Celanese
The chemistry inside innovation™

FORTRON® 6165A4

65% Mineral/Glass reinforced, V-0
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).

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
Stress at break, 5mm/min	130	MPa	ISO 527-1/-2
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
Shear Modulus	6880	MPa	ISO 6721
Charpy impact strength, 23°C	20	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	20	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	7	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	7	kJ/m²	ISO 179/1eA
Izod notched impact strength, 23°C	6	kJ/m²	ISO 180/1A
Izod notched impact strength, -30°C	6	kJ/m²	ISO 180/1A
Izod impact strength, 23°C	20	kJ/m²	ISO 180/1U
Izod impact strength, -30°C	20	kJ/m²	ISO 180/1U
Hardness, Rockwell, M-scale	100		ISO 2039-2

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
Temp. of deflection under load, 1.8 MPa	270	°C	ISO 75-1/-2
Temp. of deflection under load, 8 MPa	215	°C	ISO 75-1/-2
Coeff. of linear therm. expansion, parallel	19	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal	24	E-6/K	ISO 11359-1/-2
Thermal conductivity	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
Eff. thermal diffusivity		m²/s	Internal
Eff. thermal diffusivity, crossflow		m²/s	ISO 22007-4
Eff. thermal diffusivity, through plane		m²/s	ISO 22007-4
Spec. heat capacity of melt	930	J/(kg K)	Internal

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Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	UL 94
Thickness tested	1.5	mm	UL 94
Burning Behav. at thickness h	V-0	class	UL 94
Thickness tested	0.75	mm	UL 94
Burning Behav. 5V at thickness h	5VA	class	UL 94
Thickness tested	3.0	mm	UL 94
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
Comparative tracking index	PLC 2	PLC	UL 746A

Other properties

Water absorption, 2mm	0.02	%	Sim. to ISO 62
Density	1950	kg/m³	ISO 1183

Injection

Drying Temperature	130 - 140	°C	
Drying Time, Dehumidified Dryer	3 - 4	h	
Processing Moisture Content	0.02	%	
Melt Temperature Optimum	315	°C	Internal
Screw tangential speed	0.14 - 0.16	m/s	
Max. mould temperature	140 - 160	°C	
Back pressure	3	MPa	
Injection speed	fast		

Characteristics

Additives	Release agent

Additional information

Injection molding

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

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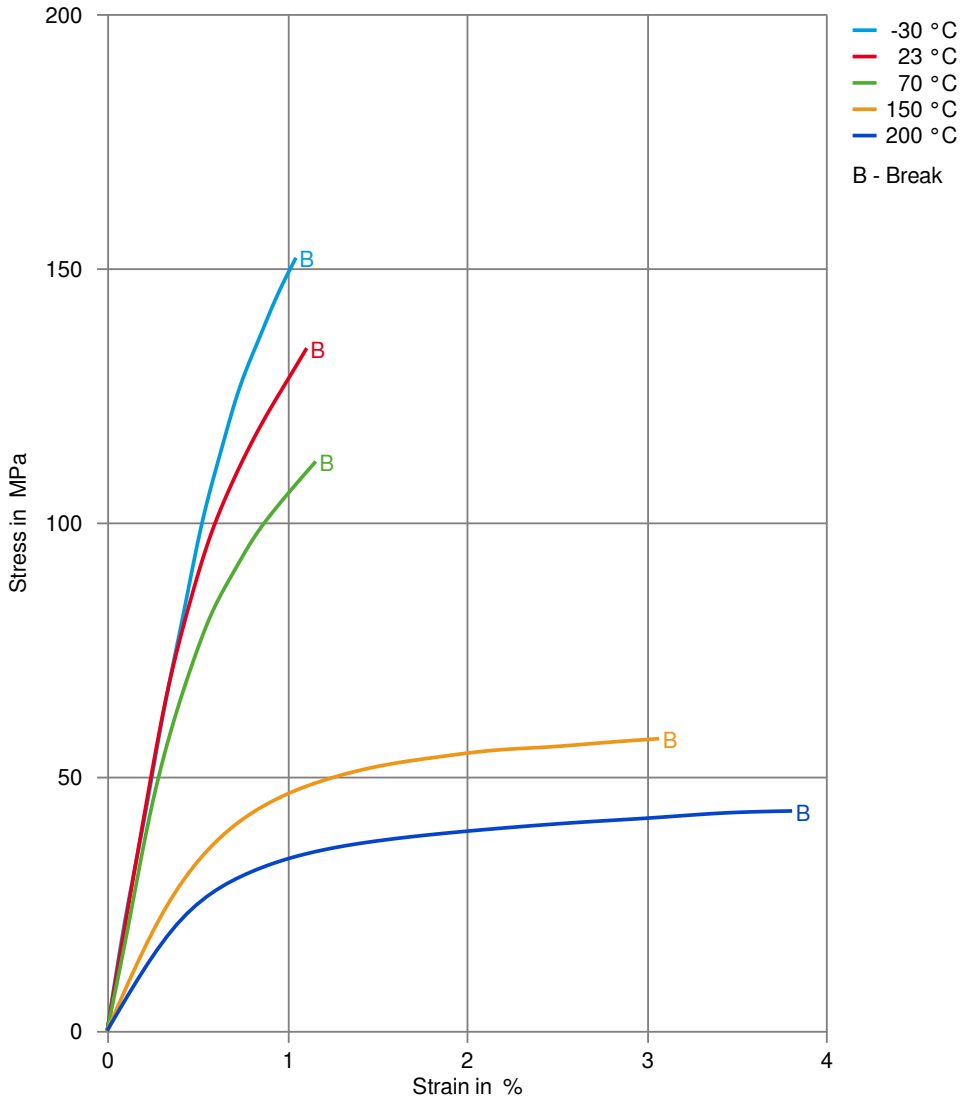
vented.

