TUFNOL Grade 6F/45

Cotton fabric based epoxy laminate

Fine weave cotton/Epoxy resin laminated plastic

(SRBF – Synthetic Resin Bonded Fabric)

A top quality epoxy grade combining electrical performance with first class mechanical capabilities

This TUFNOL epoxy cotton grade has a unique combination of properties, which makes it particularly useful for applications requiring extra performance. It has good all-round performance but its principal features are its excellent electrical properties, good dimensional stability and outstanding machinability.

Grade 6F/45 is made with a specially modified epoxy resin, which gives it high insulation resistance and electric strength, and an exceptional resistance to surface electrical tracking. These first class electrical properties, with the excellent wear resistance of the finer weave cotton, together provide a combination of properties not found in other grades.

Grade 6F/45 is mechanically strong and is resistant to a wide range of chemicals. It has low water absorption and good dimensional stability, giving fine tolerances and a superb machined finish.

What is Grade 6F/45 used for?

This versatile grade is used for a very broad range of applications, where precision and a high quality machined finish need to be combined with electrical or mechanical performance. It is used for rotor blades in compressors, slip ring assemblies in helicopters. Windshield components on commercial aircraft, high vacuum components, slot wedges, coil supports in turbine generators, labyrinth seals, insulating gears in scientific instruments, electrical mounting plates and large electrical terminal blocks.

TYPES AVAILABLE	Sheets	Rods	Tubes	Other sections
Natural colour	Yes	Yes	Yes	Yes*

* Minimum order quantities may apply.

info@tufnol.co.uk
+44(0)121 356 9351
+44 (0)1355 233 876

SPECIFICATIONS for TUFNOL Grade 6F/45

BRITISH STANDARDS	Current Standards	Recent Standards (now obsolete)
Sheet	BS EN 60893-3-2 Type EP CC 301	BS 2572 Type F6
Round Rod (Rolled moulded)	&BS EN 61212-3-3 Type EP CC 41	
Rectangular Bar	BS 6128 Part 4 Type PF CC 41 & 42	(BS 6128 is now obsolete.)
Hexagon Bar	BS 6128 Part 6 Type PF CC 61 & 62	
Round Tube	BS EN 61212-3-2 Type EP CC 31	
Rectangular Tube	BS 6128 Part 13 Type PF CC 131	

PHYSICAL PROPERTIES

TUFNOL Grade 6F/45 Sheet

PROPERTY	TYPICAL RESULT	UNITS
Cross breaking strength	170	MPa
Impact strength, notched, Charpy	4.6	kJ/m2
Compressive strength, flatwise	290	MPa
Compressive strength, edgewise	190	MPa
Shear strength, flatwise	100	MPa
Water Absorption		
- 1.6mm thk.	30	mg
- 3mm thk.	35	mg
- 6mm thk.	45	mg
- 12mm thk.	55	mg
Electric strength, flatwise in oil at 90°C		
- 1.6mm thk.	15	MV/m
- 3mm thk.	12	MV/m
- 6mm thk.	10	MV/m
Electric strength, edgewise in oil at 90°C	80	kV
Insulation resistance after immersion in water	3x1011	ohms
Loss tangent at 1 MHz	0.040	-
Permittivity at 1 MHz	4.3	-
Comparative tracking index	800	-

info@tufnol.co.uk
+44(0)121 356 9351
+44 (0)1355 233 876

Relative density	1.36	-
Maximum working temperature**		
- continuous	130	°C
- intermittent	150	°C
Thermal classification	Class B	-
Thermal conductivity through laminae	0.36	W/(mK)
Thermal expansion in plane of laminae	1.8	x 10-5/K
Specific heat	1.5	kJ/(kgK)

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

TUFNOL Grade 6F/45 Round Tube

PROPERTY	TYPICAL RESULT	UNITS
Axial compressive strength	180	MPa
Cohesion between layers	130	MPa
Water absorption	1.2	mg/cm2
Insulation resistance after immersion in water	1x1010	ohms
Loss tangent at 1 MHz	0.04	-
Permittivity at 1 MHz	4.0	-
Axial electric strength in oil at 90°C	75	KV
Radial electric strength in oil at 90°C		
- 1.6mm wall	13	MV/m
- 3.0mm wall	10	MV/m

Relative density	1.35	-

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

TUFNOL Grade 6F/45 Round Rod

PROPERTY	TYPICAL RESULT	UNITS
Flexural strength	170	MPa
Water absorption	1.3	mg/cm2
Insulation resistance after immersion in water	1x1010	ohms
Axial electric strength in oil at 90°C	80	kV
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.

info@tufnol.co.uk
+44(0)121 356 9351
+44 (0)1355 233 876