

FORTRON® 6165A4

Polyphenylene sulfide

Fortron 6165A4 offers a unique balance of properties based on a high mineral and glass reinforced composition. The heat resistance under load bearing conditions is excellent for this product. As with all Fortron grades this product is inherently flame-retardant. Applications include electronic components (i.e. lamp houses, connection parts and sockets) and components in industry (i.e. pumps and pistons).

Product information

Resin Identification	PPS-(GF+MD)6 5	ISO 1043
Part Marking Code	>PPS-(GF+MD)65<	ISO 11469

Rheological properties

Moulding shrinkage, parallel	0.2 %	ISO 294-4, 2577
Moulding shrinkage, normal	0.5 %	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	19000 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	130 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	1.2 %	ISO 527-1/-2
Flexural modulus	18800 MPa	ISO 178
Flexural strength	210 MPa	ISO 178
Compressive modulus	18500 MPa	ISO 604
Compressive strength	230 MPa	ISO 604
Charpy impact strength, 23°C	20 kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	20 kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	7 kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	7 kJ/m ²	ISO 179/1eA
Izod notched impact strength, 23°C	6 kJ/m ²	ISO 180/1A
Izod notched impact strength, -30°C	6.0 kJ/m ²	ISO 180/1A
Izod impact strength, 23°C	20 kJ/m ²	ISO 180/1U
Izod impact strength, -30°C	20 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	19 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	24 E-6/K	ISO 11359-1/-2
Thermal conductivity, flow	0.68 W/(m K)	ISO 22007-2
Thermal conductivity, crossflow	0.67 W/(m K)	ISO 22007-2
Thermal conductivity, through plane	0.71 W/(m K)	ISO 22007-2
Effective thermal diffusivity, flow	3.7E-7 m ² /s	ISO 22007-4
Effective thermal diffusivity, crossflow	3.6E-7 m ² /s	ISO 22007-4

FORTRON® 6165A4

Polyphenylene sulfide

Effective thermal diffusivity, through plane	3.8E-7 m ² /s	ISO 22007-4
Specific heat capacity of melt	930 J/(kg K)	ISO 22007-4

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	0.75 mm	IEC 60695-11-10
Burning Behav. 5V at thickness h	5VA class	IEC 60695-11-20
Thickness tested	3 mm	IEC 60695-11-20
Oxygen index	53 %	ISO 4589-1/-2

Electrical properties

Relative permittivity, 1MHz	5.6	IEC 62631-2-1
Dissipation factor, 1MHz	20 E-4	IEC 62631-2-1
Volume resistivity	1E15 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	25 kV/mm	IEC 60243-1
Arc Resistance	182 s	UL 746B

Physical/Other properties

Water absorption, 2mm	0.02 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.03 %	Sim. to ISO 62
Density	2000 kg/m ³	ISO 1183
Bulk density	910 kg/m ³	ISO 60

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	212 °C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent

FORTRON® 6165A4

Polyphenylene sulfide

Special characteristics

Flame retardant, Platable, Light stabilised or stable to light, Heat stabilised or stable to heat, Chemical resistant

Additional information

Injection molding

Preprocessing

Predrying in a dehumidified air dryer at 130 - 140 degC/3-4 hours is recommended.

Processing

On injection molding machines with 15-25 D long three-section screws, as are usual in the trade, the FORTRON is processable. A shut-off nozzle is preferred to a free-flow nozzle.

Melt temperature 320-340 degC
Mold wall temperature at least 140 degC

A medium injection rate is normally preferred. All mold cavities must be effectively vented.

Postprocessing

Tool temperature of at least 135 degC is recommended for parts to achieve maximum crystallizable potential.

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 (≤ 60 h).

Automotive

OEM
Stellantis
Stellantis - Chrysler

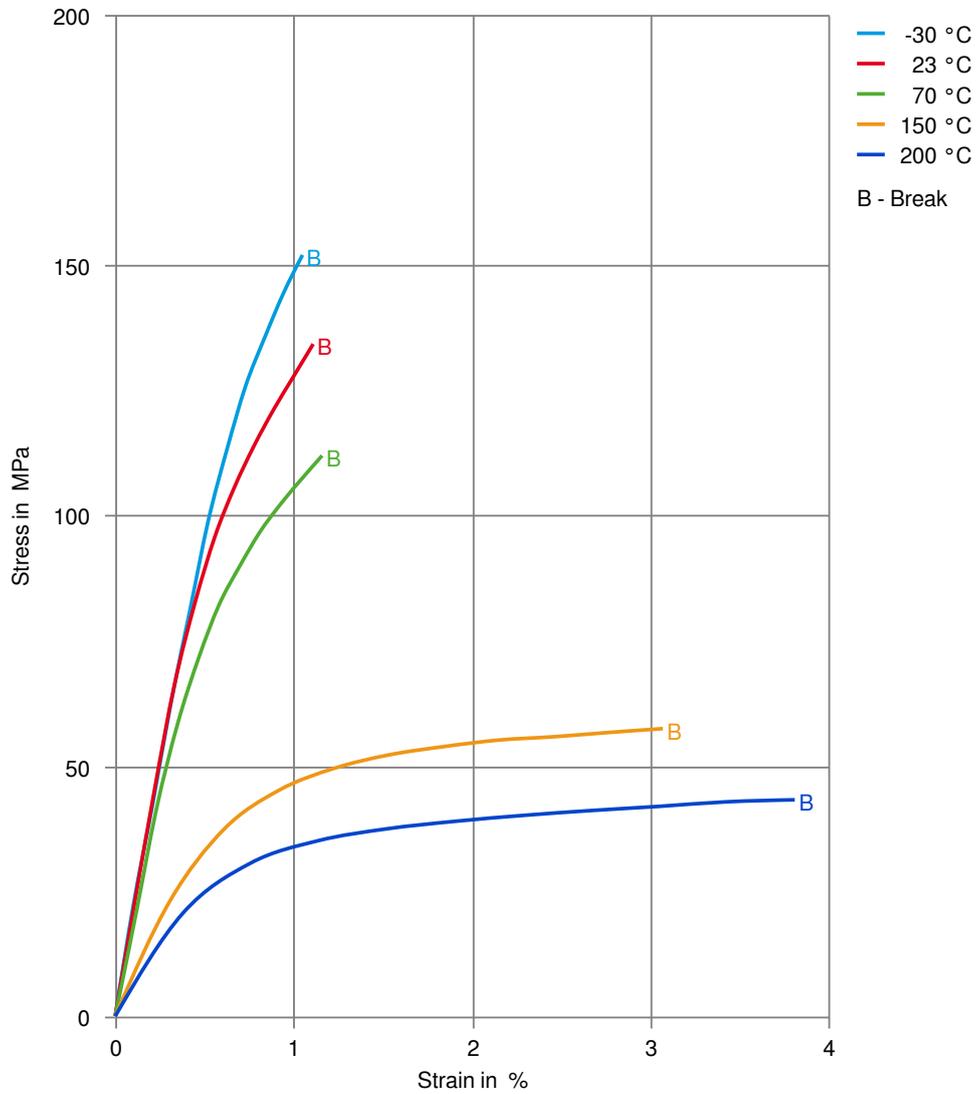
STANDARD
MS.50152 / PPS.GFMD65.18500T.6C.GR-ICE
MS-DB-570 / CPN-3243

