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CELANEX® 3316

CELANEX® PBT

Celanex 3316 is a non-exuding flame retarded (UL and CSA approved V-0 at 1/32 inch and 5V at 1/16 inch), 30% fiberglass reinforced polybutylene terephthalate which has an excellent balance of mechanical properties and processability. It is well suited for electrical connector applications where its UL approved 50% regrind use capability allows maximum use of purchased product.

Product information

Resin Identification	PBT-GF30 FR(17)	ISO 1043
Part Marking Code	>PBT-GF30 FR(17)<	ISO 11469

Rheological properties

Melt volume-flow rate	7	cm^3/10min	ISO 1133
Temperature	250	°C	
Load	2.16	kg	
Melt mass-flow rate	12	g/10min	ISO 1133
Melt mass-flow rate, Temperature	250	°C	
Melt mass-flow rate, Load	2.16	kg	
Moulding shrinkage range, parallel	0.3 - 0.5	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.8 - 1	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	10700	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	135	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.5	%	ISO 527-1/-2
Flexural modulus	10300	MPa	ISO 178
Flexural strength	200	MPa	ISO 178
Charpy impact strength, 23°C	59	kJ/m^2	ISO 179/1eU
Charpy impact strength, -30°C	42	kJ/m^2	ISO 179/1eU
Charpy notched impact strength, 23°C	8.5	kJ/m^2	ISO 179/1eA
Charpy notched impact strength, -30°C	8.5	kJ/m^2	ISO 179/1eA
Izod notched impact strength, 23°C	7.7	kJ/m^2	ISO 180/1A
Izod impact strength, 23°C	74.7	kJ/m^2	ISO 180/1U
Hardness, Rockwell, M-scale	89		ISO 2039-2
Poisson's ratio	0.34[C]		
Shore D hardness, 15s	85		ISO 48-4 / ISO 868

[C]: Calculated

Thermal properties

Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	208	°C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	220	°C	ISO 75-1/-2
Temperature of deflection under load, 8 MPa	165	°C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	225	°C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	25	E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	80	E-6/K	ISO 11359-1/-2
RTI, electrical, 0.4mm	75	°C	UL 746B
RTI, electrical, 0.75mm	140	°C	UL 746B

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RTI, electrical, 1.5mm	140	°C	UL 746B
RTI, electrical, 3.0mm	140	°C	UL 746B
RTI, impact, 0.4mm	75	°C	UL 746B
RTI, impact, 0.75mm	130	°C	UL 746B
RTI, impact, 1.5mm	130	°C	UL 746B
RTI, impact, 3.0mm	130	°C	UL 746B
RTI, strength, 0.4mm	75	°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

Flammability

Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.38	mm	IEC 60695-11-10
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	1.5	mm	IEC 60695-11-20
Oxygen index	30	%	ISO 4589-1/-2

Electrical properties

Relative permittivity, 100Hz	3.6		IEC 62631-2-1
Relative permittivity, 1MHz	2.9		IEC 62631-2-1
Dissipation factor, 100Hz	33	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	145	E-4	IEC 62631-2-1
Volume resistivity	1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	1E15	Ohm	IEC 62631-3-2
Electric strength	34	kV/mm	IEC 60243-1
Comparative tracking index	250		IEC 60112
Arc Resistance	106	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.16	%	Sim. to ISO 62
Water absorption, 2mm	0.4	%	Sim. to ISO 62
Density	1660	kg/m³	ISO 1183

VDA Properties

Emission of organic compounds	15.5	µgC/g	VDA 277

Injection

Drying Recommended	yes	
Drying Temperature	120	°C
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	250	°C
Min. melt temperature	240	°C
Max. melt temperature	260	°C
Screw tangential speed	0.1 - 0.3	m/s
Mold Temperature Optimum	80	°C

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Min. mould temperature	60 °C
Max. mould temperature	130 °C
Ejection temperature	189 °C

Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Flame retardant
Special characteristics	Flame retardant

Additional information

Injection molding

Preprocessing

To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-30°F (-34°C) at 250°F (121°C) for 4 hours..

