Celanese
The chemistry inside innovation™

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

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

Typical mechanical properties

Tensile modulus	2.19E6	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	29300	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.9	%	ISO 527-1/-2
Flexural modulus	2.18E6	psi	ISO 178
Flexural strength	42600	psi	ISO 178
Compressive modulus	2.18E6	psi	ISO 604
Compressive strength	38400	psi	ISO 604
Charpy impact strength, 23 °C	25.2	ftlb/in²	ISO 179/1eU
Charpy impact strength, -30 °C	25.2	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23 °C	4.76	ftlb/in²	ISO 179/1eA
Charpy notched impact strength, -30 °C	4.76	ftlb/in²	ISO 179/1eA
Izod notched impact strength, 23 °C	4.76	ftlb/in²	ISO 180/1A
Izod notched impact strength, -30 °C	4.76	ftlb/in²	ISO 180/1A
Izod impact strength, 23 °C	16.2	ftlb/in²	ISO 180/1U
Izod impact strength, -30 °C	16.2	ftlb/in²	ISO 180/1U
Hardness, Rockwell, M-scale	100		ISO 2039-2

Thermal properties

Melting temperature, 10 °C/min	536	°F	ISO 11357-1/-3
Glass transition temperature, 10 °C/min	194	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	518	°F	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	419	°F	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	0.14	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.233	E-4/°F	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	0.0591	in	IEC 60695-11-10
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0150	in	IEC 60695-11-10
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	0.1260	in	IEC 60695-11-20
Oxygen index	47	%	ISO 4589-1/-2
Glow Wire Flammability Index, 1.0mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 2.0mm	1760	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	1520	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 2.0mm	1520	°F	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	428[OT]	°F	
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Surface resistivity, at high temperature	1E10[OT]	Ohm	IEC 62631-3-2
Temperature	428[OT]	°F	
Electric strength, Direct Current	1020[OT]	kV/in	IEC 60243-2
Electric strength, DC, high temperature	686[OT]	kV/in	IEC 60243-2
Temperature	428[OT]	°F	
Comparative tracking index	125		IEC 60112

[OT]: One time tested

Physical/Other properties

Water absorption, 2mm	0.02	%	Sim. to ISO 62
Density	0.0596	lb/in³	ISO 1183

Injection

Drying Recommended	yes	
Drying Temperature	266	°F
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	626	°F
Min. melt temperature	590	°F
Max. melt temperature	644	°F
Max. screw tangential speed	0.2 - 0.3	m/s
Mold Temperature Optimum	284	°F
Min. mold temperature	257	°F
Max. mold temperature	320	°F
Hold pressure range	4350 - 10200	psi
Back pressure	435	psi
Ejection temperature	450	°F

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Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
General Motors	GMW17521P-PPS-GF40	
Hyundai	MS244-02 Type A-2	
Renault	IP03a, No Spec, Special Part Approval, See Your CE Account Manager.	
Stellantis	MS.50152 / PPS.GF40.14000T.7C.GR-ICE	CPN3502 BLACK
Stellantis - Chrysler	MS-DB-570 / CPN-3502	Black
VW Group	VW 50137	

Characteristics

Processing	Injection Molding
Additives	Release agent, Nucleated
Special characteristics	Flame retardant, Heat stabilized or stable to heat, Chemical resistant

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 =< - 30° C. The time between drying and processing should be as short as possible.

