CELANEX® 2016

CELANEX® PBT

Celanex 2016 is a non-exuding flame retarded (UL and CSA approved V-0 at 1/32 inch and 5V at 1/8 inch), unreinforced polybutylene terephthalate which has an excellent balance of mechanical properties and processability. It is well suited for electrical connector applications where UL approved 50% regrind use capability makes maximum use of purchased product.

Product information

Resin Identification	PBT FR(17)	ISO 1043
Part Marking Code	>PBT FR(17)<	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	25	g/10min	ISO 1133
Melt mass-flow rate, Temperature	482	°F	
Melt mass-flow rate, Load	4.76	lb	
Molding shrinkage range, parallel	1.7 - 2.1	%	ISO 294-4, 2577
Molding shrinkage range, normal	1.6 - 1.9	%	ISO 294-4, 2577

Typical mechanical properties

Shore D hardness, 15s	81		ISO 48-4 / ISO 868
Tensile modulus	435000	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	8700	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	3.5	%	ISO 527-1/-2
Nominal strain at break	10	%	ISO 527-1/-2
Tensile strain at break, 50mm/min	20	%	ISO 527-1/-2
Flexural modulus	450000	psi	ISO 178
Flexural strength	13800	psi	ISO 178
Charpy impact strength, 23°C	26.2	$ftlb/in^2$	ISO 179/1eU
Charpy impact strength, -30°C	26.2	$ftlb/in^2$	ISO 179/1eU
Charpy notched impact strength, 23°C	1.9	$ftlb/in^2$	ISO 179/1eA
Charpy notched impact strength, -30°C	2.14	$ftlb/in^2$	ISO 179/1eA
Izod notched impact strength, 23°C	2.14	$ftlb/in^2$	ISO 180/1A
Hardness, Rockwell, M-scale	79		ISO 2039-2
Ball indentation hardness, H 961/30	23200	psi	ISO 2039-1

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	154	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	329	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	374	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.35	E-4/°F	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	0.428	E-4/°F	ISO 11359-1/-2

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Flammability

Burning Behav. at thickness h	V-0	class	IEC 60695-11-10
Thickness tested	0.0295	in	IEC 60695-11-10
Burning Behav. 5V at thickness h	5VA	class	IEC 60695-11-20
Thickness tested	0.1181	in	IEC 60695-11-20
Oxygen index	30	%	ISO 4589-1/-2
Glow Wire Flammability Index, 0.75mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1760	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1760	°F	IEC 60695-2-12

Electrical properties

Relative permittivity, 100Hz	3.6		IEC 62631-2-1
Relative permittivity, 1MHz	3.5		IEC 62631-2-1
Dissipation factor, 100Hz	47	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	185	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	635	kV/in	IEC 60243-1
Comparative tracking index	250		IEC 60112
Arc Resistance	117	s	UL 746B

Physical/Other properties

Humidity absorption, 2mm	0.17	%	Sim. to ISO 62
Water absorption, 2mm	0.45	%	Sim. to ISO 62
Water absorption, Immersion 24h	0.07	%	Sim. to ISO 62
Density	0.052	lb/in³	ISO 1183

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	374	°F

Automotive

OEM	STANDARD	ADDITIONAL INFORMATION
Stellantis - Chrysler	MS.50103 / CPN-3945	Canod

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Characteristics

Processing	Injection Molding
Additives	Release agent, 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.

