

DuPont™ Vespel® SCP-50094

Polyimide Isostatic Shapes

Typical ISO Properties

DuPont™ Vespel® SCP-50094 is a proprietary polymer. It is designed for demanding applications that require high temperature and wear resistance.

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

Mechanical Properties	Temperature	Pressure	Test Method	Units	Typical Values
Tensile Strength	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-638 D-1708 Specimen	MPa (kpsi)	124 (18.0) 55 (8.0)
Tensile Elongation	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-638 D-1708 Specimen	%	4.3 13
Young's Modulus	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-638 D-1708 Specimen	MPa (kpsi)	4,140 (600) 2,350 (340)
Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-790	MPa (kpsi)	200 (29) 96 (14)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-790	MPa (kpsi)	6,370 (923) 3,540 (514)
Compressive Strength	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-695	MPa (kpsi)	385 (56) 450 (65)
Compressive Strain, Ultimate	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-695	MPa (kpsi)	41 63
Compressive Stress at 10% Strain	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-695	MPa (kpsi)	220 (31.9) 81 (11.7)
Deformation Under Load after 24 hours	23 °C (73 °F)	14 MPa (2.5 kpsi)	ASTM D-621	% deformation	0.05
Compressive Creep, 10 hr 100 hr 1000 hr	23 °C (73 °F)	10 MPa (1.5 kpsi)	ASTM D-2990	%	0.02 0.02 0.05
Compressive Creep, 10 hr 100 hr 1000 hr	23 °C (73 °F)	14 MPa (2.5 kpsi)	ASTM D-2990	%	0.03 0.05 0.07
Rockwell "E" hardness	—	—	ASTM D-785	—	91
Poisson's Ratio	23 °C (73 °F) 260 °C (500 °F)	—	ASTM D-638	—	0.34 0.34

continued



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Thermal Properties	Temperature	Pressure	Test Method	Units	Typical Values
Coefficient of Thermal Expansion Parallel Perpendicular	50–150 °C (122–302 °F)	—	ASTM E-831	m/m·°C or m/m·K (in/in·°F)	42.7 x 10 ⁻⁶ (23.7 x 10 ⁻⁶)
Thermal Conductivity	50 °C (122 °F) 100 °C (212 °F) 300 °C (572 °F)	—	ASTM F-433	W/m·K (Btu/hr-in °F)	0.59 (0.03) 0.66 (0.03) 0.58 (0.03)
Specific Heat	60 °C (140 °F)	—	ASTM E-1269	J/kg·°C (Btu/lb·°F)	9.2 x 10 ⁵ (0.22)
Wear Properties	Velocity	Pressure	Test Method	Units	Typical Values
Coefficient of Friction, Unlubricated, Air 0.88 (25K) PV 3.50 (100K) PV 10.50 (300K) PV	0.7 m/s (134 fpm) 2.0 m/s (400 fpm) 3.0 m/s (585 fpm)	1.3 MPa (187 psi) 1.7 MPa (250 psi) 3.5 MPa (500 psi)	Falex	—	0.25 0.07 0.11
Wear Factor, Unlubricated, Air 0.88 (25K) PV 3.50 (100K) PV 10.50 (300K) PV	0.7 m/s (134 fpm) 2.0 m/s (400 fpm) 3.0 m/s (585 fpm)	1.3 MPa (187 psi) 1.7 MPa (250 psi) 3.5 MPa (500 psi)	Falex	mm-sec/MPa-m-hr (in ³ -min/ft-lb-hr)	1.7 x 10 ⁻³ (24 x 10 ⁻¹⁰) 0.8 x 10 ⁻³ (11 x 10 ⁻¹⁰) 1.2 x 10 ⁻³ (17 x 10 ⁻¹⁰)
Other Properties	Temperature	Time	Test Method	Units	Typical Values
Specific Gravity	23 °C (73 °F)	—	ASTM D-792	—	1.50
Water Absorption	23 °C (73 °F)	24 hr	ASTM D-570	% weight change	0.06

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