

**TEXAS COTTON QUALITY EVALUATION
CROP OF 1990**

Conducted at
**INTERNATIONAL CENTER FOR TEXTILE
RESEARCH and DEVELOPMENT**

Texas Tech University
Lubbock, Texas

Sponsored by
THE TEXAS FOOD AND FIBERS COMMISSION

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1001 East Loop 289
P. O. Box 5888
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The information presented in this report was obtained by testing commercial cotton varieties that were produced in Texas in 1990. This evaluation was conducted for our 11th annual study of Texas cotton quality. Fiber testing and spinning trials were carried out at the **International Center for Textile Research and Development**. All cottons were commercially available in adequate quantities to be purchased by industry. No experimental varieties were included.

It will be noted that we are giving the variety and area of growth of each cotton in this study. We would like to point out that Tables X and XI list the production area as Altus, Oklahoma. However, this variety is also produced in Texas, and when the production area is near the state border, it sometimes is difficult to determine on which side of the line the cotton was actually grown. (After all, it is not easy to see a boundary line in the middle of a large cotton field.)

Other cottons presented in this report were produced in the Texas Coastal Bend area, the Rio Grande Valley, the El Paso area, the Rolling Plains, Central Texas, and the High Plains of West Texas. We feel these areas offer an excellent cross section of the varieties grown in this state.

Fiber measurements were made both by individual instruments such as the Stelometer and Fibrograph, and by use of the Motion Control 3000 and Spinlab 900 HVI systems. Additionally, data from the IIC/Shirley F/MT and Peyer Texlab AL-101 instruments are included in the tables.

Spinning involved the production of three yarn numbers at rotor and ring spinning. A comparison of the rotor and ring yarns can be made by the two common numbers. We increased the lower yarn number at ring spinning, thinking this finer number would have broader application for the spinning industry.

We call attention to Figure 1, preceding the data tables, which gives details of the spinning arrangements employed by the two rotor machines and the ring spinning machine used in this program. We have listed the names of the machines, nominal yarn numbers, rotor types, rotor speeds, opening roller types, approximate drafts, and twist multipliers. For ring spinning we have given the roving number, spindle speed, ring diameter and twist multiplier.

We are offering this report to our friends in cotton production, marketing and manufacturing, hoping this information will be interesting and useful. We are grateful to the Texas Food and Fibers Commission for sponsoring this program and assisting in publishing this report.

FIGURE 1
SPINNING SPECIFICATIONS

(a) ROTOR SPINNING

Sliver	55 gr/yd Finisher Drawframe					
Machine	Rieter m1/1			Schlafhorst Autocoro		
Nominal Yarn Number (N_e)	10	22	30	10	22	30
Rotor Type	45 N St			T33		
Rotor Speed (rpm)	55,000			90,000		
Opening Roller Type	T.52			OB20		
Opening Roller Speed (rpm)	6700			7500		
Draft (approximate)	66	145	198	66	145	198
Twist Multiplier (α_e)	4.85	4.80	4.78	4.78	4.79	4.79
Yarn Speed (yd/min)	99.5	67.7	58.3	165.4	111.3	95.3
Navel	Smooth Steel			4-grooved Ceramic		

(b) RING SPINNING

Roving Frame	Saco Lowell
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 (α_e)	4.00

TABLE 1 LOT NUMBER 2139 VARIETY DPL51 PRODUCTION AREA CORPUS CHRISTI, TEXAS

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	26.60	1/8" Gauge Strength (g/tex)	26	1/8" Gauge Strength (g/tex)	24
Elongation (%)	5.58	Elongation (%)	6.8	Elongation (%)	8.3
2.5% Span Length (in)	0.987	Length (in)	0.98	Length (in)	0.97
Uniformity ratio (%)	47.2	Uniformity Ratio (%)	81	Uniformity Ratio (%)	83
Short Fiber Content (%)	5.7	Micronaire Value (%)	4.3	Micronaire Value (%)	4.4
Micronaire Value (Mpsi)	4.47	Reflectance	76	Reflectance	75.9
Pressley Strength (Mpsi)	90.8	Yellowness	8.0	Yellowness	8.4
Shirley Non-lint Content (%)	2.33	Index of: - Color	31	Index of: - Color	31
IIC/Shirley F/MT III	Micronaire: 4.4	Fineness: 181 mtex	- Leaf	Fineness: 181 mtex	- Leaf
Peyer Texlab AL-101	Upper Quartile Length: 1.02 in.	Mean Length: 0.81 in.	Percent Mature Fibers: 82.7	Upper Quartile Length: 1.02 in.	Percent Mature Fibers: 82.7
			CV% of Mean: 33.6		Percent Short Fibers: 16.6

YARN PROPERTIES

Spinning Machine:	Rieter m1/1		Schlafhorst Autocoro		Saco Lowell SF-3H Ring	
	10/1	22/1	10/1	22/1	16/1	22/1
Nominal Yarn Number (Ne)	10/1	4.85	30/1	4.78	30/1	4.79
Nominal Twist Multiplier (α _e)	4.85	4.81	4.78	4.78	4.0	4.0
Skein Test:						
Yarn Number (Ne)	9.96	22.08	29.77	10.02	21.86	29.57
CV% of Yarn Number	0.9	1.0	0.9	0.8	1.0	1.1
Count-Strength-Product	2303	1927	1767	2429	2087	1864
CV% of CSP	1.2	2.9	1.4	1.4	3.2	2.4
Single-Yarn Test:						
Tenacity (g/tex)	14.16	12.50	11.92	14.95	13.17	12.20
Mean Strength (g)	840	334	237	881	356	244
CV% of Break	7.7	8.7	9.2	6.7	8.5	8.9
Elongation (%)	6.94	5.76	5.36	6.92	5.90	5.68
CV% of Elongation	6.4	8.0	9.7	5.3	7.1	7.0
Spec. Work of Rupture (g/tex)	0.536	0.388	0.343	0.559	0.412	0.367
CV% of Work of Rupture	12.0	15.5	17.9	10.7	14.5	14.1
Initial Modulus (g/tex)	259	263	327	228	272	250
Uster Evenness Test:						
Non-Uniformity (CV%)	13.96	16.08	18.79	13.12	14.95	17.17
Thin Places/1,000 yds	4	66	294	0	27	149
Thick Places/1,000 yds	66	142	463	92	79	270
Neps/1,000 yds	63	233	1371	94	181	1119
ASTM Yarn Grade	B+	B+	B	B+	B+	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	23.91	1/8" Gauge Strength (g/tex)	26	1/8" Gauge Strength (g/tex)	24
Elongation (%)	6.42	Elongation (%)	7.2	Elongation (%)	8.2
2.5% Span Length (in)	1.112	Length (in)	1.12	Length (in)	1.10
Uniformity ratio (%)	44.2	Uniformity Ratio (%)	81	Uniformity Ratio (%)	82
Short Fiber Content (%)	8.0	Micronaire Value	4.6	Micronaire Value	4.7
Micronaire Value (Mpsi)	4.70	Reflectance	75	Reflectance	78.4
Pressley Strength (Mpsi)	78.6	Yellowness	8.6	Yellowness	8.9
Shirley Non-lint Content (%)	2.00	Index of: - Color	31	Index of: - Color	21
IIC/Shirley F/MT III	Micronaire: 4.7	Fineness: 193 mtex	- Leaf	Index of: - Leaf	2
Peyer Textlab AL-101	Upper Quartile Length: 1.12 in.	Mean Length: 0.92 in.	Percent Mature Fibers: 85.0	CV% of Mean: 29.3	Percent Short Fibers: 9.7