Processing

Rear Temperature 450-470(230-240) deg F (deg C)
Center Temperature 460-480(235-250) deg F (deg C)
Front Temperature 470-490(240-255) deg F (deg C)
Nozzle Temperature 480-490(250-255) deg F (deg C)
Melt Temperature 460-490(235-255) deg F (deg C)
Mold Temperature 150-200(65-93) deg F (deg C)
Back Pressure 0-50 psi
Screw Speed Medium
Injection Speed Fast

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided, in particular for flame retardant grades. Up to 50% clean and dry regrind may be used for the '16 series' flame retardant grades.

Processing Notes

Pre-Drying

To avoid hydrolytic degradation during processing, CELANEX resins have to be dried to a moisture level equal to or less than 0.02%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C) at 250°F (121°C) for 4 hours.

Storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

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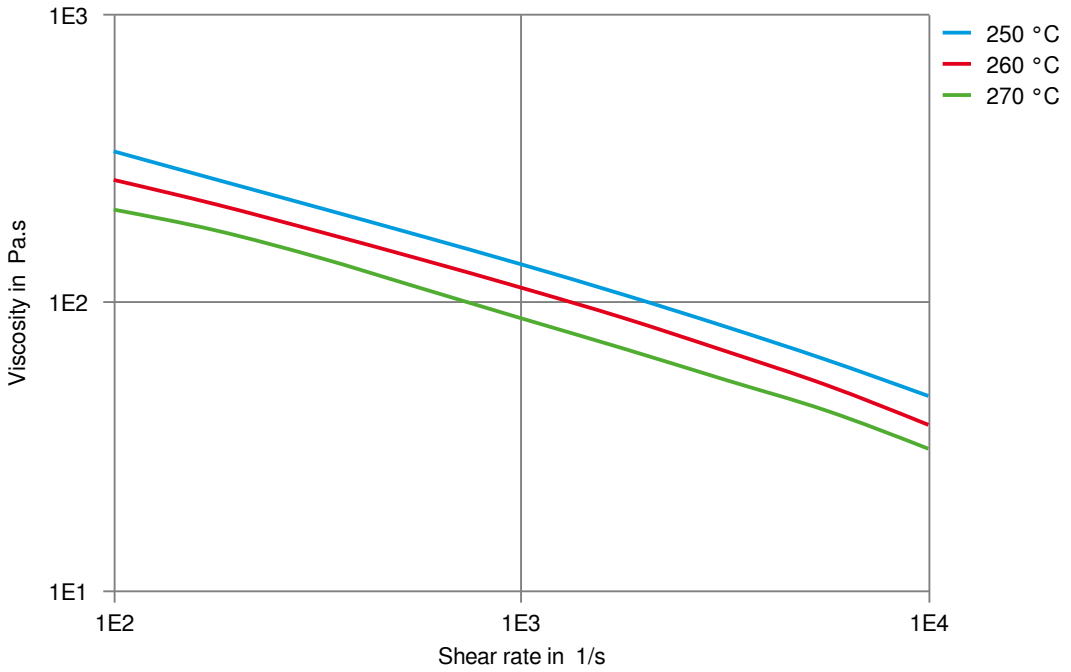
Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
General Motors	GMW16733P-PBT-GF30F	N/A
Li Auto	Q/LiA5310038	2021 (V2)
Renault	No Spec, Special Part Approval, See Your CE Account Manager.	
SAIC Motor	SMTC 5 310 055	ED3002 Black
Stellantis	MS.90181 / PBT.GF30.9000T.3C.FR	Technical Black;01896_10_00327
Stellantis - Chrysler	MS.50103 / CPN-2253	Natural
Stellantis - Chrysler	MS.50103 / CPN-2253	Technical Black

