Celanese
The chemistry inside innovation™

CELANEX® 2004-2

CELANEX® PBT

Celanex 2004-2 is an unfilled polyester that has an excellent combination of flowability and toughness. A typical application for Celanex 2004-2 is electrical connectors containing latches. Celanex 2004-2 contains an internal lubricant.

Product information

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

Rheological properties

Melt volume-flow rate	33	cm^3/10min	ISO 1133
Temperature	482	°F	
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	348000	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	7800	psi	ISO 527-1/-2
Tensile strain at yield, 50mm/min	8	%	ISO 527-1/-2
Nominal strain at break	37	%	ISO 527-1/-2
Flexural modulus	334000	psi	ISO 178
Flexural strength	10000	psi	ISO 178
Charpy impact strength, 23°C	104[P]	ftlb/in^2	ISO 179/1eU
Charpy impact strength, -30°C	21.4	ftlb/in^2	ISO 179/1eU
Charpy notched impact strength, 23°C	2.14	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	2.19	ftlb/in^2	ISO 180/1A
Izod notched impact strength, -30°C	2.19	ftlb/in^2	ISO 180/1A
Izod impact strength, 23°C	N	ftlb/in^2	ISO 180/1U

[P]: Partial Break

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	129	°F	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	331	°F	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	347	°F	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	0.61	E-4/°F	ISO 11359-1/-2

Flammability

Burning Behav. at thickness h	HB	class	IEC 60695-11-10
Thickness tested	0.0394	in	IEC 60695-11-10

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CELANEX® 2004-2

CELANEX® PBT

Electrical properties

Relative permittivity, 100Hz	3.7		IEC 62631-2-1
Relative permittivity, 1MHz	3.5		IEC 62631-2-1
Dissipation factor, 100Hz	30	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	210	E-4	IEC 62631-2-1
Volume resistivity	>1E13	Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15	Ohm	IEC 62631-3-2
Arc Resistance	181	s	UL 746B

Physical/Other properties

Water absorption, 2mm	0.45	%	Sim. to ISO 62
Density	0.0469	lb/in^3	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	365	°F

Automotive

OEM	ADDITIONAL INFORMATION
Renault	No spec listed

Characteristics

Processing	Injection Molding
Special characteristics	High impact or impact modified

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)

CELANEX® 2004-2

CELANEX® PBT

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.