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Twist Multiplier (α_e)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
<u>Skein Test:</u>									
Yarn Number (Ne)	10.01	22.13	29.87	9.96	21.64	29.73	15.88	22.10	29.60
CV% of Yarn Number	0.7	0.8	0.8	0.4	0.6	0.9	1.1	1.3	2.3
Count-Strength-Product	2148	1815	1684	2272	2897	1693	2377	2064	1955
CV% of CSP	1.4	2.3	4.0	2.3	2.9	1.4	2.2	3.1	2.3
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	13.05	11.14	11.09	13.79	11.80	11.46	13.74	13.06	12.24
Mean Strength (g)	770	297	219	817	322	228	510	349	244
CV% of Break	7.3	9.8	10.0	6.6	8.6	9.1	10.2	12.7	13.5
Elongation (%)	6.95	5.74	5.61	7.19	5.99	5.73	6.55	6.06	5.62
CV% of Elongation	7.1	9.6	9.8	6.0	7.1	7.4	7.9	9.7	9.3
Spec. Work of Rupture (g/tex)	0.517	0.355	0.340	0.550	0.383	0.356	0.466	0.404	0.254
CV% of Work of Rupture	12.3	17.4	18.0	11.1	14.5	15.0	16.2	20.2	21.0
Initial Modulus (g/tex)	268	250	283	221	240	249	233	211	259
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	13.84	15.73	18.58	12.49	15.09	17.73	19.27	21.80	24.70
Thin Places/1,000 yds	6	49	268	2	37	204	204	460	1098
Thick Places/1,000 yds	69	122	429	24	108	335	693	1360	2175
Neps/1,000 yds	53	191	1492	24	182	1234	94	214	742
ASTM Yarn Grade	A	B+	B	B+	B+	B+	C	D+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	25.59	1/8" Gauge Strength (g/tex)	28	1/8" Gauge Strength (g/tex)	25
Elongation (%)	6.08	Elongation (%)	7.2	Elongation (%)	8.2
2.5% Span Length (in)	1.022	Length (in)	1.03	Length (in)	1.02
Uniformity ratio (%)	43.9	Uniformity Ratio (%)	81	Uniformity Ratio (%)	82
Short Fiber Content (%)	8.6	Micronaire Value	4.5	Micronaire Value	4.4
Micronaire Value (Mpsi)	4.43	Reflectance	76	Reflectance	77.6
Pressley Strength (%)	92.0	Yellowness	8.0	Yellowness	8.4
Shirley Non-lint Content (%)	2.37	Index of: - Color	31	Index of: - Color	31
IIC/Shirley F/MT III	Micronaire: 4.5	Fineness: 190 mtex	- Leaf	Fineness: 190 mtex	- Leaf
Peyer Texlab AL-101	Upper Quartile Length: 1.04 in.	Mean Length: 0.83 in.	Percent Mature Fibers: 81.3	Upper Quartile Length: 1.04 in.	Percent Mature Fibers: 81.3
			CV% of Mean: 33.0		Percent Short Fibers: 15.8

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (α_E)									
<u>Skein Test:</u>									
Yarn Number (Ne)	10.20	22.49	30.22	9.72	21.90	29.79	16.19	22.34	32.37
CV% of Yarn Number	0.7	0.6	1.1	2.0	1.1	1.1	0.9	1.4	6.7
Count-Strength-Product	2325	1970	1772	2488	2099	1871	2481	2300	2090
CV% of CSP	2.0	2.3	1.5	1.8	2.3	2.1	4.3	2.4	7.9
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	14.22	12.41	12.04	15.41	13.18	12.50	15.41	14.45	13.14
Mean Strength (g)	823	326	235	936	355	248	562	382	240
CV% of Break	8.1	9.6	12.6	7.5	8.1	9.2	10.0	11.6	15.9
Elongation (%)	7.33	5.96	5.72	7.71	6.43	6.04	6.94	6.20	5.57
CV% of Elongation	5.9	11.0	10.0	4.8	6.9	7.3	7.2	8.1	12.0
Spec. Work of Rupture (g/tex)	0.560	0.400	0.367	0.633	0.446	0.394	0.531	0.451	0.371
CV% of Work of Rupture	12.1	18.3	21.2	11.0	13.7	15.9	15.3	17.1	24.6
Initial Modulus (g/tex)	230	258	302	193	239	241	220	250	266
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	13.81	16.21	19.04	12.65	14.77	17.41	18.88	21.10	23.97
Thin Places/1,000 yds	5	76	346	2	24	172	191	424	961
Thick Places/1,000 yds	61	146	479	45	86	305	551	1094	1911
Neps/1,000 yds	50	246	1323	58	170	1158	82	195	571
ASTM Yarn Grade	A	B+	B	B+	B+	B	C	C	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCL3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	24.29	1/8" Gauge Strength (g/tex)	24	1/8" Gauge Strength (g/tex)	24
Elongation (%)	5.17	Elongation (%)	7.6	Elongation (%)	7.6
2.5% Span Length (in)	1.053	Length (in)	1.08	Length (in)	1.08
Uniformity ratio (%)	43.8	Uniformity Ratio (%)	80	Uniformity Ratio (%)	82
Short Fiber Content (%)	7.7	Micronaire Value	3.9	Micronaire Value	3.9
Micronaire Value (Mpsi)	3.73	Reflectance	71.7	Reflectance	72.3
Pressley Strength (%)	92.2	Yellowness	8.9	Yellowness	8.3
Shirley Non-lint Content (%)	1.55	Index of: - Color	41	Index of: - Color	41
IIC/Shirley F/MT III	Micronaire: 3.6	Fineness: 147 mtex	- Leaf	Fineness: 147 mtex	- Leaf
Peyer Texlab AL-101	Upper Quartile Length: 1.09 in	Mean Length: 0.89 in.	Percent Mature Fibers: 78.0	Upper Quartile Length: 1.09 in	Percent Mature Fibers: 78.0
		CV% of Mean: 29.8	Percent Short Fibers: 10.2		

