

# Technical Data Sheet



## PI

(Vespel SP-1) Polyimide

Mechanical properties	Temperature	Unit	Typical values
Tensile strength	23 °C (73 °F)	MPa	86.2 (12.5)
	260 °C (500 °F)		41.4 (6.0)
Strain at break	23 °C (73 °F)	%	7.5
	260 °C (500 °F)		6.0
Flexural strength	23 °C (73 °F)	MPa	110.3 (16.0)
	260 °C (500 °F)		62.1 (9.0)
Flexural modulus	23 °C (73 °F)	MPa	3102 (450)
	260 °C (500 °F)		1724 (250)
Compressive Stress at 1 % strain at 10 % strain at 0.1 % offset	23 °C (73 °F)	MPa	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)	MPa	2413 (350)
Axial Fatigue, Endurance Limit at 10 <sup>3</sup> cycles  at 10 <sup>7</sup> cycles	23 °C (73 °F)	MPa	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 at 10 <sup>3</sup> cycles at 10 <sup>7</sup> cycles	23 °C (73 °F)	MPa	65.5 (9.5)
	23 °C (73 °F)		44.8 (6.5)
Shear Strength	23 °C (73 °F)	MPa	89.6 (13.0)
Izod Notched Impact Strength	23 °C (73 °F)	J/m	42.7
Izod Unnotched Impact Strength	23 °C (73 °F)	J/m	747
Possion'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 PV= 0,875 Mpa * m/s PV= 3,5 Mpa* m/s	---	---	0.29
In Vacuum	---	---	---
Static in Air	---	---	0.35
<b>Thermal properties</b>			
Coefficient of linear thermal expansion	23 ° C (73 °F) to 260 °C (500 °F)	µm/m/°C (in/in/°F)	54 (30)
	-62 to +23 °C (-80 to 73 °F)		45 (25)
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)	%	0.14
Deflection Temperature at 2 MPa	---	°C	~ 360

<b>Electrical properties</b>			
Dielectric constant			
at 10 <sup>2</sup> Hz			3.62
at 10 <sup>4</sup> HZ	23 °C (73 °F)	---	3.64
at 10 <sup>6</sup> HZ			3.55
Dissipation Factor			
at 10 <sup>2</sup> Hz			0.0018
at 104 HZ	23 °C (73 °F)	---	0.0036
at 106 HZ			0.0034
Dielectric strength, Short Time 2 mm Thick	23 °C (73 °F)	MV/m	22 (3.20)
Volume resistivity	23 °C (73 °F)	Ω·m	10 <sup>14</sup> -10 <sup>15</sup>
Surface resistivity	23 °C (73 °F)	Ω	10 <sup>15</sup> -10 <sup>16</sup>
<b>Other properties</b>			
Water absorption			
24 h			0.24
48 h	23 °C (73 °F) 50 °C (122 °F)	%	0.72
Equilibrium, 50 % RH			1.0 - 1.3
Specific gravity	---	---	1,43
Oxygen Index	---	%	53

The information provided in this data sheet corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials, additives or pigments or in any process, unless expressly indicated otherwise.

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