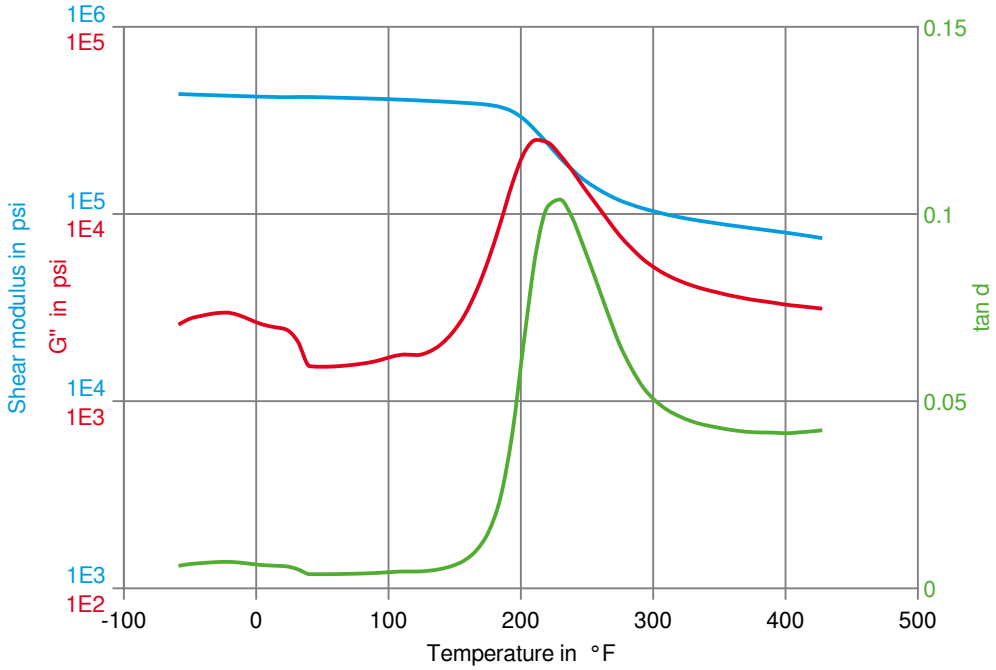
Storage

For subsequent storage the material should be stored dry in the dryer until processed (<= 60 h).

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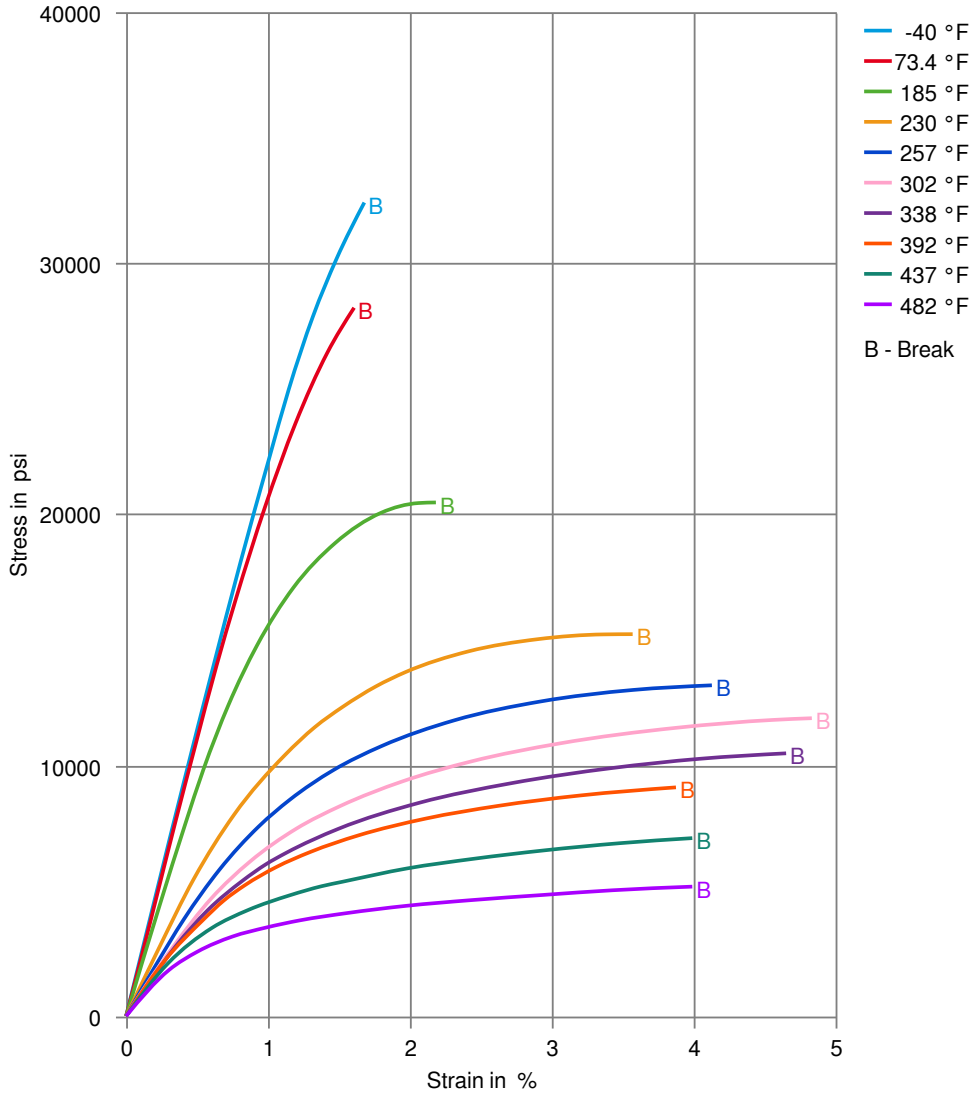
Dynamic Shear modulus-temperature



