

TYPICAL PROPERTIES OF VESPEL® POLYIMIDE

| 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 |
| PHYSICAL | | | | | | |
| D792 | Density (lb/in ³) (g/cm ³) | 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 |
| MECHANICAL | | | | | | |
| 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) | 19,000 | 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 | - | - | - |
| THERMAL | | | | | | |
| D696 | Coefficient of Linear Thermal Expansion (x 10 ⁻⁵ 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 ² -hr-°F) (x 10 ⁻⁴ 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 |
| ELECTRICAL | | | | | | |
| D149 | Dielectric Strength (V/mil) short time, .08" 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 ¹⁴ - 10 ¹⁵ | 10 ¹² - 10 ¹³ | - | - | - |

These products are available from



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