

PF45 SERIES

Norseal PF45 Series, Micro-Cellular Polyurethane Foams

The **Norseal**® PF Series are enhanced, micro-cellular polyurethane foam solutions for packaging of pouch and prismatic lithium ion cells. A range of products are available in this line as a result of working on many EV projects of varying designs and functional needs. Importantly, the properties and resulting function of the foam is very consistent over time and consistent over a range of environmental conditions.

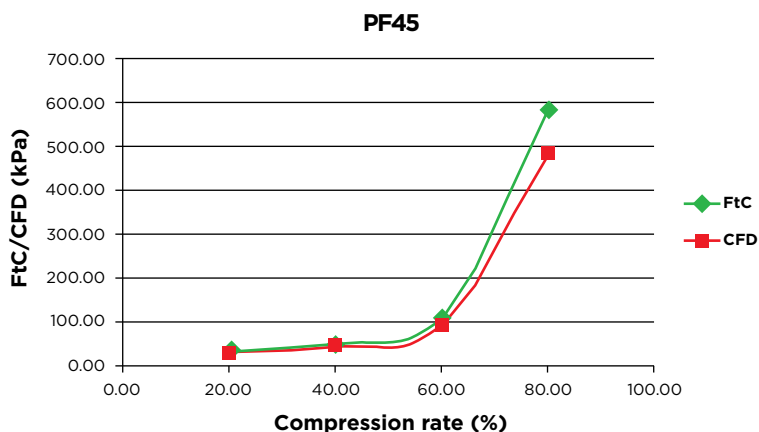
Uniformity of cell temperature and cell pressure is needed for a long battery life. The compressed foam cushion between cells create uniform pressure over the cell surface. The thermal insulation properties of the foam also helps to keep the cell face temperature.

The key to performance is seen in the Compression Force Deflection (CFD) curve. **Norseal** PF cushion pads provide a flat CFD curve over deflection, and this CFD curve remains flat over a range of environmental temperatures and over time.

Norseal PF series is supplied without adhesive.

FEATURES & BENEFITS

- High resiliency performance over complete compression range
- Excellent elastic recovery
- Remains conformable and flexible even at low temperatures
- With or without adhesive
- Easy to die-cut



Norseal PF45 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	PF45
PHYSICAL		
Density, kg/m ³ (lb/cu.ft.)	ASTM D3574	250 (16)
Shrink		<2%
Thickness, mm (in)		2.0 - 2.5 - 3.0 - 3.5 - 4.0 (.08 - .10 - .12 - .14 - .16)
Usable width	-	1360 mm
Standard color	-	Black
Liner	-	Paper
Compression set (@70%), % @23°C (73°F) for 7 days @70°C (158°F) for 7 days	ASTM D1667	<3 <10
Force to compress, kPa (psi) 50 mm / min @30%	ASTM D1667	28-52 kPa (4.1 to 7.5 psi)
Compression force deflection, kPa (psi) @30% deflection	ASTM D1667	20-38 kPa (2.9 to 5.5 psi)
Hardness, durometer, Shore OO	ASTM D2240	40
Water absorption, % wt gain	AMS 3568-b	<4
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
Low temperature cold flex	-40°C w/25 mm mandrel	Pass
ELECTRICAL		
Surface resistivity, ohm/sq	ASTM D257	10 x 10 ¹²
Volume resistivity, ohm.cm	ASTM D257	1.0 x 10 ¹⁴
Dielectric strength, AC, volts/mil	ASTM D149, Method B, @10%	49
Dielectric strength DC, volt/mil	ASTM D3755 @50% @10%	321 157
Dielectric breakdown DC, KV	ASTM D3755 @50%	23
Dielectric constant	ASTM D150 @1Khz	2.2
FLAME		
Flame resistance	ASTM D4986 (self extinguishing)	Pass
Glow wire test, GWFI, C	IEC 60695	650

**Performance Plastics - Tape Solutions**

North America | South America | Europe | Asia

For a full list of locations, please visit
tapesolutions.saint-gobain.com/contact-us

IMPORTANT: It is the user's responsibility to ensure the suitability and safety of Saint-Gobain Performance Plastics products for all intended uses and that the materials to be used comply with all applicable regulatory requirements. Saint-Gobain Performance Plastics assumes no responsibility for any product failures that occur due to misuse of the materials it provides arising out of the design, fabrication or application of the products into which the materials are incorporated.

WARRANTY: For a period of 6 months, Saint-Gobain Performance Plastics warrants this product(s) to be free from defects in manufacturing. The only obligation under any applicable product warranty will be to replace any portion proving defective, or at our option, to refund the purchase price thereof. SAINT-GOBAIN PERFORMANCE PLASTICS DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Form #1028 | © Saint-Gobain September 2018 | Norseal and Saint-Gobain are trademarks of Saint-Gobain.