

FORTRON® 6165A4 - PPS

Description

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).

Physical properties	Value	Unit	Test Standard
Density	1950	kg/m ³	ISO 1183
Molding shrinkage, parallel	0.2	%	ISO 294-4, 2577
Molding shrinkage, normal	0.5	%	ISO 294-4, 2577
Water absorption, 23°C-sat	0.02	%	ISO 62
Bulk density	0.908	g/cm ³	ISO 60

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	19000	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	130	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	1.2	%	ISO 527-2/1A
Flexural modulus, 23°C	18800	MPa	ISO 178
Flexural stress at break	210	MPa	ISO 178
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 impact notched, 23°C	6	kJ/m ²	ISO 180/1A
Izod impact notched, -30°C	6	kJ/m ²	ISO 180/1A
Izod impact unnotched, 23°C	20	kJ/m ²	ISO 180/1U
Izod impact unnotched, -30°C	20	kJ/m ²	ISO 180/1U
Compressive modulus	18500	MPa	ISO 604
Rockwell hardness (M-Scale)	100	M-Scale	ISO 2039-2

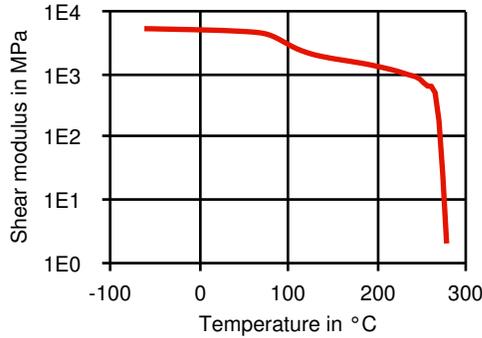
Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	280	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	90	°C	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	270	°C	ISO 75-1, -2
DTUL at 8.0 MPa	215	°C	ISO 75-1, -2
Coeff. of linear therm expansion, parallel	0.19	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	0.24	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	53	%	ISO 4589-1/-2
Flammability @1.6mm nom. thickn.	V-0	class	UL 94
thickness tested (1.6)	1.5	mm	UL 94
Flammability at thickness h	V-0	class	UL 94
thickness tested (h)	0.75	mm	UL 94
Flammability 5V at thickness h	5VA	class	UL 94
thickness tested (5V)	3.0	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 1MHz	5.6	-	IEC 60250
Dissipation factor, 1MHz	20	E-4	IEC 60250
Volume resistivity	>1E15	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	25	kV/mm	IEC 60243-1

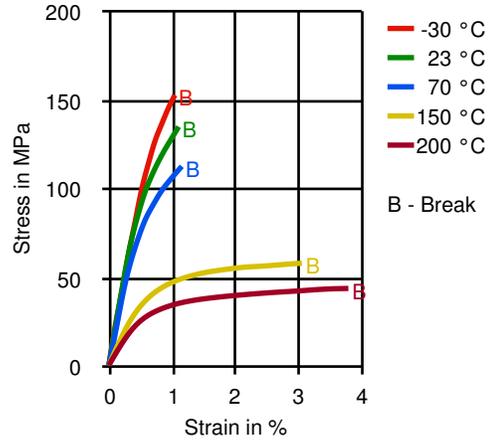
Rheological calculation properties	Value	Unit	Test Standard
Spec. heat capacity melt	1600	J/(kg K)	Internal

Diagrams

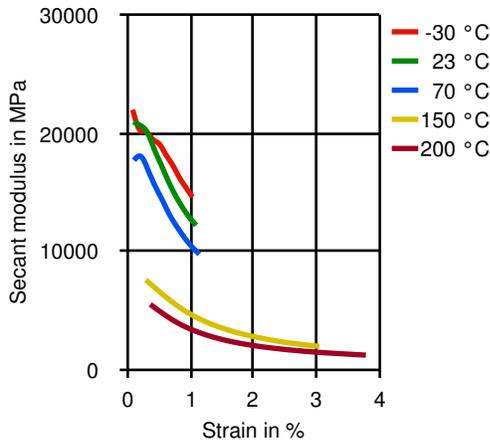
Dynamic Shear modulus-temperature



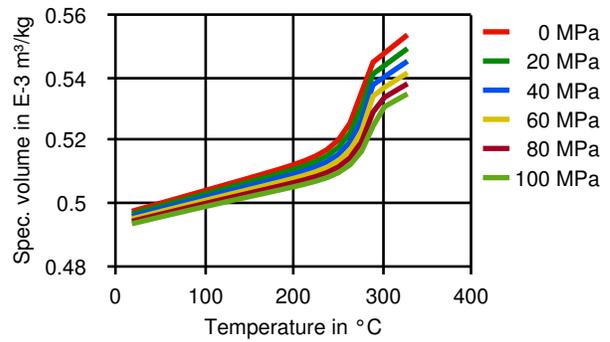
Stress-strain



Secant modulus-strain



Moldflow Specific volume-temperature (pvT)



Typical injection moulding processing conditions

	Value	Unit	Test Standard
Pre Drying			
Necessary low maximum residual moisture content	0.02	%	-
Drying time	3 - 4	h	-
Drying temperature	130 - 140	°C	-
Temperature	Value	Unit	Test Standard
Hopper temperature	20 - 30	°C	-
Feeding zone temperature	60 - 80	°C	-
Zone1 temperature	290 - 300	°C	-
Zone2 temperature	310 - 320	°C	-
Zone3 temperature	330 - 340	°C	-
Zone4 temperature	330 - 340	°C	-
Nozzle temperature	310 - 330	°C	-
Melt temperature	330	°C	-
Mold temperature	140 - 160	°C	-
Hot runner temperature	330 - 340	°C	-
Pressure	Value	Unit	Test Standard
Back pressure max.	30	bar	-
Speed	Value	Unit	Test Standard
Injection speed	fast	-	-

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Screw Speed	Value	Unit	Test Standard
Screw speed diameter, 25mm	120	RPM	-
Screw speed diameter, 40mm	75	RPM	-
Screw speed diameter, 55mm	50	RPM	-
Other	Value	Unit	Test Standard
Specimen thickness (shrinkage)	3.18	mm	Internal
Spiral flow	15.5	-	Internal

Other text information

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.

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.

Characteristics

Special Characteristics

Flame retardant, Light stabilized, Platable

Delivery Form

Pellets

Product Categories

Mineral/Glass reinforced

Additives

Release agent

Processing

Injection molding

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General Disclaimer

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