

TECASINT 2011 natural - Stock Shapes (rods, plates, tubes)

Chemical Designation

PI (Polyimide)

Colour

brown

Density

1.38 g/cm³

Main features

- very good thermal stability
- high thermal and mechanical capacity
- low outgassing
- very good electrical insulation
- resistance against high energy radiation
- good chemical resistance
- high creep resistance
- sensitive to hydrolysis in higher thermal range

Target Industries

- mechanical engineering
- precision engineering
- aircraft and aerospace technology
- cryogenic engineering
- electronics
- electrical engineering
- semiconductor technology
- vacuum technology

<i>Mechanical properties</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</i>	<i>comment</i>
Tensile strength	0.40 inch/min	138	MPa	ASTM D 638	(1) eU (2) eA
Modulus of elasticity (tensile test)	0.04 inch/min	3794	MPa	ASTM D 638	(3) Specimen in 4mm thickness
Elongation at break (tensile test)	0.40 inch/min	8.9	%	ASTM D 638	
Flexural strength	0.54 inch/min	193	MPa	ASTM D 790	
Modulus of elasticity (flexural test)	0.54 inch/min	3776	MPa	ASTM D 790	
Compression strength	0.05 inch/min, 10% strain	192	MPa	ASTM D 695	
Compression modulus	0.05 inch/min	3781	MPa	ASTM D 695	
Impact strength (Charpy)	max 7.5 J	87.9	kJ/m ²	DIN EN ISO 179-1	1)
Notched impact strength (Charpy)	max 7.5 J	9.3	kJ/m ²	DIN EN ISO 179-1	2)
Shore hardness	Shore D	90		DIN EN ISO 868	
Ball indentation hardness		260	MPa	ISO 2039-1	3)
<i>Thermal properties</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</i>	<i>comment</i>
Glass transition temperature		666	°F	-	1)
Heat distortion temperature	1.80 MPa	606	°F	DIN 53 461	(1) DMA, maximum loss factor tan d (2) Thermal expansion XY/Z axis
Thermal expansion (CLTE)	122-392°F	44 / 43	10 ⁻⁶ K ⁻¹	DIN 53 752	2)
Thermal expansion (CLTE)	392-572°F	51 / 51	10 ⁻⁶ K ⁻¹	DIN 53 752	3) Thermal expansion XY/Z axis
Specific heat		0.925	J/(g*K)	-	
Thermal conductivity	104°F	0.22	W/(K*m)	ISO 8302	
<i>Electrical properties</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</i>	<i>comment</i>
surface resistivity	73°F	10 ¹⁵	Ω	DIN IEC 60093	
volume resistivity	73°F	10 ¹⁵	Ω*cm	DIN IEC 60093	
Electric strength DC	73°F	34.3	kV*mm ⁻¹	ISO 60243-1	
Dielectric constant	100 Hz	3.5		DIN VDE 0303	
Dielectric constant	1 kHz	3.5		DIN VDE 0303	
Dielectric constant	10 kHz	3.4		DIN VDE 0303	
Dielectric constant	100 kHz	3.4		DIN VDE 0303	
<i>Other properties</i>	<i>condition</i>	<i>value</i>	<i>unit</i>	<i>test method</i>	<i>comment</i>
Water absorption	24 h in water, 73°F	0.47	%	DIN EN ISO 62	(1) Corresponding means no listing at UL (yellow card). The information might be taken from resin, stock shape or estimation. Individual testing regarding application conditions is mandatory.
Water absorption	24 h in water, 176°F	1.65	%	DIN EN ISO 62	
Outgassing in high vacuum		passed		ECSS-Q-70-02	
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)
Oxygen Index		51		EN ISO 4589-2	

→ TECASINT 2000 series show significant water uptake. Parts have to be pre-dried before fast heating to above 200 °C (drying process: 2 h per 3 mm wall thickness at 150 °C).

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