

TECHNICAL DATA SHEET

ForTii® F12

Envalior
PPA-GF40 FR(40)

Processing

Injection molding

Granules

Special Characteristics

Flame retardant, Halogen-free, Phosphorus-free

Delivery Form

Product Text

Product Information

40% Glass Reinforced, PA4T, Electro-friendly, Halogen free and free of red phosphorous

ISO 1043 PPA-GF40 FR(40)

ForTii® F12 has excellent balance of stiffness and toughness, suitable for high mechanical loaded application such as power connector or EV parts. F12 has high RTI electrical rating of 140°C at 0.75 mm and shows JEDEC Level 2 performance, enabling SMT process without deformation and low risk on blistering.

Processing/Physical Characteristics	Value	Unit	Standard
Molding shrinkage, parallel	0.3	%	ISO 294-4, 2577
Molding shrinkage, normal	0.85	%	ISO 294-4, 2577
Mechanical Properties	Value	Unit	Standard
Tensile modulus	14000	MPa	ISO 527
Stress at break	170	MPa	ISO 527
Strain at break	1.9	%	ISO 527
Poisson's ratio	0.35		ISO 527
Charpy impact strength, +23°C	65	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	8	kJ/m ²	ISO 179/1eA
Thermal Properties	Value	Unit	Standard
Melting temperature, 10°C/min	325	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	125	°C	ISO 11357-1/-2
Temp. of deflection under load, 1.80 MPa	305	°C	ISO 75-1/-2

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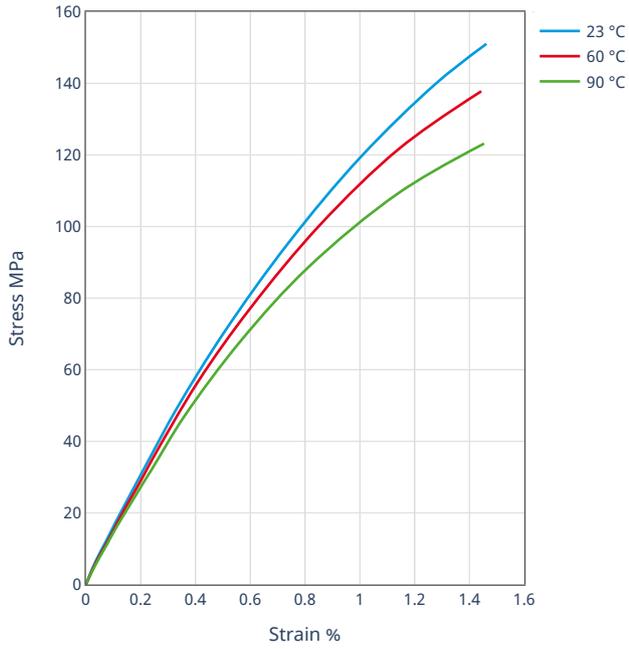
Thermal Properties	Value	Unit	Standard
Temp. of deflection under load, 0.45 MPa	323	°C	ISO 75-1/-2
Burning behav. at 1.5 mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.5	mm	
Yellow card available	yes		
Burning behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	3	mm	
Yellow card available	yes		
Electrical Properties	Value	Unit	Standard
Relative permittivity, 100Hz	4.2		IEC 62631-2-1
Relative permittivity, 1MHz	3.9		IEC 62631-2-1
Dissipation factor, 100Hz	50	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	150	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm*m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	33	kV/mm	IEC 60243-1
Comparative tracking index	600		IEC 60112
Other Properties	Value	Unit	Standard
Water absorption	3.4	%	Sim. to ISO 62
Humidity absorption	1.3	%	Sim. to ISO 62
Density	1550	kg/m ³	ISO 1183
Material Specific Properties	Value	Unit	Standard
Viscosity number	86	cm ³ /g	ISO 307, 1157, 1628

Diagrams

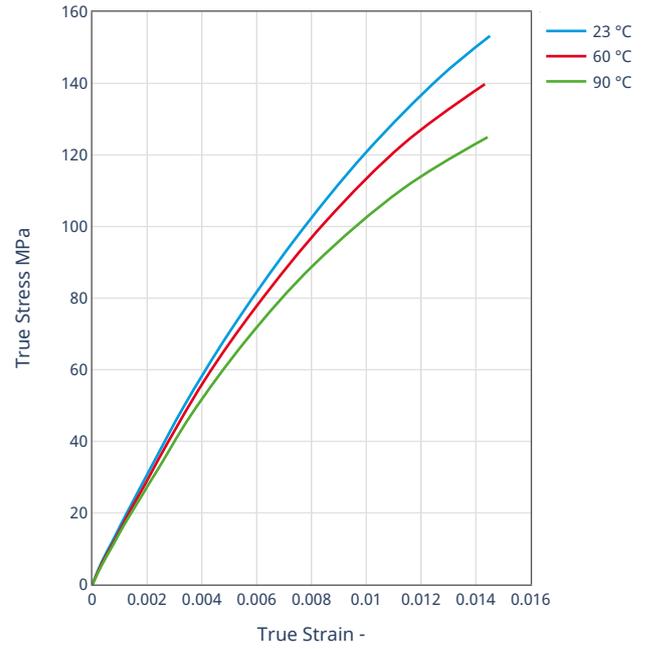
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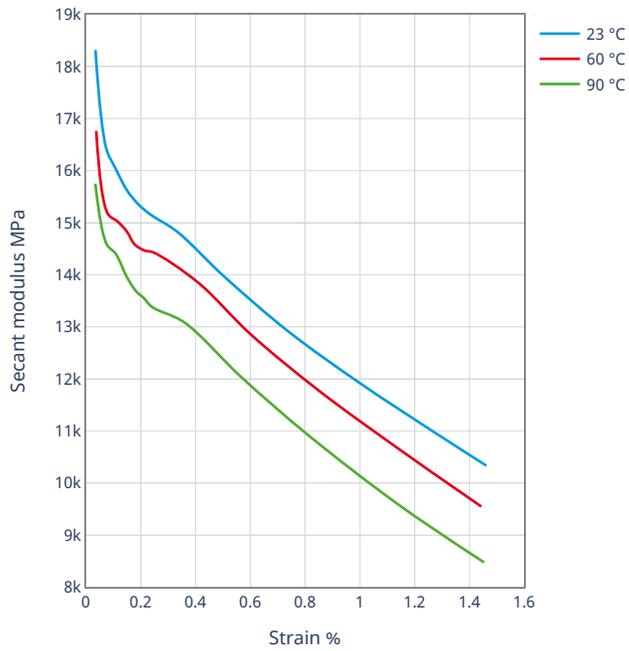
Stress-strain



True stress-true strain



Secant modulus-strain



Processing Information

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Injection molding

Injection Molding Recommendations

Hot runner recommendations for molding high heat performance Engineering Materials

Steel recommendations for molds screws and barrels

Trouble shooting guideline for injection molding