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlathorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (αg)									
<u>Skein Test:</u>									
Yarn Number (Ne)	10.08	22.24	30.89	9.87	21.66	29.51	16.12	22.21	29.67
CV% of Yarn Number	1.2	1.6	8.0	1.5	2.8	2.2	2.2	1.9	2.3
Count-Strength-Product	2347	2011	1857	2478	2084	1905	2319	2180	2019
CV% of CSP	1.8	2.6	3.1	1.6	4.2	2.4	3.0	6.7	4.7
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	14.22	12.81	12.50	14.77	13.18	12.27	15.38	15.26	14.63
Mean Strength (g)	833	340	240	884	359	246	563	406	292
CV% of Break	7.8	7.9	9.8	7.3	7.6	8.4	10.6	12.9	12.4
Elongation (%)	6.55	5.49	4.98	6.95	5.84	5.34	6.31	5.44	5.40
CV% of Elongation	7.5	8.0	7.9	5.2	6.7	7.2	9.9	12.3	10.3
Spec. Work of Rupture (g/tex)	0.511	0.379	0.339	0.556	0.412	0.353	0.480	0.426	0.384
CV% of Work of Rupture	12.6	14.1	16.1	11.0	13.4	14.1	17.0	21.4	20.7
Initial Modulus (g/tex)	272	284	359	192	282	289	213	311	306
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	13.55	15.04	17.15	11.96	14.17	15.19	19.18	21.22	24.33
Thin Places/1,000 yds	2	15	110	0	9	36	164	373	908
Thick Places/1,000 yds	54	82	263	14	44	84	553	1059	1873
Neps/1,000 yds	59	175	919	20	97	186	150	272	988
ASTM Yarn Grade	B+	A	B+	A	B+	B+	C+	C	C

TABLE V LOT NUMBER 2188 VARIETY DPL Acala 90 PRODUCTION AREA EL PASO, TEXAS

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stielometer Strength (g/tex)	24.69	1/8" Gauge Strength (g/tex)	27	1/8" Gauge Strength (g/tex)	24
Elongation (%)	6.50	Elongation Length (in)	7.6	Elongation Length (in)	8.8
2.5% Span Length (in)	1.080	Uniformity Ratio (%)	1.12	Uniformity Ratio (%)	1.04
Uniformity ratio (%)	44.1	Micronaire Value (%)	80	Micronaire Value (%)	78
Short Fiber Content (%)	7.3	Reflectance	3.9	Reflectance	3.9
Micronaire Value (Mpsi)	3.97	Yellowness	78	Yellowness	79.8
Pressley Strength (%)	80.9	Index of: - Color	21	Index of: - Color	11
Shirley Non-lint Content (%)	1.10	Index of: - Leaf	2	Index of: - Leaf	2
IIC/Shirley F/MT III	Micronaire: 4.0	Fineness: 154 mtex	Percent Mature Fibers: 85.0		
Peyer Textlab AL-101	Upper Quartile Length: 1.15 in.	Mean Length: 0.93 in.	CV% of Mean: 31.4	Percent Short Fibers: 10.7	

YARN PROPERTIES

Spinning Machine:	Rieter m1/1		Schlafhorst Autocoro		Saco Lowell SF-3H Ring	
	10/1	22/1	10/1	22/1	16/1	22/1
Nominal Yarn Number (Ne)	10/1	22/1	10/1	22/1	16/1	22/1
Nominal Twist Multiplier (αg)	4.85	4.81	4.78	4.79	4.0	4.0
Skein Test:						
Yarn Number (Ne)	10.00	22.18	30.50	22.06	16.24	21.86
CV% of Yarn Number	0.7	2.3	1.8	1.1	1.0	1.8
Count-Strength-Product	2248	1926	1757	1963	2226	2123
CV% of CSP	1.6	2.7	2.3	1.3	2.4	2.5
Single-Yarn Test:						
Tenacity (g/tex)	13.51	12.20	11.20	12.35	14.88	13.95
Mean Strength (g)	798	325	217	330	541	377
CV% of Break	6.8	8.7	10.3	9.6	11.4	10.7
Elongation (%)	7.60	6.78	6.12	6.97	7.47	6.98
CV% of Elongation	6.1	8.1	9.6	7.7	10.1	8.3
Spec. Work of Rupture (g/tex)	0.582	0.449	0.375	0.464	0.563	0.492
CV% of Work of Rupture	11.1	15.0	19.2	16.5	17.7	16.4
Initial Modulus (g/tex)	265	264	289	249	207	468
Uster Evenness Test:						
Non-Uniformity (CV%)	13.83	15.60	17.79	14.71	19.46	21.00
Thin Places/1,000 yds	2	52	183	18	210	358
Thick Places/1,000 yds	56	109	304	60	588	986
Neps/1,000 yds	49	241	1168	142	69	153
ASTM Yarn Grade	A	B+	B+	B	C+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	28.97	1/8" Gauge Strength (g/tex)	30	1/8" Gauge Strength (g/tex)	29
Elongation (%)	5.50	Elongation (in)	6.6	Elongation (in)	9.0
2.5% Span Length (in)	1.195	Uniformity Ratio (%)	84	Uniformity Ratio (%)	1.21
Uniformity ratio (%)	46.4	Micronaire Value	4.0	Micronaire Value	84
Short Fiber Content (%)	2.6	Reflectance	78	Reflectance	4.0
Micronaire Value (Mpsi)	3.90	Yellowness	8.8	Yellowness	74.8
Pressley Strength (%)	96.1	Index of: -Color	21	Index of: -Color	31
Shirley Non-lint Content (%)	3.18	Leaf	2	Leaf	6
IIC/Shirley F/MT III	Micronaire: 4.0	Fineness: 156 mtex	Percent Mature Fibers: 84.0		
Peyer Textlab AL-101	Upper Quartile Length: 1.27 in.	Mean Length: 1.06 in.	CV% of Mean: 26.5	Percent Short Fibers: 4.5	