Stress-strain



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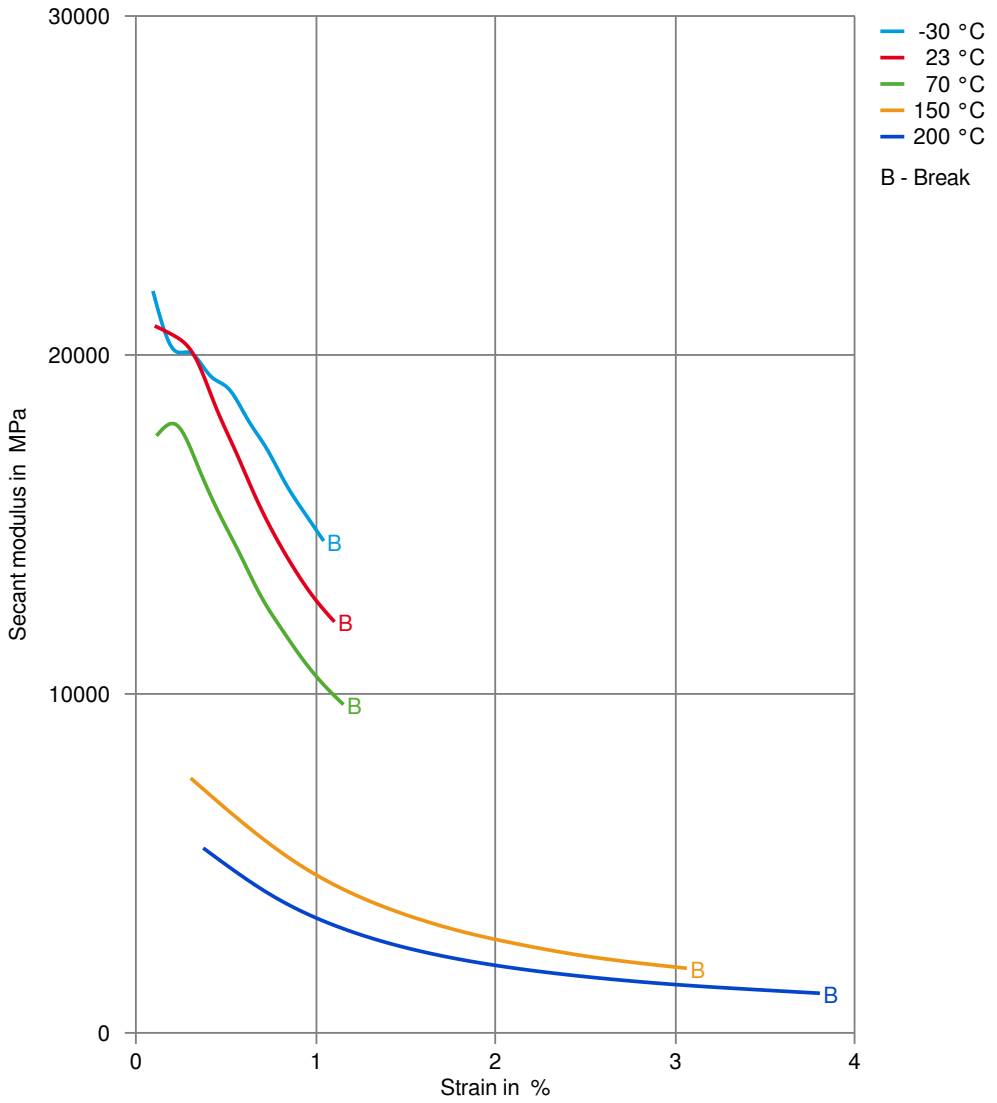
Secant modulus-strain



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Processing Texts

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.
Longer pre-drying times/storage	For subsequent storage the material should be stored dry in the dryer until processed (<= 60 h).
Injection molding	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.
Injection molding Preprocessing	Predrying in a dehumidified air dryer at 130 - 140 degC/3-4 hours is recommended.
Injection molding Postprocessing	Tool temperature of at least 135 degC is recommended for parts to achieve maximum crystallizable potential.

Revised: 2023-07-28 Source: Celanese Materials Database