

Appendices

Process Parameters And Fabric Properties

Table 3.2a: Spinning process parameters of Polyester/ Viscose (75/25) yarn spun

Spinning process	PV (75/25)		
	37 Tex	20 Tex	13 Tex
Blow room			
Lap Hank (gms/mt)	350	350	350
Beater Speed (rpm) K1 & K2	850/750	850/750	850/750
Carding			
Sliver Hank	0.1	0.12	0.14
Licker-in speed (rpm)	834	834	834
Cylinder speed (rpm)	350	350	350
Flat speed (mm/min.)	222	222	222
Doffer speed (m/min)	120	120	120
Licker-in cylinder gauge (thou)	8	8	8
Flat-cylinder gauge (thou)	14/14/14/12/12	14/14/14/12/12	14/14/14/12/12
Cylinder – Doffer gauge (thou)	4	4	4
Draw Frame (Breaker)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.7	1.7	1.7
Back-Middle Roller Gauge	53	53	53
Middle-Front Roller Gauge	53	53	53
Delivery Speed (mpm)	250	250	250
Draw Frame (Finisher)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.21	1.21	1.21
Back-Middle Roller Gauge	55	55	55
Middle-Front Roller Gauge	49	49	49
Delivery Speed (mpm)	400	400	400
Simplex			
Short Cradle / Medium Cradle	SF-1(470gmx32 spdl)	SF-1(470gmx216 spdl)	SF-1(375gmx32 spdl)
Roving Hank	0.8	0.8	1.4
Break Draft	1.21	1.21	1.21
TPI	0.67	0.67	0.89
Back-Middle Roller Gauge	65	65	65
Middle-Front Roller Gauge	60	60	60
Delivery Speed (mpm)	1000	1000	1000
Ring Frame			
Count	16	30	44
Spindle Speed (rpm)	14000	16000	16000
TM	3.2 (12.8 TPI)	3.3 (18.1 TPI)	3.5 (23.2 TPI)
Spacer type (mm)	4.5	4.5	2.5
Traveller used	3 No	3/0	8/0
Back-Middle Roller Gauge	75	75	75
Middle-Front Roller Gauge	54	54	54
Autoconer			
Delivery speed (mpm)	1200	1200	1200

Table 3.2b: Spinning process parameters of Polyester/Viscose (60/40) yarn spun

Spinning process	PV (60/40)		
	37 Tex	20 Tex	13 Tex
Blow room			
Lap Hank (gms/mt)	350	350	350
Beater Speed (rpm) K1 & K2	850/750	850/750	850/750
Carding			
Sliver Hank	0.1	0.12	0.14
Licker-in speed (rpm)	834	834	834
Cylinder speed (rpm)	350	350	350
Flat speed (mm/min.)	222	222	222
Doffer speed (m/min)	120	120	120
Licker-in cylinder gauge (thou)	8	8	8
Flat-cylinder gauge (thou)	14/14/14/12/12	14/14/14/12/12	14/14/14/12/12
Cylinder – Doffer gauge (thou)	4	4	4
Draw Frame (Breaker)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.7	1.7	1.7
Back-Middle Roller Gauge	53	53	53
Middle-Front Roller Gauge	53	53	53
Delivery Speed (mpm)	250	250	250
Draw Frame (Finisher)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.21	1.21	1.21
Back-Middle Roller Gauge	55	55	55
Middle-Front Roller Gauge	49	49	49
Delivery Speed (mpm)	400	400	400
Simplex			
Short Cradle / Medium Cradle	SF-1(470gmx32 spdl)	SF-1(275gmx48 spdl)	SF-1(375gmx32 spdl)
Roving Hank	0.8	0.9	1.4
Break Draft	1.21	1.21	1.21
TPI	0.72	0.76	0.95
Back-Middle Roller Gauge	65	65	65
Middle-Front Roller Gauge	60	60	60
Delivery Speed (mpm)	1000	1000	1000
Ring Frame			
Count	16	30	44
Spindle Speed (rpm)	14000	16000	16000
TM	3.2 (12.8 TPI)	3.3 (18.1 TPI)	3.5 (23.2 TPI)
Spacer type (mm)	4.5	3.0	2.5
Traveller used	3 No	3/0	8/0
Back-Middle Roller Gauge	75	75	75
Middle-Front Roller Gauge	54	54	54
Autoconer			
Delivery speed (mpm)	1200	1200	1000

Table 3.2c: Spinning process parameters of Polyester/ Viscose (45/55) yarn spun

Spinning process	PV (45/55)		
	37 Tex	20 Tex	13 Tex
Blow room			
Lap Hank (gms/mt)	350	350	350
Beater Speed (rpm) K1 & K2	850/750	850/750	850/750
Carding			
Sliver Hank	0.1	0.12	0.14
Licker-in speed (rpm)	834	834	834
Cylinder speed (rpm)	350	350	350
Flat speed (mm/min.)	222	222	222
Doffer speed (m/min)	120	120	120
Licker-in cylinder gauge (thou)	8	8	8
Flat-cylinder gauge (thou)	14/14/14/12/12	14/14/14/12/12	14/14/14/12/12
Cylinder – Doffer gauge (thou)	4	4	4
Draw Frame (Breaker)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.7	1.7	1.7
Back-Middle Roller Gauge	53	53	53
Middle-Front Roller Gauge	53	53	53
Delivery Speed (mpm)	250	250	250
Draw Frame (Finisher)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.21	1.21	1.21
Back-Middle Roller Gauge	55	55	55
Middle-Front Roller Gauge	49	49	49
Delivery Speed (mpm)	400	400	400
Simplex			
Short Cradle / Medium Cradle	SF-1(470gmx32 spdl)	SF-1(275gmx48 spdl)	SF-1(375gmx32 spdl)
Roving Hank	0.8	0.9	1.4
Break Draft	1.21	1.21	1.21
TPI	0.76	0.81	1.01
Back-Middle Roller Gauge	65	65	65
Middle-Front Roller Gauge	60	60	60
Delivery Speed (mpm)	1000	1000	1000
Ring Frame			
Count	16	30	44
Spindle Speed (rpm)	14000	16000	16000
TM	3.2 (12.8 TPI)	3.3 (18.1 TPI)	3.5 (23.2 TPI)
Spacer type (mm)	4.5	3.0	2.5
Traveller used	3 No	3/0	8/0
Back-Middle Roller Gauge	75	75	75
Middle-Front Roller Gauge	54	54	54
Autoconer			
Delivery speed (mpm)	1200	1200	1000

Table 3.2d: Spinning process parameters of Polyester/Viscose/Lycra (70/25/5) yarn spun

Spinning process	PVLycra (70/25/5)		
	37 Tex	20 Tex	13 Tex
Blow room			
Lap Hank (gms/mt)	350	350	350
Beater Speed (rpm) K1 & K2	850/750	850/750	850/750
Carding			
Sliver Hank	0.1	0.12	0.14
Licker-in speed (rpm)	834	834	834
Cylinder speed (rpm)	350	350	350
Flat speed (mm/min.)	222	222	222
Doffer speed (m/min)	120	120	120
Licker-in cylinder gauge (thou)	8	8	8
Flat-cylinder gauge (thou)	14/14/14/12/12	14/14/14/12/12	14/14/14/12/12
Cylinder – Doffer gauge (thou)	4	4	4
Draw Frame (Breaker)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.7	1.7	1.7
Back-Middle Roller Gauge	53	53	53
Middle-Front Roller Gauge	53	53	53
Delivery Speed (mpm)	250	250	250
Draw Frame (Finisher)			
Sliver Hank	0.1	0.12	0.14
Break Draft	1.21	1.21	1.21
Back-Middle Roller Gauge	55	55	55
Middle-Front Roller Gauge	49	49	49
Delivery Speed (mpm)	400	400	400
Simplex			
Short Cradle / Medium Cradle	SF-1(315gmx48 spdl)	SF-1(275gmx48 spdl)	SF-1(235gmx48 spdl)
Roving Hank	0.8	0.9	1.4
Break Draft	1.21	1.21	1.21
TPI	0.67	0.71	0.89
Back-Middle Roller Gauge	65	65	65
Middle-Front Roller Gauge	60	60	60
Delivery Speed (mpm)	1000	1000	1000
Ring Frame			
Count	16	30	44
Spindle Speed (rpm)	14000	16000	16000
TM	3.2 (12.8 TPI)	3.3 (18.1 TPI)	3.5 (23.2 TPI)
Spacer type (mm)	4.5	3.0	2.5
Traveller used	3 No	3/0	8/0
Back-Middle Roller Gauge	75	75	75
Middle-Front Roller Gauge	54	54	54
Autoconer			
Delivery speed (mpm)	1200	1200	1000

Table 3.3.a: Characteristics of yarns used in the production of woven fabrics

Yarn Characteristics	PV (75/25)			PV (60/40)		
	37 Tex	20 Tex	13 Tex	37 Tex	20 Tex	13 Tex
Lea Count CV%	1.2	1.7	1.6	0.6	1.3	1.4
Strength (lbs)	382.8	167.6	93.4	306.9	148.8	81.9
Strength CV%	2.7	3.2	4.6	2.8	3.4	4.1
CSP	5828	5053	4115	4912	4369	3568
Unevenness (Uster), U%	7.98	9.74	11.31	7.83	9.51	11.47
Irregularity, CVm, %	10.02	12.26	14.23	9.86	12	14.43
Hairiness (Uster), H	6.98	5.29	4.71	6.94	5.29	4.53
Sh	1.44	1.26	1.21	1.43	1.2	1.17
Thin places (-50%), Km	0	0.3	9	0	1	20
Thick places (+ 50%), Km	4.8	7	16	5	5.5	27.5
Neps (+ 200%), km	10	29.8	73.8	9	34.4	61.8
RKm (gm/tex)	32.95	29.93	27.08	30.14	27.76	22.46
Rkm CV%	6.6	7.7	9.7	8.4	7.5	12.3
Elongation%	14.44	13.28	12.33	14.95	13.36	11.66
Elongation CV%	4	5.5	6.9	5	5.1	9.3
TPI	13.86	19.79	24.62	12.49	18.16	24.81
TPI CV%	2.4	4.7	4.9	4.3	3.3	4.6
Objectionable Faults	0.00	0.00	20	0.00	0.00	0.00
Spinning Faults	0.00	0.00	1	0.00	0.00	0.00
Long thick	0.00	0.00	55	0.00	0.00	0.00
Objectionable thin	0.0	0.0	1	0.00	0.00	0.0
Total objectionable	0.00	0.00	77	0.00	0.00	0.00
Total tolerable faults	0.00	0.00	1734	0.00	0.00	0.00
Total faults	0.00	0.00	1811	0.00	0.00	0.00

Table 3.3.b: Characteristics of yarns used in the production of woven fabrics

Yarn Characteristics	PV (45/55)			PVLycra (70/25/05)		
	37 Tex	20 Tex	13 Tex	37 Tex	20 Tex	13 Tex
Lea Count CV%	1.1	1	2.4	2.7	1.5	1
Strength (lbs)	257.6	116.9	70.8	199.9	113	73.5
Strength CV%	4.5	2.7	3.5	5.4	3.6	6.7
CSP	4060	3494	3100	2968	3402	3153
Unevenness (Uster), U%	7.59	9.31	11.52	8.55	8.79	10.12
Irregularity, CVm, %	9.57	11.78	14.54	10.76	11.11	12.76
Hairiness (Uster), H	7.29	5.3	4.71	7.5	6.41	5.1
Sh	1.45	1.14	1.19	1.42	1.3	1.26
Thin places (-50%), Km	0	0	20.8	0.5	0	4
Thick places (+ 50%), Km	4.5	4.3	27.5	5	7.8	7.3
Neps (+ 200%), km	10.8	29.8	108.3	11	20.5	74
RKm (gm/tex)	24.12	23.74	21.92	27	27.78	26.32
Rkm CV%	6.1	9.5	9.1	12.5	8.4	10.4
Elongation%	14.01	12.81	12.18	15.73	14.31	13.44
Elongation CV%	4.8	6.3	6.4	9.8	7.8	9.7
TPI	13.1	19.95	23.81	14.24	18.77	21.9
TPI CV%	4.1	3.1	3.3	5.2	4	3
Objectionable Faults	0.00	0.00	20	16	0.00	0.00
Spinning Faults	0.00	0.00	1	0.00	0.00	0.00
Long thick	0.00	0.00	68.1	0.00	0.00	0.00
Objectionable thin	0.0	0.0	0.00	0.00	0.00	0.0
Total objectionable	0.00	0.00	85.1	0.00	0.00	0.00
Total tolerable faults	0.00	0.00	2328	0.00	0.00	0.00
Total faults	0.00	0.00	2413	0.00	0.00	0.00

Table 3.5: Sizing machine parameters

Make	Amritlaxmi Beam to Beam Sizing Machine
JV Alpenol:	25 kg
PVA:	5 kg
Water:	150 kg
Cooking Temp:	130 – 140 C
Pressure:	2 kg
Cooking Time:	45 min
Drying Temp:	125 – 130 (1 st Cylinder), 115-120 C (2 nd Cylinder), 105 – 110 C (3 rd Cylinder), 90 C (4 th Cylinder)
Size pick up %	8.5

Table 3.8: Wet process route and recipe followed

Process Route	Processing Condition	Machine
Desizing	Desizing Enzyme :-1 gpl Wetting agent :- 1 gpl Temperature-90°C and time - 30 mins	Soft flow
Washing	First a boil wash at 90°C for 10 mins Sample check for desizing	Soft flow
Scouring	Soda- 1 gpl Soap- 2 gpl Run at 80°C for 10 mins	Soft flow
Washing	Hot wash at 80°C for 10 mins Cold wash at 50°C for 10 mins followed by neutralising with 1 gpl acetic acid.	Soft flow
Drying cum Heat	At 180-190°C with contact time 30-35 seconds	Stenter
Polyester dyeing and washing	Dyeing with Disperse Dye as per normal polyester dyeing route	Soft flow
Viscose dyeing and washing	Dyeing with Reactive Dye as per normal cotton dyeing route	Soft flow
Drying	At 130-140°C	Stenter
Singeing	Speed 100-120 mpm	Singeing
Chemical finishing	Softener-10 gpl Binder-10 gpl Acid- 0.5gpl Dry at 120-130°C	Stenter
Sanforising	Belt pressure- 2-3kg Speed- 13-15mpm	Sanforising machine

Table 3.9: Wet process route and recipe followed for Lycra blends (Jet 50)

Process	Ingredients	Quantity (%.gpl)	Quantity (gm)	Temperature (°C)	Time (Min)
Loading	Lubricating agent- Azalube	2	600	50	5
	Wetting agent-SW	1	300		
Load the fabric run for 5 min then add					
Desizing	LHT Enzyme	100- 1	300	90	30
Boil wash	Base desizing agent			85	20
Check Size					
Scouring	Scouring agent -SCB	2	600	70	15
	Soda	1	300		
Hot Wash + Cold Wash				80/40	10/10
Neutralise	Acid	1	300	50	10
Stenter Dry					

Table 3.10: Dyeing process route and recipe followed (Then)

Process	Ingredients	Quantity (%.gpl)	Quantity (gm)	Temperature (°C)	Time (Min)
Loading	Lubricating agent-Azalube	1	200	50	5
	Wetting agent-SW	1	200		
Load the fabric run for 10 min					
Hot Wash + Cold Wash				80/40	10/10
PET Dyeing	Azalube	1	100	130	45
	Rathelene	2	700		
	N.Blue GR				
	Levelling agent-DFT	1	200		
	Dispersing agent-RDNI	1	200		
	A Acid	1	200		
Cold Wash					
RC	Hydro	1	200	80	20
	Caustic	1	200		
	Reduction	2	400		
	Clearing agent-RCLI				
Soaping	DTCI	1	200	85	15
Hot & Cold Wash					
Neutralization	Acid	1	200		
Viscose	Azalube	1	120	80	30
Dyeing (Migration)					
	Reactofix N	3	450		
	Blue HERI				
	Salt	60	12000		
	Soda	20	4000		
Cold Wash					
Neutral	Acid	1	200	50	10
Soaping	DTCI-Non toxic soaping agent	1	200		
Hot Wash + Cold Wash + Drying					

Table 3.11: Actual Thread Density, Fabric Cover and Thickness of ready for dyeing (RFD) Satin Samples

Fabric Code	Fabric Sett		Fabric Thickness (mm)	Cloth cover factor		
	EPI	PPI		(K ₁)	K ₂)	(K _C)
RS ₁	133	60	0.561	24.28	15.00	26.27
RS ₂	133	62	0.593	24.28	15.50	26.34
RS ₃	133	62	0.600	24.28	15.50	26.34
RS ₄	133	62	0.842	24.28	15.50	26.34
RS ₅	135	72	0.584	24.65	18.00	26.80
RS ₆	136	72	0.581	24.83	18.00	26.87
RS ₇	135	73	0.589	24.65	18.25	26.83
RS ₈	135	72	0.854	24.65	18.00	26.80
RS ₉	137	77	0.545	25.01	19.25	27.07
RS ₁₀	138	76	0.581	25.20	19.00	27.10
RS ₁₁	138	78	0.654	25.20	19.50	27.15
RS ₁₂	138	77	0.814	25.20	19.25	27.12
RS ₁₃	132	72	0.478	24.10	13.15	25.93
RS ₁₄	133	73	0.501	24.28	13.33	26.05
RS ₁₅	133	72	0.485	24.28	13.15	26.03
RS ₁₆	132	72	0.636	24.10	13.15	25.93
RS ₁₇	134	86	0.475	24.46	15.70	26.45
RS ₁₈	135	85	0.498	24.65	15.52	26.51
RS ₁₉	135	86	0.505	24.65	15.70	26.53
RS ₂₀	136	87	0.659	24.83	15.88	26.63
RS ₂₁	138	100	0.483	25.20	18.26	27.02
RS ₂₂	138	102	0.508	25.20	18.62	27.06
RS ₂₃	138	102	0.508	25.20	18.62	27.06
RS ₂₄	135	100	0.655	24.65	18.26	26.83
RS ₂₅	132	72	0.443	24.10	10.85	25.61
RS ₂₆	133	71	0.453	24.28	10.70	25.70
RS ₂₇	134	72	0.454	24.46	10.85	25.84
RS ₂₈	134	73	0.530	24.46	11.01	25.85
RS ₂₉	135	102	0.445	24.65	15.38	26.49
RS ₃₀	135	101	0.479	24.65	15.23	26.47
RS ₃₁	136	100	0.468	24.83	15.08	26.54
RS ₃₂	133	100	0.569	24.28	15.08	26.28
RS ₃₃	133	110	0.450	24.28	16.58	26.48
RS ₃₄	135	112	0.465	24.65	16.88	26.67
RS ₃₅	135	113	0.529	24.65	17.04	26.69
RS ₃₆	135	111	0.572	24.65	16.73	26.65

