

TECHNICAL DATA SHEET

ForTii® F11

Envalior
PPA-GF30 FR(40)

Processing

Injection molding

Granules

Delivery Form

Special Characteristics

Flame retardant, Halogen-free, Phosphorus-free

Product Text

Product Information

30% Glass Reinforced, PA4T, Electro-friendly, Halogen free and free of red phosphorous, Certified V-0 at 0.2mm

ISO 1043 PPA-GF30 FR(40)

ForTii F11 has an excellent balance in flow, toughness and stiffness, enabling thin walls or complicated geometries for E&E applications. F11 is all-color VDE approved, has a high RTI electrical rating of 140°C at 0.75 mm and a CTI ≥800V rating to secure thermal ageing and electrical performance.

Processing/Physical Characteristics	Value	Unit	Standard
Molding shrinkage, parallel	0.35	%	ISO 294-4, 2577
Molding shrinkage, normal	1.2	%	ISO 294-4, 2577
Mechanical Properties	Value	Unit	Standard
Tensile modulus	11500	MPa	ISO 527
Stress at break	150	MPa	ISO 527
Strain at break	2	%	ISO 527
Poisson's ratio	0.35		ISO 527
Charpy impact strength, +23°C	50	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, +23°C	7.5	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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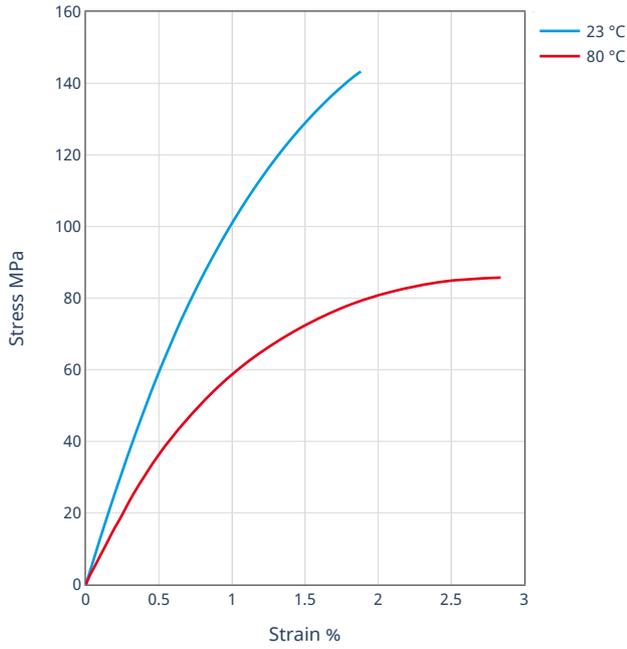
Thermal Properties	Value	Unit	Standard
Temp. of deflection under load, 0.45 MPa	323	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	20	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	65	E-6/K	ISO 11359-1/-2
Burning behav. at 1.5 mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness 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		
Oxygen index	39	%	ISO 4589-1/-2
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	64	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	176	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	4.1	%	Sim. to ISO 62
Humidity absorption	1.6	%	Sim. to ISO 62
Density	1460	kg/m ³	ISO 1183
Material Specific Properties	Value	Unit	Standard
Viscosity number	86	cm ³ /g	ISO 307, 1157, 1628

