

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

### Chemical Designation

PI (Polyimide)

### Colour

brown

### Density

1.38 g/cm<sup>3</sup>

### 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
- medical technology
- semiconductor technology
- vacuum technology

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50 mm/min	130	MPa	DIN EN ISO 527-1	(1) eU (2) eA
Modulus of elasticity (tensile test)	1 mm/min	3600	MPa	DIN EN ISO 527-1	(3) Specimen in 4mm thickness
Elongation at break (tensile test)	50 mm/min	8	%	DIN EN ISO 527-1	
Flexural strength	10 mm/min	177	MPa	DIN EN ISO 178	
Modulus of elasticity (flexural test)	2 mm/min	3600	MPa	DIN EN ISO 178	
Compression strength	10 mm/min	470	MPa	EN ISO 604	
Compression strength	10mm/min, 10% strain	170	MPa	EN ISO 604	
Compression modulus	1 mm/min	3430	MPa	EN ISO 604	
Compressive strain at break	10 mm/min	55	%	EN ISO 604	
Impact strength (Charpy)	max 7.5 J	87.9	kJ/m <sup>2</sup>	DIN EN ISO 179-1	1)
Notched impact strength (Charpy)	max 7.5 J	9.3	kJ/m <sup>2</sup>	DIN EN ISO 179-1	2)
Shore hardness	Shore D	90		DIN EN ISO 868	
Ball indentation hardness		260	MPa	ISO 2039-1	3)
Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		352	°C	-	1)
Heat distortion temperature	1.80 MPa	319	°C	DIN 53 461	(1) DMA, maximum loss factor tan d (2) Thermal expansion XY/Z axis
Thermal expansion (CLTE)	50-200°C	4.4 / 4.3	10 <sup>-5</sup> K <sup>-1</sup>	DIN 53 752	2)
Thermal expansion (CLTE)	200-300°C	5.1 / 5.1	10 <sup>-5</sup> K <sup>-1</sup>	DIN 53 752	3) Thermal expansion XY/Z axis
Specific heat		0.925	J/(g*K)	-	
Thermal conductivity	40°C	0.22	W/(K*m)	ISO 8302	
Electrical properties	parameter	value	unit	norm	comment
surface resistivity	23°C	10 <sup>15</sup>	Ω	DIN IEC 60093	
volume resistivity	23°C	10 <sup>15</sup>	Ω*cm	DIN IEC 60093	
Electric strength DC	23°C	34.3	kV*mm <sup>-1</sup>	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	
Other properties	parameter	value	unit	norm	comment
Water absorption	24 h in water, 23°C	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, 80°C	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)

→ 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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