



15% Graphite Filled Polyimide

Other Trade Names: Vespel® SP21, Tecasint® 1021
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Applications: High Temperature, High Speed Bearings and wear components. Capable of speeds up to 800 FPM and independent laboratory tests showing tribological performance up to an impressive 400,000 Max PV Value.

Mechanical Property	Temperature	ASTM	Units	Typical Values
Tensile Strength	23 °C (73 °F) 260 °C (500 °F)	D-1708 or E8 [†]	MPa (kpsi)	65.5 (9.5) 37.9 (5.5)
Strain at Break	23 °C (73 °F) 260 °C (500 °F)	D-1708 or E8 [†]	%	4.5 3.0
Flexural Strength	23 °C (73 °F) 260 °C (500 °F)	D-790	MPa (kpsi)	110.3 (16.0) 62.0 (9.0)
Flexural Modulus	23 °C (73 °F) 260 °C (500 °F)	D-790	MPa (kpsi)	3792 (550) 2551 (370)
Compressive Stress at 1% strain at 10% strain at 0.1% strain	23 °C (73 °F) 23 °C (73 °F) 23 °C (73 °F)	D-695	MPa (kpsi)	29.0 (4.2) 133.1 (19.3) 45.5 (6.6)
Compressive Modulus	23 °C (73 °F)	D-695	MPa (kpsi)	2895 (420)
Axial Fatigue, Endurance Limit at 10 ³ cycles at 10 ⁷ cycles	23 °C (73 °F) 260 °C (500 °F) 23 °C (73 °F) 260 °C (500 °F)	—	MPa (kpsi)	46.2 (6.7) 22.8 (3.3) 32.4 (4.7) 16.5 (2.4)
Flexural Fatigue, Endurance Limit at 10 ³ cycles at 10 ⁷ cycles	23 °C (73 °F) 23 °C (73 °F)	—	MPa (kpsi)	65.5 (9.5) 44.8 (6.5)
Shear Strength	23 °C (73 °F)	D-732	MPa (kpsi)	77.2 (11.2)
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	320
Poisson's Ratio	23 °C (73 °F)	—	—	0.41
Wear and Friction				
Wear Rate ^{††}	—	—	m/s x 10 ⁻¹⁰	6.30
Friction Coefficient ^{**} PV = 0.875 MPa·m/s PV = 3.5 MPa·m/s	—	—	—	0.24 0.12
Max Limiting PV	—	—	—	400,000
Static in Air	—	—	—	0.30

Thermal Property	Temperature	ASTM	Units	Typical Values
Coefficient of Linear Expansion	23 °C (73 °F) to 260 °C (500 °F) -62 to +23 (-80 to 73 °F)	D-696	µm/m/°C (in/in/°F)	49 (27) 34 (19)
Thermal Conductivity	40 °C (104 °F)	—	W/m·°C	0.87
Specific Heat	—	—	J/kg/°C	—
Deformation Under 14 MPa Load	50 °C (122 °F)	D-621	%	0.10
Deflection Temperature at 2 MPa	—	D-648	°C	~360
Electrical Property				
Dielectric Constant at 10 ² Hz at 10 ⁴ Hz at 10 ⁶ Hz	23 °C (73 °F)	D150	—	13.53 13.28 13.41
Dissipation Factor at 10 ² Hz at 10 ⁴ Hz at 10 ⁶ Hz	23 °C (73 °F)	D150	—	0.0053 0.0067 0.0106
Dielectric Strength, Short Time 2 mm Thick	23 °C (73 °F)	D149	MV/m	9.84 (1.4)
Volume Resistivity	23 °C (73 °F)	D257	Ω·m	10 ¹² -10 ¹³
Surface Resistivity	23 °C (73 °F)	D257	Ω	—
Other Properties				
Water Absorption 24 h 48 h Equilibrium, 50% RH	23 °C (73 °F) 50 °C (122 °F)	D570	%	0.19 0.57 0.8-1.1
Specific Gravity	—	D792	—	1.51
Oxygen Index	—	D2863	%	49

† Machined isotstic tensile specimens made per D1708

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

** Steady state, unlubricated in air.



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