ADDITIONAL INFORMATION
CPN3243 BLACK
Black

FORTRON® 6165A4

Polyphenylene sulfide

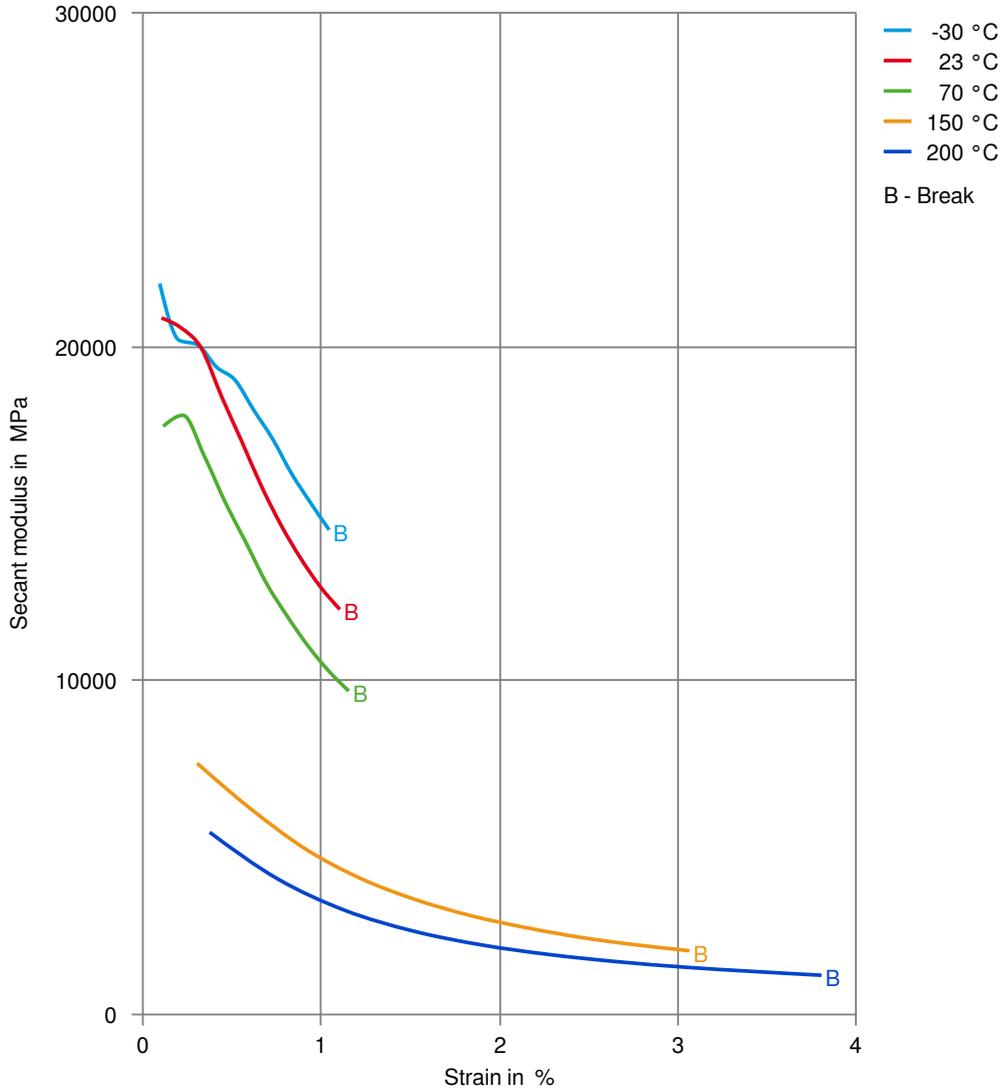
Stress-strain



FORTRON® 6165A4

Polyphenylene sulfide

Secant modulus-strain



NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.