper Quartile Length (w)	(in) 1.01
Elongation	(%) 6.7	Elongation	(%) 5.2	Mean Length	(in) .84
2.5% Span Length	(in) 1.01	Length	(in) 1.03	Percent Short Fibers	9.6
Uniformity Ratio	(%) 46.0	Uniformity Index	(in) 80.7	Diameter	(µm) 14.1
Micronaire Index	3.6	Micronaire Index	3.5	Neps	(no./g) 449
Shirley Non-Lint Content	4.70	Reflectance	(Rd) 74.0	Total Trash	(no./g) 147
F/MT Maturity	(%) 71.2	Yellowness	(+b) 10.0		
F/MT Fineness	(mtex) 169	Color Grade	32-1	Upper Quartile Length (w)	(in) 1.00
Stickiness	slightly sticky	Leaf Grade	2	Mean Length	(in) .81
Opening, Carding Waste (%)	7.0			CV% of Mean	31.0
				Percent Short Fibers	12.5

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.1	22.2	30.1	16.1	30.0
CV% of Count	.29	.50	1.59	.56	.80
Count-Strength-Product	2573	2137	1960	2559	2278
CV% of CSP	1.74	2.12	1.46	1.74	2.40
Single-Yarn Test:					
Tenacity (g/tex)	14.98	13.16	12.72	15.56	14.39
Mean Strength (g)	873	351	250	570	284
CV% of Break	6.7	7.2	8.8	9.4	12.3
Elongation (%)	7.14	5.65	5.36	6.20	5.68
CV% of Elongation	5.6	8.3	8.2	8.5	9.2
Uster Evenness Test:					
Non-Uniformity (CV%)	13.48	15.45	17.38	18.68	23.19
Thin Places/1,000 yds	2	22	127	145	710
Thick Places/1,000 yds	34	135	309	510	1605
Neps/1,000 yds	25	286	906	133	860
Hairiness	4.70	4.23	4.12	6.14	5.17
ASTM Yarn Grade	B+	B	B	C+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	26.0	1/8" Gauge Strength (g/tex)	27.1	Upper Quartile Length (w) (in)	1.03
Elongation (%)	5.8	Elongation (%)	5.2	Mean Length (in)	.85
2.5% Span Length (in)	1.01	Uniformity Index (in)	1.03	Percent Short Fibers	10.7
Uniformity Ratio (%)	45.0	Micronaire Index	80.6	Diameter (µm)	13.7
Micronaire Index	3.8	Reflectance (Rd)	77.2	Neps (no./g)	636
Shirley Non-Lint Content (%)	3.86	Yellowness (+b)	8.4	Total Trash	117
F/MT Maturity (mtex)	74.8	Color Grade	31-1	Peyer AL 101	
F/MT Fineness	170	Leaf Grade	4	Upper Quartile Length (w) (in)	.97
Stickiness	very slightly sticky			Mean Length (in)	.75
				CV% of Mean	37.3
				Percent Short Fibers	21.7
Opening, Carding Waste (%)	7.5				

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning		Ring Spinning	
	10/1	22/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )				
Skein Test:				
Yarn Number (N <sub>e</sub> )	10.0	22.0	16.2	30.2
CV% of Count	.38	.59	.40	.48
Count-Strength-Product	2413	2068	2423	2166
CV% of CSP	1.00	2.33	3.17	3.46
Single-Yarn Test:				
Tenacity (g/tex)	14.16	12.49	14.88	13.35
Mean Strength (g)	832	335	541	261
CV% of Break	5.9	9.1	11.2	10.4
Elongation (%)	6.63	5.16	5.72	5.16
CV% of Elongation	5.1	8.7	8.8	7.9
Uster Evenness Test:				
Non-Uniformity (CV%)	13.55	15.84	19.69	24.81
Thin Places/1,000 yds	1	32	231	1022
Thick Places/1,000 yds	38	182	738	2043
Neps/1,000 yds	39	397	259	1324
Hairiness	4.52	4.20	6.06	5.13
ASTM Yarn Grade	B	B	C	D

FIBER PROPERTIES

Individual Instrument Data		HVI Data		Uster AFIS	
Stelometer Strength (g/tex)	31.5	1/8" Gauge Strength (g/tex)	30.2	Upper Quartile Length (w) (in)	1.10
Elongation (%)	6.3	Elongation (%)	6.4	Mean Length (in)	.92
2.5% Span Length (in)	1.08	Uniformity Index (in)	1.09	Percent Short Fibers	7.9
Uniformity Ratio (%)	48.0	Micronaire Index	82.9	Diameter (µm)	12.5
Micronaire Index	3.8	Reflectance (Rd)	3.6	Neps (no./g)	200
Shirley Non-Lint Content (%)	4.08	Yellowness (+b)	78.7	Total Trash	124
F/MT Maturity (%)	79.0	Color Grade	8.1	Peyer AL 101	
F/MT Fineness (mtex)	154	Leaf Grade	31-1	Upper Quartile Length (w) (in)	1.11
Stickiness	not sticky		2	Mean Length (in)	.93
				CV% of Mean	25.7
				Percent Short Fibers	5.6
Opening, Carding Waste (%)	7.7				

CARDED YARN PROPERTIES

Spinning Machine	Rotor Spinning			Ring Spinning	
	10/1	22/1	30/1	16/1	30/1
Nominal Yarn Number (N <sub>e</sub> )					
Skein Test:					
Yarn Number (N <sub>e</sub> )	10.1	22.1	29.9	16.0	28.2
CV% of Count	.26	.50	.53	.37	1.07
Count-Strength-Product	2983	2549	2387	3157	2869
CV% of CSP	2.49	1.66	3.16	3.26	3.50
Single-Yarn Test:					
Tenacity (g/tex)	17.63	16.02	15.35	19.00	17.46
Mean Strength (g)	1031	429	303	700	366
CV% of Break	6.4	7.0	7.0	7.8	10.4
Elongation (%)	7.45	6.01	6.09	6.77	6.22
CV% of Elongation	5.6	6.0	5.8	7.4	7.7
Uster Evenness Test:					
Non-Uniformity (CV%)	12.50	14.52	16.25	16.96	20.57
Thin Places/1,000 yds	1	11	52	49	297
Thick Places/1,000 yds	13	85	180	284	1027
Neps/1,000 yds	6	126	420	32	337
Hairiness	4.10	3.95	3.70	5.84	4.97
ASTM Yarn Grade	B+	B	B	B	C



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