Diagrams

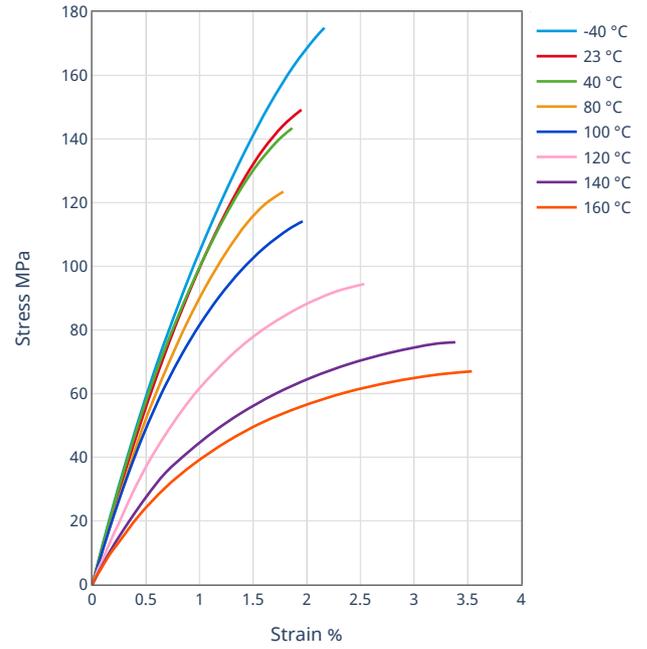
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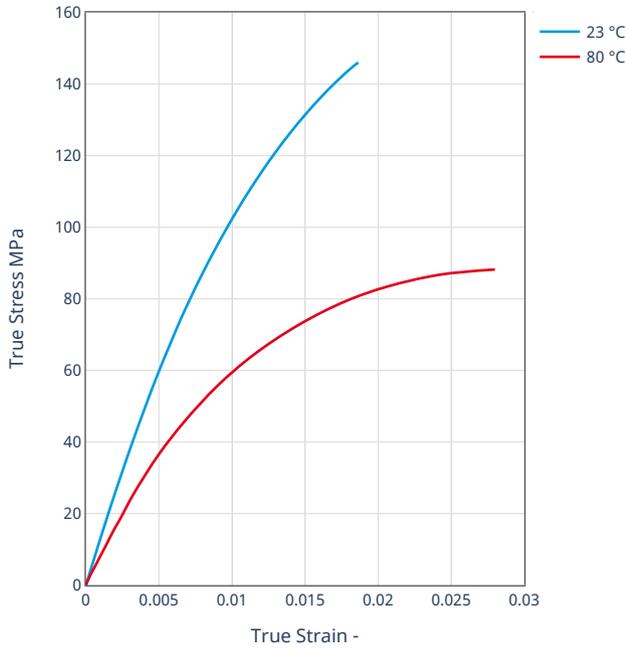
Stress-strain



