Celanese
The chemistry inside innovation™

Crastin® FR684NH1 NC010

THERMOPLASTIC POLYESTER RESIN

Crastin® FR684NH1 is a 25% Glass Reinforced, Flame Retardant, Non-Halogenated, Polybutylene Terephthalate

Product information

Resin Identification	PBT-GF25FR(40)	ISO 1043
Part Marking Code	>PBT-GF25FR(40)<	ISO 11469

Rheological properties

Melt mass-flow rate	7	g/10min	ISO 1133
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage, parallel	0.5	%	ISO 294-4, 2577
Moulding shrinkage, normal	1.2	%	ISO 294-4, 2577
Flow length	280	mm	
Flow length - pressure	110	MPa	
Flow length - width/thickness	2	mm	

Typical mechanical properties

Tensile modulus	9400	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	95	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.5	%	ISO 527-1/-2
Charpy impact strength, 23°C	43	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	46	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	7.5	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	6.8	kJ/m²	ISO 179/1eA
Poisson's ratio	0.34		

Thermal properties

Melting temperature, 10°C/min	223	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	205	°C	ISO 75-1/-2
Ball pressure test	220	°C	IEC 60695-10-2
Coeff. of linear therm. expansion, parallel, -40-23°C	23	E-6/K	ISO 11359-1/-2
CLTE, Parallel, 23-55°C(73-130°F)	29	E-6/K	ASTM E 831
Coeff. of linear therm. expansion, parallel, 55-160°C	20	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion, normal, -40-23°C	66	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), Normal,23-55°C (73-130°F)	122	E-6/K	ASTM E 831
Coefficient of linear thermal expansion (CLTE), normal, 55-160°C	127	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.75mm	130	°C	UL 746B
RTI, electrical, 1.5mm	130	°C	UL 746B
RTI, electrical, 3.0mm	130	°C	UL 746B
RTI, impact, 0.75mm	125	°C	UL 746B

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RTI, impact, 1.5mm	125	°C	UL 746B
RTI, impact, 3.0mm	125	°C	UL 746B
RTI, strength, 0.75mm	140	°C	UL 746B
RTI, strength, 1.5mm	140	°C	UL 746B
RTI, strength, 3.0mm	140	°C	UL 746B
TGA curve	available		ISO 11359-1/-2

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0	class	IEC 60695-11-10
Thickness tested	1.5	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.4	mm	IEC 60695-11-10
UL recognition	yes		UL 94
Oxygen index	40	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.4mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 0.75mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	750	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	750	°C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.0mm	750	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	750	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	800	°C	IEC 60695-2-13
Railway classification	R22		EN 45545-2
Railway classification rating	HL1		EN 45545-2

Electrical properties

Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	42	kV/mm	IEC 60243-1
Comparative tracking index	600		IEC 60112
Comparative tracking index, 23 °C	0	PLC	UL 746A

Physical/Other properties

Humidity absorption, 2mm	0.1[DS]	%	Sim. to ISO 62
Water absorption, 2mm	0.25[DS]	%	Sim. to ISO 62
Density	1520	kg/m³	ISO 1183

[DS]: Derived from similar grade

VDA Properties

Emission of organic compounds	39	µgC/g	VDA 277

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Injection

Drying Recommended	yes	
Drying Temperature	120	°C
Drying Time, Dehumidified Dryer	2 - 4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	250	°C
Min. melt temperature	240	°C
Max. melt temperature	260	°C
Mold Temperature Optimum	80	°C
Min. mould temperature	30	°C
Max. mould temperature	130	°C
Hold pressure range	≥60	MPa
Hold pressure time	3	s/mm
Back pressure	As low as possible	MPa
Ejection temperature	170	°C