K₁: Warp Cover factor; K₂: Weft Cover factor; K_C: Cloth cover

Table 3.12: Actual Thread Density, Fabric Cover and Thickness of ready for dyeing (RFD) 2/3 Twill Samples

Fabric Code	Fabric Sett		Fabric Thickness (mm)	Cloth cover factor		
	EPI	PPI		(K ₁)	(K ₂)	(K _C)
RT ₁	132	61	0.573	24.10	15.25	26.22
RT ₂	133	62	0.592	24.28	15.50	26.34
RT ₃	133	62	0.609	24.28	15.50	26.34
RT ₅	133	65	0.567	24.28	16.25	26.44
RT ₆	135	72	0.601	24.65	18.00	26.80
RT ₇	135	71	0.592	24.65	17.75	26.77
RT ₈	136	72	0.853	24.83	18.00	26.87
RT ₉	136	72	0.558	24.83	18.00	26.87
RT ₁₀	137	76	0.578	25.01	19.00	27.04
RT ₁₁	137	76	0.578	25.01	19.00	27.04
RT ₁₃	137	73	0.506	25.01	13.33	26.43
RT ₁₄	137	71	0.515	25.01	12.96	26.40
RT ₁₅	131	73	0.518	23.92	13.33	25.86
RT ₁₆	132	73	0.673	24.10	13.33	25.96
RT ₁₇	133	77	0.466	24.28	14.06	26.15
RT ₁₈	132	76	0.489	24.10	13.88	26.03
RT ₁₉	135	85	0.491	24.65	15.52	26.51
RT ₂₀	135	84	0.621	24.65	15.34	26.48
RT ₂₁	135	85	0.469	24.65	15.52	26.51
RT ₂₂	135	86	0.492	24.65	15.70	26.53
RT ₂₃	137	101	0.487	25.01	18.44	26.98
RT ₂₄	137	100	0.651	25.01	18.26	26.96
RT ₂₅	138	73	0.482	25.20	11.01	26.30
RT ₂₆	136	74	0.484	24.83	11.16	26.09
RT ₂₇	134	71	0.492	24.46	10.70	25.82
RT ₂₈	133	70	0.553	24.28	10.55	25.68
RT ₂₉	134	102	0.433	24.46	15.38	26.41
RT ₃₀	134	101	0.431	24.46	15.23	26.39
RT ₃₁	135	101	0.497	24.65	15.23	26.47
RT ₃₂	135	101	0.515	24.65	15.23	26.47
RT ₃₃	137	105	0.454	25.01	15.83	26.70
RT ₃₄	134	104	0.449	24.46	15.68	26.44
RT ₃₅	134	110	0.442	24.46	16.58	26.56
RT ₃₆	134	109	0.523	24.46	16.43	26.54

K₁: Warp Cover factor; K₂: Weft Cover factor; K_C: Cloth cover

Table 3.13: Actual Thread Density, Fabric Cover, Fabric properties for Dyed Satin Samples

Fabric Code	Fabric Sett		Cloth cover factor			Thickness (mm)	Weight, g/m ²	Air permeability (l/m ² /s)
	EPI	PPI	(K ₁)	(K ₂)	(K _C)			
DS ₁	144	62	26.29	15.50	27.24	0.528	246.95	311
DS ₂	144	64	26.29	16.00	27.27	0.540	224.66	264
DS ₃	144	65	26.29	16.25	27.28	0.548	225.95	247.6
DS ₄	144	64	26.29	16.00	27.27	0.762	327.73	87.92
DS ₅	144	74	26.29	18.50	27.42	0.543	247.11	150.6
DS ₆	144	74	26.29	18.50	27.42	0.548	245.78	141.2
DS ₇	144	75	26.29	18.75	27.44	0.547	248.19	156.8
DS ₈	144	74	26.29	18.50	27.42	0.751	353.51	58.92
DS ₉	144	79	26.29	19.75	27.50	0.562	261.49	97.78
DS ₁₀	144	78	26.29	19.50	27.48	0.569	264.37	103.74
DS ₁₁	144	78	26.29	19.50	27.48	0.554	260.33	109
DS ₁₂	144	77	26.29	19.25	27.47	0.737	358.47	38.32
DS ₁₃	144	74	26.29	13.51	27.12	0.454	183.25	372.2
DS ₁₄	144	75	26.29	13.69	27.13	0.451	186.66	288.8
DS ₁₅	144	74	26.29	13.51	27.12	0.462	185.77	298.4
DS ₁₆	144	74	26.29	13.51	27.12	0.582	242.37	100.54
DS ₁₇	144	88	26.29	16.07	27.27	0.463	214.28	109.6
DS ₁₈	144	87	26.29	15.88	27.26	0.478	209.1	171
DS ₁₉	144	88	26.29	16.07	27.27	0.474	205.79	173.60
DS ₂₀	144	89	26.29	16.25	27.28	0.597	267.90	63
DS ₂₁	144	102	26.29	18.62	27.43	0.461	219.53	100.52
DS ₂₂	144	103	26.29	18.81	27.44	0.495	231.54	93.22
DS ₂₃	144	102	26.29	18.62	27.43	0.478	225.48	89.20
DS ₂₄	144	102	26.29	18.62	27.43	0.590	286.76	39.20
DS ₂₅	144	74	26.29	11.16	26.97	0.420	160.60	406.60
DS ₂₆	144	73	26.29	11.01	26.96	0.415	162.85	359.20
DS ₂₇	144	74	26.29	11.16	26.97	0.422	163.23	347.40
DS ₂₈	144	74	26.29	11.16	26.97	0.489	201.38	156.40
DS ₂₉	144	102	26.29	15.38	27.23	0.418	185.24	173.80
DS ₃₀	144	103	26.29	15.53	27.24	0.434	194.43	147.40
DS ₃₁	144	102	26.29	15.38	27.23	0.433	190.79	145.60
DS ₃₂	144	102	26.29	15.38	27.23	0.478	236.63	60.46
DS ₃₃	144	112	26.29	16.88	27.32	0.428	196.28	113.60
DS ₃₄	144	114	26.29	17.19	27.34	0.444	200.52	109.40
DS ₃₅	148	113	27.02	17.04	27.62	0.445	199.62	108.68
DS ₃₆	144	113	26.29	17.04	27.33	0.523	245.49	50.64

K₁: Warp Cover factor; K₂: Weft Cover factor; K_C: Cloth cover

Table 3.14: Actual Thread Density, Fabric Cover, Fabric properties for Dyed 2/3 Twill Samples

Fabric Code	Fabric Sett		Cloth cover factor			Thickness (mm)	Weight, g/m ²	Air permeability, (l/m ² /s)
	EPI	PPI	(K ₁)	(K ₂)	(K _C)			
DT ₁	144	62	26.29	15.50	27.24	0.455	184.38	270.20
DT ₂	144	63	26.29	15.75	27.25	0.449	223.63	260.20
DT ₃	144	62	26.29	15.50	27.24	0.544	227.95	234
DT ₅	144	66	26.29	16.50	27.30	0.547	251.8	129.80
DT ₆	144	74	26.29	18.50	27.42	0.545	249.31	112.16
DT ₇	144	73	26.29	18.25	27.40	0.544	248.03	114.80
DT ₈	144	72	26.29	18.00	27.39	0.713	342.18	54.82
DT ₉	144	73	26.29	18.25	27.40	0.531	257.08	87.76
DT ₁₀	144	78	26.29	19.50	27.48	0.542	263.23	85.22
DT ₁₁	144	77	26.29	19.25	27.47	0.536	260.94	77.44
DT ₁₃	144	74	26.29	13.51	27.12	0.455	184.38	270.20
DT ₁₄	144	73	26.29	13.33	27.10	0.462	186.90	200.40
DT ₁₅	144	75	26.29	13.69	27.13	0.462	185.31	222.20
DT ₁₆	144	75	26.29	13.69	27.13	0.568	245.22	87.90
DT ₁₇	144	79	26.29	14.42	27.17	0.452	205.20	117.40
DT ₁₈	144	76	26.29	13.88	27.14	0.460	207.99	127
DT ₁₉	144	87	26.29	15.88	27.26	0.461	209.72	107
DT ₂₀	144	86	26.29	15.70	27.25	0.545	257.64	46.74
DT ₂₁	144	87	26.29	15.88	27.26	0.453	226.84	52
DT ₂₂	144	88	26.29	16.07	27.27	0.453	230.30	57.88
DT ₂₃	144	103	26.29	18.81	27.44	0.456	230.02	51.54
DT ₂₄	144	102	26.29	18.62	27.43	0.543	282.09	25.46
DT ₂₅	144	75	26.29	11.31	26.98	0.422	165.10	307
DT ₂₆	144	75	26.29	11.31	26.98	0.430	164.19	291
DT ₂₇	144	73	26.29	11.01	26.96	0.426	160.79	269.40
DT ₂₈	144	73	26.29	11.01	26.96	0.488	204.98	122.40
DT ₂₉	144	102	26.29	15.38	27.23	0.412	191.02	103.32
DT ₃₀	144	101	26.29	15.23	27.22	0.421	193.19	104.30
DT ₃₁	144	103	26.29	15.53	27.24	0.420	193.38	93.10
DT ₃₂	144	103	26.29	15.53	27.24	0.469	232.45	40.58
DT ₃₃	144	106	26.29	15.98	27.27	0.420	200.99	64.98
DT ₃₄	144	104	26.29	15.68	27.25	0.427	200.11	67.10
DT ₃₅	144	112	26.29	16.88	27.32	0.427	203.89	62.66
DT ₃₆	144	111	26.29	16.73	27.31	0.472	238.75	32.24

K₁: Warp Cover factor; K₂: Weft Cover factor; K_C: Cloth cover

Percentage Transmittance

Table 4.5: Value of Percentage transmittance of RFD Satin fabrics woven using 37 Tex weft

Wavelength (nm)	% Transmittance											
	RS ₁	RS ₂	RS ₃	RS ₄	RS ₅	RS ₆	RS ₇	RS ₈	RS ₉	RS ₁₀	RS ₁₁	RS ₁₂
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.0680	0.0837	0.0625	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
320	0.4715	0.5489	0.5698	0.05	0.1817	0.2131	0.1638	0.05	0.05	0.1015	0.0573	0.05
325	0.8899	0.9509	1.0312	0.05	0.5078	0.5098	0.4716	0.05	0.05	0.3373	0.2784	0.05
330	1.0539	1.1227	1.2200	0.05	0.6348	0.6335	0.5924	0.05	0.05	0.4292	0.3632	0.05
335	1.2126	1.2787	1.3945	0.05	0.7668	0.7571	0.7014	0.05	0.05	0.5305	0.4541	0.05
340	1.3448	1.4209	1.5484	0.05	0.8648	0.8611	0.7948	0.05	0.05	0.6038	0.5312	0.05
345	1.5996	1.6654	1.8247	0.0582	1.0770	1.0671	0.9958	0.05	0.05	0.7853	0.6880	0.05
350	1.9597	2.0139	2.2121	0.0785	1.3842	1.3751	1.2644	0.05	0.05	1.0350	0.9084	0.05
355	2.5952	2.6286	2.8650	0.2280	1.9373	1.9214	1.7570	0.0736	0.1338	1.4945	1.3305	0.0988
360	3.7409	3.6870	3.9872	0.6610	2.9603	2.9344	2.6557	0.3866	0.5396	2.3659	2.1247	0.4487
365	5.5650	5.3645	5.7182	1.4760	4.7170	4.6193	4.0875	1.0564	1.3726	3.8598	3.4253	1.1502
370	7.9794	7.4498	7.8559	2.7907	7.0845	6.8439	5.9202	2.2143	2.8236	5.8499	5.1287	2.3239
375	9.9173	9.0605	9.4832	4.0871	9.1210	8.6475	7.3784	3.4194	4.3549	7.5080	6.5247	3.5124
380	11.2293	10.1590	10.5662	5.1670	10.5642	9.8797	8.4173	4.4616	5.6318	8.6674	7.5378	4.5187
385	11.9761	10.7633	11.135	5.8291	11.3870	10.5894	9.0069	5.1368	6.4747	9.3209	8.1130	5.1712
390	12.4381	11.1205	11.5753	6.3398	11.8752	10.9988	9.3703	5.6341	7.0768	9.7182	8.4643	5.6604
395	12.6268	11.3218	11.7295	6.7056	12.1547	11.2425	9.5858	6.0043	7.5226	9.9791	8.7038	6.0124
400	12.7637	11.4578	11.8346	7.0219	12.3600	11.4132	9.7358	6.3359	7.9276	10.1697	8.8728	6.3216

Table 4.6: Value of Percentage transmittance of Dyed Satin fabrics woven using 37 Tex weft

[illegible]

Table 4.7: Value of Percentage transmittance of RFD Satin fabrics woven using 20 Tex weft

Wavelength (nm)	% Transmittance											
	RS ₁₃	RS ₁₄	RS ₁₅	RS ₁₆	RS ₁₇	RS ₁₈	RS ₁₉	RS ₂₀	RS ₂₁	RS ₂₂	RS ₂₃	RS ₂₄
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.05	0.2322	0.2364	0.05	0.05	0.05	0.0911	0.05	0.05	0.05	0.05	0.05
320	0.05	0.9317	1.0087	0.05	0.2522	0.4114	0.5168	0.05	0.0693	0.1788	0.1768	0.05
325	0.05	1.5045	1.6116	0.05	0.6380	0.8168	0.9615	0.05	0.3289	0.4959	0.4988	0.05
330	0.05	1.7693	1.8793	0.0610	0.7998	1.0025	1.1417	0.05	0.4268	0.6326	0.6383	0.05
335	0.05	1.9883	2.0960	0.1133	0.9596	1.1599	1.3075	0.0501	0.5405	0.7775	0.7686	0.05
340	0.05	2.1954	2.2971	0.1325	1.0999	1.3160	1.4620	0.0582	0.6304	0.9053	0.8940	0.05
345	0.05	2.5489	2.6381	0.2371	1.3779	1.5965	1.7259	0.0947	0.8055	1.4111	1.1133	0.0509
350	0.05	3.0433	3.11	0.3823	1.7749	1.9899	2.1050	0.2226	1.0762	1.4978	1.4378	0.1319
355	0.05	3.8423	3.8660	0.6881	2.4776	2.6784	2.7366	0.4729	1.5689	2.1346	2.0152	0.3604
360	0.0918	5.1931	5.1082	1.3122	3.7476	3.8596	3.8237	1.0458	2.4672	3.2913	3.0361	0.8732
365	0.1252	7.1832	6.8941	2.4149	5.7673	5.7140	5.4613	2.0729	3.9349	5.1660	4.6576	1.8382
370	0.13701	9.5233	8.9237	3.9590	8.3636	7.9837	7.3638	3.6222	5.8016	7.5581	6.6301	3.2711
375	0.1222	11.2169	10.3774	5.3139	10.4085	9.6962	8.7695	5.0199	7.2920	9.4237	8.1596	4.6006
380	0.1829	12.3010	11.3334	6.3841	11.7589	10.8281	9.7422	6.1257	8.3231	10.6518	9.2274	5.6899
385	0.1794	12.8947	11.8560	7.0290	12.5294	11.4535	10.2480	6.8476	8.8923	11.3499	9.7966	6.3742
390	0.1553	13.2234	12.1501	7.4768	12.9815	11.8037	10.5345	7.3674	9.2275	11.7626	10.1318	6.8656
395	0.1243	13.3570	12.2714	7.8200	13.1975	11.9882	10.7061	7.7214	9.4354	11.9566	10.3344	7.2614
400	0.0719	13.4283	12.3470	8.0986	13.3462	12.1096	10.8092	8.0201	9.5847	12.0973	10.8425	7.5867

[illegible]

Table 4.9: Value of Percentage transmittance of RFD Satin fabrics woven using 13 Tex weft

Wavelength (nm)	% Transmittance											
	RS ₂₅	RS ₂₆	RS ₂₇	RS ₂₈	RS ₂₉	RS ₃₀	RS ₃₁	RS ₃₂	RS ₃₃	RS ₃₄	RS ₃₅	RS ₃₆
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.0525	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.4417	0.4802	0.3774	0.05	0.0678	0.05	0.05	0.05	0.05	0.05	0.05	0.05
320	1.5210	1.4515	1.240	0.0519	0.6916	0.4381	0.3861	0.05	0.1837	0.4137	0.3391	0.05
325	2.3508	2.1655	1.9908	0.2423	1.2717	0.8974	0.8126	0.0626	0.5427	0.8652	0.7522	0.05
330	2.7288	2.4931	2.2976	0.3181	1.5467	1.1031	0.9878	0.0752	0.6898	1.0673	0.9344	0.05
335	3.0436	2.7398	2.5260	0.4259	1.7762	1.2816	1.1494	0.1219	0.8250	1.2529	1.0989	0.0641
340	3.3402	2.9953	2.7515	0.4914	1.9971	1.4591	1.2922	0.1591	0.9507	1.4415	1.2605	0.0736
345	3.8217	3.3889	3.1105	0.6632	2.3814	1.7727	1.5620	0.2844	1.1797	1.7530	1.5378	0.1836
350	4.4953	3.9472	3.6149	0.8983	2.9262	2.2263	1.9312	0.4512	1.5124	2.2130	1.9398	0.3353
355	5.5503	4.8136	4.3960	1.3436	3.8367	2.9855	2.5523	0.8152	2.0991	2.9890	2.6405	0.6393
360	7.2627	6.1926	5.6589	2.1716	5.3836	4.3003	3.6112	1.5516	3.1332	4.3356	3.8144	1.2831
365	9.7055	8.1867	7.3999	3.5150	7.7274	6.3191	5.1934	2.8115	4.7150	6.4132	5.5798	2.3975
370	12.5337	10.3453	9.3229	5.2619	10.5114	8.7073	7.0477	4.5587	6.6397	8.8889	7.6994	3.9267
375	14.5267	11.8375	10.6542	6.6846	12.5435	10.4783	8.3831	6.0578	8.0893	10.7079	9.2566	5.2539
380	15.7595	12.8172	11.5313	7.7550	13.8558	11.6451	9.2823	7.2040	9.0791	11.8961	10.278	6.3097
385	16.4431	13.30	11.9993	8.4084	14.5616	12.2626	9.7840	7.9540	9.6041	12.5402	10.8545	6.9958
390	16.8087	13.5476	12.2601	8.8850	14.9497	12.5879	10.0830	8.5247	9.9041	12.8820	11.1908	7.5160
395	16.9051	13.6796	12.3556	9.2036	15.1077	12.7773	10.2197	8.9283	10.0820	13.0744	11.3413	7.9232
400	16.9330	13.7292	12.4133	9.4490	15.1963	12.8860	10.3041	9.2397	10.1935	13.1870	11.4456	8.2616

