

# Tufnol Grade 1P/13/N

## Neoprene Clad Paper Reinforced Laminate. (Provisional Information)

TUFNOL high performance composite sealing/insulating materials are designed to meet specific needs, primarily in the Oil and Gas distribution industries. The products incorporate an SRBP or SRBF core with a chemically bonded Neoprene surface. Conventional materials can cause problems, either being too soft to withstand the compressive forces of the mating surfaces or too hard to form a satisfactory seal. The thickness of the sealing rubber face(s) on TUFNOL Grade 1P/13/N laminates is kept to a minimum (typically 0.8mm). This combined with the high compressive strength of the core eliminate the compression effects normally associated with softer materials. The product acts as electrical insulation between the mating surfaces reducing electrolytic effects, which can lead to corrosion.

### IDENTIFICATION CODE

TUFNOL Grade 1P/13/N1 – Neoprene on one face.  
TUFNOL Grade 1P/13/N2 – Neoprene on two faces.

Black Neoprene facing will be supplied as standard.

### SHEET SIZE

1220mm x 1220mm approx.

### THICKNESS RANGE

Laminate 0.8mm up to 3.2mm  
Neoprene 0.4mm, 0.8mm, 1.2mm, 1.6mm

When ordering, the thicknesses of the two or three layers must be clearly stated in the following order, Rubber – Laminate – Rubber. e.g. TUFNOL Grade 1P/13/N2 1.2mm rubber, 2.0mm laminate, 1.2mm rubber.

### AREA WEIGHT RATIO

Material Thickness	Laminate Weight	Neoprene Weight
0.8mm	1.10 kg/m <sup>2</sup>	1.37 kg/m <sup>2</sup>
1.6mm	2.20 kg/m <sup>2</sup>	2.79 kg/m <sup>2</sup>
3.2mm	4.40 kg/m <sup>2</sup>	-

A composite with 1.2mm laminate clad one side with 0.8mm neoprene weighs 3.02 kg/m<sup>2</sup> approx.

### MACHINING

TUFNOL Grades 1P/13/N1 and N2 can be guillotined and sawn by normal methods used for paper based laminates. They can be punched at temperatures of 25°C–80°C

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### TYPICAL PROPERTIES OF COMPOSITE MATERIALS

Insulation resistance after 24 hours' immersion in water	30 megohms
Insulation resistance in 'as received' condition	5 x 10 <sup>5</sup> megohms
Power Factor at 800 c/s	0.050 Tan δ
Pull off strength	15lb
Dielectric Strength ( in oil at ambient temperature)	3.75kV/mm
Breakdown Voltage parallel to laminations (in oil at ambient temperature)	2.5kV
Water absorption	Typical 250mg (3mm x 50mm x 50mm) 2.5%

### TYPICAL PROPERTIES OF NEOPRENE

Surface resistivity after 24 hours' submersion in water	106 megohms
Surface resistivity in 'as received' condition	107 megohms

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