Characteristics

Additives	Flame retardant, Non-halogenated/Red phosphorous free flame retardant

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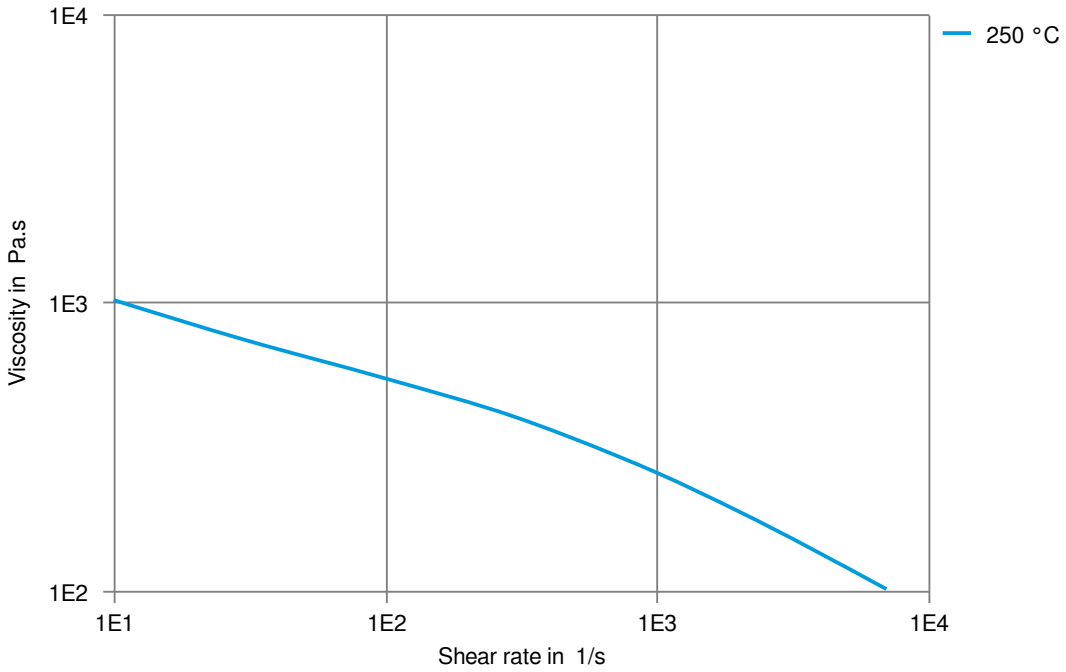
Viscosity-shear rate



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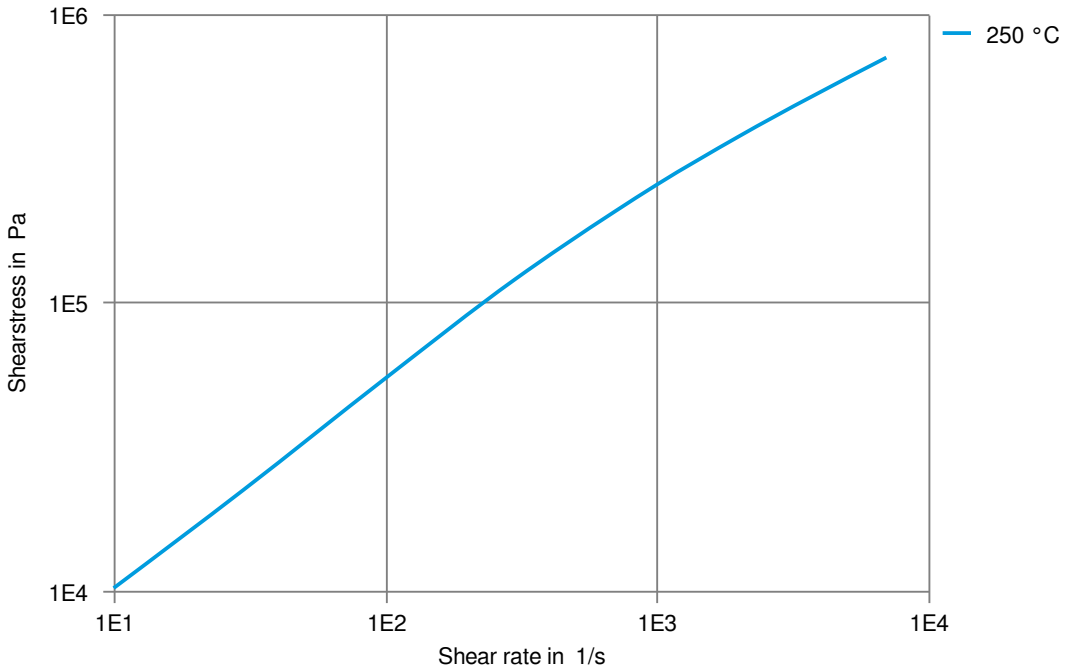
Shearstress-shear rate