Table 4.10: Value of Percentage transmittance of Dyed Satin fabrics woven using 13 Tex weft

[illegible]

Table 4.11: Value of Percentage transmittance of woven fabrics of RFD Twill 37 Tex weft

Wavelength (nm)	% Transmittance									
	RT₁	RT₂	RT₃	RT₅	RT₆	RT₇	RT₈	RT₉	RT₁₀	RT₁₁
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.0615	0.0734	0.1489	0.05	0.05	0.05	0.05	0.05	0.05	0.05
320	0.4292	0.5905	0.7448	0.0804	0.1850	0.2160	0.05	0.05	0.1034	0.1511
325	0.8106	1.0650	1.2693	0.3212	0.4772	0.5304	0.05	0.2017	0.4080	0.4326
330	0.9718	1.2712	1.5129	0.3956	0.6022	0.6618	0.05	0.2687	0.5270	0.5592
335	1.1163	1.4487	1.7258	0.5047	0.7283	0.7972	0.05	0.3572	0.6462	0.6812
340	1.2328	1.6110	1.9291	0.5765	0.8286	0.9105	0.05	0.4122	0.7577	0.7954
345	1.4811	1.9013	2.2749	0.7407	1.0452	1.1274	0.05	0.5707	0.9600	1.0101
350	1.8151	2.3053	2.7675	0.9750	1.3609	1.4377	0.05	0.7764	1.2747	1.3225
355	2.4080	3.0023	3.5853	1.4149	1.9136	1.9783	0.1874	1.1993	1.8365	1.8735
360	3.4677	4.2079	4.9759	2.2300	2.9350	2.9539	0.5785	1.9892	2.8657	2.8914
365	5.1616	6.0805	7.0937	3.5870	4.6065	4.4964	1.3709	3.3636	4.6064	4.5567
370	7.3361	8.4164	9.6506	5.3970	6.7795	6.4208	2.6855	5.2672	6.8722	6.6801
375	9.0424	10.2301	11.5749	6.8845	8.5410	7.9223	4.0017	6.8734	8.7464	8.3957
380	10.2187	11.4435	12.8307	7.9621	9.7285	8.9696	5.0946	8.0121	10.0756	9.5983
385	10.8616	12.1218	13.5298	8.5786	10.4143	9.5744	5.8202	8.6873	10.8036	10.2656
390	11.2491	12.5013	13.9338	8.9600	10.8292	9.9346	6.03634	9.1092	11.2440	10.6743
395	11.4552	12.7035	14.1176	9.1888	11.0600	10.1448	6.7355	9.3411	11.5143	10.9360
400	11.5880	12.8085	14.2287	9.3567	11.2390	10.2909	7.0873	9.5166	11.6901	11.1194

Table 4.12: Value of Percentage transmittance of woven fabrics of Dyed Twill 37 Tex weft

[illegible]

Table 4.13: Value of Percentage transmittance of RFD Twill fabrics woven using 20 Tex weft

Wavelength (nm)	% Transmittance											
	RT ₁₃	RT ₁₄	RT ₁₅	RT ₁₆	RT ₁₇	RT ₁₈	RT ₁₉	RT ₂₀	RT ₂₁	RT ₂₂	RT ₂₃	RT ₂₄
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.1603	0.2205	0.1862	0.05	0.05	0.05	0.0699	0.05	0.05	0.05	0.05	0.05
320	0.7919	0.9130	0.8668	0.05	0.3903	0.4657	0.6458	0.05	0.0941	0.1072	0.2348	0.05
325	1.3195	1.4984	1.4512	0.05	0.8060	0.9384	1.1771	0.05	0.4022	0.4194	0.5754	0.05
330	1.5470	1.7774	1.7087	0.0647	0.9792	1.1547	1.4451	0.05	0.5350	0.5542	0.7236	0.05
335	1.7386	1.9935	1.9217	0.1200	1.1438	1.3373	1.6638	0.0846	0.6634	0.6925	0.8741	0.05
340	1.9052	2.2189	2.1326	0.1501	1.2910	1.5129	1.8969	0.1049	0.7770	0.8003	1.0016	0.05
345	2.2015	2.5864	2.4757	0.2589	1.5616	1.8233	2.2694	0.2075	1.0023	1.0362	1.2625	0.0988
350	2.6194	3.1127	2.9761	0.4297	1.9499	2.2566	2.8187	0.3702	1.3340	1.3749	1.6309	0.2135
355	3.3184	3.9727	3.7766	0.7425	2.6116	3.0038	3.7145	0.6675	1.9278	1.9782	2.2665	0.4678
360	4.4710	5.3958	5.0894	1.3861	3.7792	4.2782	5.2335	1.3056	3.0189	3.0617	3.3705	1.0210
365	6.2120	7.5284	7.0336	2.5127	5.5716	6.2319	7.5542	2.4078	4.7950	4.8382	5.1043	2.0252
370	8.2036	9.9883	9.2107	4.0809	7.7735	8.5904	10.269	3.9399	7.0440	7.0510	7.2154	3.4717
375	9.6641	11.7716	10.7790	5.4442	9.4221	10.3592	12.2686	5.3025	8.8550	8.8182	8.8185	4.8086
380	10.677	12.9030	11.8285	6.5104	10.5068	11.5445	13.5584	6.3661	10.1133	10.0502	9.9153	5.8899
385	11.1972	13.5072	12.3675	7.1725	11.1117	12.1795	14.2527	7.0329	10.7940	10.7162	10.5223	6.5994
390	11.4781	13.8356	12.6506	7.6408	11.4593	12.5433	14.6331	7.5165	11.1822	11.0984	10.8782	7.1314
395	11.6573	13.9865	12.8181	8.0010	11.6227	12.7306	14.8213	7.8788	11.4305	11.3358	11.0899	7.5343
400	11.7751	14.0731	12.9097	8.2930	11.7278	12.8440	14.9235	8.1816	11.5827	11.5078	11.2323	7.8767

[illegible]

Table 4.15: Value of Percentage transmittance of RFD Twill fabrics woven using 13 Tex weft

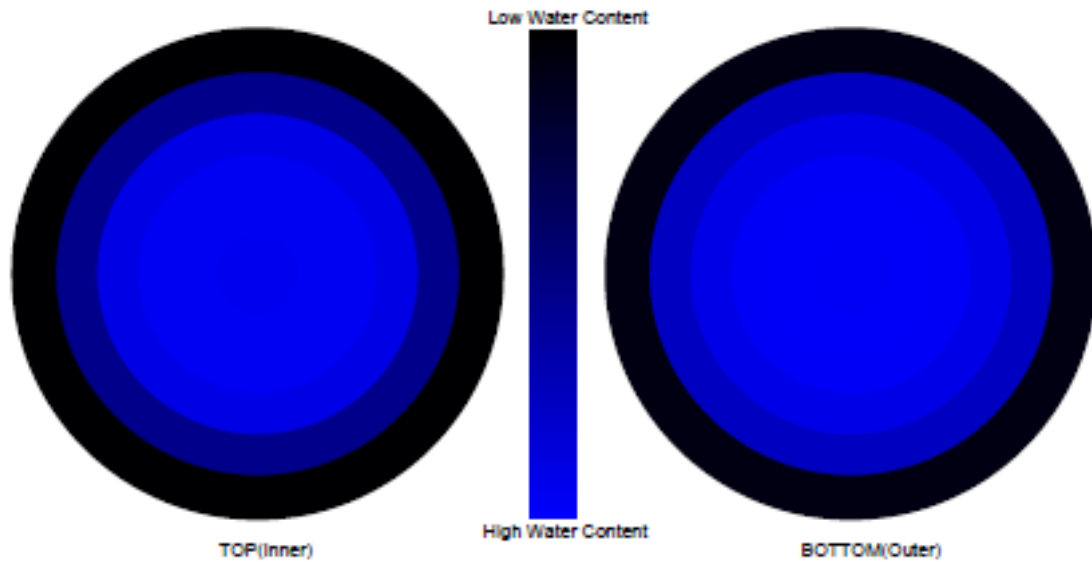
Wavelength (nm)	% Transmittance											
	RT ₂₅	RT ₂₆	RT ₂₇	RT ₂₈	RT ₂₉	RT ₃₀	RT ₃₁	RT ₃₂	RT ₃₃	RT ₃₄	RT ₃₅	RT ₃₆
290	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
295	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
300	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
305	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
310	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
315	0.2542	0.3810	0.3669	0.05	0.1862	0.05	0.1090	0.05	0.05	0.05	0.05	0.05
320	1.0315	1.3541	1.2494	0.05	0.8668	0.5185	0.7350	0.05	0.2243	0.3761	0.4865	0.05
325	1.6336	2.1330	1.9343	0.2264	1.4512	1.0356	1.1395	0.0838	0.6165	0.8567	0.9523	0.0534
330	1.8936	2.500	2.2538	0.3013	1.7087	1.2650	1.6020	0.1320	0.7818	1.0773	1.1799	0.0719
335	2.1103	2.7643	2.4978	0.4002	1.9217	1.4696	1.8334	0.2035	0.9434	1.2742	1.3549	0.1473
340	2.3184	3.0555	2.7365	0.4682	2.1326	1.6597	2.0839	0.2588	1.0850	1.4664	1.5525	0.1832
345	2.6413	3.4833	3.1245	0.6365	2.4757	1.9949	2.4742	0.3989	1.3621	1.8021	1.8675	0.3170
350	3.0998	4.1043	3.6724	0.8761	2.9761	2.4781	3.0422	0.5986	1.7589	2.2839	2.2398	0.5040
355	3.8459	5.0786	4.5045	1.3160	3.7666	3.2682	3.9853	0.9926	2.4400	3.1108	3.0938	0.8675
360	5.0708	6.6357	5.8696	2.1309	5.0893	4.6283	5.5416	1.7431	3.6640	4.5268	4.3852	1.5907
365	6.8124	8.8789	7.7687	3.4435	7.0336	6.6592	7.8761	3.0015	5.5363	6.7270	6.3561	2.8065
370	8.7717	11.3579	9.8641	5.1158	9.2107	9.0333	10.5370	4.6365	7.8592	9.3466	8.5849	4.4402
375	10.1600	13.1091	11.3172	6.4518	10.7990	10.7876	12.4787	6.0088	9.5970	11.3196	10.2392	5.8270
380	11.0793	14.2399	12.2529	7.4560	11.8285	11.9524	13.7269	7.0550	10.7540	12.6170	11.3548	6.8972
385	11.5654	14.8035	12.7361	8.0823	12.7365	12.5552	14.3767	7.7336	11.4031	13.3176	11.9132	7.6112
390	11.8401	15.0772	12.9886	8.5397	12.6506	12.8949	14.7082	8.2457	11.7749	13.7020	12.1955	8.1622
395	11.9664	15.2206	13.1100	8.8645	12.8181	13.0748	14.8947	8.6420	11.9484	13.9039	12.4062	8.5794
400	12.0357	15.2695	13.1652	9.1183	12.9097	13.1558	14.9862	8.9615	12.0583	14.022	12.5317	8.9177

Table 4.16: Value of Percentage transmittance of Dyed Twill fabrics woven using 13 Tex weft

[illegible]

Moisture Management Properties

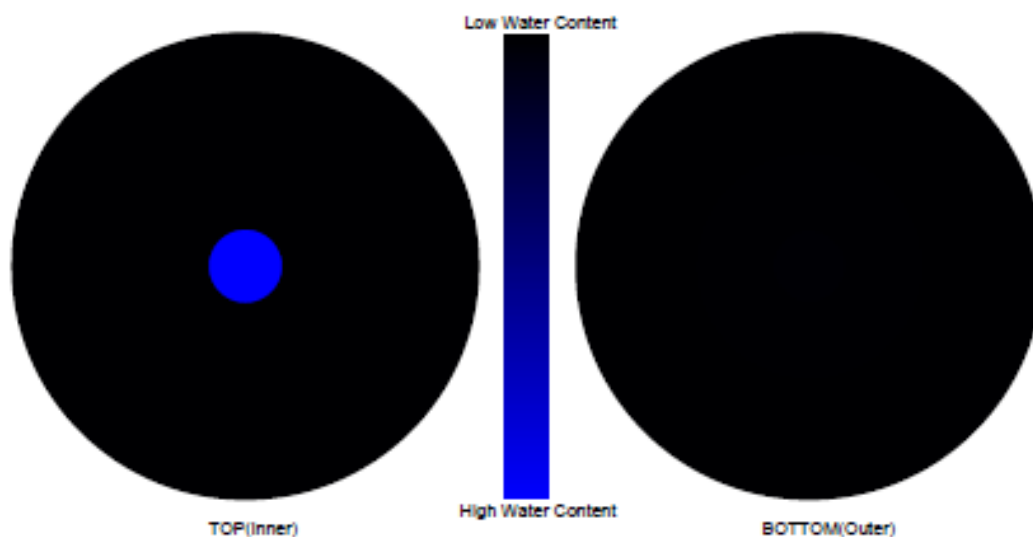
Water Location vs Time



(Measure Time = 120.0 sec)		
	Top Surface	Bottom Surface
Wetting time(sec)	1.872	9.173
Absorption rate(%/sec)	63.6142	98.6239
Max wetted radius(mm)	15.0	15.0
Spreading Speed(mm/sec)	2.9253	1.6292
One way transport capability	91.7904	
Description	MMT-	

Figure 4.19: Typical water location versus time simulation of Satin Dyed fabric woven using 37Tex weft (DS₃. P/V:45/55; 55 PPI).

Water Location vs Time



(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	8.143	120.0
Absorption rate(%/sec)	499.0068	0.0
Max wetted radius(mm)	5.0	0.0
Spreading Speed(mm/sec)	0.6002	0.0
One way transport capability	-1560.7418	
Description	MMT-	

Figure 4.20: Typical water location versus time simulation of Satin Dyed fabric woven using 37Tex weft (DS₈- P/V/L:70/20/5; 65 PPI)

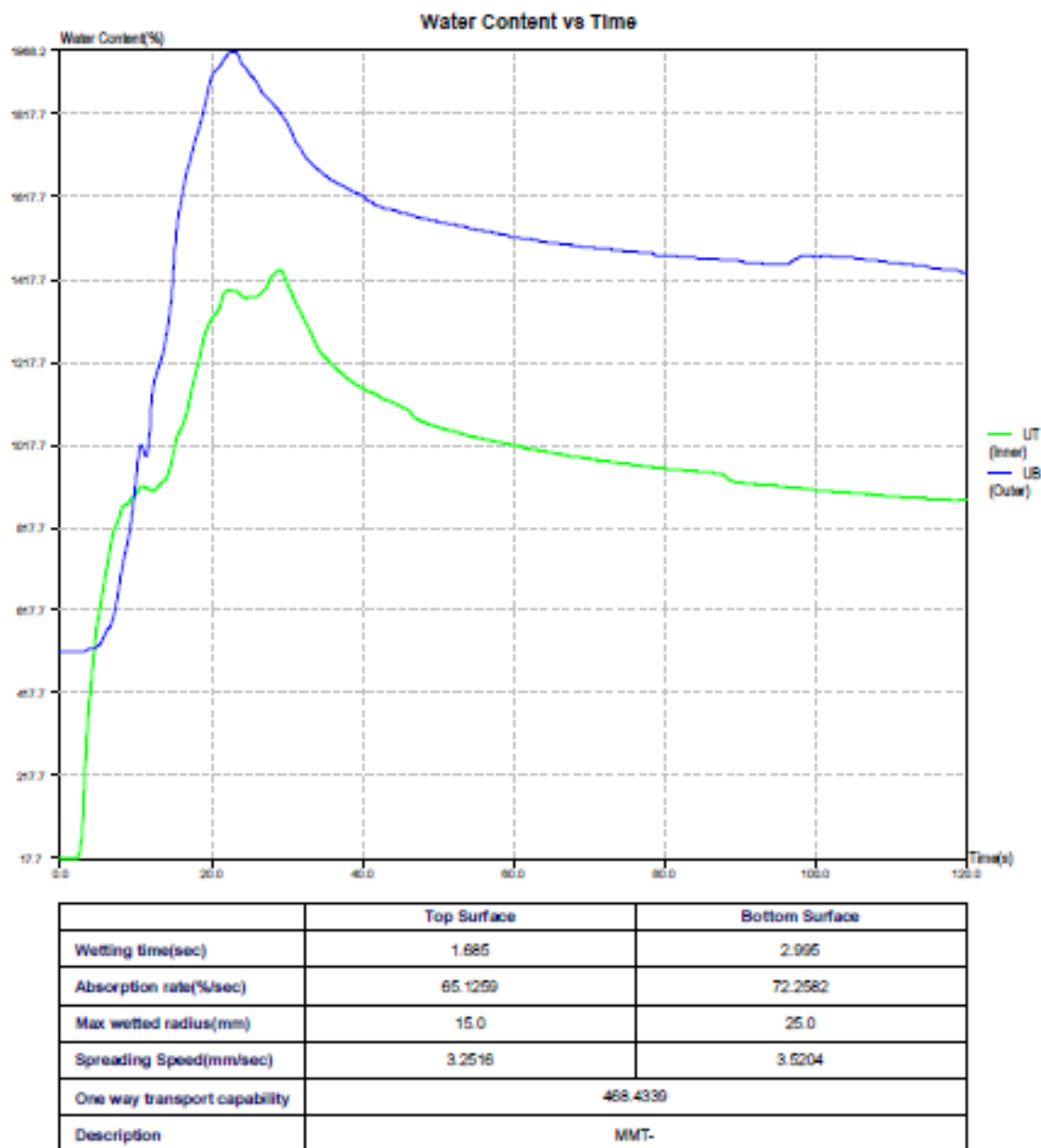


Figure 4.21: Typical water content versus time of Satin Dyed fabric woven with 37Tex weft (DS₃).

