

DuPont™ Vespel® SCP-5050

Polyimide Shapes

Typical Properties

DuPont™ Vespel® SCP-5050 parts and shapes improve high temperature performance and wear resistance to allow for the replacement of metal and graphite parts. Vespel® SCP-5050 parts and shapes enable more efficient and durable systems, increased performance and reduced maintenance costs. SCP-5050 has a Coefficient of Thermal Expansion (CTE) similar to steel.

Some data presented below are based on limited production runs and are subject to revision as new knowledge and experience become available.

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)	72 (10.5) 38 (5.6)
Tensile Elongation	23 °C (73 °F) 260 °C (500 °F)	ASTM D-638 D-1708 Specimen	%	2.5 5.3
Young's Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-638 D-1708 Specimen	MPa (kpsi)	8,928 (1,295) 2,931 (425)
Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (kpsi)	130 (19) 73 (11)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-790	MPa (kpsi)	7,800 (1,130) 5,080 (740)
Compressive Strength	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	219 (32) 240 (35)
Compressive Modulus	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	2,997 (435) 3,138 (455)
Compressive Stress at 10% Strain	23 °C (73 °F) 260 °C (500 °F)	ASTM D-695	MPa (kpsi)	172 (25.0) 184 (26.7)
Rockwell "E" Hardness	—	ASTM D-785	—	63
Deformation Under Load 24 hr, 14 MPa (2 kpsi)	23 °C (73 °F)	ASTM D-621	% deformation	0.03
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)	29 x 10 ⁻⁶ (16 x 10 ⁻⁶)
Specific Heat	60 °C (140 °F)	ASTM E-1269	J/kg °C (Btu/lb °F)	920 (0.22)
Other Properties				
Specific Gravity	—	ASTM D-792	—	1.76
Water Absorption after 24 hr	23 °C (73 °F)	ASTM D-570	% weight change	0.04

*Plaque CTE is 45 x 10⁻⁶ m/m·°C (25 x 10⁻⁶ in/in·°F) in the z direction and 16 x 10⁻⁶ m/m·°C (9 x 10⁻⁶ in/in·°F) in the x, y plane.



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(07/09) Reference No. VPE-A10986-00-A0711 Previous Reference No. K-21996



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