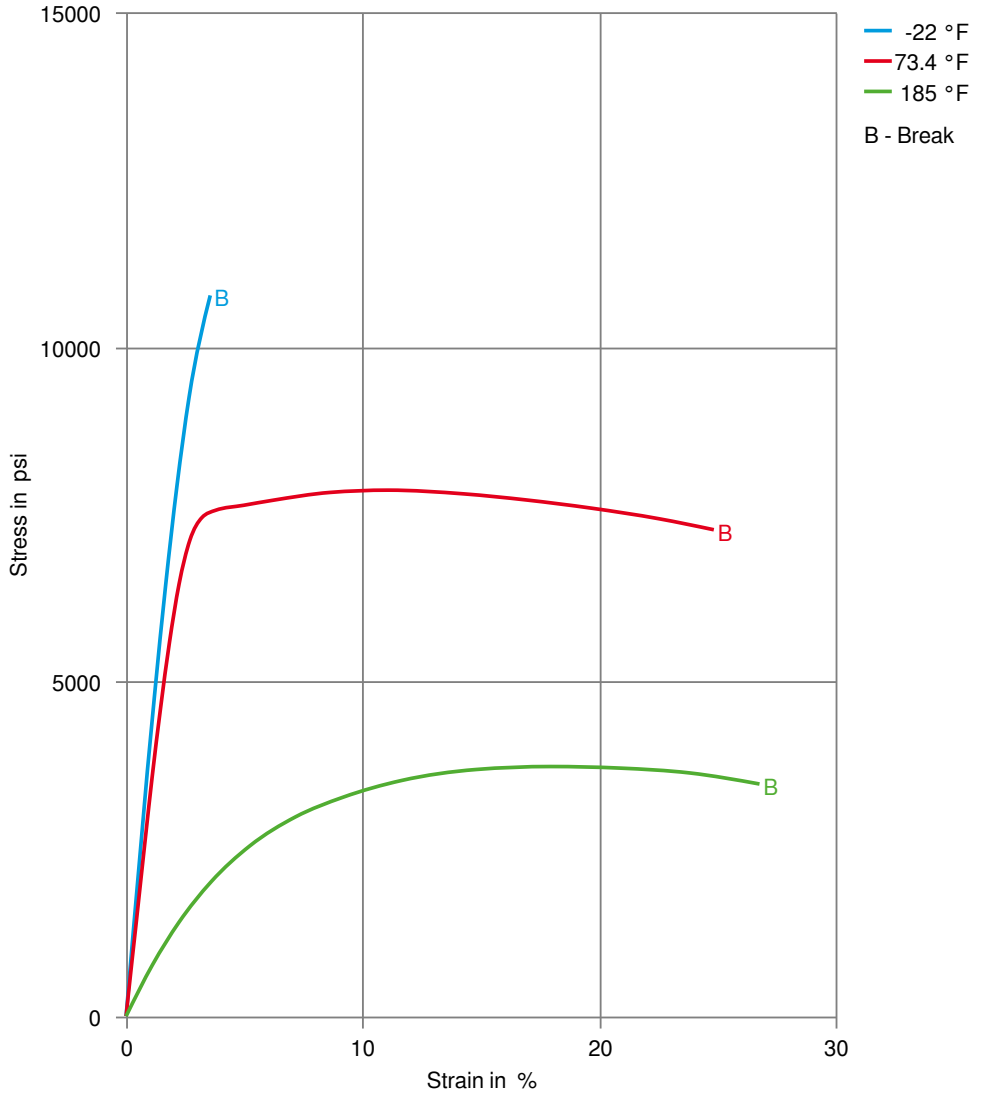
Storage

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

CELANEX® 2004-2

CELANEX® PBT

Stress-strain

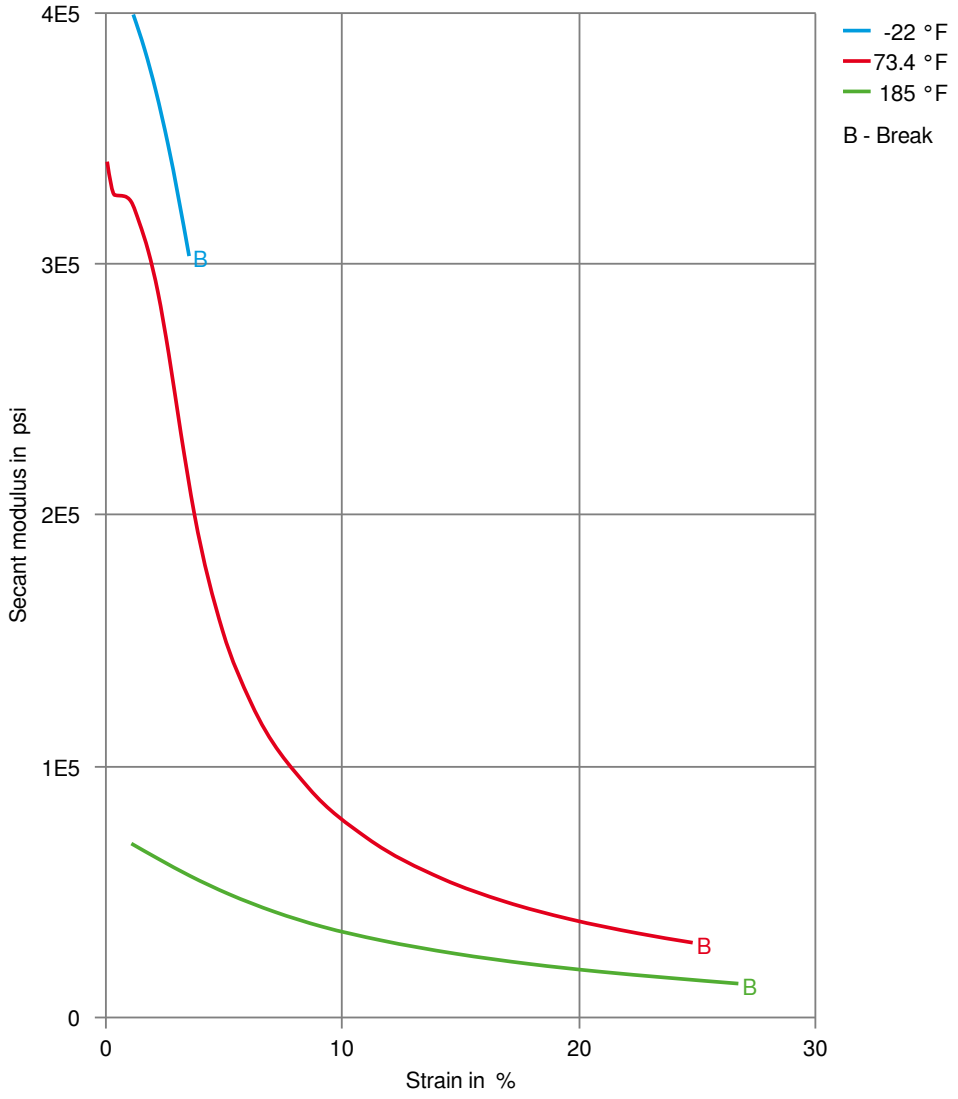


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CELANEX® 2004-2

CELANEX® PBT

Secant modulus-strain



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