



# VOLE BRAND

## SRBF Material Synthetic Resin Bonded Fabric

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

# SRBF Material. VOLE BRAND.

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A medium/fine grade for mechanical applications.

Vole Brand TUFNOL is a medium/fine weave grade for mechanical applications, where the finish requirements or shape of the component demand a slightly finer reinforcement than other general purpose grades. It is excellent for screw threading and for other parts where good machining qualities are needed. It is suitable for electrical insulation at low voltages.

**What is Vole Brand used for?**

Vole Brand is used for mechanical applications where good machined finish is important, but where the benefits of the finest weave grades are not considered necessary, for example, medium/fine gears, threaded items, blades, wear resistant components and many similar items.

## Types available

	Sheets	Rods	Tubes	Other Sections
Natural colour	Yes	Yes	Yes	Use Whale Brand

## Specifications for VOLE 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	BSEN 60893-3-4:2012 PF CC 203	-
Round Tube	BS EN 61212-3-2 Type PF CC 33	BS 6128 Part 9 Type PF CC 92
NEMA*		
Sheet	NEMA LI-1-1983 Type L	-

\*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	145	MPa
Impact strength, notched, Charpy	9.5	kJ/m <sup>2</sup>
Compressive strength, flatwise	325	MPa
Compressive strength, edgewise	200	MPa
Shear strength, flatwise	98	MPa
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.	2.5	MV/m
- 6mm thk.	2.0	MV/m
Electric strength, edgewise in oil at 90°C	11	kV
Insulation resistance after immersion in water	1 x 10 <sup>8</sup>	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 <sup>-5</sup> /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.

VOLE BRAND  
Round Tube

Property	Typical Result	Units
Axial compressive strength	180	MPa
Cohesion between layers	130	MPa
Water absorption	2.8	mg/cm <sup>2</sup>
Insulation resistance after immersion water	2 x 10 <sup>7</sup>	ohms
Relative density	1.35	-

Test methods as BS EN 61212-2, where applicable

VOLE BRAND  
Round Rod

Property	Typical Result	Units
Flexural strength	140	MPa
Water absorption	2.9	mg/cm <sup>2</sup>
Insulation resistance after immersion in water	2 x 10 <sup>7</sup>	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.

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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.