NORSEAL®

PF20 SERIES

Norseal® PF20 Series, Micro-Cellular Polyurethane Foams

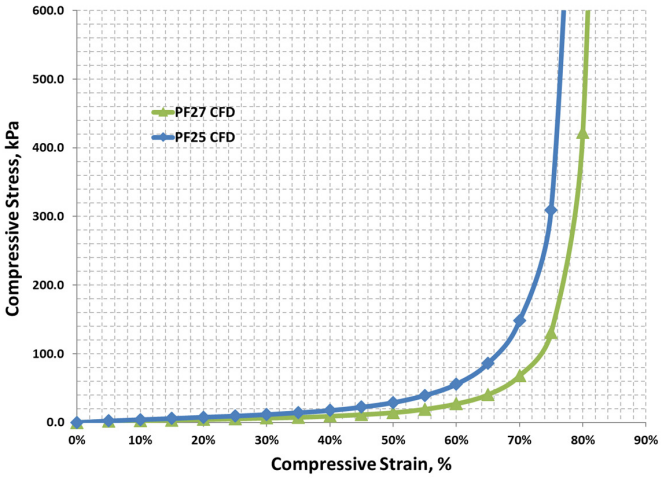
Norseal PF20 Series features enhanced micro-cellular polyurethane foam solutions, specifically developed for efficient functioning of batteries in a pack. PF25 and PF27 are available in thickness as low as 1 mm, which aids in achieving higher energy density in a pack.

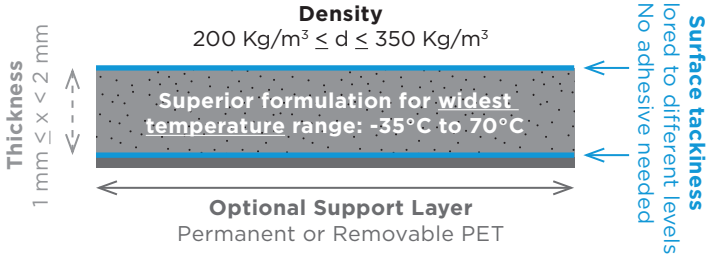
Uniformity of cell temperature and cell pressure is needed for a long battery life. The compressed foam between cells creates uniform pressure over the cell surface. The thermal insulation properties of the foam also help to maintain the cell face temperature. These properties and resulting function of the foam is 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 in lithium-ion pouch and prismatic cell packs
- Intricate area gasketing





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Norseal PF20 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	PF25	PF27
PHYSICAL			
Density, kg/m³ (lb/cu.ft.)	ASTM D3574	250 (16)	200 (12.5)
Shrink, %		<2	
Thickness, mm (in)		1.0 - 1.25 - 1.6 (0.04 - 0.05 - 0.06)	
Usable width, mm	-	1360	
Standard color	-	Black	
Standard liner	-	Paper	
Compression set (@ 70%, 7 days), %	ASTM D1667	<3 @ 23°C (73°F) <3 @ 70°C (158°F)	<3 @ 23°C (73°F) <3 @ 60°C (140°F)
Typical Force to compress, kPa (psi) 50 mm / min @ 30% deflection	ASTM D1667	25	9
Typical Compression force deflection, kPa (psi) 50 mm/min @ 30% deflection	ASTM D1667	16	7
Hardness, durometer, Shore OO	ASTM D2240	20	<1
THERMAL			
Temperature resistance, °C (°F)	Recommended constant use, max. Recommended intermittent, max.	70 (158) 121 (250)	
Thermal Conductivity, @ 50%, W/M-C	ISO 8302	0.07	0.06
Low temperature cold flex	-40°C w/25 mm mandrel	Pass	
ELECTRICAL (on nominal 1 mm thick material)			
Surface resistivity, ohm/sq	ASTM D257	6.5×10^{12}	6.6×10^{12}
Volume resistivity, ohm.cm	ASTM D257	2.9×10^{11}	1.4×10^{11}
Breakdown strength, AC, kV/mm (V/mil)	ASTM D149, Method B, @ 10%	3.2 (81.4)	1.7 (42.2)
Breakdown strength, DC, kV/mm (V/mil)	ASTM D3755 @ 10%	4.2 (106.5)	2.6 (66.2)
FLAME			
Flame resistance	ASTM D4986 (self extinguishing)	Pass	
Glow wire test, GWFI, C	IEC 60695	650	

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.

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Saint-Gobain Tape Solutions

North America | South America | Europe | Asia

For a full list of locations, please visit
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