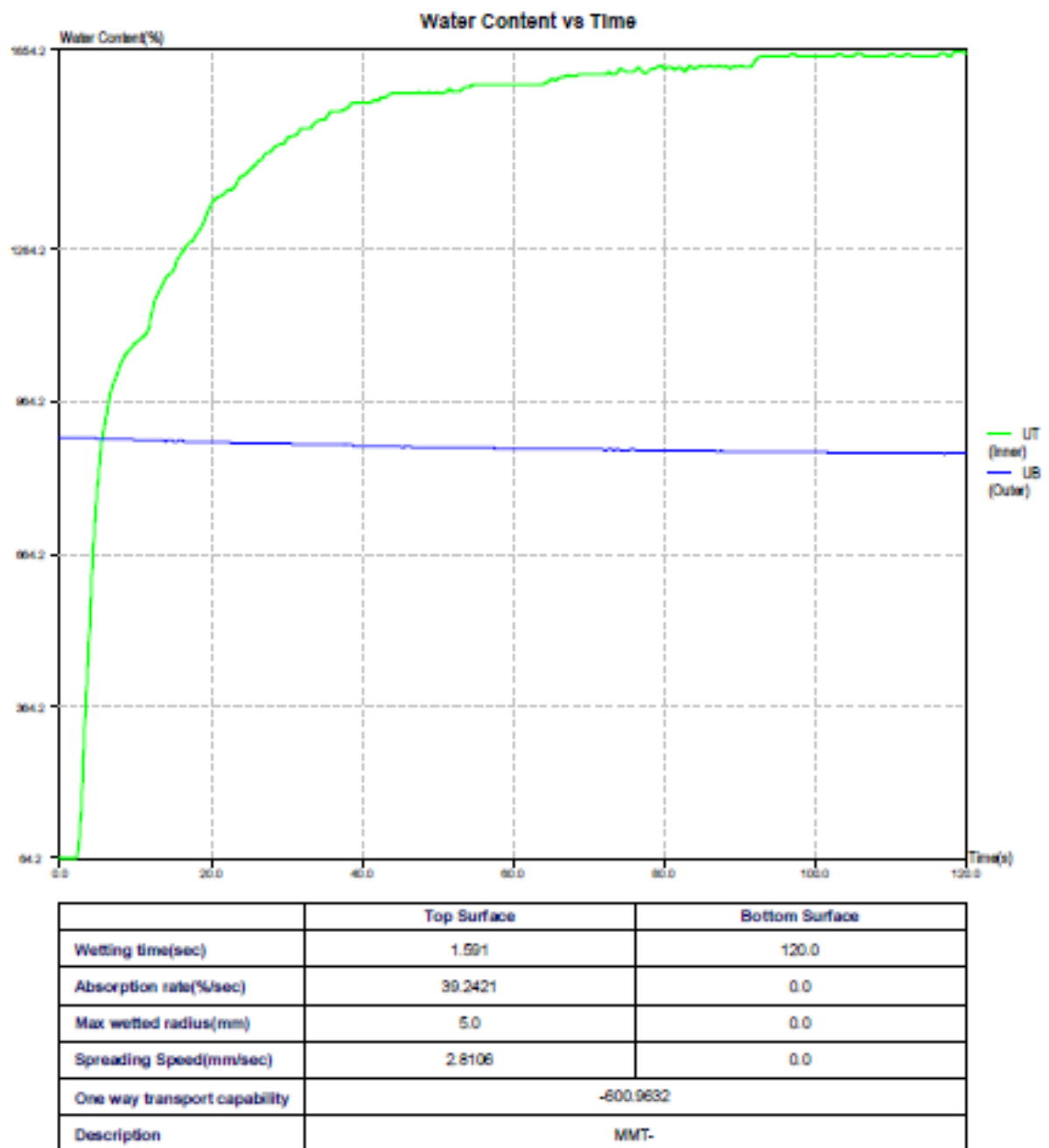


Figure 4.22: Typical water content versus time of Satin Dyed fabric woven with 37Tex weft (DS₈).

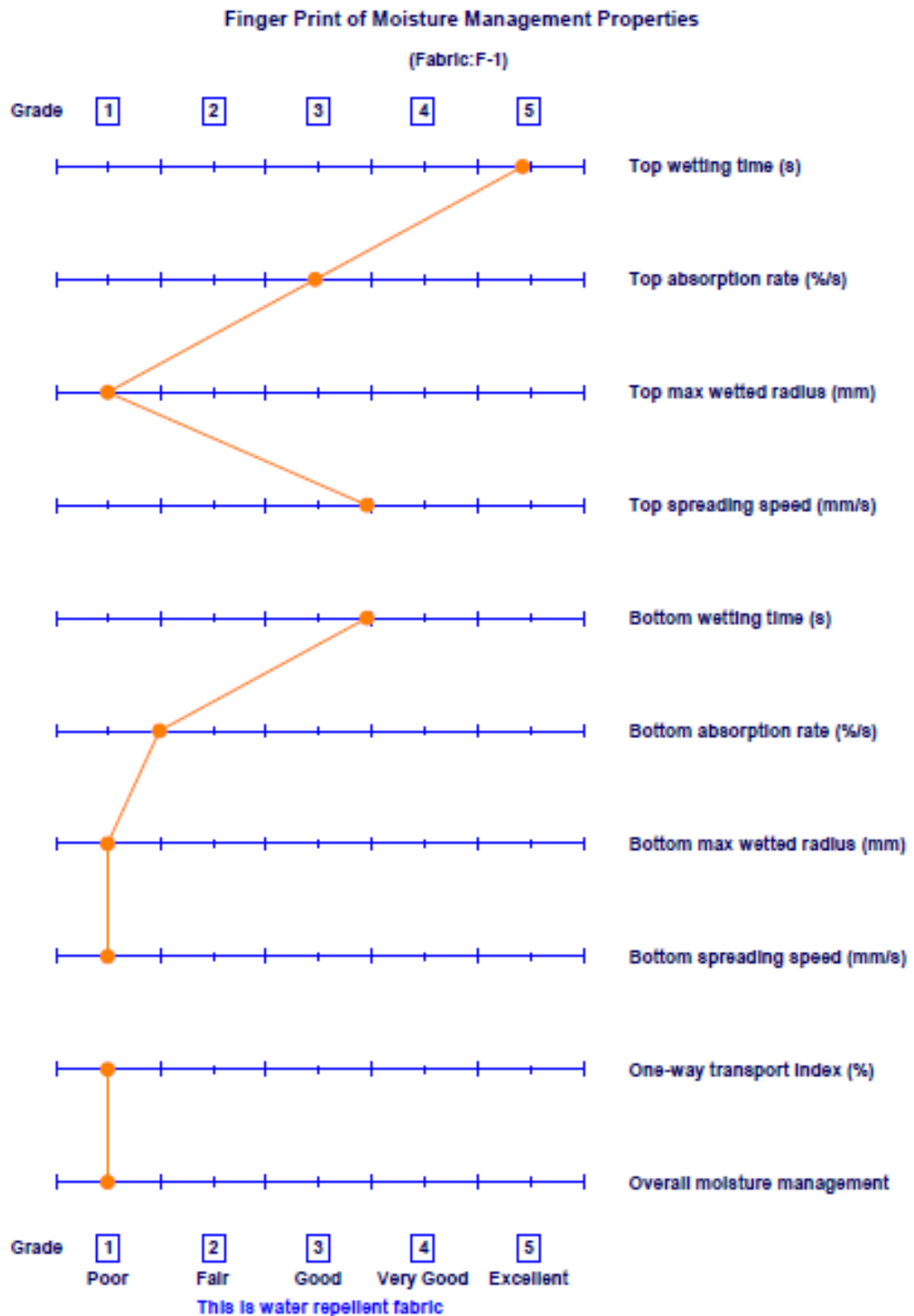
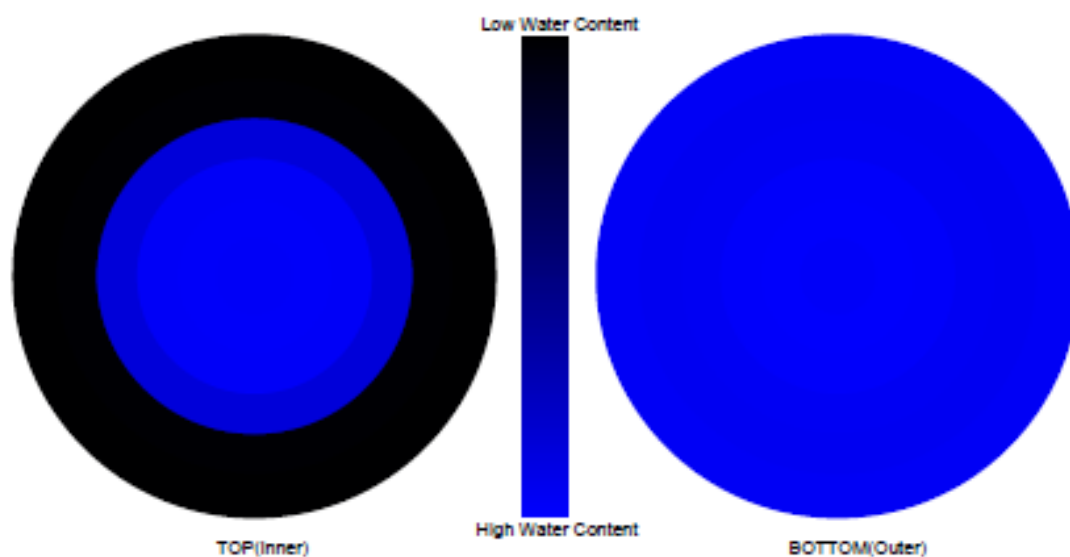


Figure 4.25: Typical fingerprint of moisture management properties of Satin Dyed fabric sample – DS₈.

Water Location vs Time

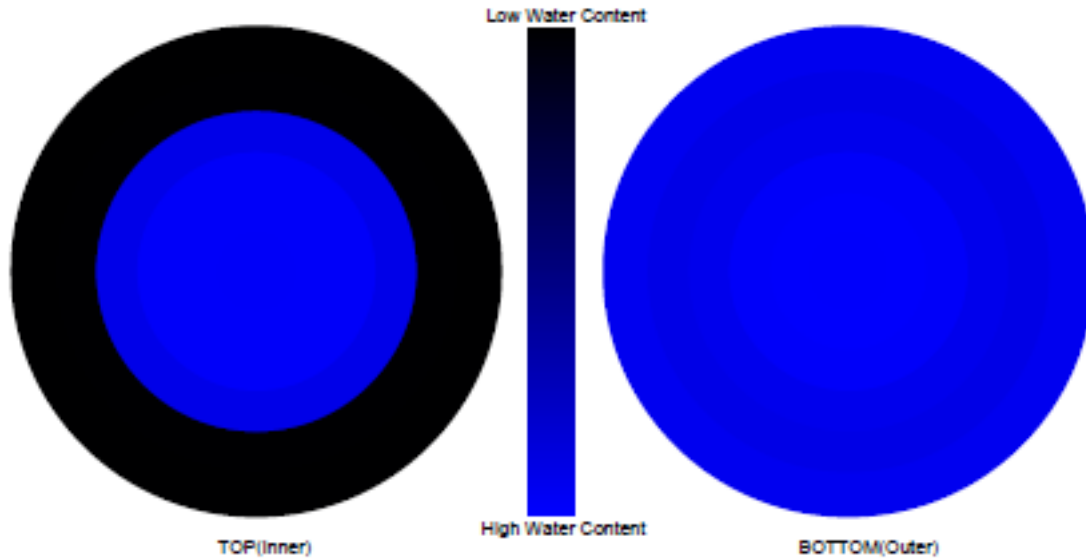


(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	6.271	2.059
Absorption rate(%/sec)	82.679	66.0578
Max wetted radius(mm)	15.0	25.0
Spreading Speed(mm/sec)	1.3138	4.333
One way transport capability	432.1699	
Description	MMT-	

Figure 4.26: Typical water location versus time simulation of Satin Dyed fabric woven with 20Tex weft (DS₁₉ - P/V:45/55; 80 PPI).

Water Location vs Time



(Measure Time = 120.0 sec)		
	Top Surface	Bottom Surface
Wetting time(sec)	8.144	4.68
Absorption rate(%/sec)	78.8954	35.6381
Max wetted radius(mm)	20.0	15.0
Spreading Speed(mm/sec)	1.2516	1.5439
One way transport capability	203.7142	
Description	MMT-	

Figure 4.27: Typical water location versus time simulation of Satin Dyed fabric woven with 20Tex weft (DS₂₃ - P/V:45/55; 95 PPI).

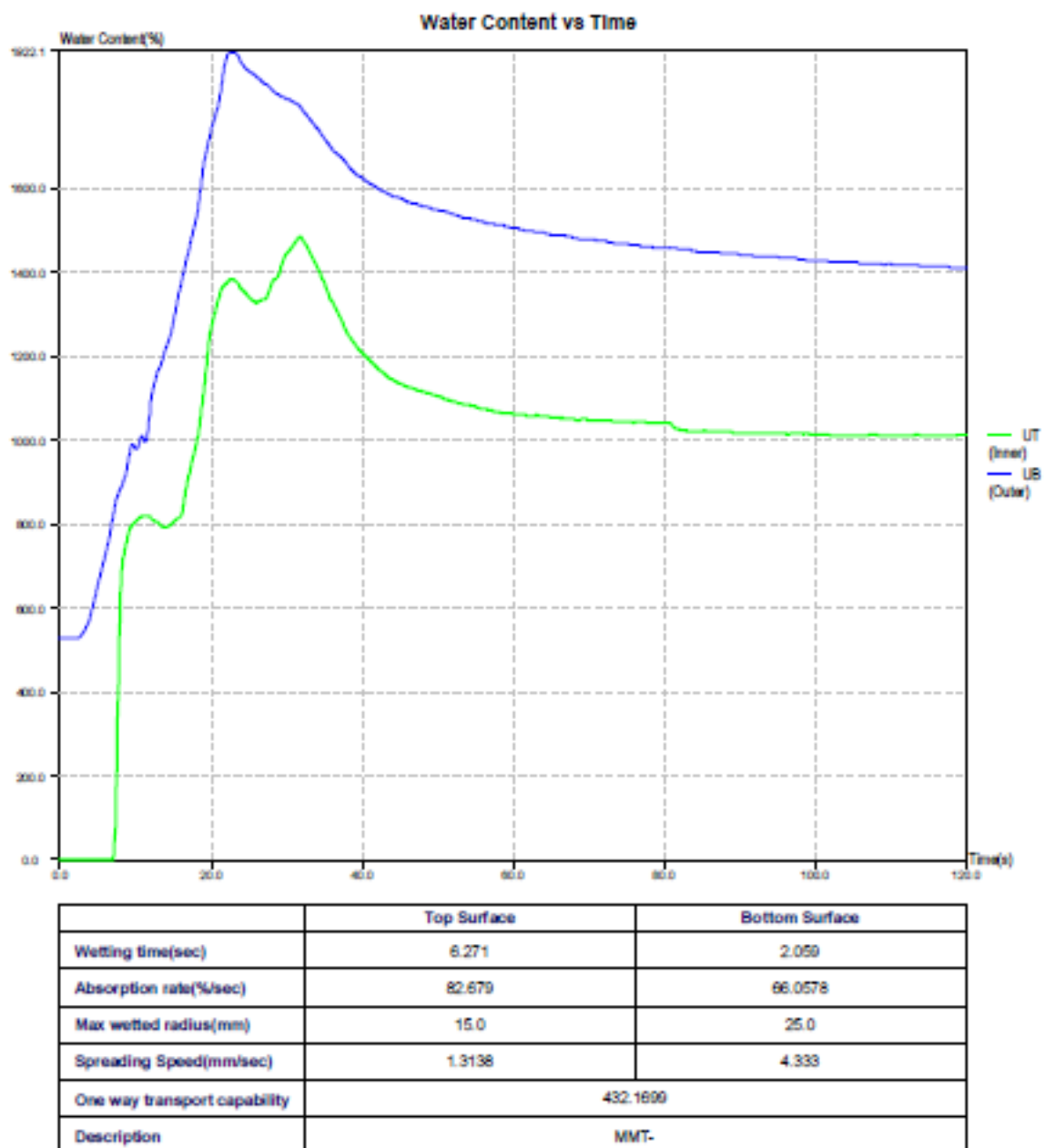
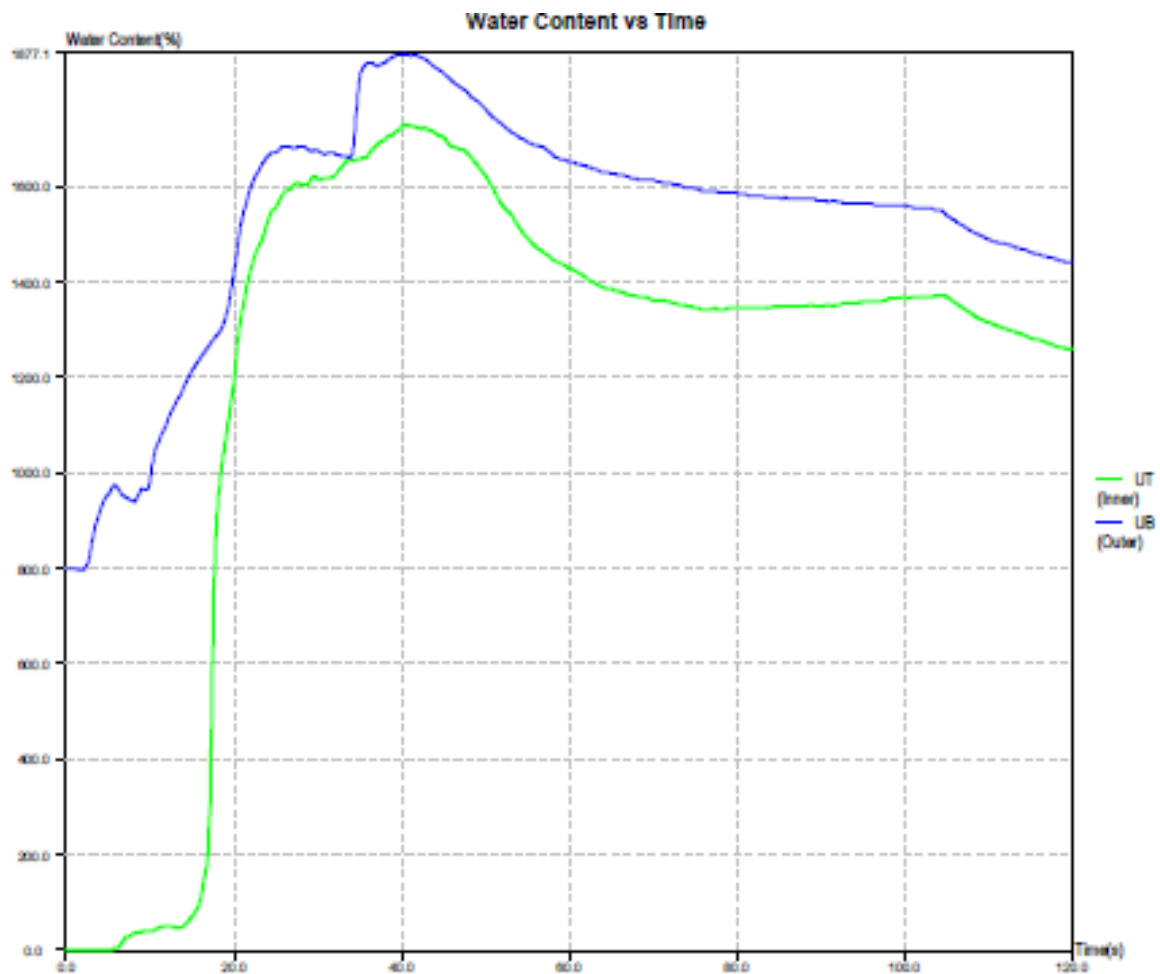