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (α _e)									
Skein Test:									
Yarn Number (Ne)	9.78	22.28	29.93	9.94	22.08	30.47	15.76	21.36	28.70
CV% of Yarn Number	0.9	1.3	1.1	1.0	0.7	1.6	1.4	1.8	1.1
Count-Strength-Product	2566	2313	2140	2738	2333	2186	2867	2568	2488
CV% of CSP	2.2	1.8	2.4	1.7	1.7	2.1	2.4	4.0	4.4
Single-Yarn Test:									
Tenacity (g/tex)	15.86	14.43	13.67	16.44	14.73	13.49	19.10	17.54	16.92
Mean Strength (g)	958	383	270	979	394	261	695	485	348
CV% of Break	6.0	9.3	8.7	6.8	7.6	7.1	9.2	12.5	10.0
Elongation (%)	7.23	6.13	5.75	7.57	6.44	6.00	7.12	6.78	6.29
CV% of Elongation	5.2	9.2	8.1	5.1	6.2	6.3	7.2	8.4	9.2
Spec. Work of Rupture (g/tex)	0.614	0.470	0.406	0.650	0.493	0.418	0.662	0.573	0.505
CV% of Work of Rupture	10.2	17.5	15.9	10.9	12.7	12.3	13.8	17.5	17.1
Initial Modulus (g/tex)	252	292	326	187	272	289	244	251	292
Uster Evenness Test:									
Non-Uniformity (CV%)	13.23	15.18	17.12	12.00	14.26	15.26	16.52	18.25	20.81
Thin Places/1,000 yds	2	24	115	0	15	49	26	84	252
Thick Places/1,000 yds	69	125	352	20	60	104	284	553	1148
Neps/1,000 yds	76	284	1118	30	138	228	185	323	778
ASTM Yarn Grade	A	A	B+	A	B+	B+	B	B	B+

TABLE VII LOT NUMBER 2190 VARIETY ACALA 90 PRODUCTION AREA LAMESA, TEXAS

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	25.79	1/8" Gauge Strength (g/tex)	31	1/8" Gauge Strength (g/tex)	29
Elongation (%)	7.00	Elongation (%)	7.4	Elongation (%)	8.8
2.5% Span Length (in)	1.040	Length (in)	1.08	Length (in)	0.99
Uniformity ratio (%)	43.1	Uniformity Ratio (%)	80	Uniformity Ratio (%)	80
Short Fiber Content (%)	10.1	Micronaire Value	3.6	Micronaire Value	4.4
Micronaire Value (Mpsi)	3.60	Reflectance	79	Reflectance	78.2
Pressley Strength (%)	96.8	Yellowness	8.4	Yellowness	8.6
Shirley Non-lint Content (%)	2.55	Index of: - Color	21 - Leaf	Index of: - Color	31 - Leaf
IIC/Shirley F/MT III	Micronaire: 3.8	Fineness: 143 mtex	Percent Mature Fibers: 86.0		
Peyer Textlab AL-101	Upper Quartile Length: 1.05 in.	Mean Length: 0.82 in.	CV% of Mean: 36.1	Percent Short Fibers: 18.4	

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlathorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10.12	21.59	29.82	9.93	21.87	29.87	16.51	21.95	30.30
Nominal Twist Multiplier (α _g)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
<u>Skein Test:</u>									
Yarn Number (Ne)	10.12	21.59	29.82	9.93	21.87	29.87	16.51	21.95	30.30
CV% of Yarn Number	1.0	0.6	1.0	0.9	1.1	1.5	1.8	1.9	2.7
Count-Strength-Product	2346	2037	1828	2498	2130	1984	2311	2110	1982
CV% of CSP	1.8	2.4	2.3	1.6	2.9	2.8	3.3	2.6	5.1
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	14.60	12.73	12.17	15.04	13.68	12.76	15.49	14.77	13.36
Mean Strength (g)	852	348	241	894	369	252	554	397	261
CV% of Break	7.9	10.2	9.3	7.2	9.8	10.8	11.3	12.5	13.7
Elongation (%)	7.80	6.40	5.91	7.65	6.72	6.42	7.33	6.69	6.10
CV% of Elongation	5.4	8.2	10.2	5.7	7.9	7.7	9.2	9.3	9.3
Spec. Work of Rupture (g/tex)	0.615	0.449	0.392	0.631	0.499	0.434	0.566	0.493	0.411
CV% of Work of Rupture	11.9	16.7	17.9	11.9	16.3	16.9	17.4	19.0	20.1
Initial Modulus (g/tex)	238	266	331	216	286	285	194	528	266
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	13.87	15.38	17.73	12.50	14.74	15.47	20.72	22.06	25.24
Thin Places/1,000 yds	3	27	141	1	21	39	338	533	1206
Thick Places/1,000 yds	59	93	281	20	66	86	793	1178	2150
Neps/1,000 yds	38	160	1058	18	141	183	108	172	869
ASTM Yarn Grade	A	B+	B+	A	B	A	C	C+	D

