

# DuPont™ Vespel® SCP-5000

## Polyimide Isostatic Shapes

### Typical ISO Properties

DuPont™ Vespel® SCP-5000 is an unfilled polyimide polymer that offers high modulus and surface hardness and improved dimensional stability. Compared to traditional polyimides, it offers better strength and stiffness at high temperatures.

*The typical values presented below are preliminary results and are subject to revision.*

Mechanical Properties	Temperature	Test Method	Units	Typical Values
Tensile Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-638 D-1708 Specimen	MPa (kpsi)	163 (23.6) 62 (9.0)
Tensile Elongation	23 °C (73 °F) 260 °C (500 °F)	ASTM D-638 D-1708 Specimen	%	7.5 49
Young's Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-638 D-1708 Specimen	MPa (kpsi)	3,990 (580) 2,370 (340)
Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (kpsi)	254 (36.8) 96.5 (14.0)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (kpsi)	5,760 (836) 3,007 (436)
Compressive Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	640 (92.9) 549 (79.6)
Compressive Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	9,060 (1,314) 3,698 (536)
Compressive Stress at 10% Strain	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	230 (33.4) 73.6 (10.7)
Deformation Under Load 24 hr, 14 MPa (2 kpsi)	23 °C (73 °F)	ASTM D-621	% deformation	0.05
Rockwell "E" Hardness	—	ASTM D-785	—	95
Thermal Properties				
Coefficient of Thermal Expansion	23 °C–300 °C (73 °F–572 °F)	ASTM E-831	m/m·°C or m/m·K (in/in·°F)	45 x 10 <sup>-6</sup> (26 x 10 <sup>-6</sup> )
Specific Heat	60 °C (140 °F)	ASTM E-1269	J/kg °C (Btu/lb °F)	9.2 x 10 <sup>5</sup> (0.22)



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Electrical Properties	Temperature	Test Method	Units	Typical Values
Dielectric Constant, 10 <sup>4</sup> Hz 10 <sup>6</sup> Hz	23 °C (73 °F)	ASTM D-150	—	3.3
				3.3
Dielectric Factor, 10 <sup>4</sup> Hz 10 <sup>6</sup> Hz	23 °C (73 °F)	ASTM D-150	—	0.001
				0.001
Volume Resistivity	23 °C (73 °F)	ASTM D-257	Ohm-m	10 <sup>14</sup>
Surface Resistivity	23 °C (73 °F)	ASTM D-257	Ohm-m	10 <sup>15</sup>
Wear Properties				
Coefficient of Friction, Unlubricated, Air	0.7 m/s (134 fpm)	1.3 MPa (187 psi)	Falex	0.26
	2.0 m/s (400 fpm)	1.7 MPa (250 psi)		0.15
Other Properties				
Specific Gravity	—	ASTM D-792	—	1.46
Water Absorption after 24 hr	23 °C (73 °F)	ASTM D-570	% weight change	0.08

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Contact DuPont at the following regional locations:

**North America**  
800-222-8377

**Latin America**  
+0800 17 17 15

**Europe, Middle East, Africa**  
+41 22 717 51 11

**Greater China**  
+86-400-8851-888

**ASEAN**  
+65-6586-3688

**Japan**  
+81-3-5521-8484

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