

FORTRON® ICE 504L

Polyphenylene sulfide

FORTRON ICE 504L is a 40% glass fiber reinforced polyphenylene sulfide, that belongs to our new generation of Fortron® PPS.

This new technology allows optimization of molding conditions with faster cycle times. Due to the faster crystallization of the material at a higher temperature, the option of mold wall temperature reduction can be subject of advanced process optimization. The potential for optimization of Fortron® ICE by cycle time reduction is possible by standard cavity surface temperatures of 140 °C. The potential for lowering the mold temperature must be checked individually and it depends on process and part design.

Product information

Resin Identification	PPS-GF40	ISO 1043
Part Marking Code	>PPS-GF40<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0.3 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.6 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	15100 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	200 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.9 %	ISO 527-1/-2
Flexural modulus	15000 MPa	ISO 178
Flexural strength	290 MPa	ISO 178
Compressive modulus	15000 MPa	ISO 604
Compressive strength	265 MPa	ISO 604
Charpy impact strength, 23 °C	53 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30 °C	53 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23 °C	10 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30 °C	10 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23 °C	10 kJ/m ²	ISO 180/1A
Izod notched impact strength, -30 °C	10.0 kJ/m ²	ISO 180/1A
Izod impact strength, 23 °C	34 kJ/m ²	ISO 180/1U
Izod impact strength, -30 °C	34 kJ/m ²	ISO 180/1U
Hardness, Rockwell, M-scale	100	ISO 2039-2
Poisson's ratio	0.33 ^[C]	

[C]: Calculated

Thermal properties

Melting temperature, 10 °C/min	280 °C	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	90 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	270 °C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	215 °C	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	26 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	42 E-6/K	ISO 11359-1/-2
Specific heat capacity of melt	1500 J/(kg K)	ISO 22007-4

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Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0 class	IEC 60695-11-10
Thickness tested	1.5 mm	IEC 60695-11-10
Burning Behav. at thickness h	V-0 class	IEC 60695-11-10
Thickness tested	0.38 mm	IEC 60695-11-10
Oxygen index	47 %	ISO 4589-1/-2
Glow Wire Flammability Index, 1.0mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	825 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	825 °C	IEC 60695-2-13

Electrical properties

Relative permittivity, 1MHz	4.1	IEC 62631-2-1
Dissipation factor, 1MHz	20 E-4	IEC 62631-2-1
Volume resistivity	1E14 ^[OT] Ohm.m	IEC 62631-3-1
Volume resistivity, at high temperature	1E10 ^[OT] Ohm.m	IEC 62631-3-1
Temperature	220 ^[OT] °C	
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Surface resistivity, at high temperature	1E10 ^[OT] Ohm	IEC 62631-3-2
Temperature	220 ^[OT] °C	
Electric strength, Direct Current	40 ^[OT] kV/mm	IEC 60243-2
Electric strength, DC, high temperature	27 ^[OT] kV/mm	IEC 60243-2
Temperature	220 ^[OT] °C	
Comparative tracking index	125	IEC 60112

[OT]: One time tested

Physical/Other properties

Water absorption, 2mm	0.02 %	Sim. to ISO 62
Density	1650 kg/m ³	ISO 1183

Injection

Drying Recommended	yes
Drying Temperature	130 °C
Drying Time, Dehumidified Dryer	2 - 4 h
Processing Moisture Content	≤0.02 %
Melt Temperature Optimum	330 °C
Min. melt temperature	310 °C
Max. melt temperature	340 °C
Screw tangential speed	0.2 - 0.3 m/s
Mold Temperature Optimum	150 °C
Min. mould temperature	140 °C
Max. mould temperature	160 °C
Hold pressure range	30 - 70 MPa
Back pressure	3 MPa
Ejection temperature	232 °C

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Characteristics

Additives

Release agent, Nucleated

Additional information

Processing Notes

Pre-Drying

FORTRON should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be $\leq -30^{\circ}\text{C}$. The time between drying and processing should be as short as possible.

