CELANEX® 3100-2

CELANEX® PBT

Celanex 3100 is a general purpose, 7.5% glass reinforced polybutylene terephthalate with a good balance of mechanical properties and processability. Celanex 3100 is a high flow material.

Product information

Resin Identification	PBT-GF7		ISO 1043
Part Marking Code	>PBT-GF7<		ISO 11469

Rheological properties

Melt volume-flow rate	18	cm^3/10min	ISO 1133
Temperature	482	°F	
Load	4.76	lb	
Melt mass-flow rate	14	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Molding shrinkage range, parallel	0.6 - 1	%	ISO 294-4, 2577
Molding shrinkage range, normal	1 - 1.4	%	ISO 294-4, 2577

Typical mechanical properties

Tensile modulus	537000	psi	ISO 527-1/-2
Tensile stress at break, 5mm/min	11300	psi	ISO 527-1/-2
Tensile strain at break, 5mm/min	8	%	ISO 527-1/-2
Flexural modulus	515000	psi	ISO 178
Flexural strength	15200	psi	ISO 178
Charpy impact strength, 23°C	N	$ftlb/in^2$	ISO 179/1eU
Charpy impact strength, -30°C	90.4	$ftlb/in^2$	ISO 179/1eU
Charpy notched impact strength, 23°C	2.85	$ftlb/in^2$	ISO 179/1eA
Charpy notched impact strength, -30°C	2.62	$ftlb/in^2$	ISO 179/1eA
Izod notched impact strength, 23°C	1.81	$ftlb/in^2$	ISO 180/1A
Izod impact strength, 23°C	10.9	$ftlb/in^2$	ISO 180/1U

Thermal properties

Melting temperature, 10°C/min	437	°F	ISO 11357-1/-3
Glass transition temperature, 10°C/min	140	°F	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	289	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	403	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	365	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.72	E-4/°F	ISO 11359-1/-2
Thermal conductivity of melt	0.131	W/(m K)	ISO 22007-2
Specific heat capacity of melt	1970	J/(kg K)	ISO 22007-4

Flammability

Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.0280	in	IEC 60695-11-10
Oxygen index	22	%	ISO 4589-1/-2

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Electrical properties

Relative permittivity, 100Hz	4		IEC 62631-2-1
Relative permittivity, 1MHz	3.6		IEC 62631-2-1
Dissipation factor, 100Hz	13	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	200	E-4	IEC 62631-2-1
Volume resistivity	1E11	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Electric strength	584	kV/in	IEC 60243-1
Arc Resistance	130	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.2	%	Sim. to ISO 62
Water absorption, 2mm	0.6	%	Sim. to ISO 62
Density	0.0487	lb/in^3	ISO 1183
Density of melt	69.3	lb/ft^3	

Injection

Drying Recommended	yes	
Drying Temperature	248	°F
Drying Time, Dehumidified Dryer	4	h
Processing Moisture Content	≤0.02	%
Melt Temperature Optimum	482	°F
Min. melt temperature	464	°F
Max. melt temperature	500	°F
Max. screw tangential speed	0.1 - 0.3	m/s
Mold Temperature Optimum	176	°F
Min. mold temperature	140	°F
Max. mold temperature	266	°F
Ejection temperature	426	°F

Characteristics

Processing	Injection Molding
Additives	Release agent
Special characteristics	Heat stabilized or stable to heat

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)

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Center Temperature 460-480(235-250) deg F (deg C)
Front Temperature 470-500(240-260) deg F (deg C)
Nozzle Temperature 480-500(250-260) deg F (deg C)
Melt Temperature 460-500(235-260) 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 25% clean and dry regrind may be used.

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.

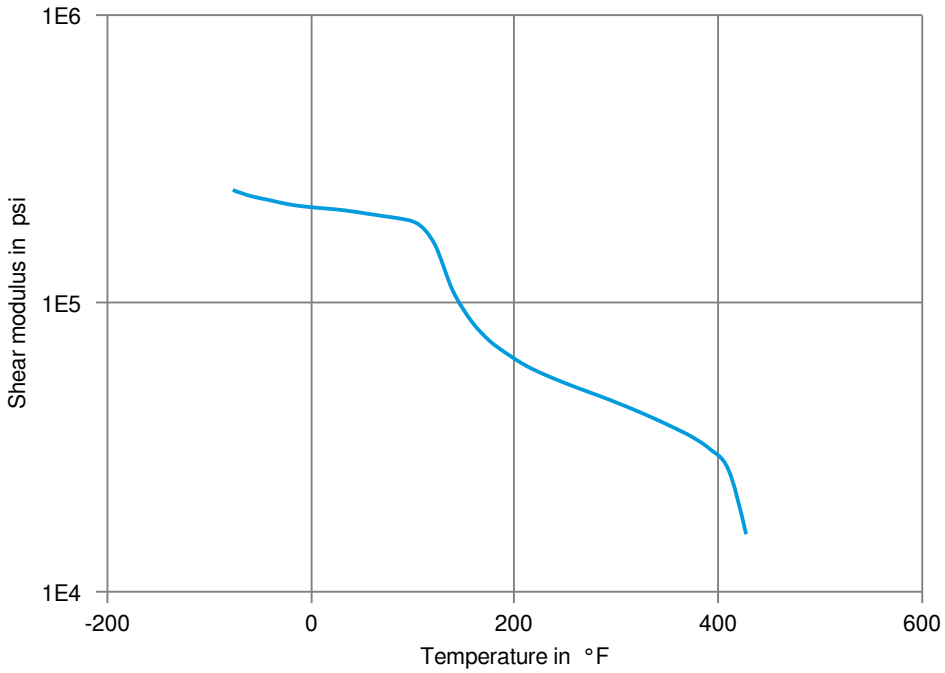
Storage

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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Dynamic Shear modulus-temperature



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