

## ***Kite Brand TUFNOL***

Phenolic Paper laminate

Paper/phenolic resin laminated plastic

(SRBP - Synthetic Resin Bonded Paper)

### **First class electrical insulation**

Kite Brand TUFNOL is a first class electrical insulating materials with good dielectric strength and high insulation resistance. It has low moisture absorption and good mechanical strength, although its impact strength is lower than that of most other grades of Tufnol. Kite Brand sheet meets British Standard BS EN 60893-3-4 Type PF CP 206. It is readily machined and can be hot punched in thicknesses up to 3.2mm.

### **What is Kite Brand used for?**

Kite Brand is the most widely used of all TUFNOL phenolic paper grades, wherever a good quality general purpose electrical insulation material is required. It is used for a multitude of different applications at low, medium and high voltages, including such items as terminal boards, mounting panels, tag strips, coil formers, insulating sleeves and bushes, busbar supports, tool and instrument handles, coil supports, insulated enclosures, brush holders, insulating spacers and special purpose plugs and sockets.

TYPES AVAILABLE	Sheets	Rods	Tubes	Other sections
Natural colour Kite Brand	Yes	No  (use Swan Brand)	Yes	Hollow sections only
Black Kite Brand	Yes*			

\*Minimum order quantities may apply.

***SPECIFICATIONS for Kite Brand TUFNOL***

BRITISH STANDARDS	Current Standards	Recent Standards
		(now obsolete)
Sheet	BS EN 60893-3-4 Type PF CP 206	BS 2572 Type P3 BS 5102 Type 1
Round Tube	BS EN 61212-3-2 Type PF CP 32	BS 6128 Part 9 Type PF CP 91
Rectangular Tube	BS 6128 Part 13 Type PF CC 131	
<b>NEMA*</b>		
Sheet	NEMA LI-1-1983 Type XXX	
Tube	NEMA LI-1-1983 Type XXX	
<b>Admiralty*</b>		
Sheet	NES 2053	
Round Tube	NES 2054	

\*Testing and certification to these standards is subject to special enquiry. Standard quality testing is to British Standards.

**PHYSICAL PROPERTIES****Kite Brand TUFNOL Sheet**

PROPERTY	TYPICAL RESULT	UNITS
Cross breaking strength	175	MPa
Impact strength, notched, Charpy	2.7	kJ/m <sup>2</sup>
Compressive strength, flatwise	350	MPa
Compressive strength, edgewise	200	MPa
Resistance to flatwise compression	1.2	%
Shear strength, flatwise	105	MPa
Water Absorption		
- 1.6mm thk.	39	mg
- 3mm thk.	47	mg
- 6mm thk.	56	mg
- 12mm thk.	70	mg
Electric strength, flatwise in oil at 90°C		
- 1.6mm thk.	14.5	MV/m
- 3mm thk.	13	MV/m
- 6mm thk.	8.8	MV/m
- 12mm thk.	6.1	MV/m
Electric strength, edgewise in oil at 90°C	55	kV
Insulation resistance after immersion in water	in1x10 <sup>10</sup>	ohms

Loss tangent at 1 MHz	0.037	-
Permittivity at 1 MHz	5.1	-
Relative density	1.36	-
Maximum working temperature**		
- continuous	90	°C
- intermittent	120	°C
Thermal classification	Class E	-
Thermal conductivity through laminae	0.26	W/(mK)
Thermal expansion in plane of laminae	1.8	x 10 <sup>-5</sup> /K
Specific heat	1.5	kJ/(kgK)

Test methods as BS EN 60893-2, where applicable.

**Kite Brand TUFNOL Round Tube**

PROPERTY	TYPICAL RESULT	UNITS
Axial compressive strength	190	MPa
Cohesion between layers	110	MPa
Water absorption	1.0	mg/cm <sup>2</sup>
Insulation resistance after immersion in water	in1x10 <sup>9</sup>	ohms
Axial electric strength in oil at 90°C	40	KV
Radial electric strength in oil at 90°C		
- 1.6mm wall	8	MV/m
- 3mm wall	6	MV/m
Relative density	1.35	-

Test methods as BS EN 61212-2, where applicable.

**\*\***Users of highly stressed components at temperatures approaching the maximum are recommended to seek further advice from Tufnol Composites Ltd.