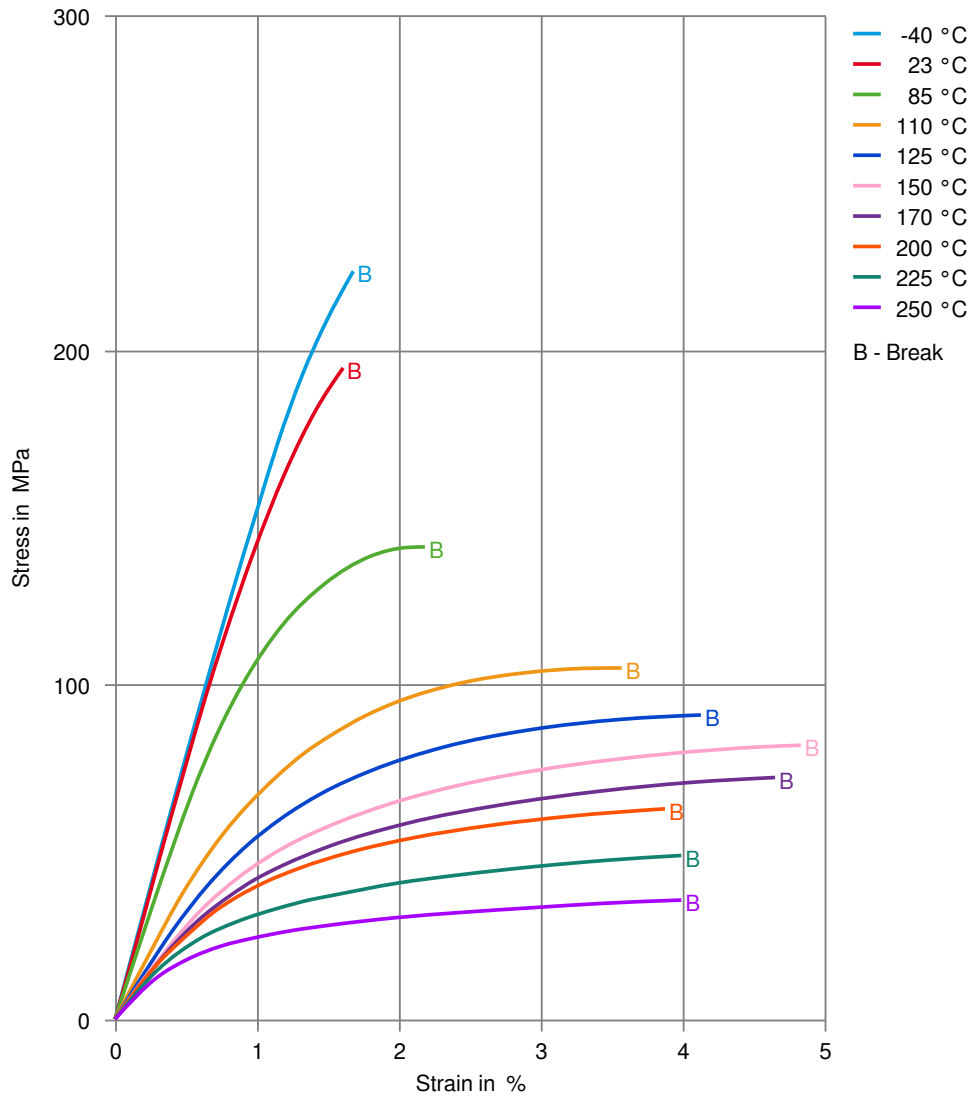
Storage

For subsequent storage the material should be stored dry in the dryer until processed ($\leq 60\text{ h}$).

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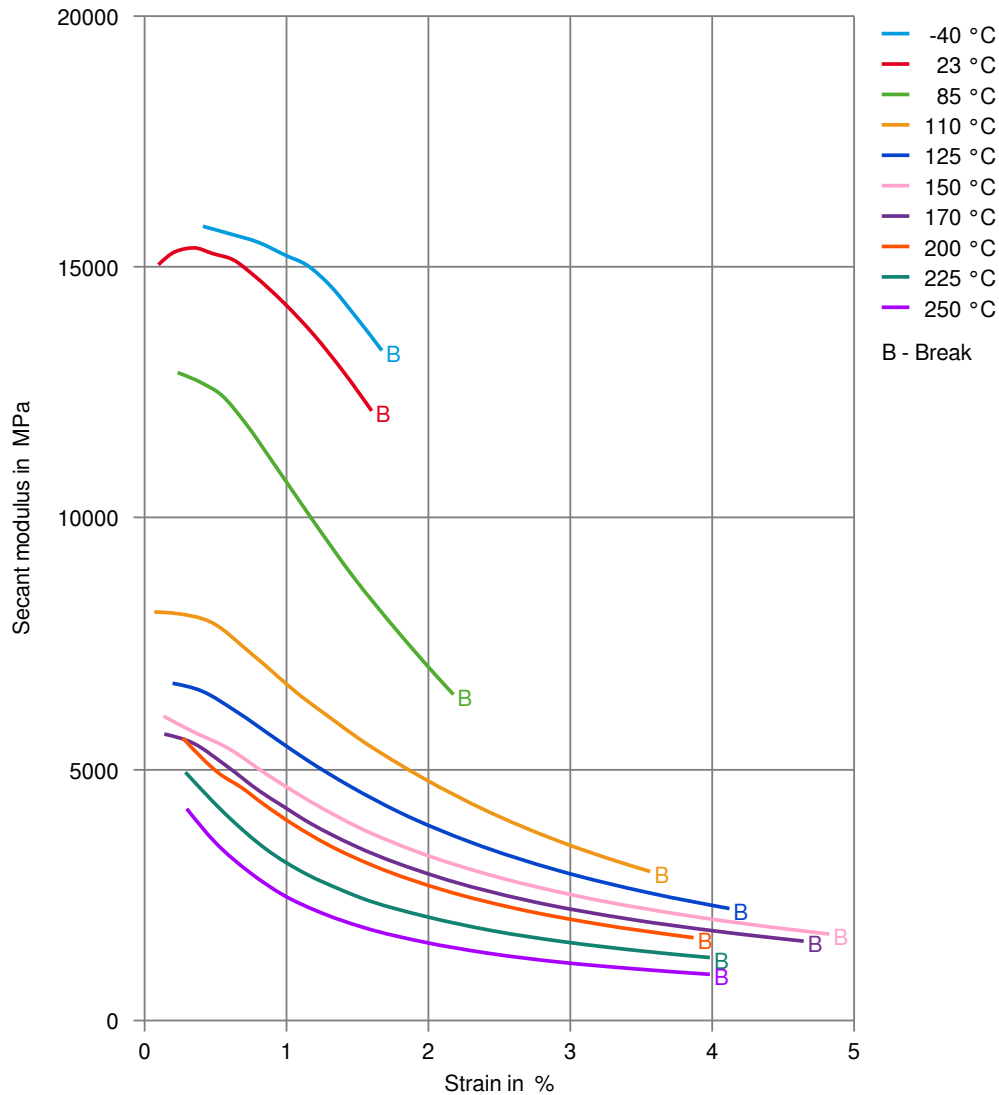
Stress-strain



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Secant modulus-strain



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