Figure 4.28: Typical water content versus time of Satin Dyed fabric woven with 20Tex weft (DS₁₉).



	Top Surface	Bottom Surface
Wetting time(sec)	5.148	1.778
Absorption rate(%/sec)	64.8775	35.9222
Max wetted radius(mm)	20.0	25.0
Spreading Speed(mm/sec)	1.4871	3.7297
One way transport capability	300.9239	
Description	MMT-	

Figure 4.29: Typical water content versus time of Satin Dyed fabric woven with 20Tex weft (DS₂₃).

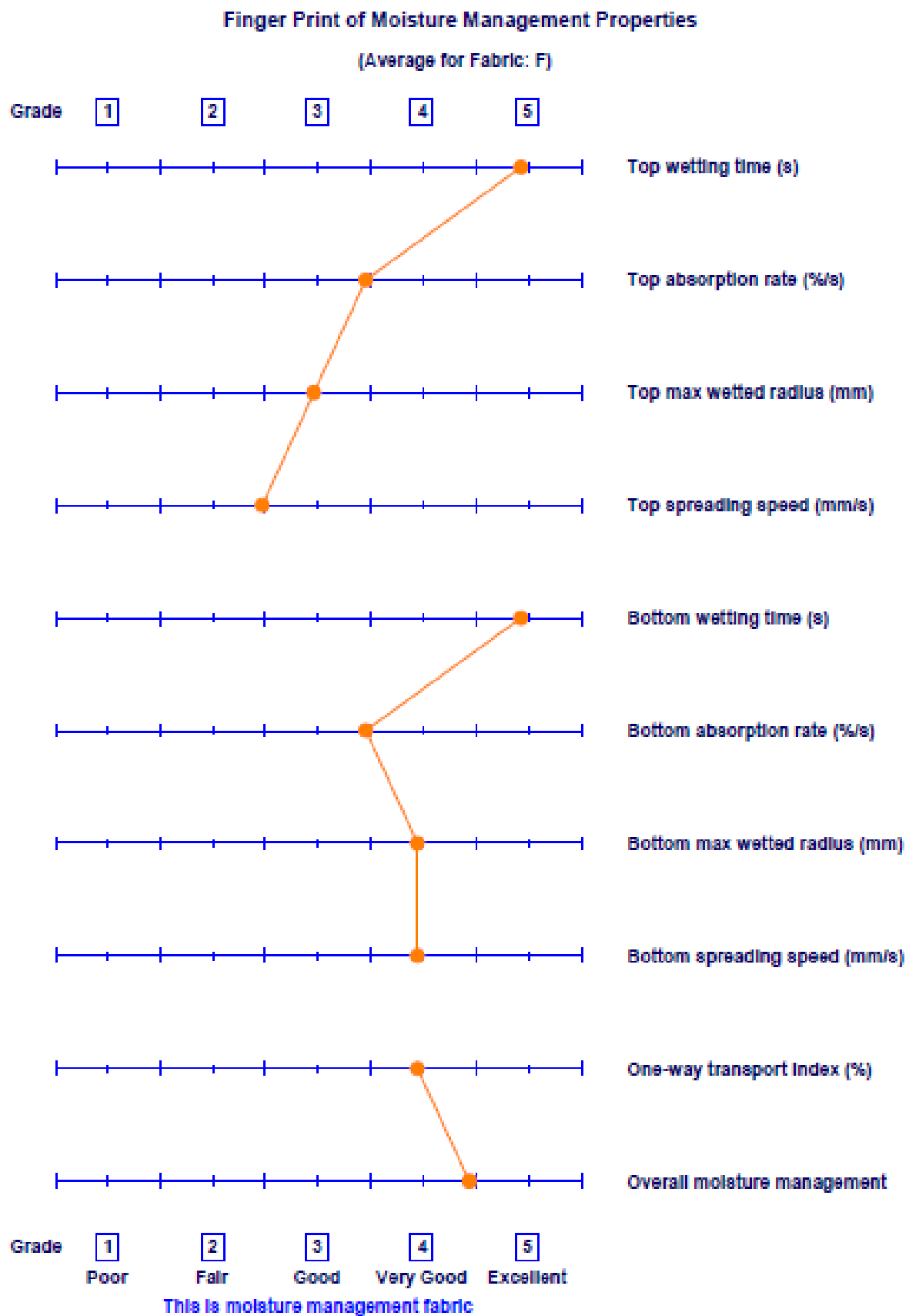


Figure 4.31: Typical fingerprint of moisture management properties of Satin Dyed fabric sample – DS₁₉.

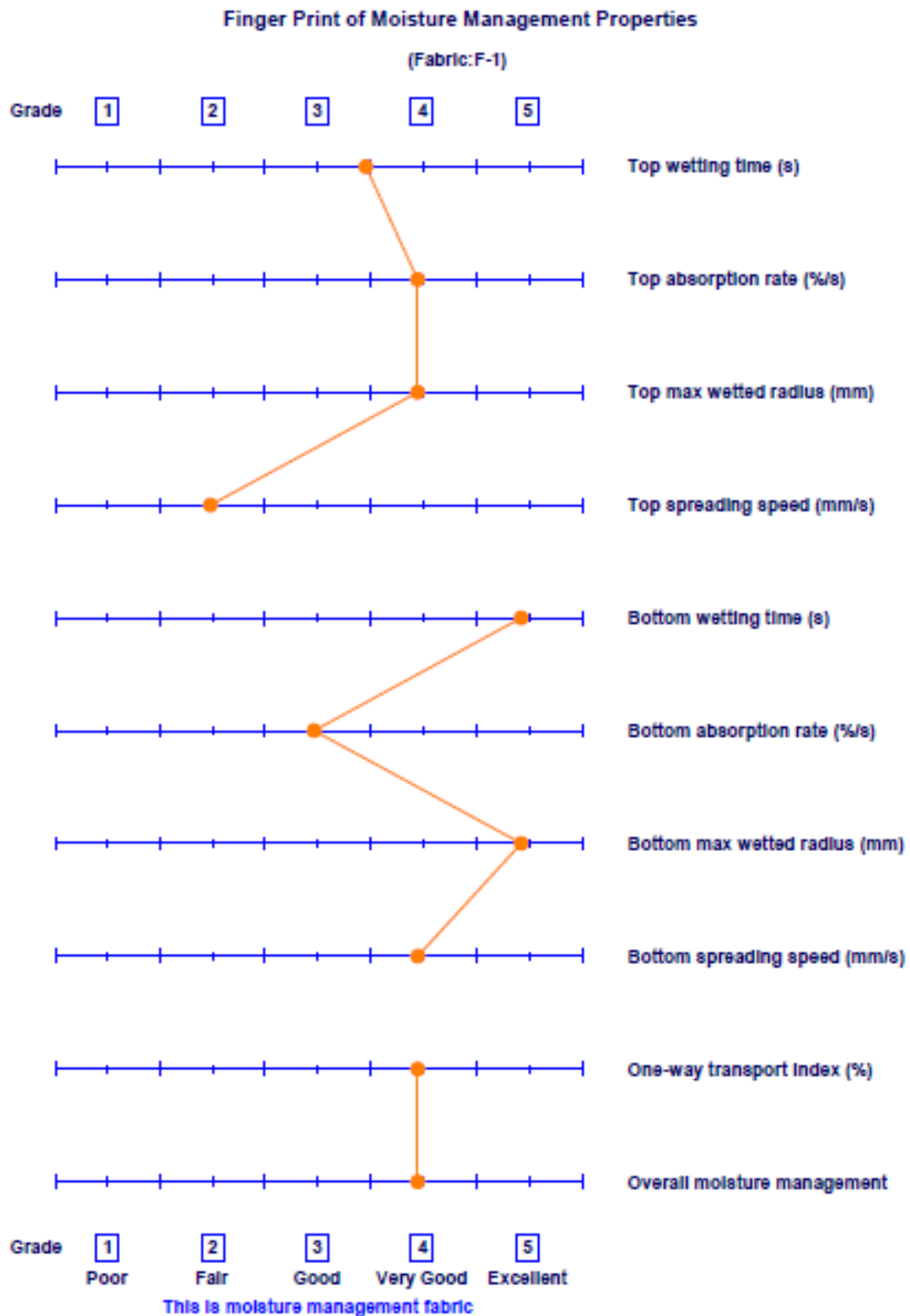
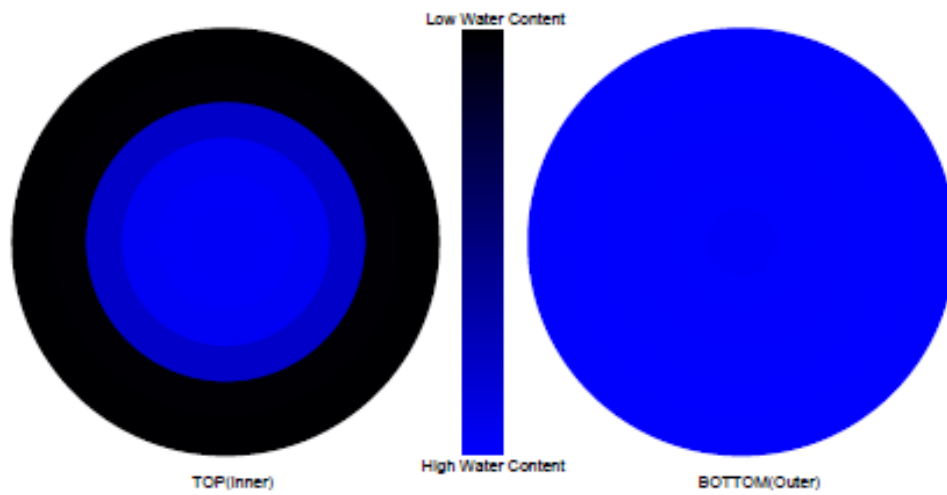


Figure 4.32: Typical fingerprint of moisture management properties of Satin Dyed fabric sample – DS₂₃.

Water Location vs Time

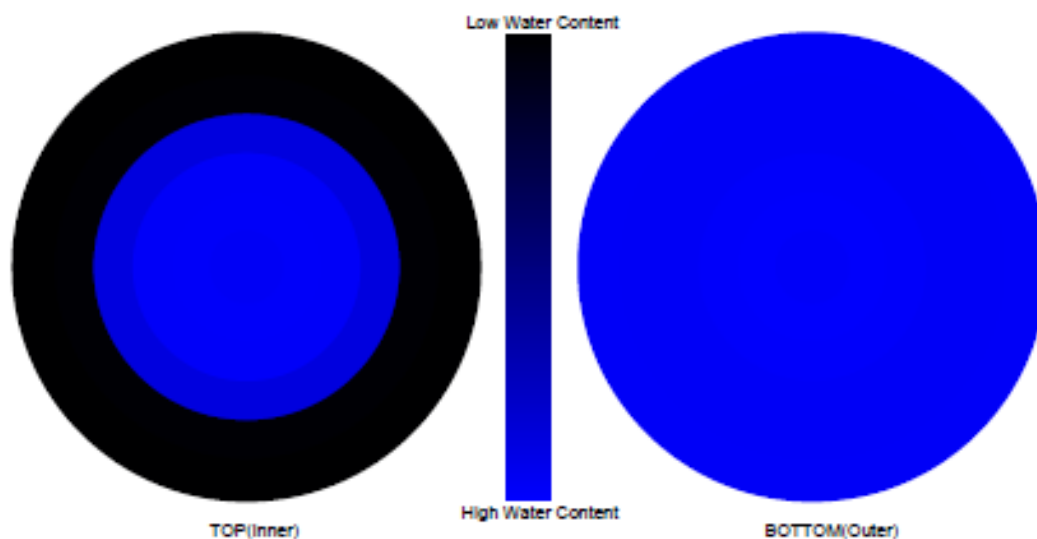


(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	1.965	4.025
Absorption rate(%/sec)	50.7347	56.4662
Max wetted radius(mm)	15.0	15.0
Spreading Speed(mm/sec)	2.9226	3.5804
One way transport capability	1051.5833	
Description	MMT-	

Figure 4.33: Typical water content versus time of Satin Dyed fabric woven with 13Tex-weft (DS₂₇- P/V:45/55; 65 PPI).

Water Location vs Time



(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	3.183	3.838
Absorption rate(%/sec)	77.1003	43.7388
Max wetted radius(mm)	15.0	15.0
Spreading Speed(mm/sec)	2.055	2.2695
One way transport capability	279.0758	
Description	MMT-	

Figure 4.34: Typical water content versus time of Satin Dyed fabric woven with 13Tex-weft (DS₃₅ - P/V:45/55; 105 PPI).

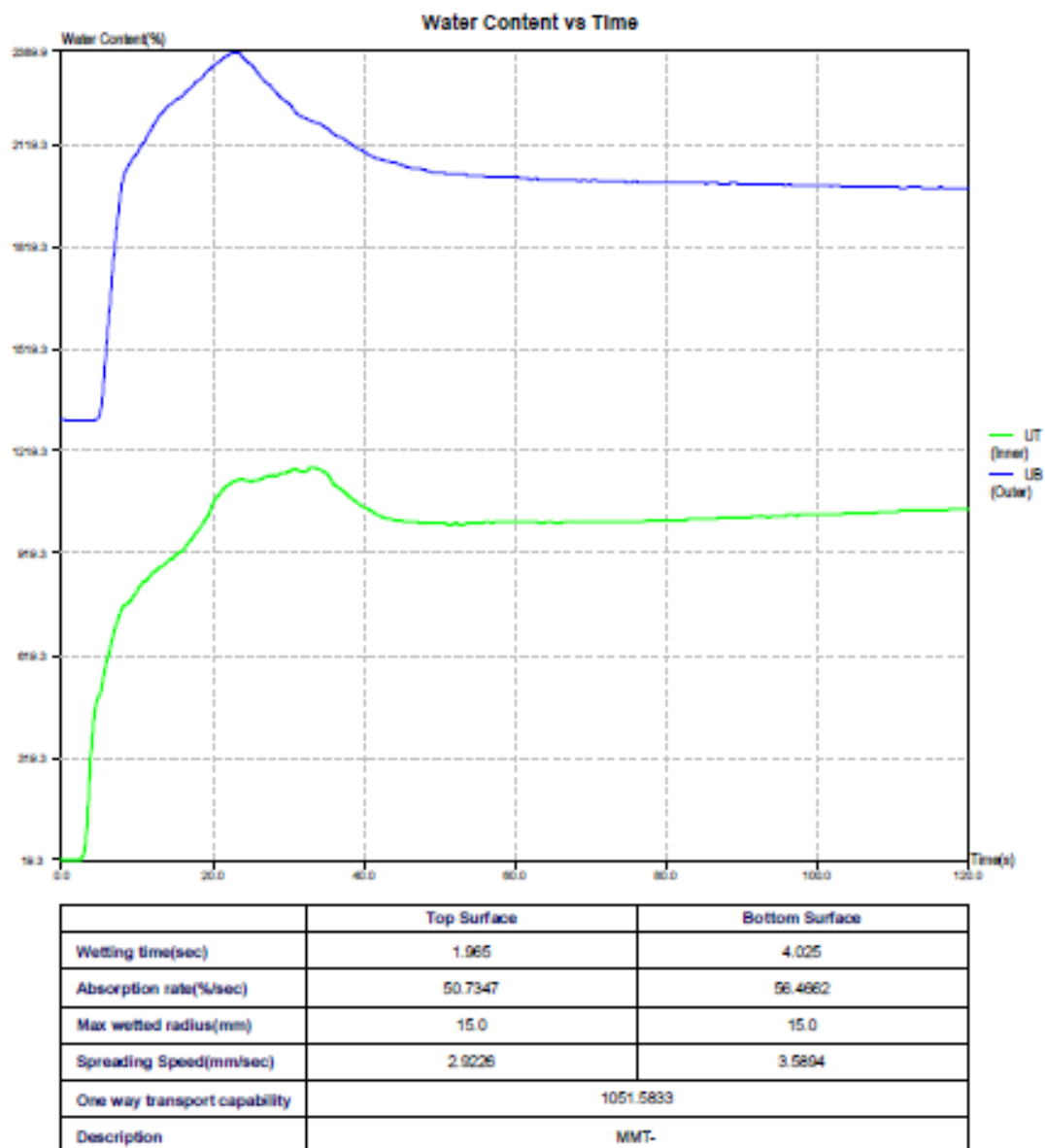


Figure 4.35: Typical water location versus time simulation of Satin Dyed fabric woven with 13 Tex weft (DS₂₇).