Viscosity-shear rate



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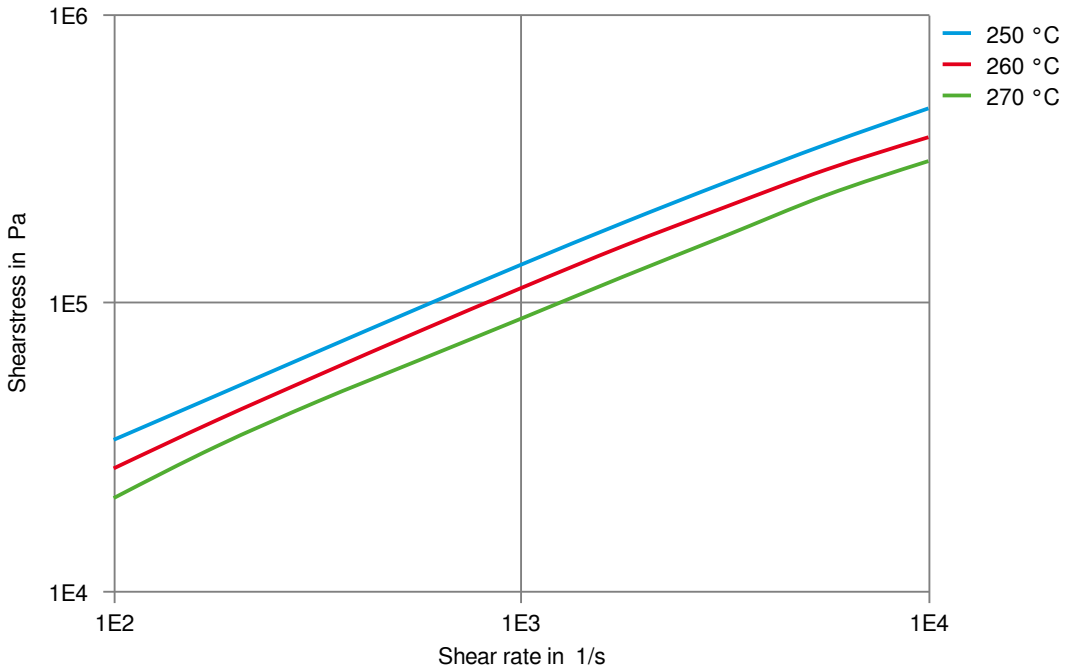
Shearstress-shear rate



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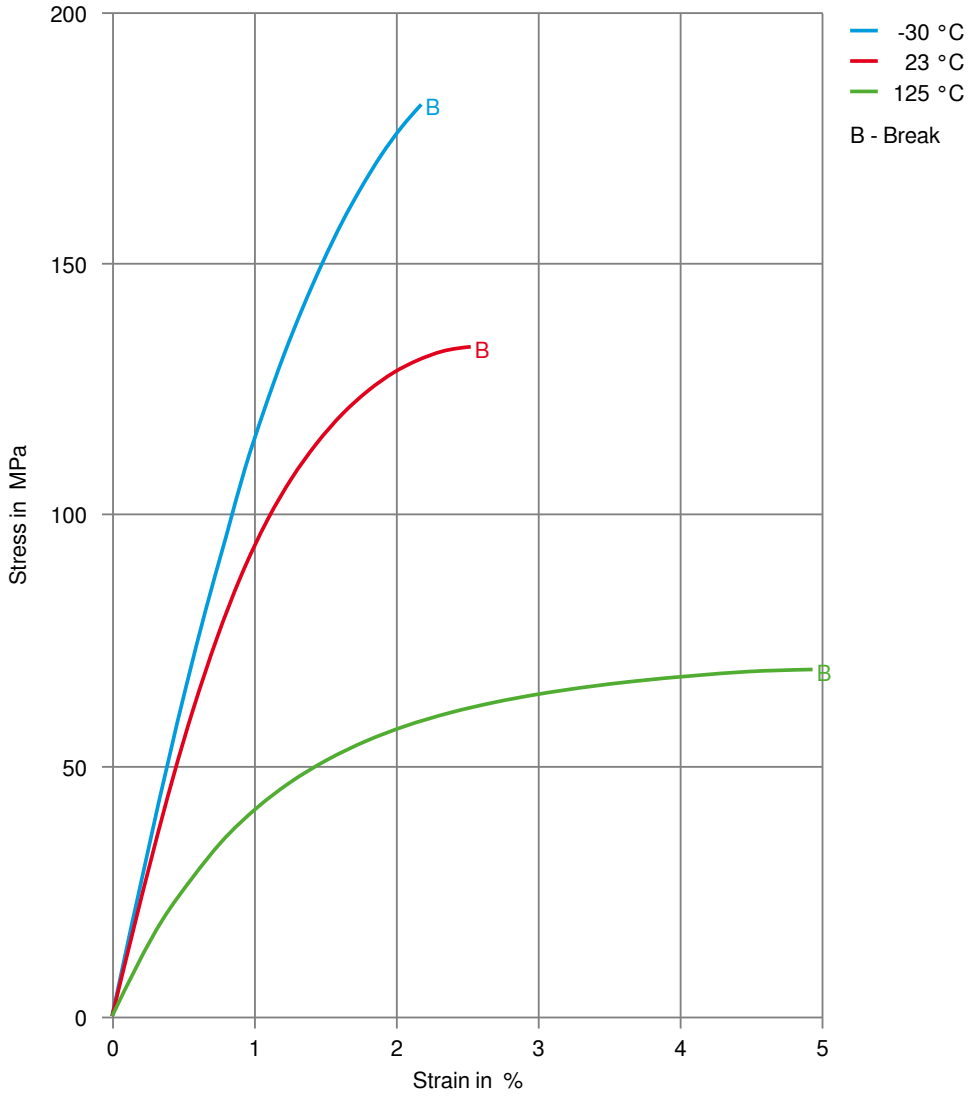
Stress-strain