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	24.11	1/8" Gauge Strength (g/tex)	28	1/8" Gauge Strength (g/tex)	26
Elongation (%)	6.42	Elongation (%)	7.0	Elongation (%)	8.8
2.5% Span Length (in)	0.987	Length (in)	1.02	Length (in)	1.02
Uniformity ratio (%)	46.1	Uniformity Ratio (%)	81	Uniformity Ratio (%)	83
Short Fiber Content (%)	5.5	Micronaire Value	4.0	Micronaire Value	4.0
Micronaire Value (Mpsi)	4.10	Reflectance	77.0	Reflectance	69.7
Pressley Strength (%)	86.9	Yellowness	8.8	Yellowness	10.5
Shirley Non-lint Content (%)	4.12	Index of: - Color	31	Index of: - Color	43
IIC/Shirley F/MT III	Micronaire: 4.2	Fineness: 191 mtex		Index of: - Leaf	6
Peyer Texlab AL-101	Upper Quartile Length: 1.00 in.	Mean Length: 0.81 in.	Percent Mature Fibers: 71.0	Percent Short Fibers: 14.9	
			CV% of Mean: 31.1		

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10.01	21.63	31.10	9.79	22.12	30.75	16.33	22.32	30.03
Nominal Twist Multiplier (α_e)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Skein Test:									
Yarn Number (Ne)	10.01	21.63	31.10	9.79	22.12	30.75	16.33	22.32	30.03
CV% of Yarn Number	1.0	1.5	10.9	0.9	1.7	1.8	1.6	1.5	1.5
Count-Strength-Product	2131	1819	1659	2287	1880	1677	2096	1923	1721
CV% of CSP	2.3	3.1	2.8	2.1	3.3	3.2	2.6	3.0	2.6
Single-Yarn Test:									
Tenacity (g/tex)	12.97	11.53	11.10	13.68	11.98	11.32	13.63	12.82	12.39
Mean Strength (g)	765	315	213	825	320	217	493	339	244
CV% of Break	9.7	9.7	11.6	8.1	8.8	11.0	12.0	13.5	12.1
Elongation (%)	6.80	5.91	5.12	7.31	6.06	5.44	6.20	5.81	5.66
CV% of Elongation	6.5	9.1	12.0	5.7	6.8	8.1	10.7	10.1	9.5
Spec. Work of Rupture (g/tex)	0.496	0.367	0.314	0.543	0.386	0.333	0.435	0.377	0.354
CV% of Work of Rupture	14.0	17.2	20.9	12.7	14.0	17.7	18.7	19.1	18.2
Initial Modulus (g/tex)	270	257	303	212	239	276	222	504	265
Uster Evenness Test:									
Non-Uniformity (CV%)	14.50	16.26	19.13	13.13	15.20	16.55	21.79	22.67	25.97
Thin Places/1,000 yds	5	56	293	1	37	102	586	680	1446
Thick Places/1,000 yds	75	149	434	21	72	164	945	1292	2190
Neps/1,000 yds	70	251	1426	22	147	293	176	287	1003
ASTM Yarn Grade	B+	B	B	A	B	B+	D+	C	D

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	25.32	1/8" Gauge Strength (g/tex)	30	1/8" Gauge Strength (g/tex)	26
Elongation (%)	6.33	Elongation (%)	7.2	Elongation (%)	8.8
2.5% Span Length (in)	0.977	Length (in)	0.98	Length (in)	0.98
Uniformity ratio (%)	47.6	Uniformity Ratio (%)	79	Uniformity Ratio (%)	80
Short Fiber Content (%)	3.1	Micronaire Value	4.4	Micronaire Value	4.4
Micronaire Value (Mpsi)	4.23	Reflectance	78	Reflectance	75.7
Pressley Strength (%)	97.5	Yellowness	8.8	Yellowness	8.0
Shirley Non-lint Content (%)	3.44	Index of: - Color	21	Index of: - Color	41
IIC/Shirley F/MT III	Micronaire: 4.2	Fineness: 171 mtex	- Leaf	Fineness: 171 mtex	- Leaf
Peyer Textlab AL-101	Upper Quartile Length: 0.86 in.	Mean Length: 0.69 in.	Percent Mature Fibers: 81.0	Upper Quartile Length: 0.86 in.	Percent Mature Fibers: 81.0
			CV% of Mean: 34.3		Percent Short Fibers: 24.8

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlathorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Twist Multiplier (α _g)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Skein Test:									
Yarn Number (Ne)	9.98	22.18	29.97	10.02	22.30	29.84	16.15	22.29	29.96
CV% of Yarn Number	1.5	1.9	1.3	1.5	1.5	1.3	1.0	2.5	1.9
Count-Strength-Product	2407	2091	1843	2552	2028	2001	2403	2223	2069
CV% of CSP	3.0	3.2	3.7	1.6	1.5	1.1	3.1	4.7	4.5
Single-Yarn Test:									
Tenacity (g/tex)	14.84	13.06	11.99	14.92	13.59	12.90	16.35	15.58	14.48
Mean Strength (g)	878	348	236	879	362	255	598	413	286
CV% of Break	8.1	10.8	11.0	8.1	8.7	10.7	10.8	10.2	16.7
Elongation (%)	7.38	6.23	5.70	7.23	6.44	6.26	7.12	6.42	6.12
CV% of Elongation	6.2	9.1	10.9	6.9	7.5	8.9	9.7	9.7	12.6
Spec. Work of Rupture (g/tex)	0.602	0.443	0.368	0.600	0.464	0.424	0.582	0.506	0.442
CV% of Work of Rupture	12.0	18.0	20.0	13.3	15.4	17.7	17.0	15.2	26.4
Initial Modulus (g/tex)	262	305	313	258	261	281	222	580	289
Uster Evenness Test:									
Non-Uniformity (CV%)	14.07	15.95	18.55	12.93	15.35	16.22	19.31	20.93	23.83
Thin Places/1,000 yds	4	43	239	16	36	81	189	380	855
Thick Places/1,000 yds	81	136	441	288	110	179	551	852	1696
Neps/1,000 yds	78	249	1388	316	242	381	132	209	721
ASTM Yarn Grade	A	A	B+	A	B	B+	C+	C+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	28.04	1/8" Gauge Strength (g/tex)	32	1/8" Gauge Strength (g/tex)	30
Elongation (%)	7.17	Elongation (%)	7.4	Elongation (%)	8.9
2.5% Span Length (in)	0.978	Length (in)	1.06	Length (in)	1.04
Uniformity ratio (%)	45.3	Uniformity Ratio (%)	82	Uniformity Ratio (%)	83
Short Fiber Content (%)	6.8	Micronaire Value	4.4	Micronaire Value	4.5
Micronaire Value	4.37	Reflectance	72	Reflectance	76.3
Pressley Strength (Mpsi)	93.3	Yellowness	8.8	Yellowness	8.3
Shirley Non-lint Content (%)	3.00	Index of: - Color	44	Index of: - Color	31
		Leaf	2	Leaf	6
IIC/Shirley F/MT III	Micronaire: 4.6	Fineness: 189 mtex	Percent Mature Fibers: 83.0		
Peyer Texlab AL-101	Upper Quartile Length: 0.90 in.	Mean Length: 0.73 in.	CV% of Mean: 31.6	Percent Short Fibers: 19.1	

