Celanese
The chemistry inside innovation™

CELANEX® 1600USFDA - PBT

Description

Celanex 1600USFDA is a high molecular weight grade of unreinforced polybutylene terephthalate for use in injection molding and extrusion US FDA applications.

Physical properties	Value	Unit	Test Standard
Density	**1310**	kg/m³	ISO 1183
Melt flow rate, MFR	**9.9**	g/10min	ISO 1133
MFR temperature	**250**	°C	ISO 1133
MFR load	**2.16**	kg	ISO 1133
Melt volume rate, MVR	**8.5**	cm³/10min	ISO 1133
MVR temperature	**250**	°C	ISO 1133
MVR 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

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**2550**	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	**60**	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	**5**	%	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	**33**	MPa	ISO 527-2/1A
Tensile strain at break, 50mm/min	**115**	%	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/m²	ISO 179/1eU
Charpy impact strength, -30°C	**210**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**7**	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	**6.5**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**5.5**	kJ/m²	ISO 180/1A
Rockwell hardness (M-Scale)	**72**	M-Scale	ISO 2039-2

Mechanical properties (TPE)	Value	Unit	Test Standard
Shore D hardness, 15s	**77**	-	ISO 868

Thermal properties	Value	Unit	Test Standard
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	**185**	°C	ISO 306
Coeff. of linear therm expansion, parallel	**1.1**	E-4/°C	ISO 11359-2
Coeff. of linear therm expansion, normal	**1.03**	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

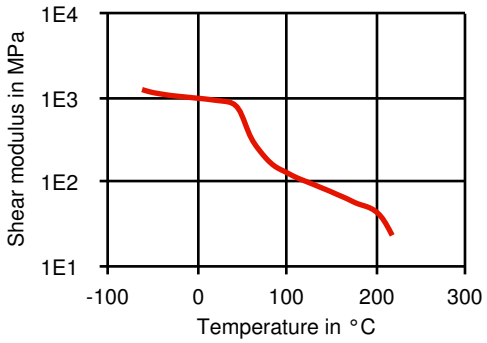
Electrical properties	Value	Unit	Test Standard
Relative permittivity, 100Hz	**4**	-	IEC 60250
Relative permittivity, 1MHz	**3.5**	-	IEC 60250
Dissipation factor, 100Hz	**14**	E-4	IEC 60250
Dissipation factor, 1MHz	**210**	E-4	IEC 60250
Volume resistivity	**>1E13**	Ohm*m	IEC 60093
Surface resistivity	**>1E15**	Ohm	IEC 60093

CELANEX® 1600USFDA - PBT

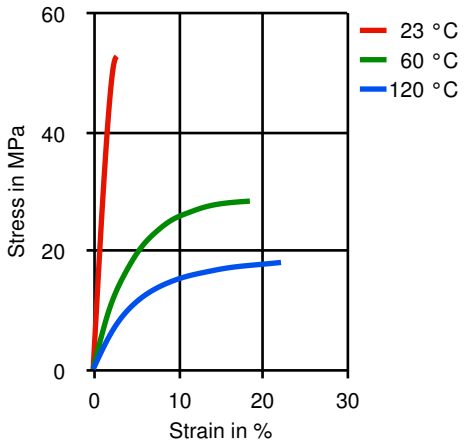
Electric strength	**23**	kV/mm	IEC 60243-1
Comparative tracking index	**600**	-	IEC 60112

Diagrams

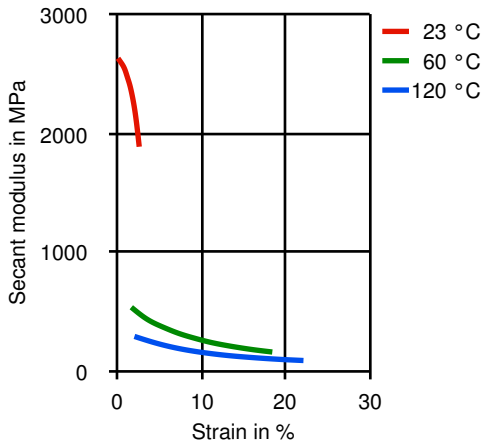
Dynamic Shear modulus-temperature



Stress-strain



Secant modulus-strain



Typical injection moulding processing conditions

Pre Drying	**Value**	**Unit**	**Test Standard**
Necessary low maximum residual moisture content	**0.02**	%	-
Drying time	**4**	h	-
Drying temperature	**120 - 130**	°C	-
Temperature	**Value**	**Unit**	**Test Standard**
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	-
Pressure	**Value**	**Unit**	**Test Standard**
Back pressure max.	**3.5**	bar	-

CELANEX® 1600USFDA - PBT

Speed	Value	Unit	Test Standard
Injection speed	**medium-fast**	-	-

Other text information

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% prior to processing. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C). Typical drying conditions are 250°F (121°C) for 4 hours. For subsequent storage of material in the dryer until processed, drying temperature should be lowered to 100 deg C and material should not kept in dryer for more than 60 hrs.

Injection molding

Injection speed, injection pressure and holding pressure should be optimized for individual article geometry. To avoid material degradation during processing, low back pressure and minimum screw speed should be used. Overheating of material should be avoided. Up to 25% clean and dry regrind may be used.

Characteristics

Special Characteristics	Processing
High viscosity	Film extrusion, Injection molding, Other extrusion, Sheet extrusion

Product Categories	Delivery Form
Unfilled	Pellets