

**CELANEX® 1700USFDA - PBT**
**Description**

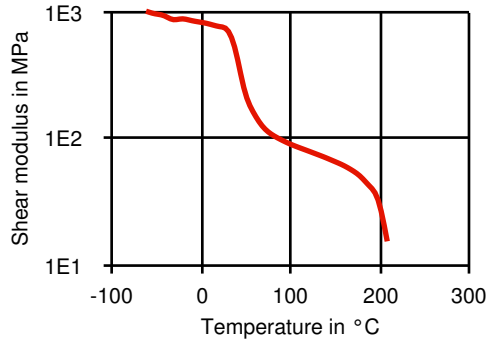
Celanex 1700USFDA is a very high molecular weight extrusion grade of unreinforced polybutylene terephthalate for use in US FDA applications.

<b>Physical properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Density	1310	kg/m <sup>3</sup>	ISO 1183
Melt flow rate, MFR	4.5	g/10min	ISO 1133
MFR temperature	250	°C	ISO 1133
MFR load	2.16	kg	ISO 1133
Molding shrinkage, parallel	1.8 - 2.0	%	ISO 294-4, 2577
Molding shrinkage, normal	1.8 - 2.0	%	ISO 294-4, 2577
Water absorption, 23°C-sat	0.45	%	ISO 62
Humidity absorption, 23°C/50%RH	0.2	%	ISO 62
<b>Mechanical properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Tensile modulus	2500	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	60	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	6	%	ISO 527-2/1A
Tensile nominal strain at break, 50mm/min	>50	%	ISO 527-2/1A
Tensile stress at 50% strain, 50mm/min	28	MPa	ISO 527-2/1A
Tensile stress at break, 50mm/min	35	MPa	ISO 527-2/1A
Tensile strain at break, 50mm/min	120	%	ISO 527-2/1A
Flexural modulus, 23°C	2200	MPa	ISO 178
Flexural strength, 23°C	80	MPa	ISO 178
Charpy impact strength, 23°C	NB	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	220	kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	7.5	kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	7	kJ/m <sup>2</sup>	ISO 179/1eA
Izod impact notched, 23°C	5.5	kJ/m <sup>2</sup>	ISO 180/1A
Rockwell hardness (M-Scale)	72	M-Scale	ISO 2039-2
<b>Mechanical properties (TPE)</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Shore D hardness, 15s	80	-	ISO 868
<b>Thermal properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Melting temperature, 10°C/min	225	°C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60	°C	ISO 11357-1,-2,-3
DTUL at 1.8 MPa	50	°C	ISO 75-1, -2
DTUL at 0.45 MPa	150	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	182	°C	ISO 306
Coeff. of linear therm expansion, parallel	1.1	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	0.92	E-4/°C	ISO 11359-2
Limiting oxygen index (LOI)	22	%	ISO 4589-1/-2
Flammability at thickness h	HB	class	UL 94
thickness tested (h)	0.75	mm	UL 94
<b>Electrical properties</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Relative permittivity, 100Hz	4	-	IEC 60250
Relative permittivity, 1MHz	3.6	-	IEC 60250
Dissipation factor, 100Hz	14	E-4	IEC 60250
Dissipation factor, 1MHz	210	E-4	IEC 60250
Volume resistivity	>1E13	Ohm*m	IEC 60093
Surface resistivity	>1E15	Ohm	IEC 60093
Electric strength	23	kV/mm	IEC 60243-1
Comparative tracking index	600	-	IEC 60112

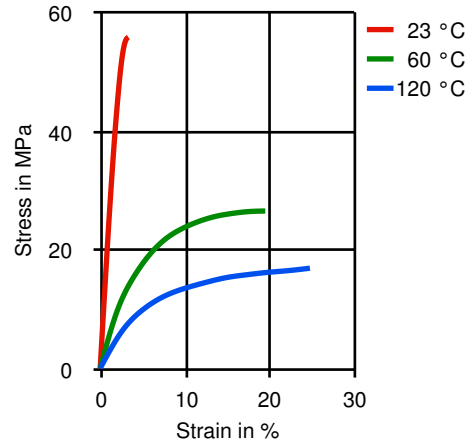
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**Diagrams**

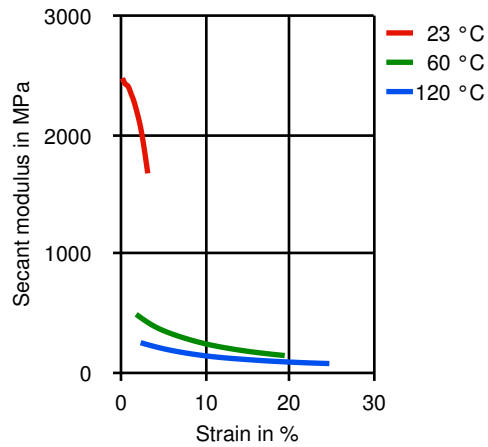
**Dynamic Shear modulus-temperature**



**Stress-strain**



**Secant modulus-strain**



**Typical injection moulding processing conditions**

<b>Pre Drying</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Necessary low maximum residual moisture content	0.02	%	-
Drying time	4	h	-
Drying temperature	120 - 130	°C	-
<b>Temperature</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Hopper temperature	20 - 50	°C	-
Feeding zone temperature	230 - 240	°C	-
Zone1 temperature	230 - 240	°C	-
Zone2 temperature	235 - 250	°C	-
Zone3 temperature	235 - 250	°C	-
Zone4 temperature	240 - 260	°C	-
Nozzle temperature	250 - 260	°C	-
Melt temperature	235 - 260	°C	-
Mold temperature	65 - 93	°C	-
Hot runner temperature	250 - 260	°C	-
<b>Speed</b>	<b>Value</b>	<b>Unit</b>	<b>Test Standard</b>
Injection speed	medium-fast	-	-

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### Pre-drying

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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.

### Longer pre-drying times/storage

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

### Characteristics

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#### Special Characteristics

High viscosity

#### Processing

Film extrusion, Other extrusion, Sheet extrusion

#### Product Categories

Unfilled

#### Delivery Form

Pellets