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10.08	21.56	30.22	10.00	21.91	29.97	15.95	21.41	28.95
Nominal Twist Multiplier (α _e)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Skein Test:									
Yarn Number (Ne)	10.08	21.56	30.22	10.00	21.91	29.97	15.95	21.41	28.95
CV% of Yarn Number	0.7	1.1	1.4	0.6	1.0	0.7	1.1	1.2	0.9
Count-Strength-Product	2539	2176	1953	2687	2264	2034	2690	2496	2407
CV% of CSP	2.2	2.3	2.2	1.1	3.0	2.4	3.3	3.9	2.6
Single-Yarn Test:									
Tenacity (g/tex)	14.96	13.68	12.77	16.14	14.10	13.18	17.48	16.50	16.40
Mean Strength (g)	876	375	250	954	380	260	647	455	335
CV% of Break	7.0	8.7	9.8	7.3	8.8	11.8	9.6	12.0	12.5
Elongation (%)	7.40	6.45	5.98	7.92	6.67	6.33	7.65	6.95	6.72
CV% of Elongation	5.8	7.5	9.2	5.9	7.0	9.2	7.5	9.6	8.9
Spec. Work of Rupture (g/tex)	0.601	0.472	0.404	0.673	0.499	0.430	0.631	0.570	0.532
CV% of Work of Rupture	11.3	14.9	17.7	11.6	14.6	19.3	14.4	18.3	19.1
Initial Modulus (g/tex)	249	300	307	186	277	265	212	230	279
Uster Evenness Test:									
Non-Uniformity (CV%)	13.83	16.00	18.86	12.47	15.09	16.03	16.96	18.64	21.17
Thin Places/1,000 yds	4	71	331	0	42	114	51	146	348
Thick Places/1,000 yds	66	157	519	24	79	139	227	497	1107
Neps/1,000 yds	42	207	1276	24	133	182	63	140	441
ASTM Yarn Grade	B+	C+	B+	A	B+	B+	B	B	B

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	26.06	1/8" Gauge Strength (g/tex)	25	1/8" Gauge Strength (g/tex)	26
Elongation (%)	5.42	Elongation (%)	6.0	Elongation (%)	8.2
2.5% Span Length (in)	0.997	Length (in)	1.02	Length (in)	1.01
Uniformity ratio (%)	44.5	Uniformity Ratio (%)	79	Uniformity Ratio (%)	80
Short Fiber Content (%)	8.2	Micronaire Value	3.8	Micronaire Value	3.8
Micronaire Value (Mpsi)	3.70	Reflectance	72	Reflectance	74.7
Pressley Strength (%)	90.3	Yellowness	8.8	Yellowness	8.8
Shirley Non-lint Content (%)	5.00	Index of: - Color 41 - Leaf 3		Index of: - Color 31 - Leaf 5	
IIC/Shirley F/MT III	Micronaire: 3.8	Fineness: 165 mtex		Percent Mature Fibers: 73.0	
Peyer Textlab AL-101	Upper Quartile Length: 1.03 in.	Mean Length: 0.81 in.		CV% of Mean: 34.7	Percent Short Fibers: 18.3

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (α_e)									
Skein Test:									
Yarn Number (Ne)	10.03	22.26	30.28	9.86	21.79	29.99	15.97	21.66	28.79
CV% of Yarn Number	1.1	1.5	1.3	0.7	2.1	1.0	1.1	1.7	1.5
Count-Strength-Product	2320	2028	1837	2467	2108	1947	2255	2160	1969
CV% of CSP	1.7	1.6	3.1	1.3	2.6	2.5	2.2	4.9	4.4
Single-Yarn Test:									
Tenacity (g/tex)	14.14	13.34	12.19	15.39	13.29	12.24	15.76	14.42	13.87
Mean Strength (g)	832	349	238	905	360	241	582	393	285
CV% of Break	7.4	9.0	10.2	7.9	8.6	10.4	11.2	11.1	13.8
Elongation (%)	6.37	5.70	5.03	7.07	5.99	5.46	6.25	5.80	5.64
CV% of Elongation	6.1	8.1	10.9	5.7	7.4	8.6	10.2	8.6	10.4
Spec. Work of Rupture (g/tex)	0.497	0.394	0.323	0.575	0.410	0.348	0.488	0.410	0.374
CV% of Work of Rupture	11.5	15.5	20.1	11.7	15.6	17.9	17.7	16.9	21.5
Initial Modulus (g/tex)	294	268	348	199	253	286	336	485	263
Uster Evenness Test:									
Non-Uniformity (CV%)	14.14	15.86	17.90	13.17	14.77	15.95	19.65	21.13	23.97
Thin Places/1,000 yds	7	36	155	2	21	56	219	409	263
Thick Places/1,000 yds	83	127	340	64	60	123	538	943	1739
Neps/1,000 yds	88	274	1266	72	146	235	128	216	798
ASTM Yarn Grade	B+	B+	A	A	B+	A	C+	C	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	24.41	1/8" Gauge Strength (g/tex)	27	1/8" Gauge Strength (g/tex)	29
Elongation (%)	7.58	Elongation (%)	8.0	Elongation (%)	10.0
2.5% Span Length (in)	0.980	Length (in)	1.01	Length (in)	1.00
Uniformity ratio (%)	46.3	Uniformity Ratio (%)	81	Uniformity Ratio (%)	82
Short Fiber Content (%)	4.6	Micronaire Value	4.1	Micronaire Value	4.0
Micronaire Value	4.10	Reflectance	73	Reflectance	74.4
Pressley Strength (Mpsi)	84.2	Yellowness	9.0	Yellowness	9.6
Shirley Non-lint Content (%)	2.30	Index of: - Color 41 - Leaf 2		Index of: - Color 31 - Leaf 5	
IIC/Shirley F/MT III	Micronaire: 4.2	Fineness: 185 mtex		Percent Mature Fibers: 75.0	
Peyer Texlab AL-101	Upper Quartile Length: 1.02 in.	Mean Length: 0.83 in.		CV% of Mean: 31.0	Percent Short Fibers: 13.1

