



**PORON 4701-40 SOFT**

**MATERIAL SPECIFICATION SHEET**

Excellent compression set resistance which enables durable, long-term performance for gaskets, sealing and cushioning. Low-outgassing and non-fogging, containing no plasticizers or residual chemicals to contaminate the device. The material will not become brittle and crumble and is non-corrosive to metal. Inherently flame retardant without the use of additives. Many of the materials meet flammability requirements of UL HBF and MVSS 302. Engineered urethane formulations offering a wide modulus range - 2-90 psi @ 25% deflection – for more design versatility requirements. Good chemical resistance. Easy to fabricate, die-cuts cleanly and works with a broad range of adhesives

PROPERTY	TEST METHOD	VALUE		
<b>PHYSICAL</b>				
Density, lb./ft3 (kg/m3) Tolerance, %	ASTM D 3574-95, Test A	15 (240)	20 (320)	30 (480)
		+/- 10		
Thickness, inches (mm) Tolerance, %		0.188 – 0.500 (4.78 – 12.70)	0.062 – 0.125 (1.57 – 3.18)	0.031 – 0.045 (0.79 – 1.14)
		+/- 10		+/-20
Standard Colour (Code)		Black (04)		
Compression Force Deflection, psi (kPa) Typical psi (kPa)	0.2"/min. Strain Rate Forced Measured @ 25% Deflection	4 – 8 (27 – 55) 5 (41)	7 – 13 (48 – 90) 11 (76)	15 – 40 (104 – 276) 25 (173)
Hardness, Durometer, Shore "O", Shore "A"	ASTM D 2240-97	12 8	17 12	34 25
Compression Set, % max.	ASTM D 1667-90 Test D @ 73oF (23oC) ASTM D 3574-95 Test D @ 158of (70oC) ASTM D 3574-95 Test J/Test D Autoclaved 5 hrs @ 250oF (121oC)	10 5	5	
Dimensional Stability, % max. change	22 hrs @ 176oF (80oC) in forced-air oven	+/- 1		
Tensile Strength, Min. psi (kPa), Typical psi (kPa)	ASTM D 3574-75 Test E	40 (276) 70 (484)	75 (518) 95 (657)	120 (829) 170 (1175)
Tensile Elongation, % min., Typical	ASTM D 3574-75 Test E	100 160	100 155	100 145
Tear Strength, Min. pli (kN/m), Typical pli (kN/m)	ASTM D 264-91 Die C	3 (0.5) 9 (1.6)	5 (0.9) 12 (2.1)	12 (2.1) 17 (3.0)
<b>ELECTRICAL AND THERMAL</b>				
Dielectric Constant, K' ("DK")	ASTM D 150 measurements at 72oF (22oC) relative humidity 50% for 24 hrs.	1.71		
Dielectric Strength, volts/mil	ASTM D 149-97a	50		
Dissipation Factor, tan D ("DF")	ASTM D 150-98	0.05		



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PROPERTY	TEST METHOD	VALUE		
Volume Resistivity, ohm-cm	ASTM S 257-99	1 X 10 <sup>12</sup>		
Surface Resistivity, ohm/sq.	ASTM D 257-99	2 X 10 <sup>12</sup>		
Thermal Conductivity, W/m-C (BTU-in./hr/ft <sup>2</sup> -F)	ASTM C 518-98	0.086 (0.60)		
Coefficient of Thermal Expansion		2.3 – 3.1 x 10 <sup>-4</sup> in./in./°C		
Density, lb./ft <sup>3</sup> (kg/m <sup>3</sup> )	ASTM D 3574-95, Test A	15 (240)	20 (320)	30 (480)
<b>TEMPERATURE RESISTANCE</b>				
Recommended Constant Use, max.	SAE J-2236	194°F (90°C)		
Recommended Intermittent Use, max.	ASTM D 746-98	250°F (121°C)		
Embrittlement	ASTM D 746-98	-40°F (-40°C)		
Cold Flexibility	MIL-P-12420D 1991 @ -40°F (40°C)	Pass		
<b>FLAMMABILITY AND OUTGASSING</b>				
Flammability	UL 94HBF (File E20305) (Pass ≥) MVSS 302 (Pass ≥) CSA Comp HBF (File 188149) (Pass ≥)	0.188" 0.188" 0.188"	0.062" 0.062" 0.062"	- - -
Fogging	SAE J-1756 3 hrs @ 212°F (100°C)	Pass	Pass	-
Outgassing, Total Mass Loss (TML) %	ASTM E 595-93 24 hrs @ 257°F (125°C) @ <7x10 <sup>3</sup> Pa	0.7	0.8	1.0
Outgassing, Collected Volatile Condensable Materials (CVCM) % Outgassing, Water Vapor Regain (WVR) %		0.04 0.3	0.04 0.3	0.05 0.62
<b>ENVIRONMENTAL</b>				
Gasket and Sealing	UL JMST2 (Consisting of UL50 and UL508) CAN/CSA – C22.2 No. 94-M91	File MH15464 File 188149		-
Water Absorption, High Humidity Exposure, % weight gain, typical	AMS 3568-95	2	2	-
Water Absorption, Immersion Testing, % weight gain, typical	ASTM D 570-95	19	10	-
UV Resistance	ASTM G 53-96	Good	Good	-
Ozone Resistance	GM 4486P-95	Pass	Pass	-
Corrosion Resistance	AMS 3568-91	Pass	Pass	-
Mildew/Bacteria Resistance	ASTM G 21	Good		
Staining	ASTM D 925	No Stain		
Skin Contact Irritation	Primary Skin Irritation Test	Pass		



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