

**TYPICAL PROPERTIES of VESPEL®**

ASTM or UL test	Property	SP-1	SP-21	SP-22	SP-211	SP-3
-	Filler Material	Unfilled	15% Graphite	40% Graphite	10% PTFE, 15% Graphite	15% Moly
<b>PHYSICAL</b>						
D792	Density (lb/in <sup>3</sup> ) (g/cm <sup>3</sup> )	0.051 1.43	0.055 1.51	0.060 1.65	0.056 1.55	0.058 1.60
D570	Water Absorption, 24 hrs @ 73°F (%) 48 hrs @ 122°F (%)	0.24 0.72	0.19 0.57	0.14 0.42	0.21 0.49	0.23 0.65
<b>MECHANICAL</b>						
D638	Tensile Strength, Ultimate @ 73°F (psi) @ 500°F (psi)	12,500 6,000	9,500 5,500	7,500 3,400	6,500 3,500	8,200 -
D638	Tensile Modulus (psi)	-	-	-	-	-
D638	Tensile Elongation, Ultimate @ 73°F (%) @ 500°F (%)	7.5 6.0	4.5 6.0	3.0 2.0	3.5 3.0	4.0 -
D790	Flexural Strength, Ultimate @ 73°F (psi) @ 500°F (psi)	16,000 9,000	16,000 9,000	13,000 6,500	10,000 5,000	11,000 5,500
D790	Flexural Modulus @ 73°F (psi) @ 500°F (psi)	450,000 250,000	550,000 370,000	700,000 400,000	450,000 200,000	475,000 270,000
D695	Compressive Strength, 10% strain @ 73°F (psi)	19,300	19,300	16,300	14,800	18,500
D695	Compressive Modulus (psi)	350,000	420,000	475,000	300,000	350,000
D785	Hardness, Rockwell	E45-60	E25-45	E5-25	E1-20	E40-55
D256	IZOD Notched Impact (ft-lb/in)	0.8	0.8	-	-	0.4
	Poisson's Ratio	0.4	0.4	-	-	-
<b>THERMAL</b>						
D696	Coefficient of Linear Thermal Expansion (x 10 <sup>-5</sup> in./in./°F)	3.0	2.7	2.1	3.0	2.9
D648	Heat Deflection Temp (°F / °C) at 264 psi	680 / 360	680 / 360	-	-	-
-	Max Continuous Operating Temp (°F / °C)	500 / 260	500 / 260	500 / 260	500 / 260	500 / 260
C177	Thermal Conductivity (BTU-in/ft <sup>2</sup> -hr-°F) (x 10 <sup>-4</sup> cal/cm-sec-°C)	2.0 6.9	6.0 20.7	12.0 41.3	5.3 18.3	3.2 11.0
UL94	Flammability Rating	V-0	V-0	V-0	V-0	V-0
<b>ELECTRICAL</b>						
D149	Dielectric Strength (V/mil) short time, 1/8" thick	560	250	-	-	-
D150	Dielectric Constant at 1 MHz	3.55	13.2	-	-	-
D150	Dissipation Factor at 1 MHz	0.0034	0.0106	-	-	-
D257	Volume Resistivity (ohm-cm) at 50% RH	10 <sup>14</sup> - 10 <sup>15</sup>	10 <sup>12</sup> - 10 <sup>13</sup>	-	-	-

NOTE: The information contained herein are typical values intended for reference and comparison purposes only. They should NOT be used as a basis for design specifications or quality control. Contact us for manufacturers' complete material property datasheets.

All values at 73°F (23°C) unless otherwise noted.

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