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

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/m²	ISO 179/1eU
Charpy impact strength, -30 °C	53	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23 °C	10	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30 °C	10	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23 °C	10	kJ/m²	ISO 180/1A
Izod notched impact strength, -30 °C	10.0	kJ/m²	ISO 180/1A
Izod impact strength, 23 °C	34	kJ/m²	ISO 180/1U
Izod impact strength, -30 °C	34	kJ/m²	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

FORTRON® ICE 504L

Polyphenylene sulfide

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/m³	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

FORTRON® ICE 504L

Polyphenylene sulfide

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

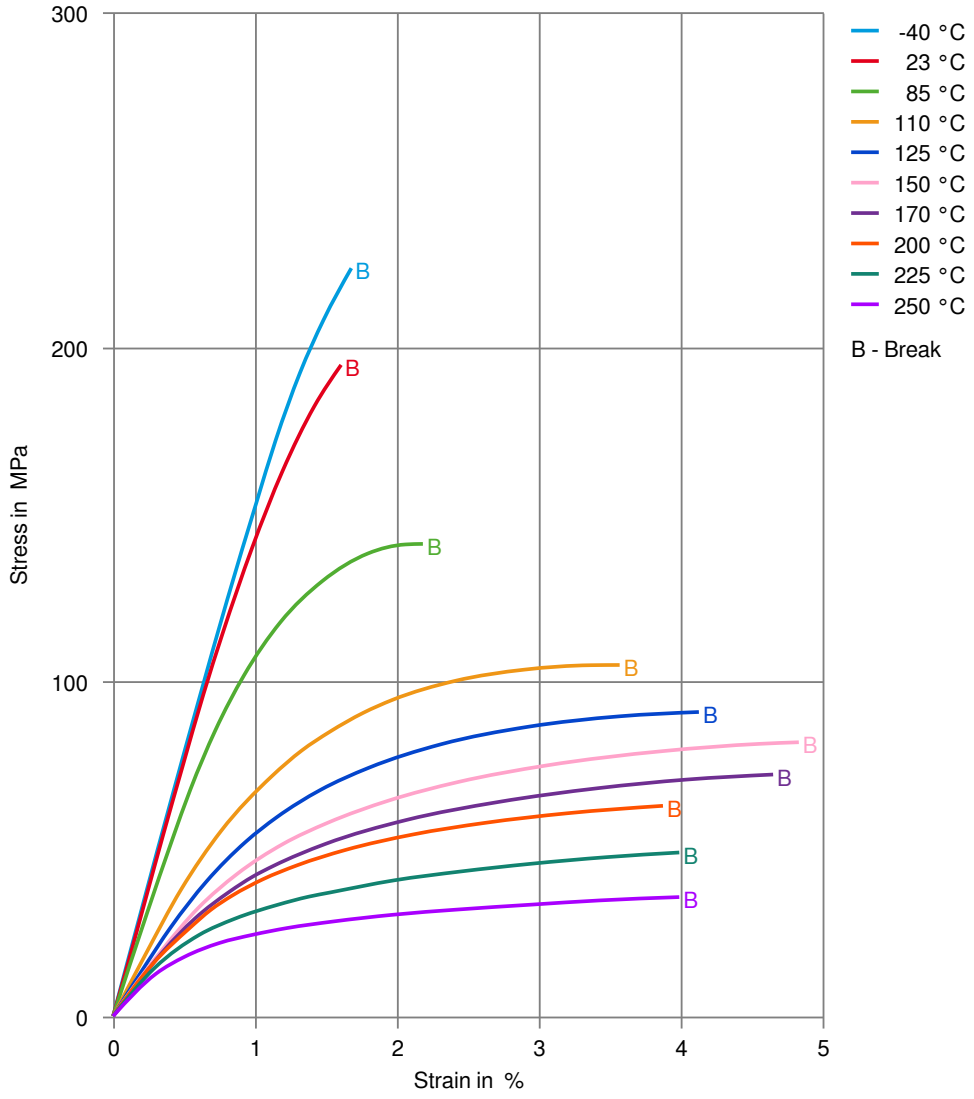
Storage

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

FORTRON® ICE 504L

Polyphenylene sulfide

Stress-strain

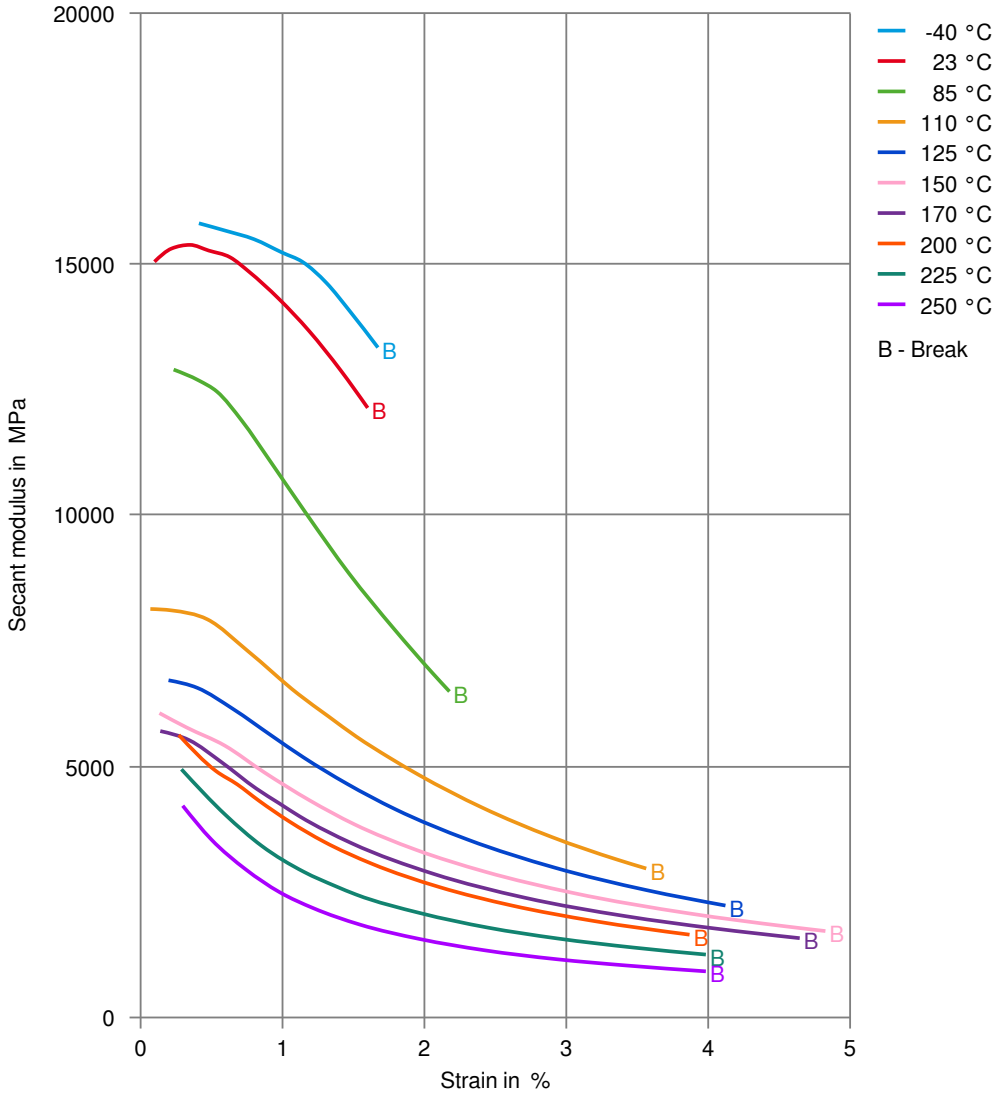


Revised: 2024-07-02 Source: Celanese Materials Database

FORTRON® ICE 504L

Polyphenylene sulfide

Secant modulus-strain



Revised: 2024-07-02 Source: Celanese Materials Database