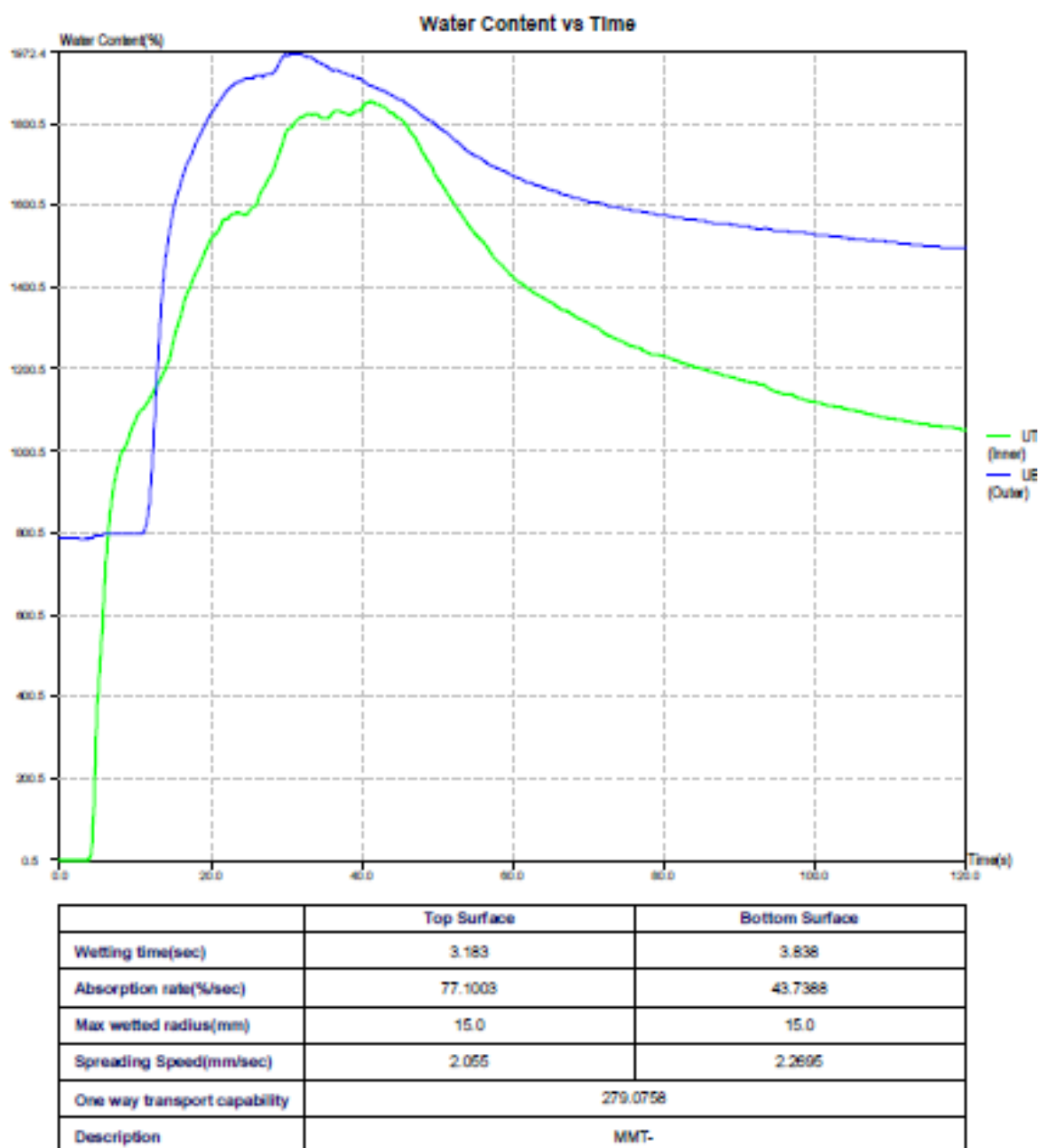


Figure 4.36: Typical water location versus time simulation of Satin Dyed fabric woven with 13 Tex weft (DS₃₅).

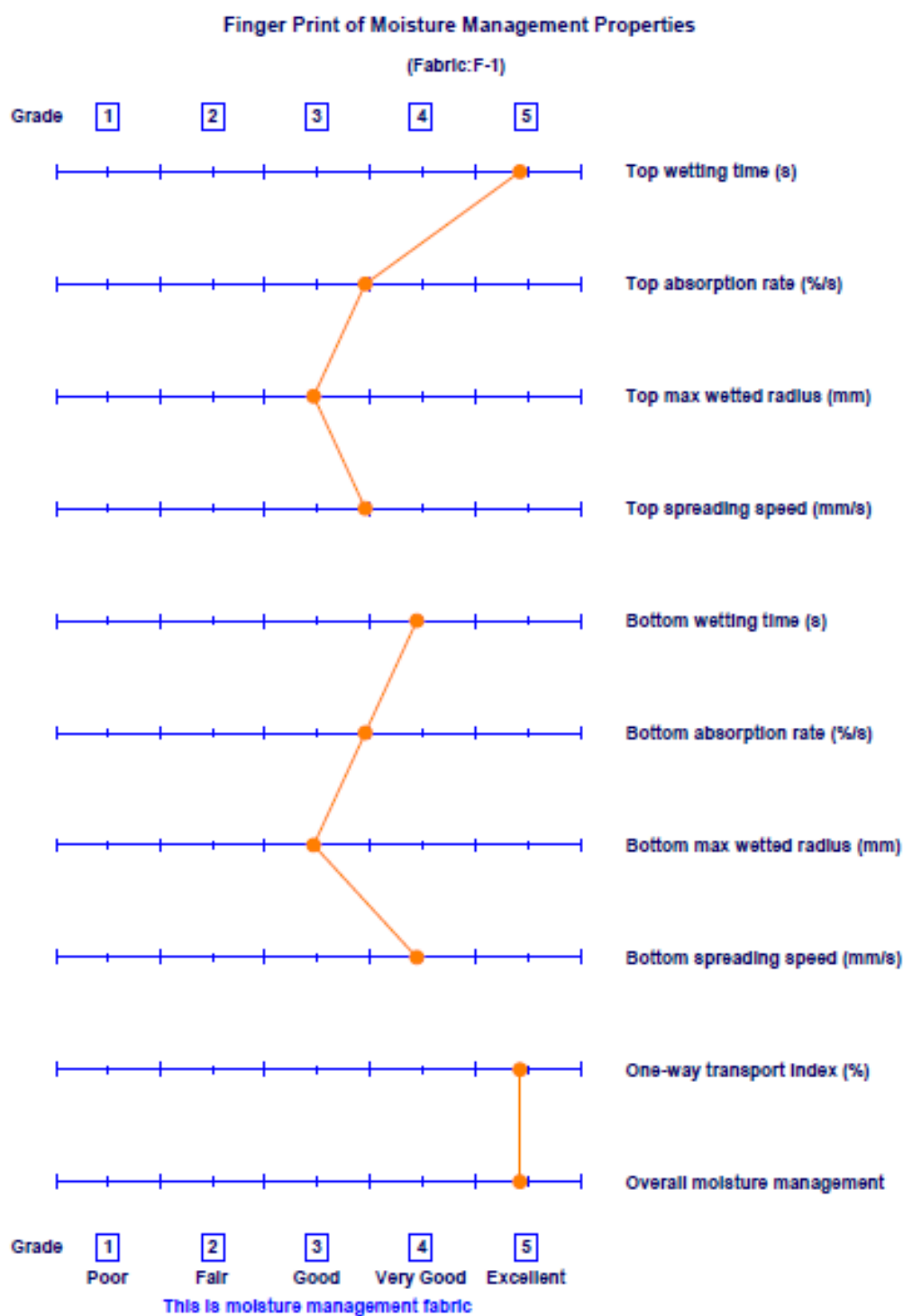


Figure 4.38: Typical fingerprint of moisture management properties of Satin Dyed fabric sample – DS₂₇.

Table 4.48: Fabric classification results of Dyed Satin fabrics woven with 37 Tex

Fabric Code	Fabric Classification
DS ₁	Water penetration fabric
DS ₂	Moisture management fabric
DS ₃	Moisture management fabric
DS ₄	Water penetration fabric
DS ₅	Moisture management fabric
DS ₆	Moisture management fabric
DS ₇	Water penetration fabric
DS ₈	Water repellent fabric
DS ₉	Water penetration fabric
DS ₁₀	Water penetration fabric
DS ₁₁	Moisture management fabric
DS ₁₂	Water penetration fabric

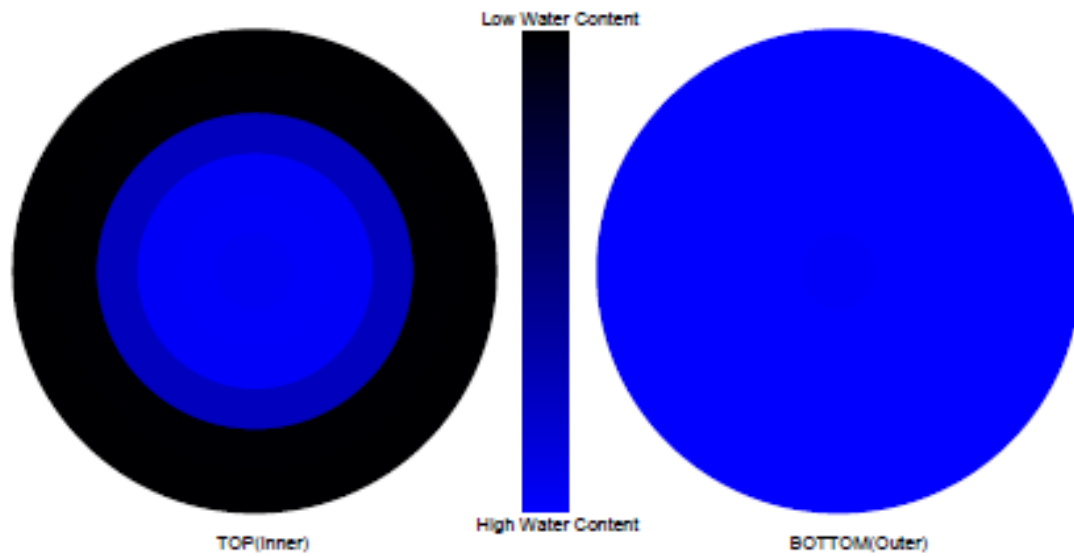
Table 4.49: Fabric classification results of Dyed Satin fabrics woven with 20 Tex

Fabric Code	Fabric Classification
DS ₁₃	Moisture management fabric
DS ₁₄	Moisture management fabric
DS ₁₅	Moisture management fabric
DS ₁₆	Water penetration fabric
DS ₁₇	Water penetration fabric
DS ₁₈	Moisture management fabric
DS ₁₉	Moisture management fabric
DS ₂₀	Water penetration fabric
DS ₂₁	Water penetration fabric
DS ₂₂	Water penetration fabric
DS ₂₃	Moisture management fabric
DS ₂₄	Water penetration fabric

Table 4.50: Fabric classification results of Dyed Satin fabrics woven with 13 Tex

Fabric Code	Fabric Classification
DS ₂₅	Moisture management fabric
DS ₂₆	Water penetration fabric
DS ₂₇	Moisture management fabric
DS ₂₈	Moisture management fabric
DS ₂₉	Water penetration fabric
DS ₃₀	Moisture management fabric
DS ₃₁	Moisture management fabric
DS ₃₂	Water penetration fabric
DS ₃₃	Water penetration fabric
DS ₃₄	Water penetration fabric
DS ₃₅	Moisture management fabric
DS ₃₆	Water penetration fabric

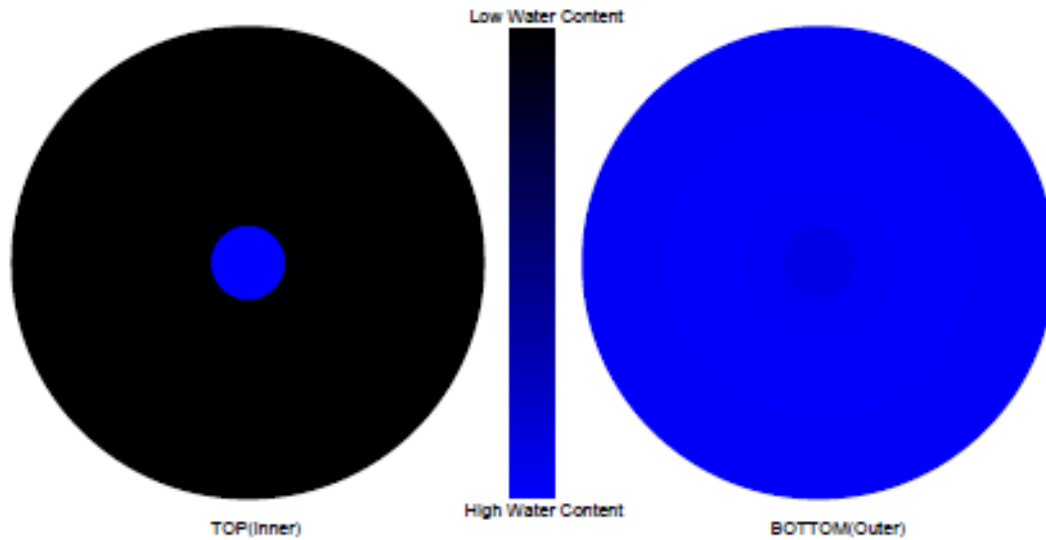
Water Location vs Time



(Measure Time = 120.0 sec)		
	Top Surface	Bottom Surface
Wetting time(sec)	2.62	1.778
Absorption rate(%/sec)	69.4364	35.5368
Max wetted radius(mm)	15.0	10.0
Spreading Speed(mm/sec)	2.6498	3.3998
One way transport capability	1494.0677	
Description	MMT-	

Figure 4.52: Typical water location versus time simulation of Twill Dyed fabric woven with 37 Tex weft (DT₁- P/V:75/25; 55 PPI)).

Water Location vs Time



(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	8.424	3.931
Absorption rate(%/sec)	43.1423	10.5647
Max wetted radius(mm)	5.0	10.0
Spreading Speed(mm/sec)	0.5807	1.5209
One way transport capability	-279.4816	
Description	MMT-	

Figure 4.53: Typical water location versus time simulation of Twill Dyed fabric woven with 37 Tex weft (DT₈- P/V/L:70/25/5; 65 PPI).