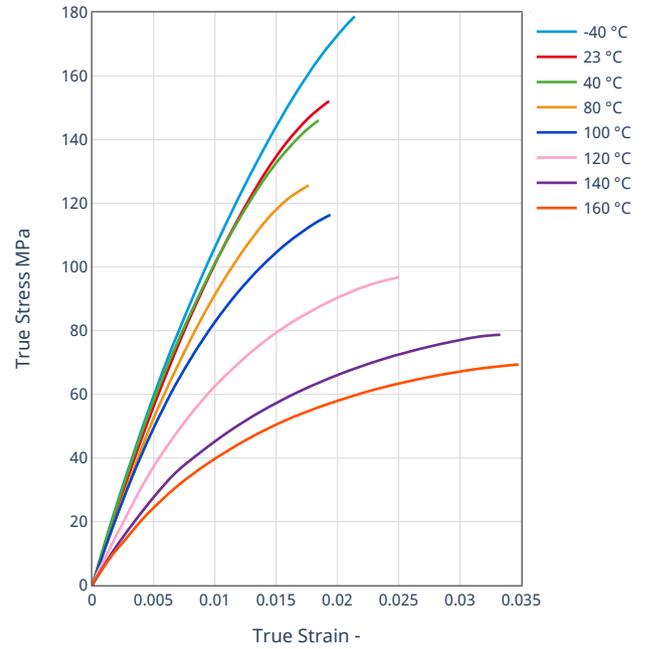
Stress-strain



True stress-true strain



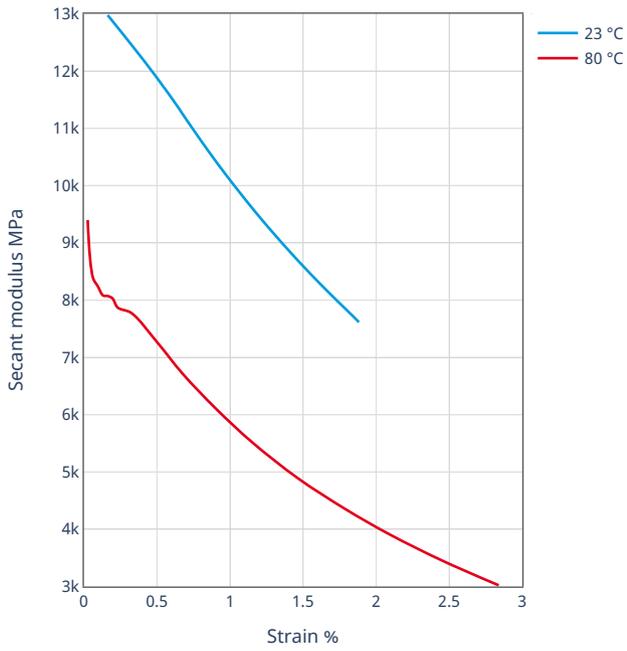
True stress-true strain



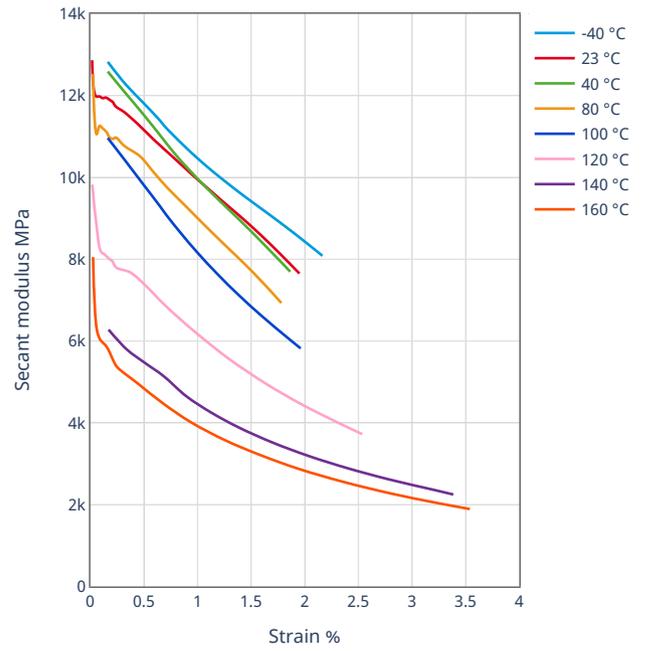
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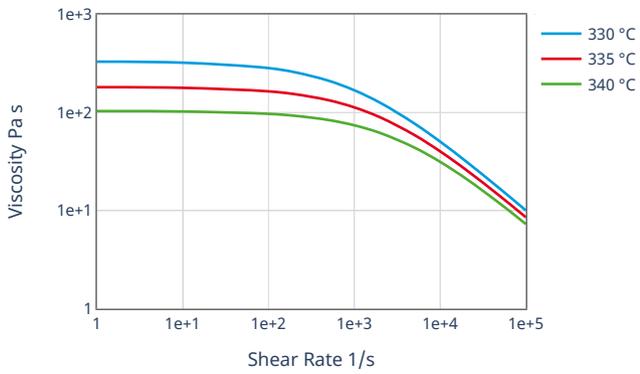
Secant modulus-strain