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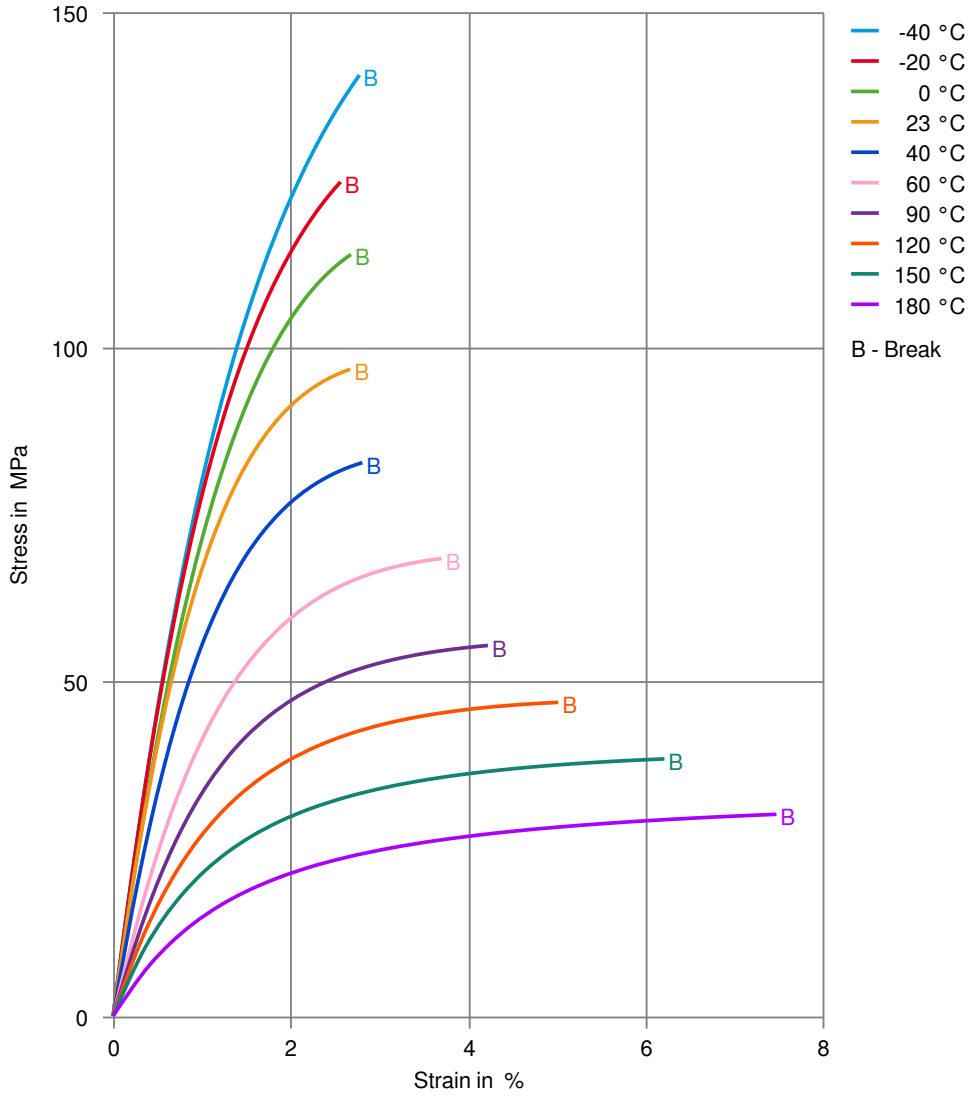
Stress-strain



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Secant modulus-strain