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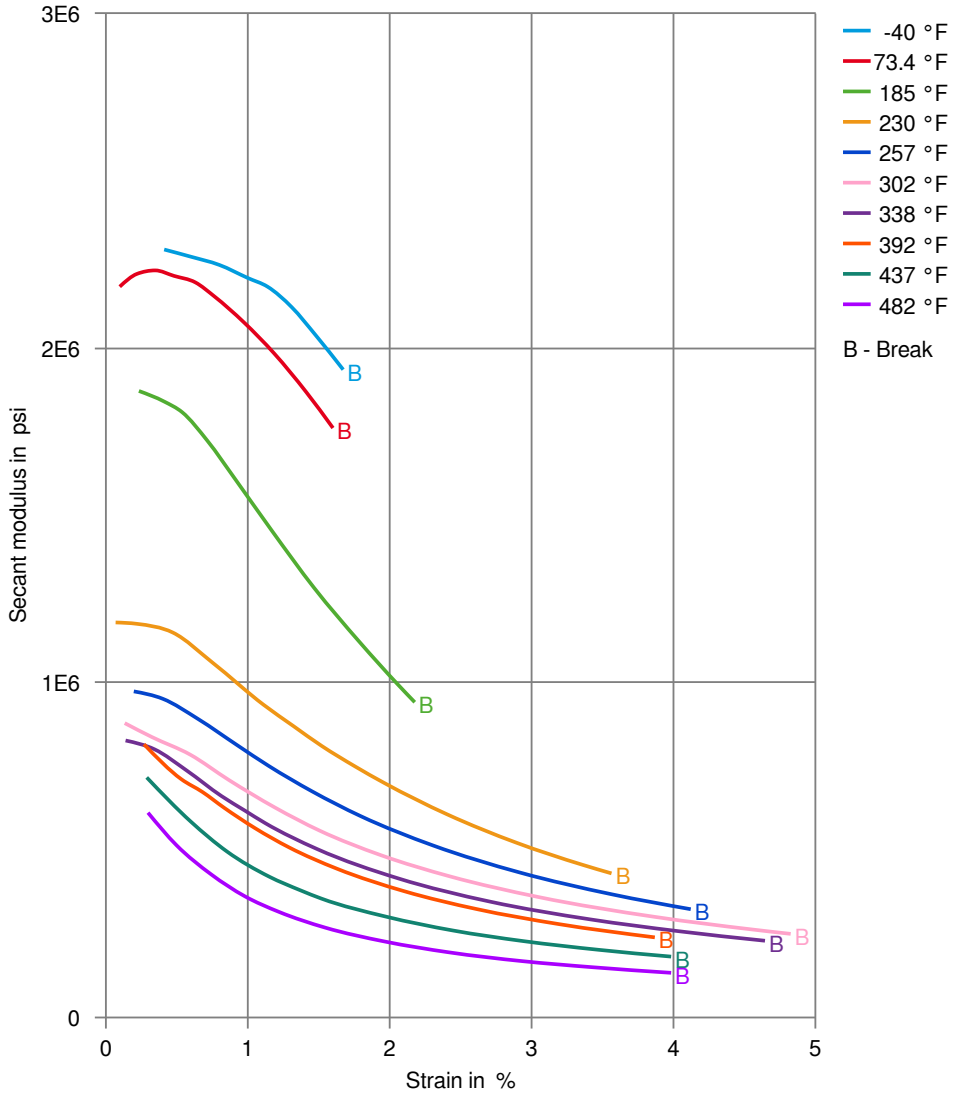
Stress-strain



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Secant modulus-strain



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