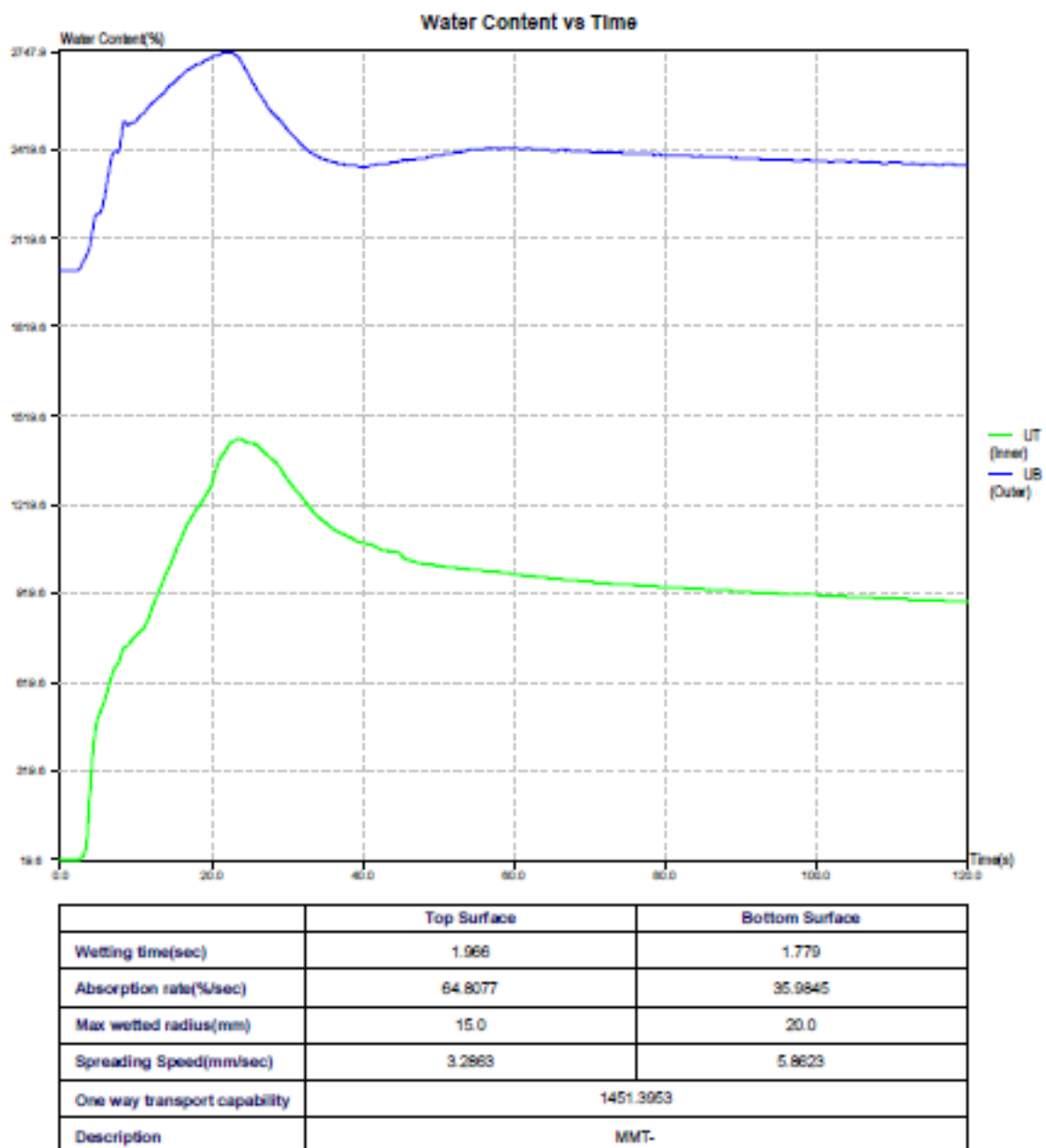
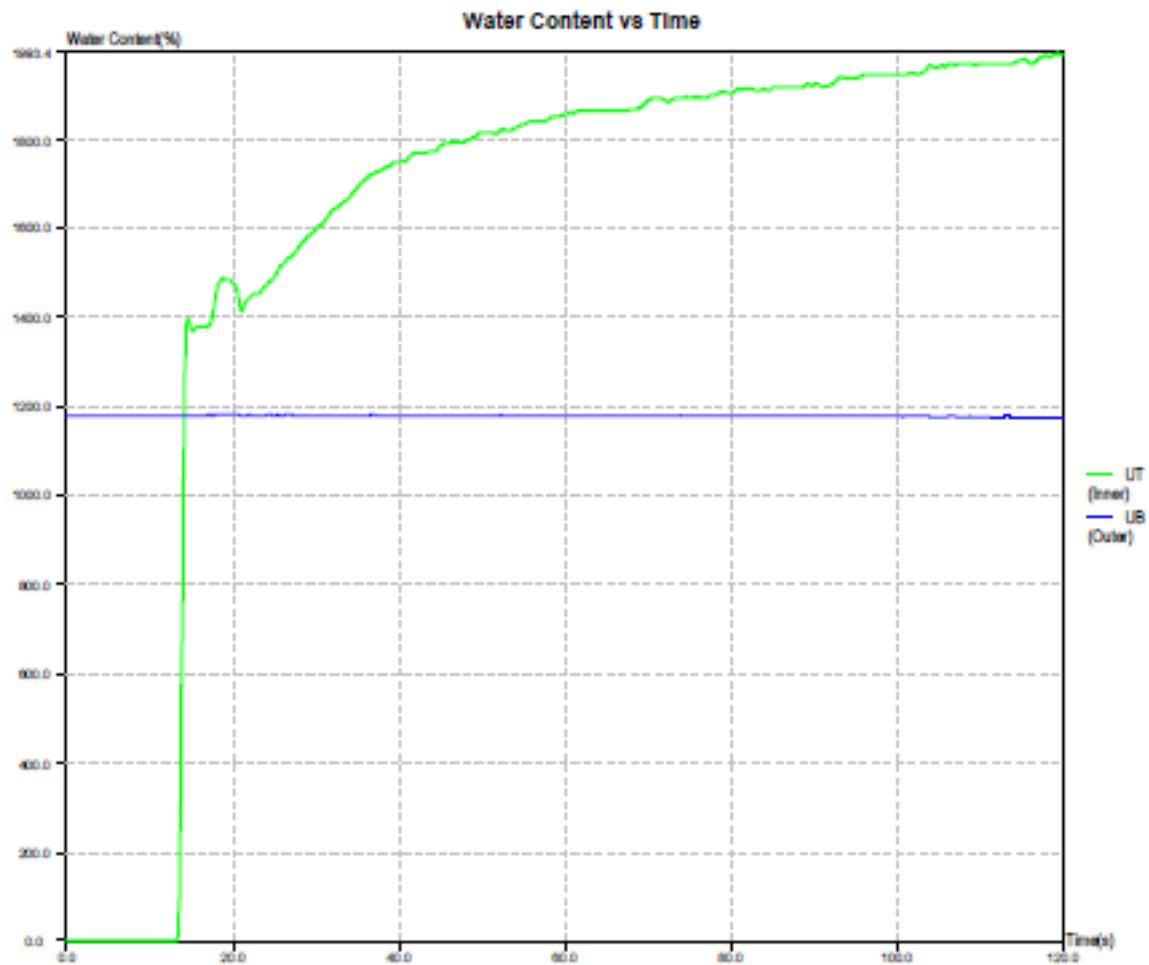


Figure 4.54: Typical water content versus time of Twill Dyed fabric woven with 37 Tex weft (DT₁).



	Top Surface	Bottom Surface
Wetting time(sec)	12.543	120.0
Absorption rate(%/sec)	58.925	0.0
Max wetted radius(mm)	5.0	0.0
Spreading Speed(mm/sec)	0.3928	0.0
One way transport capability	-421.7207	
Description	MMT-	

Figure 4.55: Typical water content versus time of Twill Dyed fabric woven with 37 Tex weft (DT₈).

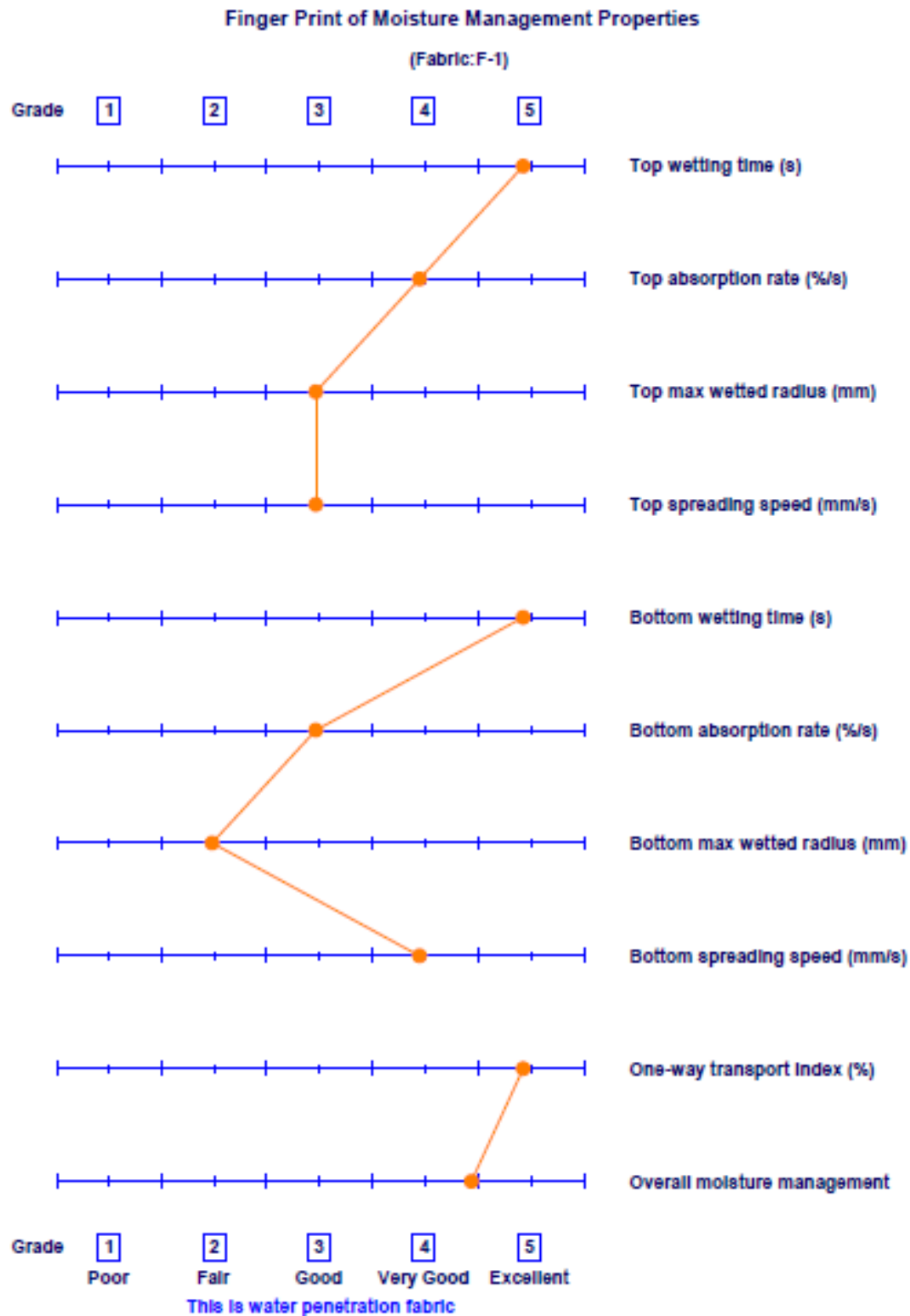


Figure 4.57: Typical fingerprint of moisture management properties of Twill Dyed fabric woven with 37 Tex weft (DT₁).

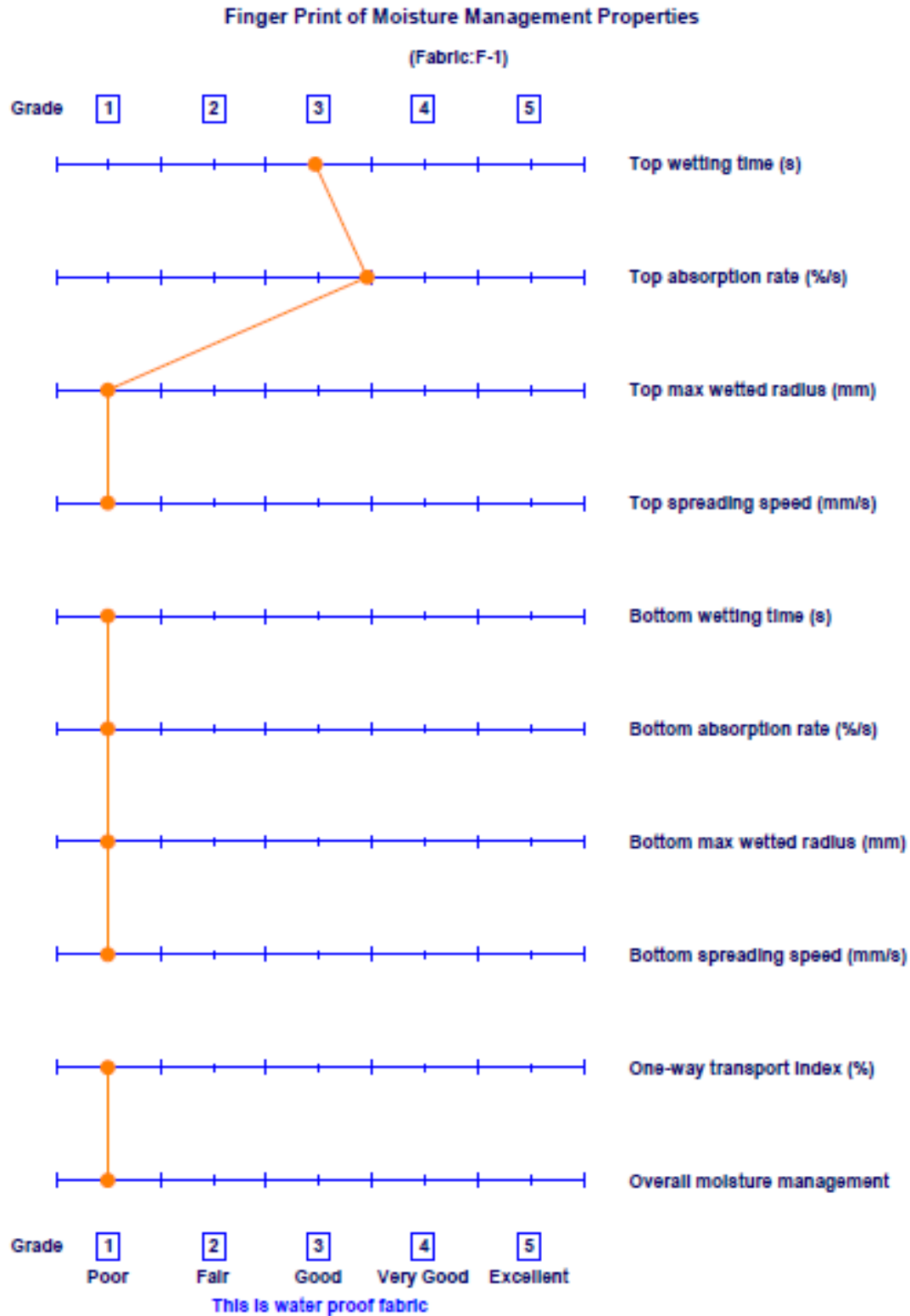
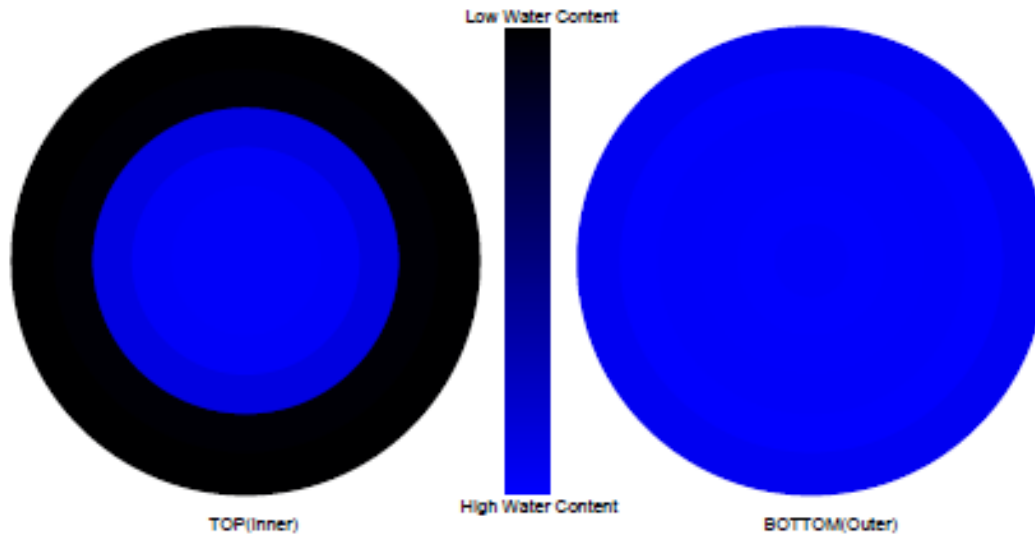


Figure 4.58: Typical fingerprint of moisture management properties of Twill Dyed fabric woven with 37 Tex weft (DT₈).

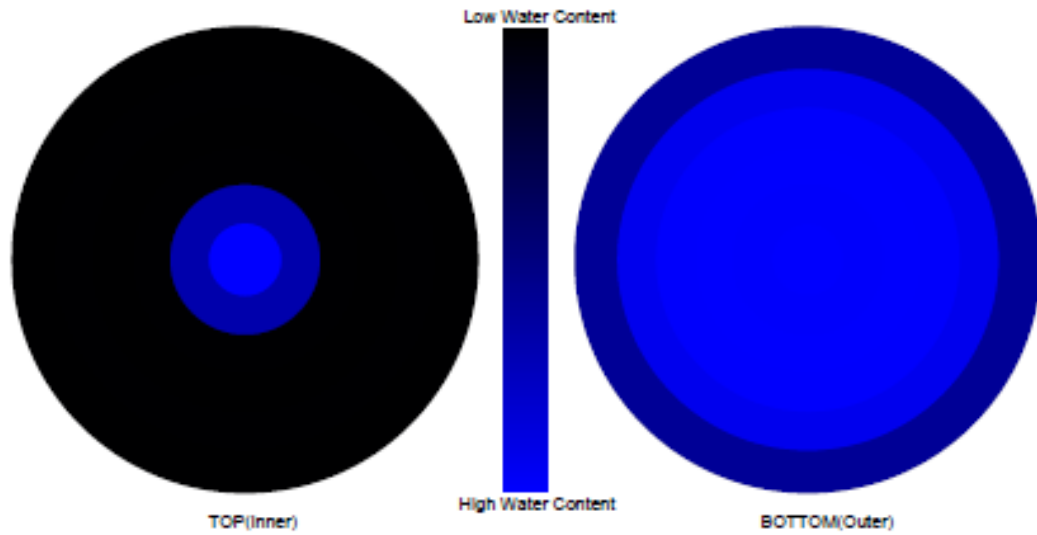
Water Location vs Time



(Measure Time = 120.0 sec)		
	Top Surface	Bottom Surface
Wetting time(sec)	1.685	2.901
Absorption rate(%/sec)	72.0348	46.2986
Max wetted radius(mm)	15.0	10.0
Spreading Speed(mm/sec)	3.1473	1.857
One way transport capability	338.6741	
Description	MMT-	

Figure 4.61: Typical water location versus time simulation of Twill Dyed fabric (DT₃₄-P/V:60/40; 105 PPI).

Water Location vs Time



(Measure Time = 120.0 sec)

	Top Surface	Bottom Surface
Wetting time(sec)	11.606	7.956
Absorption rate(%/sec)	553.1851	10.9967
Max wetted radius(mm)	10.0	10.0
Spreading Speed(mm/sec)	0.4731	0.6595
One way transport capability	-162.3491	
Description	MMT-	

Figure 4.62: Typical water location versus time simulation of Twill Dyed fabric (DT₃₆-P/V/L:70/25/5; 105 PPI).