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (α _g)									
<u>Skein Test:</u>									
Yarn Number (Ne)	10.12	21.74	30.62	9.95	22.86	29.53	16.58	22.15	29.14
CV% of Yarn Number	0.7	1.4	1.3	0.8	1.6	1.8	1.6	2.3	3.5
Count-Strength-Product	2148	1830	1622	2368	1968	1692	2174	2001	1832
CV% of CSP	1.5	4.0	3.6	1.7	2.9	3.4	2.1	3.1	4.4
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	13.68	11.71	11.18	14.10	12.29	11.47	13.93	13.11	12.88
Mean Strength (g)	799	318	216	837	317	230	496	350	261
CV% of Break	8.0	10.1	11.5	6.9	9.9	9.6	12.5	10.5	14.7
Elongation (%)	7.91	6.50	5.93	7.72	6.90	6.33	6.92	6.58	6.62
CV% of Elongation	7.7	9.0	9.8	6.8	7.6	8.2	9.3	8.9	10.6
Spec. Work of Rupture (g/tex)	0.596	0.423	0.366	0.615	0.457	0.397	0.507	0.446	0.429
CV% of Work of Rupture	13.6	17.2	19.6	11.9	15.7	16.4	18.8	17.3	22.0
Initial Modulus (g/tex)	219	237	313	242	231	261	223	422	240
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	14.24	16.22	19.22	13.01	15.30	16.49	20.60	21.31	25.33
Thin Places/1,000 yds	4	49	329	4	38	101	356	606	1258
Thick Places/1,000 yds	69	137	471	24	94	153	717	1203	2068
Neps/1,000 yds	62	228	1540	21	141	294	117	230	855
ASTM Yarn Grade	A	B+	B	A	B+	B+	C	C	D+

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	24.94	1/8" Gauge Strength (g/tex)	28	1/8" Gauge Strength (g/tex)	27
Elongation (%)	7.50	Elongation (%)	8.0	Elongation (%)	10.0
2.5% Span Length (in)	0.972	Length (in)	1.03	Length (in)	1.01
Uniformity ratio (%)	45.1	Uniformity Ratio (%)	81	Uniformity Ratio (%)	80
Short Fiber Content (%)	8.0	Micronaire Value	7.6	Micronaire Value	4.0
Micronaire Value (Mpsi)	3.77	Reflectance	9	Reflectance	75.6
Pressley Strength (%)	85.1	Yellowness	2	Yellowness	9.4
Shirley Non-lint Content (%)	3.19	Index of: - Color	31	Index of: - Color	31
IIC/Shirley F/MT III	Micronaire: 3.9	Fineness: 171 mtex		Percent Mature Fibers: 72.0	
Peyer Texlab AL-101	Upper Quartile Length: 1.01 in.	Mean Length: 0.82 in.		CV% of Mean: 30.5	Percent Short Fibers: 13.0

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Nominal Twist Multiplier (α_e)									
Skein Test:									
Yarn Number (Ne)	9.94	22.05	30.11	9.99	22.05	29.49	16.33	21.92	29.20
CV% of Yarn Number	0.9	1.1	1.0	0.7	1.1	1.8	2.4	1.5	2.2
Count-Strength-Product	2262	1937	1681	2405	1868	1807	2243	2075	1931
CV% of CSP	1.6	2.8	1.7	2.7	3.3	1.8	2.1	3.2	4.4
Single-Yarn Test:									
Tenacity (g/tex)	13.31	11.95	11.50	14.43	12.58	11.75	14.24	14.11	12.59
Mean Strength (g)	791	320	226	853	335	235	515	380	255
CV% of Break	8.3	9.8	11.0	8.5	10.1	9.4	11.7	14.8	15.7
Elongation (%)	7.86	6.90	6.36	8.24	7.08	6.81	7.12	7.22	6.78
CV% of Elongation	7.3	9.6	9.4	6.2	7.4	8.4	10.2	11.0	10.4
Spec. Work of Rupture (g/tex)	0.590	0.451	0.401	0.658	0.485	0.429	0.539	0.523	0.433
CV% of Work of Rupture	13.1	17.3	18.2	12.8	15.9	16.6	18.0	22.0	23.6
Initial Modulus (g/tex)	266	253	290	225	232	241	233	464	239
Uster Evenness Test:									
Non-Uniformity (CV%)	14.35	16.15	18.92	13.16	15.43	16.25	19.88	21.47	24.33
Thin Places/1,000 yds	8	59	284	2	30	92	275	468	1028
Thick Places/1,000 yds	77	134	426	45	80	132	538	942	1737
Neps/1,000 yds	67	157	1188	44	138	198	44	99	478
ASTM Yarn Grade	B+	B	B	A	B+	B+	C+	C+	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stelometer Strength (g/tex)	25.69	1/8" Gauge Strength (g/tex)	29	1/8" Gauge Strength (g/tex)	29
Elongation (%)	6.50	Elongation (%)	6.6	Elongation (%)	8.9
2.5% Span Length (in)	0.962	Length (in)	0.99	Length (in)	1.00
Uniformity ratio (%)	44.0	Uniformity Ratio (%)	79	Uniformity Ratio (%)	80
Short Fiber Content (%)	9.4	Micronaire Value	4.3	Micronaire Value	4.4
Micronaire Value (Mpsi)	4.33	Reflectance	74	Reflectance	75.7
Pressley Strength	95.7	Yellowness	9.2	Yellowness	9.4
Shirley Non-lint Content (%)	2.80	Index of: - Color	31	Index of: - Color	31
IIC/Shirley F/MT III	Micronaire: 4.4	Fineness: 172 mtex		Percent Mature Fibers: 85.0	
Peyer Texlab AL-101	Upper Quartile Length: 0.97 in.	Mean Length: 0.77 in.	CV% of Mean: 33.2	Percent Short Fibers: 18.2	

