



# LEHIGH VALLEY PLASTICS

We Shape The Industry

## DuPont™ Vespel® SP-1

POLYIMIDE ISOSTATIC SHAPES

DuPont™ Vespel® SP-1 parts and shapes are specified for their excellent physical properties, including electrical and thermal insulation at high temperatures. SP-1 is an unfilled polymer.

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

MECHANICAL PROPERTY	TEMPERATURE	ASTM	UNITS	TYPICAL VALUES
Tensile Strength	23°C (73°F)	D-1708	MPa (kpsi)	86.2 (12.5)
	260°C (500°F)	or E8†		41.4 (6.0)
Strain at Break	23°C (73°F)	D-1808	%	7.5
	260°C (500°F)	or E8†		6.0
Flexural Strength	23°C (73°F)	D-790	MPa (kpsi)	110.3 (16.0)
	260°C (500°F)			62.1 (9.0)
Flexural Modulus	23°C (73°F)	D-790	MPa (kpsi)	3102 (450)
	260°C (500°F)			1724 (250)
Compressive Stress at 1% strain	23°C (73°F)	D-695	MPa(kpsi)	24.8 (3.6)
	23°C (73°F)			133.1 (19.3)
	23°C (73°F)			51.0 (7.4)
Compressive Modulus	23°C (73°F)	D-695	MPa (kpsi)	2413 (350)
Axial Fatigue, Endurance Limit	23°C (73°F)	-	MPa (kpsi)	55.8 (8.10)
	260°C (500°F)			26.2 (3.8)
	23°C (73°F)			42.1 (6.1)
	260°C (500°F)			16.5 (2.4)
Flexural Fatigue, Endurance Limit	23°C (73°F)	-	Mpa (kpsi)	65.5 (9.5)
	23°C (73°F)			44.8 (6.5)
Shear Strength	23°C (73°F)	D-732	Mpa (kpsi)	89.6 (13.0)
Izod Notched Impact Strength	23°C (73°F)	D-256	J/m	42.7
Izod Unnotched Impact Strength	23°C (73°F)	D-256	J/m	747
Poisson's Ratio	23°C (73°F)	-	-	0.41
<b>WEAR AND FRICTION</b>				
Wear Rate††	-	-	m/s x 10 <sup>-10</sup>	17 - 85
Friction Coefficient**	-	-	-	0.29
In Vacuum	-	-	-	-
Static in Air	-	-	-	0.35
<b>THERMAL PROPERTY</b>				
Coefficient of Linear Expansion	23°C (73°F) to	D-696	µm/m/°C (in/in/°F)	54(30)
	260°C (500°F)			45(25)
	-62 to +23 (-80 to 73°F)			
Thermal Conductivity	40°C (104°F)	-	W/m·°C	0.35
Specific Heat	-	-	J/kg/°C	1130
Deformation Under 14 MPa Load	50°C (122°F)	D-621	%	0.14
Deflection Temperature at 2 MPa	-	D-648	°C	~360
<b>ELECTRICAL PROPERTY</b>				
Dielectric Constant	23°C (73°F)	D-150	-	3.62
				3.64
				3.55
Dissipation Factor	23°C (73°F)	D-150	-	0.0018
				0.0036
				0.0034

IMPORTANT: The information contained herein is believed to be reliable, but no representations, guarantees or warranties of any kind are made as to its accuracy, suitability for particular applications or the results to be obtained therefrom. Lehigh Valley Plastics, Inc. Will not be held responsible for the use of this information relative to actual application.



ELECTRICAL PROPERTY (CONT.)	TEMPERATURE	ASTM	UNITS	TYPICAL VALUES
Dielectric Strength, Short Time 2MM Thick	23°C (73°F)	D-149	MV/m	22 (3.20)
Volume Resistivity	23°C (73°F)	D-257	$\Omega \cdot m$	$10^{14}$ - $10^{15}$
Surface Resistivity	23°C (73°F)	D-257	$\Omega$	$10^{15}$ - $10^{16}$
OTHER PROPERTIES				
Water Absorption				
24 h	23°C (73°F)	D570	%	0.24
48 h	50°C (122°F)			0.72
Equilibrium, 50% RH				1.0-1.3
Specific Gravity	-	D792	-	1.43
Oxygen Index	-	D2863	%	53

† Machined isostatic tensile specimens made per D1708

†† Unlubricated in air (PV 0.875 MPa-m/s).

\*\* Steady state, unlubricated in air.

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