DuPont™ Vespel® SCP-50094

POLYIMIDE DIRECT FORMED PARTS

TYPICAL DF PROPERTIES

DuPont™ Vespel® SCP-50094 is a proprietary polymer. It is designed for demanding applications that require extensive toughness and chemical resistance.

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

DuPont™ Vespel® SCP-50094 Direct Form					
Mechanical Property	**Temperature**	**Pressure**	**ASTM Method**	**SI (English) Units**	**Typical Properties**
Tensile Strength	23°C (73°F) 260°C (500°F)	—	D-638 Method/ E-8 Specimen	MPa (kpsi)	88 (12.8) 45 (6.6)
Elongation	23°C (73°F) 260°C (500°F)	—	D-638 Method/ E-8 Specimen	%	2.1 4.6
Young's Modulus	23°C (73°F) 260°C (500°F)	—	D-638 Method/ E-8 Specimen	MPa (kpsi)	6490 (941) 3720 (539)
Compressive Strength	23°C (73°F) 260°C (500°F)	—	D-695	MPa (kpsi)	170 (24.7) 77 (11.2)
Compressive Strain, Ultimate	23°C (73°F) 260°C (500°F)	—	D-695	%	18 31
Compressive Stress at 10% Strain	23°C (73°F) 260°C (500°F)	—	D-695	MPa (kpsi)	168 (24.4) 64 (9.3)
Flexural Modulus	23°C (73°F) 260°C (500°F)	—	D-790	MPa (kpsi)	5170 (750) 2700 (392)
Flexural Strength	23°C (73°F) 260°C (500°F)	—	D-790	MPa (kpsi)	109 (15.8) 69 (10.0)
Poisson's Ratio	23°C (73°F) 190°C (374°F)	—	D-638		0.25 0.32
Rockwell "E" Hardness	23°C (73°F)	—	D785		70.4
Specific Gravity	23°C (73°F)	—	D-792		1.44
Deformation Under Load, 10 minutes Permanent Deformation	23°C (73°F)	14 MPa (2.0 kpsi)	D-621	%	 0.03 0.04
Compressive Creep, 10 hours 100 hours 1000 hours	23°C (73°F)	10 MPa (1.5 kpsi)	D-2990	%	0.02 0.03 0.05
Compressive Creep, 10 hours 100 hours 1000 hours	23°C (73°F)	14 MPa (2.5 kpsi)	D-2990	%	0.04 0.06 0.09
Water Absorption	23°C (73°F)	—	D-570	% weight change	0.96

continued

DuPont™ Vespel® SCP-50094 Typical DF Properties *continued*

DuPont™ Vespel® SCP-50094 Direct Form					
Thermal Property	**Temperature**	**Pressure**	**ASTM Method**	**SI (English) Units**	**Typical Properties**
Coefficient of Thermal Expansion, Parallel Perpendicular	23–300°C (73–572°F)	—	E-831	m/m°C (in/in°F)	 60.1 x 10^{-6} (33.4 x 10^{-6}) 34.1 x 10^{-6} (18.9 x 10^{-6})
Thermal Conductivity	50°C (122°F) 100°C (212°F) 150°C (302°F) 200°C (392°F) 250°C (482°F) 300°C (572°F)	—	F-433	W/mK (Btu/hr in°F)	0.39 (0.02) 0.40 (0.02) 0.41 (0.02) 0.41 (0.02) 0.41 (0.02) 0.43 (0.02)
Specific Heat	60°C (140°F)	—	DSC	J/kg-°C (Btu/lb-°F)	8.96 x 10^{-5} (0.214)
Heat Deflection Temp. in Tin Bismuth, Parallel Perpendicular		1.8 MPa (0.26 kpsi)	D-648	°C (°F)	 334 (634) 336 (637)
Electrical Property	**Temperature**	**Pressure**	**ASTM Method**	**SI (English) Units**	**Typical Properties**
Dielectric Strength	23°C (73°F)	—	D-149	Volts/mil	413
Volume Resistivity	23°C (73°F)	—	D-257	Ohm·cm (Ohm·in)	2.18 x 10^{16} (8.57 x 10^{15})
Surface Resistivity	23°C (73°F)	—	D-257	Ohm/sq	1.56 x 10^{17} (6.15 x 10^{16})
Dielectric Constant, 10^2 HZ 10^4 HZ 10^6 HZ	23°C (73°F)	—	D-150		5.5 5.4 5.4
Dissipation Factor, 10^2 HZ 10^4 HZ 10^6 HZ	23°C (73°F)	—	D-150		0.002 0.005 0.002
Wear Property	**Velocity**	**Pressure**	**ASTM Method**	**SI (English) Units**	**Typical Properties**
Coefficient of Friction, Unlubricated, Air 25K PV 100K PV 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		 0.253 0.064 0.084
Wear Factor, Unlubricated, Air 25K PV 100K PV 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)	 1.0 x 10^{-3} (13 x 10^{-10}) 0.6 x 10^{-3} (8 x 10^{-10}) 1.2 x 10^{-3} (17 x 10^{-10})

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