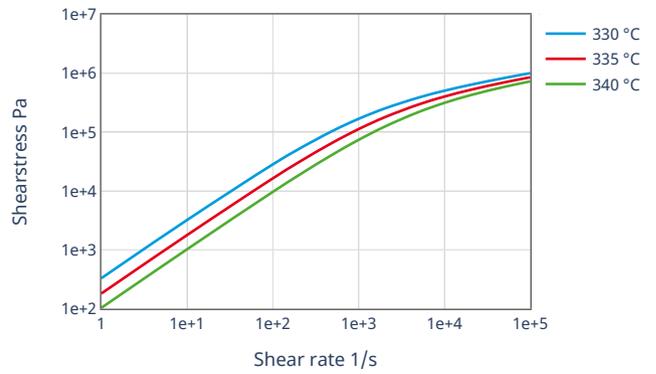
Secant modulus-strain



Viscosity-shear rate



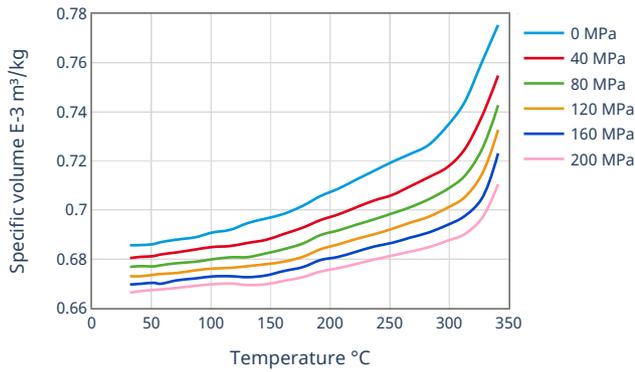
Shearstress-shear rate



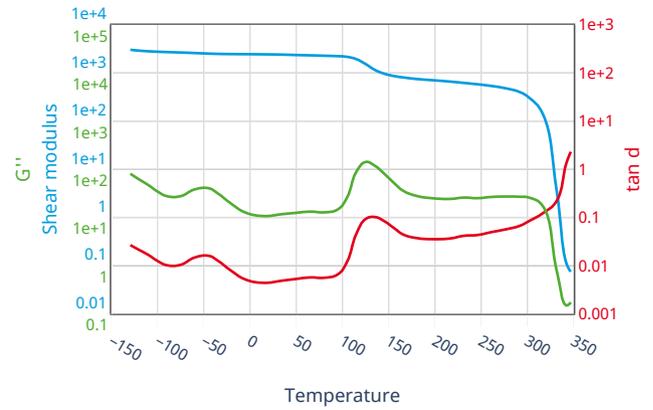
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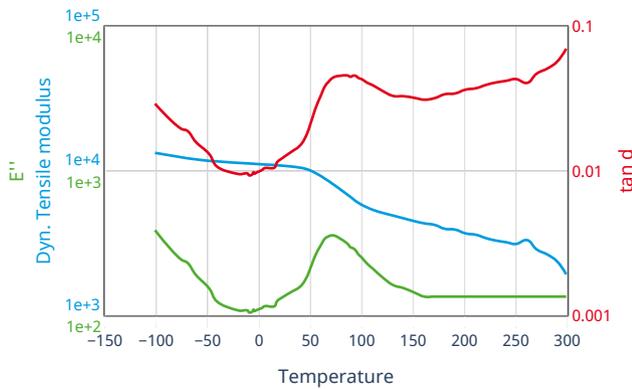
Spec. volume-Temperature (pVT)



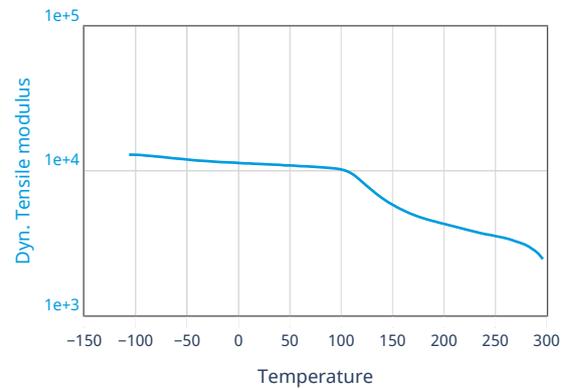
Dynamic shear modulus-temperature



Dynamic tensile modulus-temperature



Dynamic tensile modulus-temperature



Processing Information

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