

VARNISHED TERYLENE

Description:

The base fabric for materials in this range is a woven, scoured and heat-set polyester. Two standard varnishes, yellow and black, meet most requirements but for special applications there are alternatives such as polyurethane or polyester. The range is thus extremely versatile and offers materials to suit an unusually wide range of applications.

Properties:

Varnished polyester fabrics are strong, highly flexible and have excellent electrical properties. Thermal properties are outstanding and much superior to those of cotton, silk or nylon. Tests after ageing at 150°C for 10,000 hours show that the materials using polyester varnish can still be bent through 180° round a 3mm dia. mandrel without cracking. Fabric with the lower temperature varnishes are considerably hardened but resin films are still intact - i.e. there is no crazing in the resin matrix.

Classification:

All varnished polyester fabrics from this range are suitable for continuous operation at temperatures up to 120°C and can be rated as Class E materials. Under favourable circumstances yellow (glyptal) varnished materials are satisfactory at Class B temperatures (up to 130°C). Fabrics varnished with polyurethane or polyester can be used at temperatures up to 155°C (Class F).

Applications:

Typical applications for varnished polyester fabrics include phase barrier insulation conductor wrapping on machines and dry-type transformers, interlayer coil insulation and cable wrapping.

Availability:

Varnished polyester fabrics are available in the standard thicknesses, with the varnish options shown below:

Thickness		Type	Varnish / product reference			
(mm)	(in)		Yellow	Black	Polyurethane	Polyester
0.10	0.004	Straight and bias cut	SP1713	SP1319	SP1486	SP1702
0.12	0.005					
0.15	0.006		or	or	or	or
0.17	0.007		SP1715	SP1372	SP1611	SP1703
0.20	0.008					
0.25	0.100					

The materials are available at the full width of 1000mm nominal or slit into tape widths down to 6mm. Full width material is normally supplied in 50 metre rolls.

Mechanical properties:

Tensile strength		Tear strength*		Bursting strength
Warp direction	Weft direction	Warp direction	Weft direction	per mm of thickness
(N/cm)	(N/cm)	(N/cm)	(N/cm)	Mullen (kg/cm ²)
80	55	100	210	8.5

*Tests made by the Max-Elmendorf apparatus.

Load extension characteristics: The load extension characteristics of 25mm wide bias cut tape (of 0.10, 0.13, 0.15 and 0.18mm thickness) are as follows:

Extension	Load
(%)	(kg)
5	0.7
10	1.4
15	2.3
20	3.2
25	4.5

Electrical properties:

Varnished polyester fabric		Electrical strength at 20°C		Electrical strength at 90°C		Electrical strength at 150°C	
Type	Thickness (mm)	Instant value (kV/mm)	Minute Value (kV/mm)	Instant Value (kV/mm)	Minute Value (kV/mm)	Instant Value (kV/mm)	Minute Value (kV/mm)
SP1713	0.10	59.0	35.4	43.4	31.4	35.4	29.5
	0.12	63.0	43.4	40.2	30.7	36.2	28.7
	0.15	55.0	31.0	39.4	27.6	35.4	29.5
SP1319	0.10	63.0	39.4	47.3	31.0	35.4	27.6
	0.15	51.2	27.6	39.5	27.6	31.0	23.6
SP1486	0.15	51.6	39.8	46.5	35.4	24.8	15.0
SP1702	0.12	56.7	41.7	41.7	30.0	38.2	30.0

Electric strength at 20°C under tension on the bias.

Varnished Polyester		Instantaneous Value (kV/mm)						
Type	Thickness (mm)	No	5%	10%	15%	20%	25%	30%
SP1713	0.10	70.9	70.9	69.0	67.0	43.3	-	-
	0.12	76.8	74.3	66.5	60.3	58.3	54.7	38.6
	0.15	70.9	67.0	65.0	59.0	39.5	-	-
SP1319	0.10	76.8	74.8	72.9	65.0	49.2	-	-
	0.15	74.8	72.9	70.9	59.0	37.4	-	-
SP1486	0.15	74.8	74.5	73.3	71.0	66.2	58.3	55.5
SP1702	0.12	72.1	64.2	56.1	52.0	42.9	35.4	-
		Minute Value (kV/mm)						
SP1713	0.10	59.0	55.8	53.1	45.3	21.7	-	-
	0.12	59.9	49.6	39.7	38.2	33.5	32.7	-
	0.15	49.2	47.3	45.0	39.5	19.8	-	-
SP1319	0.10	70.9	69.0	57.1	35.4	15.7	-	-
	0.15	59.0	57.1	51.2	49.2	17.7	-	-
SP1486	0.15	57.1	55.9	52.4	50.0	45.7	42.1	39.6
SP1702	0.12	51.2	50.8	47.2	42.9	41.7	30.7	-

Note: Values given in the above table are typical. They are not guaranteed minimum values and should not be used for specification purposes

