



GRADE RLP

SRBP Material
Synthetic Resin Bonded Paper

Phenolic Paper laminate
Paper/phenolic resin laminated plastic

SRBP Material. GRADE RL P.

The TUFNOL range of rolled laminated paper tubes have been developed to complement the range of moulded tubes. RL tubes have good mechanical strength, low water absorption and are resistant to weathering and to chemical attack by mild acids and alkalis. They are used where electrical insulation is required and in many instances where the requirement is simply for a low cost, strong and rigid non-metallic tube.

Three grades are available:

- **Grade RL P/1** - A low cost commercial quality grade, suitable for low voltage electrical applications and some mechanical uses.
- **Grade RL P/2** - A good electrical insulator with good dielectric properties. Made to BS EN 61212 Type PF CP 23.
- **Grade RL P/3** - Superior mechanical properties to Grade RL P/1, particularly with regard to its higher bursting strength. Machines well.

What are TUFNOL RL paper tubes used for?

In general, Grade RL P/2 is used primarily for electrical insulation components such as bobbins, coil formers, insulating spacers and sleeving. The other grades are used for low voltage insulation and for low cost mechanical applications, such as handles on welding guns, structural components and containers for pyrotechnics, and similar items.

Types available

	Tubes
Grade RL P/1 - natural colour	Yes
Grade RL P/2 - natural colour - black	Yes Yes
Grade RL P/3 - natural colour	Yes

*Minimum order quantities may apply.

Specifications for GRADE RL P

British Standards	Current Standards	Recent Standards (now obsolete)
Grade RL P/1 tube	BS EN 61212-3-1 Type PF CP 22	-
Grade RL P/2 tube	BS EN 61212-3-1 Type PF CP 23 & 24	BS 6128 Part 8 Type PF CP 81 & 82
Grade RL P/3 tube	BS EN 61212-3-1 Type PF CP 21	-



Physical Properties

Property	GRADE RL P/1	GRADE RL P/2	GRADE RL P/3	Units
	Typical Result	Typical Result	Typical Result	
Axial compressive strength	90	160	90	MPa
Cohesion between layers	120	180	150	MPa
Water absorption	4.0	1.5	4.0	mg/cm ²
Insulation resistance after immersion in water	5 x 10 ⁶	2 x 10 ⁸	2 x 10 ⁶	ohms
Loss tangent at 1 MHz	-	0.03	-	-
Permittivity at 1 MHz	-	4.3	-	-
Axial electric strength in oil at 90°C	-	4.5	-	kV
Electric strength normal to axis in oil at 90°C				
- 1.6mm wall	-	11	-	MV/m
- 3.0mm wall	-	9	-	MV/m
Relative density	1.21	1.27	1.21	-
Maximum working temperature**				
- continuous	90	90	90	°C
- intermittent	120	120	120	°C
Thermal classification	Class E	Class E	Class E	-

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.