

PF47 SERIES

Norseal® PF47 Series, Micro-Cellular Polyurethane Foams

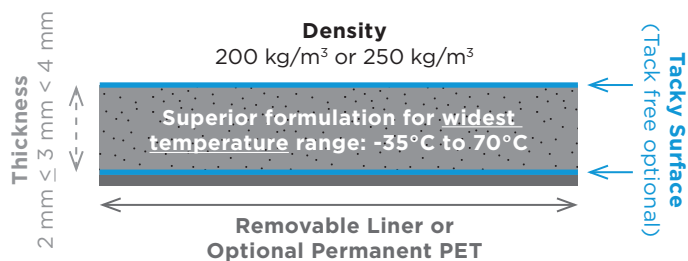
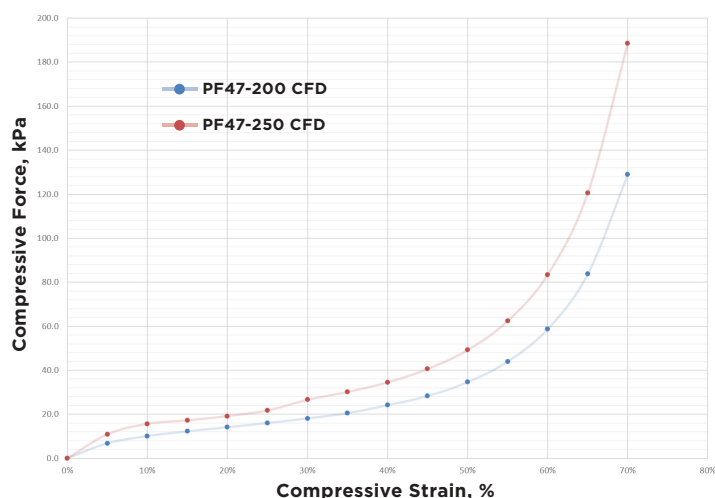
Norseal PF47 Series features enhanced micro-cellular polyurethane foam solutions, specifically developed for efficient functioning of batteries in a pack.

Uniformity of cell temperature and cell pressure is needed for a long battery life. The compressed foam between cells creates uniform pressure over the cell surface. The thermal insulation properties of the foam also help to maintain the cell face temperature. These properties and resulting function of the foam are very consistent over time and over a range of environmental conditions, ensuring a long life for the pack.

The key to performance is seen in the Compression Force Deflection (CFD) curve. **Norseal** PF cushion pads provide a flat CFD curve over a wide range of deflection, as shown here.

APPLICATIONS

- Compression/tolerance pads for lithium-ion pouch and prismatic cell packs
- Cushioning and insulation for thermistors in lithium-ion battery packs



Norseal PF47 Series — Properties

Performance tests are run using standard test procedures. The values presented are typical values and should not be used for specification purposes.

Properties	Test Method	PF47-200	PF47-250
PHYSICAL			
Density, kg/m ³ (lb/cu.ft.)	ASTM D3574	200 (12.5)	250 (16)
Shrink, %		<2	
Thickness, mm (in)		2.0 - 3.0 - 4.0 (.08 - .12 - .16)	
Thickness tolerance		+/- 10%	
Usable width, mm	-	1360	
Standard color	-	Black	
Standard liner	-	Paper	
Compression set (@ 70%, 7 days), % @ 23°C (73°F) @ 70°C (158°F)	ASTM D1667	<3 <10	
Typical Force to compress, kPa (psi) 50 mm / min @ 30% deflection	ASTM D1667	28 (4)	33 (4.8)
Typical Compression force deflection, kPa (psi) 50 mm / min @ 30% deflection	ASTM D1667	17 (2.5)	26 (3.7)
THERMAL			
Temperature resistance, °C (°F)	Recommended constant use, max. Recommended intermittent, max.	70 (158) 121 (250)	
Thermal Conductivity, @50%, W/M-C	ISO 8302	0.06	0.07
Low temperature cold flex	-40°C w/25 mm mandrel	Pass	
ELECTRICAL			
Breakdown strength, AC, kV/mm (V/mil)	ASTM D149, Method B, @ 10%	3.2 (81.1)	2.9 (74.9)
Breakdown strength, DC, kV/mm (V/mil)	ASTM D3755 @10%	3.6 (92.3)	3.2 (81.1)
FLAME			
Flame resistance	ASTM D4986 (self extinguishing equivalent to UL94-HBF)	Pass	

Options (subject to minimum order requirements)

- Higher density (increased stiffness/CFD) possible up to 330 kg/m³
- Custom thickness (from 2 mm to 10 mm)
- Tack free surface
- Permanent or removable PET liner
- Acrylic based adhesive

Shelf Life

12 months when stored at 21°C, 50% relative humidity, when product is stored in its original packaging, away from direct sources of heat and sunlight.

**Saint-Gobain Tape Solutions**

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