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February 2, 2004 - BTR

SF YS90A-75/CE3 Fabric, Full Resin, 0.003” Thickness (Nominal), 20” Width

Table 1. Physical Properties

Property	Units	Requirement	No. Tests	Test Method
Fabric Supplier	-	Nippon Graphite		
Weave	-	Spread Tow, Plain		
Yarn	-	YS-90A-10S (1K)		
Count	Yarns/25 mm	12.5 ± .5 Warp 12.5 ± .5 Fill		
Width	m	0.5 ± .05		
Fiber Areal Weight (with sizing)	gm/m^2	75.± 3	3	MIL T-29586 or Equivalent
Resin Solids	%	40±2	3	ASTM D 3529
Volatile Content	%	2 (maximum)	3	ASTM D 3530
Tack		Level 3 to 4	3	COI
Drape		Pass/Fail	3	COI
Gel Time @ 177C	minutes	5 to 13	3	ASTM D 3532
Resin Flow @ 15 minutes, 100 psi, 177C)	%	5, minimum	3	ASTM D 3531 or Equivalent
IR Scan		Report	1	COI
Glass Transition Temperature (Onset DMA)	^0C	170	1	ASTM E1640 or equivalent

Table 2. Mechanical Properties at Room Temperature

Property*	Units	Requirement	No. Tests	Test Method
Warp Tensile Modulus	psi	$27x10^6$ (Avg. Minimum.) $23x10^6$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
Warp Tensile Strength	psi	$70x10^3$ (Avg. Minimum) $56x10^3$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
Fill Tensile Modulus	psi	$27x10^6$ (Avg. Minimum.) $22x10^6$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
Fill Tensile Strength	psi	$65x10^3$ (Avg. Minimum) $52x10^3$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
Warp Compressive Modulus	psi	$24x10^6$ (Avg. Minimum.) $19x10^6$ (Single Value Min.)	5	SACMA SRM 1 or ASTM D695
Warp Compressive Strength	psi	$17x10^3$ (Avg. Minimum) $14x10^3$ (Single Value Min.)	5	SACMA SRM 1 or ASTM D695
Fill Compressive Modulus	psi	$24x10^6$ (Avg. Minimum.) $19x10^6$ (Single Value Min.)	5	SACMA SRM 1 or ASTM D695
Fill Compressive Strength	psi	$17x10^3$ (Avg. Minimum) $14x10^3$ (Single Value Min.)	5	SACMA SRM 1 or ASTM D695
0^0 Short Beam Shear Strength (Room Temperature)	psi	$4.7\ x10^3$(Avg. Minimum) $3.8x10^3$ (Single Value Min.)	5	SACMA SRM 8 or ASTM D2344
Cured Ply Thickness	mils	Report (3.0 nominal @ 45% Fiber Volume)	10 per SBS Panel	MIL T-29586 Ball End Micrometer

*Normalize Properties to 45% Fiber Volume except Short Beam Shear Strength

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Unidirectional K13D2U/CE3 Tape, Medium-Resin, 0.004" Thickness (Nominal), 12" Width

Table 1. Physical Properties

Property	Units	Requirement	No. Tests	Test Method
Fiber, Untwisted	-	K13D2U (Mitsubishi)	-	
Fiber Tow	-	2000 (Nominal) No Twist	-	
Fiber Areal Weight	gm/m^2	116.± 3	3	MIL T-29586 or Equivalent
Resin Solids	%	33±2	3	ASTM D 3529 or MIL T-29586
Volatile Content	%	2 (maximum)	3	ASTM D 3530
Tack		Level 3 to 4	3	COI
Drape		Pass/Fail	3	COI
Gel Time @ 177C	minutes	5 to 13	3	ASTM D 3532
Resin Flow @ 15 minutes, 100 psi, 177C)	%	5, minimum	3	ASTM D 3531 or Equivalent
IR Scan		Report	1	COI
Glass Transition Temperature (Onset DMA)	^{0}C	170	1	ASTM E1640 or equivalent
Fiber Modulus	msi	Report	-	Mitsubishi
Fiber Tensile Strength	ksi	Report	-	Mitsubishi

Table 2: Mechanical Properties at Room Temperature

Property*	Units	Requirement	No. Tests	Test Method
0^0 Tensile Modulus	psi	$69x10^6$ (Avg. Minimum.) $62x10^6$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
0^0 Tensile Strength	psi	$172x10^3$ (Avg. Minimum) $155x10^3$ (Single Value Min.)	5	ASTM D 3039 or SACMA SRM 4
0^0 Compressive Modulus	psi	$69x10^6$ (Avg. Minimum.) $62x10^6$ (Single Value Min.)	5	ASTM D 695 or SACMA SRM 4
0^0 Compressive Strength	psi	$35x10^3$ (Avg. Minimum) $32x10^3$ (Single Value Min.)	5	ASTM D 695 or SACMA SRM 4
0^0 Short Beam Shear Strength	psi	$4.0\ x10^3$(Avg. Minimum) $3.6x10^3$ (Single Value Min.)	5	SACMA SRM 8 or ASTM D2344
Cured Ply Thickness	mils	Report (4.0 nominal @ 52% Fiber Volume)	10 per SBS Panel	MIL T-29586 Ball End Micrometer

*Normalize to 60% Fiber Volume except Short Beam Shear Strength