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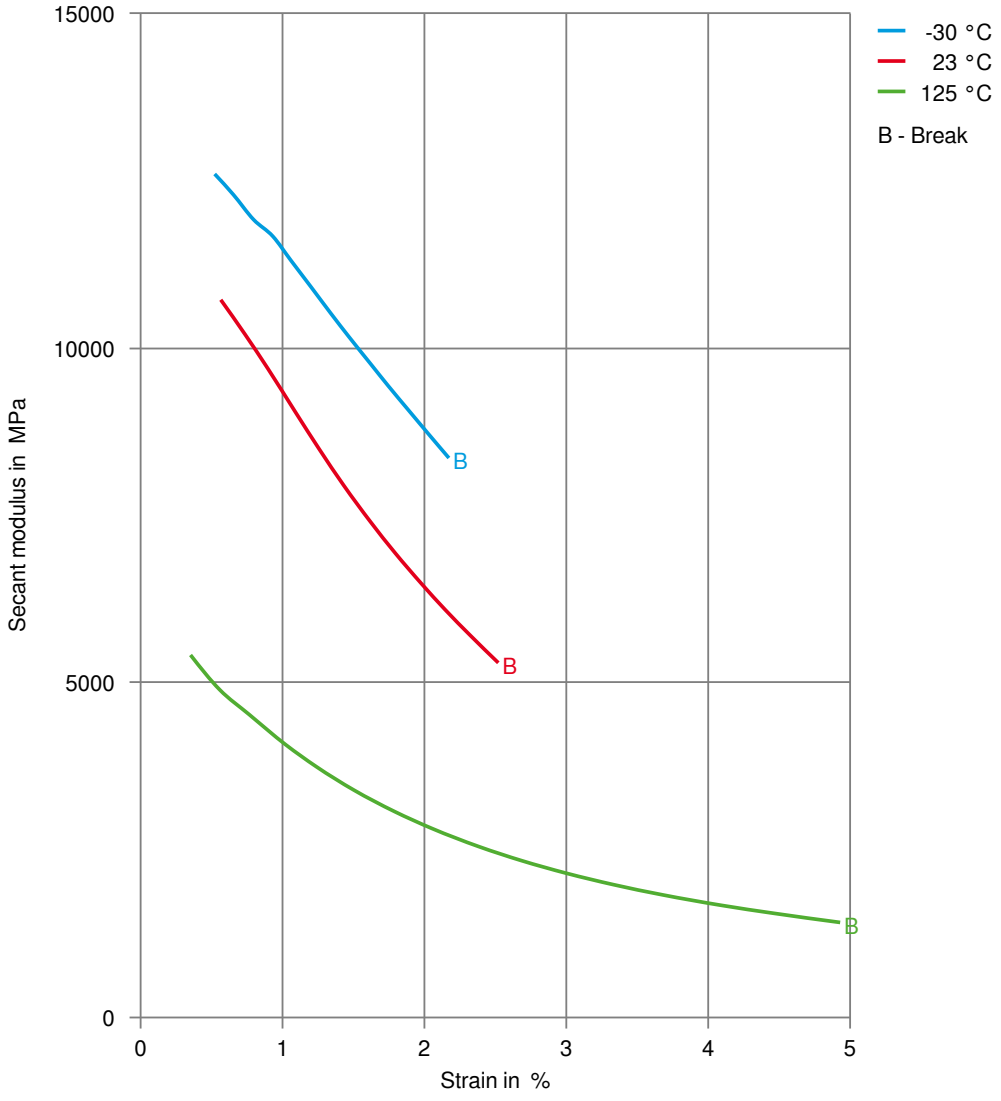
Secant modulus-strain



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