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10.14	21.92	30.11	9.89	22.14	29.92	16.36	21.97	29.60
Nominal Twist Multiplier (α _q)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
<u>Skein Test:</u>									
Yarn Number (Ne)	10.14	21.92	30.11	9.89	22.14	29.92	16.36	21.97	29.60
CV% of Yarn Number	1.1	1.7	1.9	0.6	1.7	1.8	1.3	2.4	2.9
Count-Strength-Product	2256	1866	1696	2428	2017	1783	2051	1884	1676
CV% of CSP	1.5	2.6	3.1	1.6	2.2	2.4	5.0	5.6	6.5
<u>Single-Yarn Test:</u>									
Tenacity (g/tex)	13.77	12.25	11.09	14.94	12.60	12.12	15.04	13.47	12.80
Mean Strength (g)	802	330	218	879	336	240	543	362	255
CV% of Break	10.4	13.3	14.7	9.2	11.1	11.6	16.6	16.2	17.7
Elongation (%)	6.88	5.89	5.01	7.18	5.94	5.66	6.38	5.79	5.99
CV% of Elongation	7.7	9.9	14.4	6.1	7.5	7.8	12.0	14.3	13.2
Spec. Work of Rupture (g/tex)	0.511	0.386	0.303	0.580	0.398	0.362	0.482	0.392	0.351
CV% of Work of Rupture	15.5	21.3	25.3	13.6	17.2	17.8	22.9	26.3	26.4
Initial Modulus (g/tex)	241	247	322	206	257	281	212	487	263
<u>Uster Evenness Test:</u>									
Non-Uniformity (CV%)	15.15	17.10	19.91	13.70	16.02	16.70	22.49	24.45	27.16
Thin Places/1,000 yds	12	71	390	2	46	102	543	990	1700
Thick Places/1,000 yds	82	125	459	30	93	133	928	1546	2350
Neps/1,000 yds	60	220	1392	24	187	233	114	225	783
ASTM Yarn Grade	B+	B+	B	A	B	B+	C	C	C

FIBER PROPERTIES

Individual Instrument Data		HVI Data: MCI 3000		HVI Data: Spinlab 900	
Stielometer Strength (g/tex)	20.34	1/8" Gauge Strength (g/tex)	21	1/8" Gauge Strength (g/tex)	21
Elongation (%)	6.92	Elongation (%)	7.6	Elongation (%)	8.7
2.5% Span Length (in)	0.985	Length (in)	1.03	Length (in)	0.99
Uniformity ratio (%)	44.3	Uniformity Ratio (%)	79	Uniformity Ratio (%)	80
Short Fiber Content (%)	8.0	Micronaire Value	4.0	Micronaire Value	4.3
Micronaire Value	3.87	Reflectance	70	Reflectance	70.7
Pressley Strength (Mpsi)	80.6	Yellowness	8.4	Yellowness	7.7
Shirley Non-lint Content (%)	6.25	Index of: - Color	41	Index of: - Color	51
IIC/Shirley F/MT III	Micronaire: 3.9	Fineness: 177 mtex	- Leaf	Index of: - Leaf	3
Peyer Textlab AL-101	Upper Quartile Length: 0.95 in.	Mean Length: 0.74 in.	CV% of Mean: 36.3	Percent Mature Fibers: 72.0	Percent Short Fibers: 23.9

YARN PROPERTIES

Spinning Machine:	Rieter m1/1			Schlafhorst Autocoro			Saco Lowell SF-3H Ring		
	10/1	22/1	30/1	10/1	22/1	30/1	16/1	22/1	30/1
Nominal Yarn Number (Ne)	10.14	21.86	29.63	10.04	21.91	29.36	15.67	21.31	28.75
Nominal Twist Multiplier (α _e)	4.85	4.81	4.78	4.78	4.79	4.79	4.0	4.0	4.0
Skein Test:									
Yarn Number (Ne)	10.14	21.86	29.63	10.04	21.91	29.36	15.67	21.31	28.75
CV% of Yarn Number	0.9	2.9	1.9	0.8	1.7	1.2	1.3	1.9	1.7
Count-Strength-Product	1828	1550	1368	2000	1651	1470	1744	1620	1449
CV% of CSP	2.4	2.1	2.9	1.9	1.6	3.0	2.9	3.3	4.6
Single-Yarn Test:									
Tenacity (g/tex)	11.36	9.95	9.36	12.12	10.53	9.56	12.06	11.62	10.37
Mean Strength (g)	662	269	187	713	284	192	455	322	213
CV% of Break	10.5	12.1	10.3	9.2	11.0	10.6	14.6	15.6	16.1
Elongation (%)	7.49	6.47	5.73	7.66	6.37	5.83	7.19	6.58	6.05
CV% of Elongation	7.8	10.5	8.7	6.2	8.3	8.8	10.6	13.1	13.1
Spec. Work of Rupture (g/tex)	0.497	0.367	0.307	0.539	0.383	0.317	0.453	0.404	0.330
CV% of Work of Rupture	15.8	20.3	18.2	13.8	17.3	18.0	22.3	25.2	26.1
Initial Modulus (g/tex)	233	238	281	205	243	255	155	404	235
Uster Evenness Test:									
Non-Uniformity (CV%)	15.17	17.25	19.82	14.24	15.99	16.55	22.35	24.46	27.20
Thin Places/1,000 yds	14	78	354	5	39	92	527	976	1838
Thick Places/1,000 yds	101	146	497	55	85	129	1004	1628	2590
Neps/1,000 yds	86	278	1650	47	168	262	166	311	954
ASTM Yarn Grade	B+	B	C+	A	B	B+	C	D	D