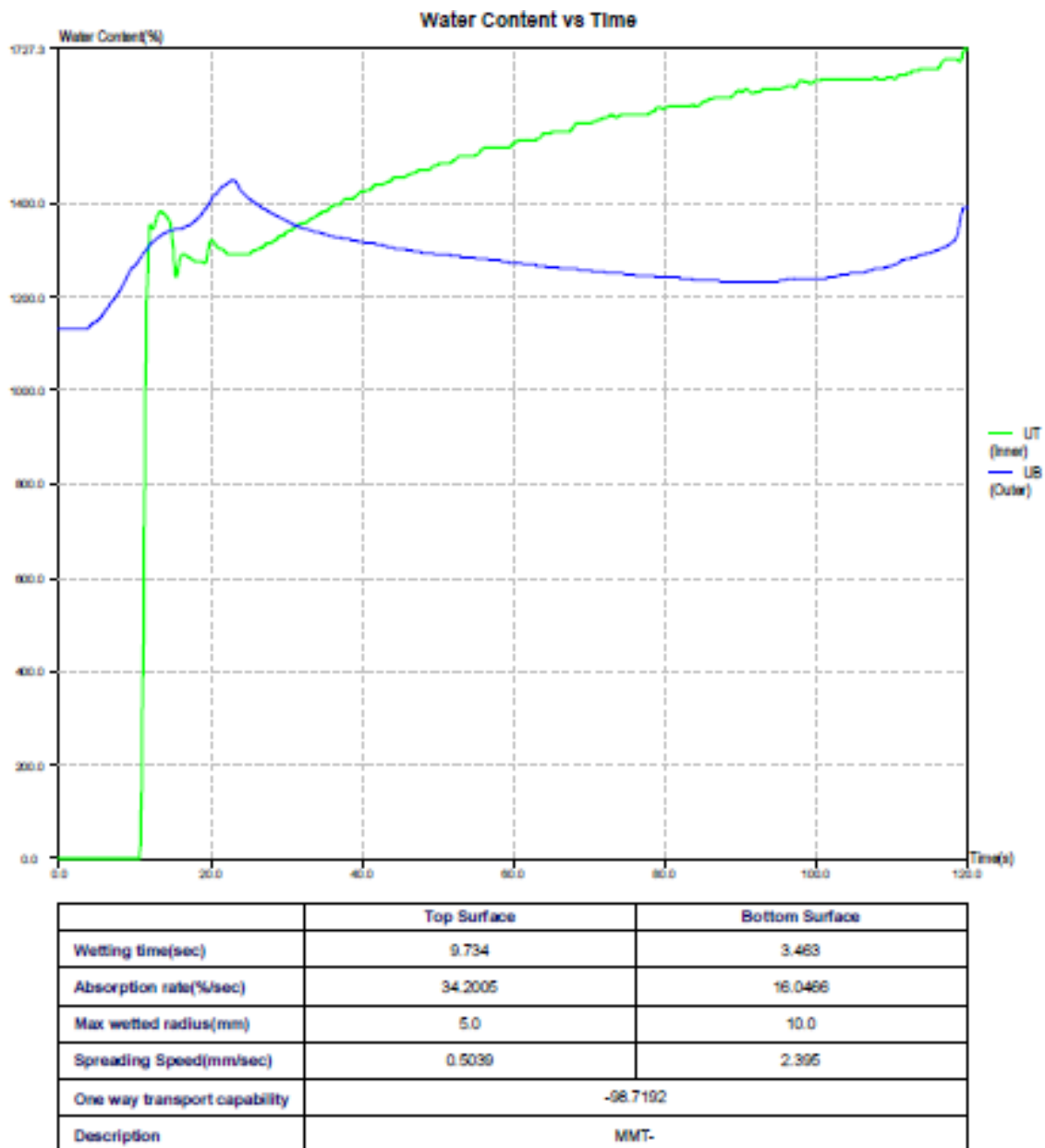


Figure 4.63: Typical water content versus time of Twill Dyed fabric (DT₃₄).

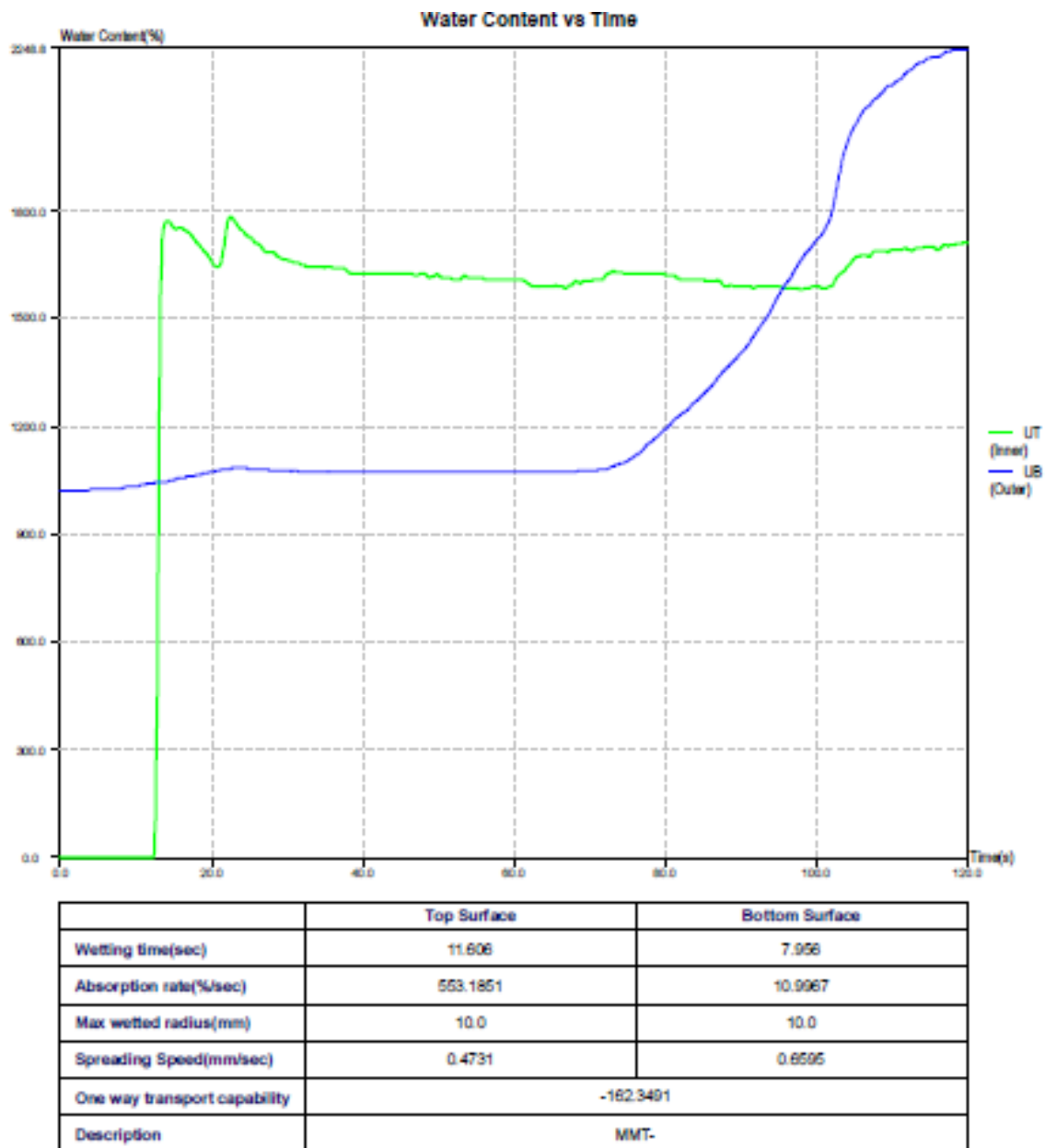


Figure 4.64: Typical water content versus time of Twill Dyed fabric (DT₃₆).

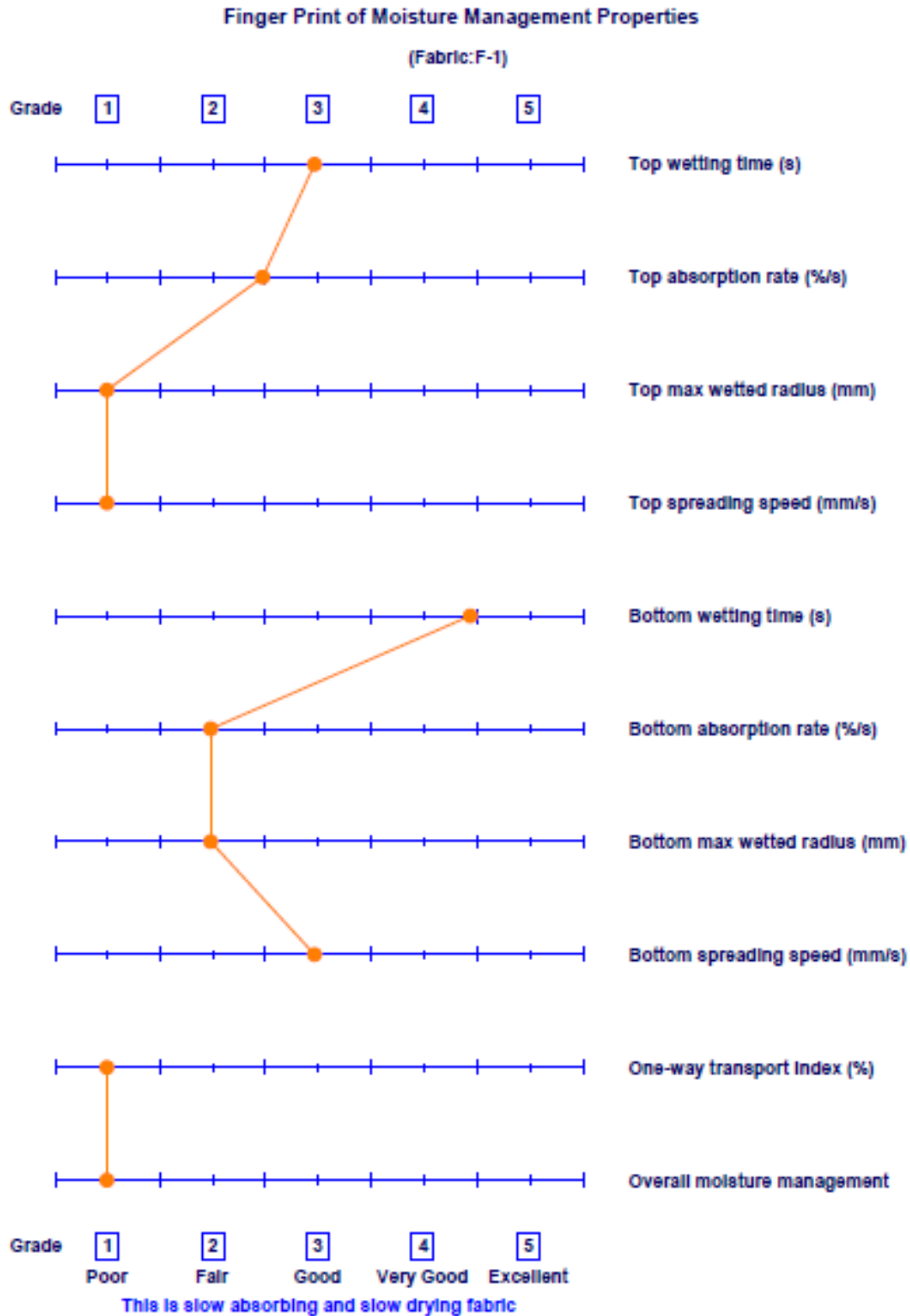
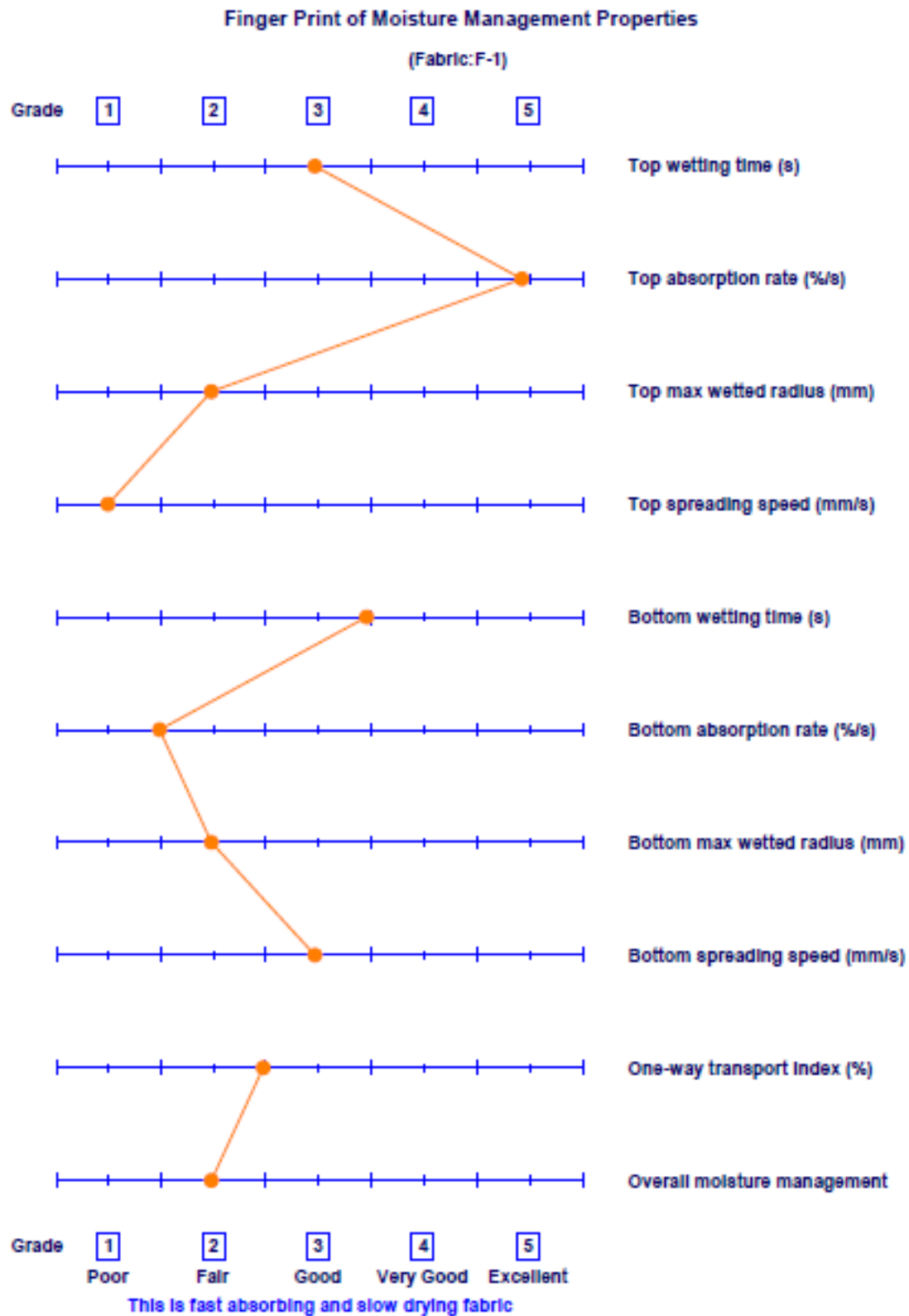


Figure 4.66: Typical fingerprint of moisture management properties of Twill Dyed fabric (DT₃₆).



This is fast absorbing and slow drying fabric

Figure 4.67: Typical fingerprint of moisture management properties of Twill Dyed fabric (DT₃₆).

Table 4.68: Fabric classification results of Dyed Twill fabrics woven with 37 Tex

Fabric Code	Fabric Classification
DT ₁	Water penetration fabric
DT ₂	Water penetration fabric
DT ₃	Moisture management fabric
DT ₅	Water penetration fabric
DT ₆	Moisture management fabric
DT ₇	Water penetration fabric
DT ₈	Fast absorbing and slow drying fabric
DT ₉	Moisture management fabric
DT ₁₀	Water penetration fabric
DT ₁₁	Moisture management fabric

Table 4.69: Fabric classification results of Dyed Twill fabrics woven with 20 Tex

Fabric Code	Fabric Classification
DT ₁₃	Water penetration fabric
DT ₁₄	Moisture management fabric
DT ₁₅	Moisture management fabric
DT ₁₆	Water penetration fabric
DT ₁₇	Moisture management fabric
DT ₁₈	Water penetration fabric
DT ₁₉	Moisture management fabric
DT ₂₀	Water penetration fabric
DT ₂₁	Water penetration fabric
DT ₂₂	Moisture management fabric
DT ₂₃	Moisture management fabric
DT ₂₄	Water penetration fabric

Table 4.70: Fabric classification results of Dyed Twill fabrics woven with 13 Tex

Fabric Code	Fabric Classification
DT ₂₅	Moisture management fabric
DT ₂₆	Moisture management fabric
DT ₂₇	Moisture management fabric
DT ₂₈	Water penetration fabric
DT ₂₉	Moisture management fabric
DT ₃₀	Moisture management fabric
DT ₃₁	Moisture management fabric
DT ₃₂	Fast absorbing and slow drying fabric
DT ₃₃	Moisture management fabric
DT ₃₄	Moisture management fabric
DT ₃₅	Water penetration fabric
DT ₃₆	Fast absorbing and slow drying fabric

LIST OF PUBLICATIONS

Original Papers published in Peer-reviewed International Journals

Sr.No.	Journal/ ISSN	Title	Issue/Vol.	Page Number
1.	International Journal of Engineering Research and Development e-ISSN: 2278-067X, p-ISSN: 2278-800X	Mathematical Model of Optimally Designed Sun Protective Workwear Fabric	Volume 11, Issue 11 (November 2015),	6-12
2.	International Journal of Textile and Fashion Technology (IJTFT) ISSN 2250-2378	Research of UV shielding properties of Polyester/Viscose woven fabric	Vol. 5, Issue 6, Dec 2015	19-26