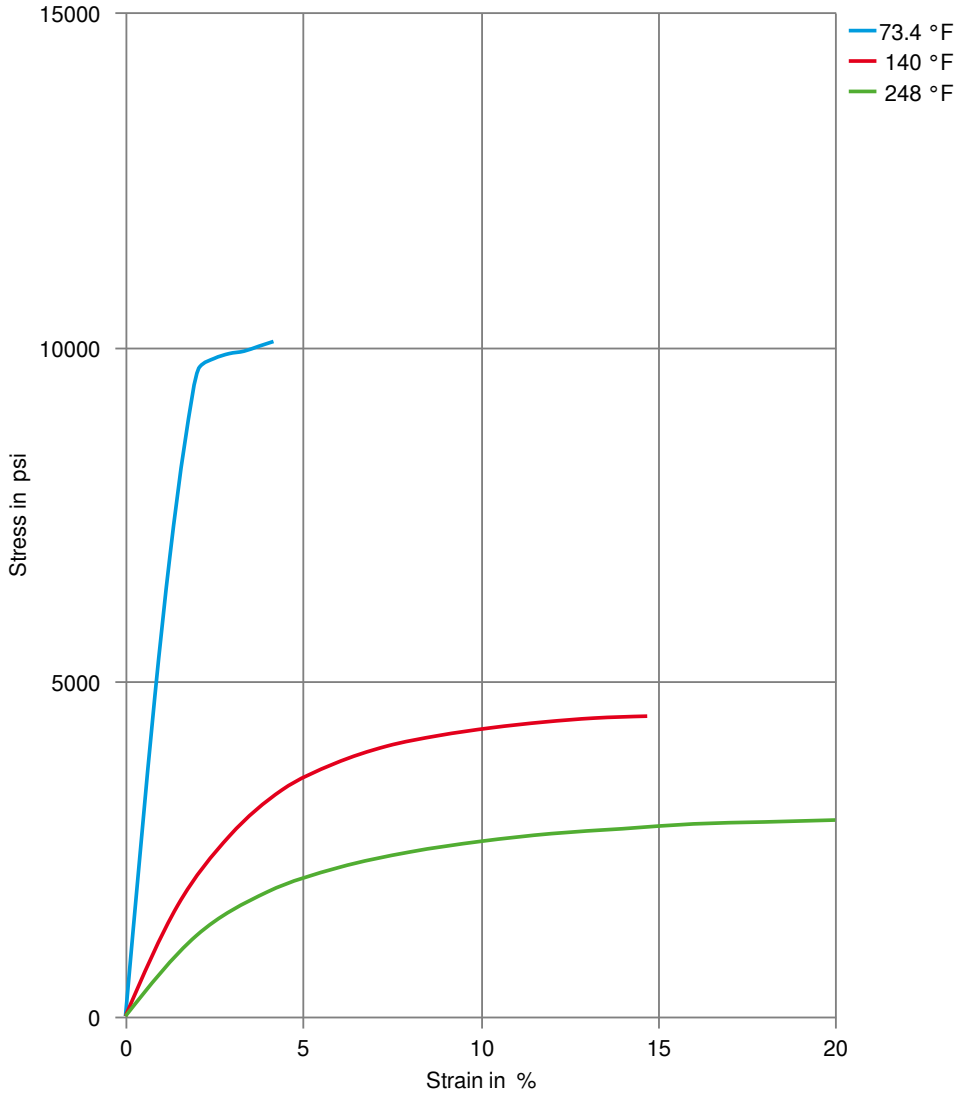
Storage

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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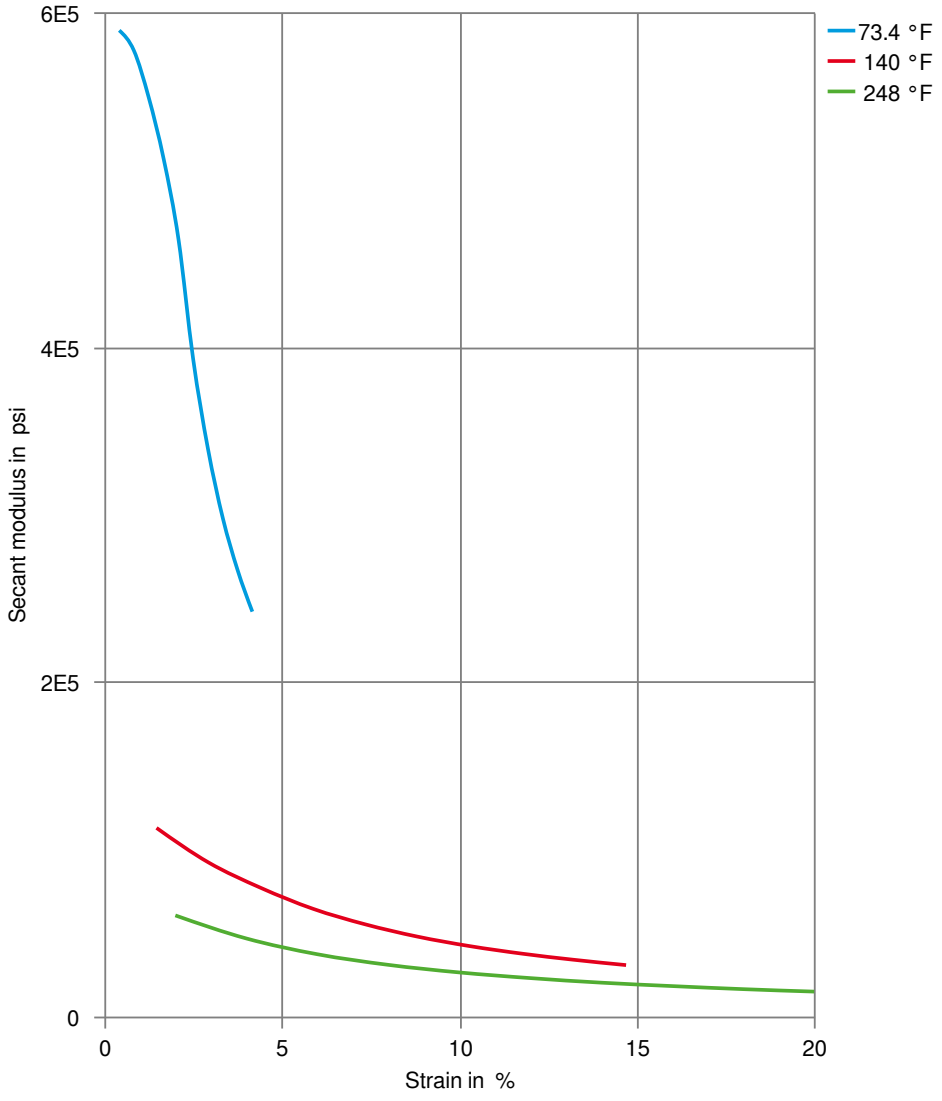
Stress-strain



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Secant modulus-strain



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