

## TECASINT 5111 natural - Stock Shapes (rods, plates, tubes)

### Chemical Designation

PI (Polyimide)

### Colour

black

### Density

1.33 g/cm<sup>3</sup>

### Main features

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

### Target Industries

- semiconductor technology
- electrical engineering
- aircraft and aerospace technology
- cryogenic engineering
- mechanical engineering
- nuclear and vacuum technology

Mechanical properties	parameter	value	unit	norm	comment
Tensile strength	50 mm/min	140	MPa	DIN EN ISO 527-1	(1) eU
Modulus of elasticity (tensile test)	1 mm/min	3800	MPa	DIN EN ISO 527-1	
Elongation at break (tensile test)	50 mm/min	5.3	%	DIN EN ISO 527-1	
Flexural strength	10 mm/min	205	MPa	DIN EN ISO 178	
Modulus of elasticity (flexural test)	2 mm/min	3600	MPa	DIN EN ISO 178	
Compression strength	10 mm/min	440	MPa	EN ISO 604	
Compressive strain at break	10 mm/min	48	%	EN ISO 604	
Impact strength (Charpy)	max 7.5 J	70	kJ/m <sup>2</sup>	DIN EN ISO 179-1	1)
Shore hardness	Shore D	91		DIN EN ISO 868	

Thermal properties	parameter	value	unit	norm	comment
Glass transition temperature		330	°C	-	1)
Heat distortion temperature	1,8 MPa	335	°C	DIN 53 461	(1) DMA, maximum loss factor tan d
Thermal expansion (CLTE)	50-200 °C	4.6 / -	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	2) axis
Thermal expansion (CLTE)	100-150 °C	4.5 / -	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	3) axis
Thermal expansion (CLTE)	23-100 °C	4.1 / -	10 <sup>-5</sup> K <sup>-1</sup>	DIN EN ISO 11359-1;2	4) axis
Specific heat		1.116	J/(g*K)	DIN EN 821	
Thermal conductivity		0.215	W/(K*m)	DIN EN 821	

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>14</sup>	Ω*cm	DIN IEC 60093	

Other properties	parameter	value	unit	norm	comment
Water absorption	24 h in water, 23 °C	0.82	%	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.
Flammability (UL94)	corresponding to	V0		DIN IEC 60695-11-10;	1)

→ TECASINT 5000 series shows 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).

Our information and statements reflect the current state of our knowledge and shall inform about our products and their applications. They do not assure or guarantee chemical resistance, quality of products and their merchantability in a legally binding way. Our products are not defined for use in medical or dental implants. Existing commercial patents have to be observed. The corresponding values and information are no minimum or maximum values, but guideline values that can be used primarily for comparison purposes for material selection. These values are within the normal tolerance range of product properties and do not represent guaranteed property values. Therefore they shall not be used for specification purposes. Unless otherwise noted, these values were determined by tests at reference dimensions and machined specimen. As the properties depend on the dimensions of the semi-finished products and the orientation in the component (esp. in reinforced grades), the material may not be used without a separate testing under individual circumstances. The customer is solely responsible for the quality and suitability of products for the application and has to test usage and processing prior to use. Data sheet values are subject to periodic review, the most recent update can be found at [www.ensingerplastics.com](http://www.ensingerplastics.com). Technical changes reserved.