TUFNOL



WHALE BRAND

SRBF Material
Synthetic Resin Bonded Fabric

Cotton fabric based laminate
Medium weave cotton/phenolic resin
laminated plastic

SRBF Material. WHALE BRAND.

A general purpose grade for mechanical applications.

Whale Brand TUFNOL is a good, general-purpose medium weave grade for mechanical applications. It has excellent all round physical properties with strength, good toughness and wear resistance. It is used for electrical insulation at low voltages only.

What is Whale Brand used for?

Whale Brand is a most useful general purpose material and is the most popular grade for a wide range of mechanical applications and general uses, such as gears, spacers, jigs and fixtures, wear resistant components, low voltage insulation and many others.

Types available

	Sheets	Rods	Tubes	Other Sections
Natural colour	Yes	Yes	Yes	Yes
Black Whale Brand	Yes*			
Graphite-impregnated Whale Brand	Yes*	Yes*	Yes*	Yes*

*Minimum order quantities may apply.

Specifications for WHALE BRAND

British Standards	Current Standards	Recent Standards (now obsolete)
Sheet	BS EN 60893-3-4 Type PF CC 203	BS 2572 Type F2
Rod from Sheet	BS EN 60893-3-4:2012 PF CC 203	-
Rectangular Bar	BS 6128 Part 4 Type PF CC 43	-
Hexagon Bar	BS 6128 Part 6 Type PF CC 63	-
Round Tube	BS EN 61212-3-2 Type PF CC 33	BS 6128 Part 9 Type PF CC 92
Rectangular Tube	BS 6128 Part 13 Type PF CC 131	-
NEMA*		
Sheet	NEMA Ll-1-1983 Type LE	-
DIN*		
Round Rod and Tube	DIN 7735 TYPE Hgw 2088 & 2089	-

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

Physical Properties

Property	Typical Result	Units
Cross breaking strength	130	MPa
Impact strength, notched, Charpy	11.5	kJ/m²
Compressive strength, flatwise	310	MPa
Compressive strength, edgewise	200	MPa
Shear strength, flatwise	90	MPa
Tensile strength	68	MPa
Young's modulus	6.3	GPa
Water Absorption		
- 1.6mm thk.	90	mg
- 3mm thk.	105	mg
- 6mm thk.	130	mg
- 12mm thk.	160	mg
Electric strength, flatwise in oil at 90°C		
- 1.6mm thk.	4.5	MV/m
- 3mm thk.	2.6	MV/m
- 6mm thk.	2.0	MV/m
Electric strength, edgewise in oil at 90°C	12	kV
Insulation resistance after immersion in water	1 x 108	ohms
Relative density	1.36	-
Maximum working temperature**		
- continuous	120	°C
- intermittent	130	°C
Thermal classification	Class E	-
Thermal conductivity through laminae	0.32	W/(mK)
Thermal expansion in plane of laminae	2.2	x 10-⁵/K
Specific heat	1.5	kJ/(kgK)

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

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

WHALE BRAND
Round Tube

Property	Typical Result	Units
Axial compressive strength	170	MPa
Cohesion between layers	130	MPa
Water absorption	3.2	mg/cm²
Insulation resistance after immersion water	1 x 107	ohms
Relative density	1.35	-

Test methods as BS EN 61212-2, where applicable

WHALE BRAND
Round Rod

Property	Typical Result	Units
Flexural strength	130	MPa
Water absorption	3.3	mg/cm²
Insulation resistance after immersion in water	1 x 107	ohms
Axial electric strength in oil at 90°C	4	kV
Relative density	1.35	-

Test methods as BS EN 61212-2, where applicable



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Reliability in the field of engineering plastics & composites.

Tufnol is the byword for quality in laminated plastics and resin based materials for engineering applications. It was invented here in the UK and its development to meet modern engineering demands continues to keep it abreast of 21st century technology.

This type of material is known as 'synthetic resin bonded laminated plastic', and is made from layers of paper, cotton cloth or woven glass fibre cloth, dipped in resin, then compressed and bonded together in a hot press. It is a strong, hard material, made in a number of different grades with varying properties and uses.

Tufnol's reliability is key to the many sectors of engineering industry in which it serves.

Tufnol UK
Wellhead Lane, Perry Barr
Birmingham B42 2TN

T: +44 (0)121 356 9351
E: info@tufnol.co.uk

tufnol.com

TUFNOL

Tufnol warrants the materials it produces will conform to Tufnol specifications. It is entirely the customer's responsibility to make the final product choice and satisfy themselves of the suitability of the product for the intended application and carrying out testing where required. Tufnol does not warrant the conformity of its materials to these properties or the suitability of its materials for any particular purpose.

The values are "typical only" and are based on test results generally in accordance with Test methods BS EN 60893-2, where applicable.