Celanese
The chemistry inside innovation™

CELANEX® 2500-6FC - PBT

Description

Celanex® PBT 2500-6FC is an easy flow and nucleated polybutylene terephthalate grade for injection molding.
Celanex 2500-6FC is a general purpose, unreinforced polybutylene terephthalate with a good balance of mechanical properties and processability for use in food contact applications. Celanex 2500-6FC is a medium to high flow material that contains a lubricant and nucleant additive package, which has been designed to support customers in reaching shorter cycle times and higher productivity targets.

Physical properties	Value	Unit	Test Standard
Density	**81.8**	lb/ft³	ISO 1183
Melt volume rate, MVR	**40**	cm³/10min	ISO 1133
MVR temperature	**482**	°F	ISO 1133
MVR load	**4.76**	lb	ISO 1133
Molding shrinkage, parallel (flow)	**1.8 - 2.3**	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	**1.8 - 2.1**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**0.45**	%	Sim. to ISO 62
Humidity absorption, 23°C/50%RH	**0.2**	%	ISO 62

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**391603**	psi	ISO 527-1, -2
Tensile stress at yield, 50mm/min	**8990**	psi	ISO 527-1, -2
Tensile strain at yield, 50mm/min	**4**	%	ISO 527-1, -2
Tensile nominal strain at break, 50mm/min	**15**	%	ISO 527-1, -2
Tensile stress at break, 50mm/min	**7980**	psi	ISO 527-1, -2
Flexural strength, 23°C	**13100**	psi	ISO 178
Flexural stress at 3.5% strain	**11600**	psi	ISO 178
Charpy impact strength, 23°C	**64.2**	ft-lb/in²	ISO 179/1eU
Charpy impact strength, -30°C	**61.8**	ft-lb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	**2.38**	ft-lb/in²	ISO 179/1eA
Charpy notched impact strength, -30°C	**2.14**	ft-lb/in²	ISO 179/1eA

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**437**	°F	ISO 11357-1/-3
DTUL at 1.8 MPa	**140**	°F	ISO 75-1, -2
DTUL at 0.45 MPa	**320**	°F	ISO 75-1, -2
Vicat softening temperature, 50°C/h 50N	**374**	°F	ISO 306
Coeff. of linear therm expansion, parallel	**0.611**	E-4/°F	ISO 11359-2

Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23°C	**>1E13**	Ohm*m	IEC 62631-3-1
Surface resistivity, 23°C	**>1E15**	Ohm	IEC 62631-3-2

Rheological calculation properties	Value	Unit	Test Standard
Density of melt	**69.3**	lb/ft³	Internal
Thermal conductivity of melt	**0.133**	W/(m K)	Internal
Spec. heat capacity melt	**1920**	J/(kg K)	Internal
Ejection temperature	**426**	°F	Internal

Typical injection moulding processing conditions

Pre Drying	Value	Unit
Necessary low maximum residual moisture content	**0.02**	%
Drying time	**2 - 4**	h
Drying temperature	**248 - 284**	°F

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Temperature	Value	Unit
Hopper temperature	**68 - 122**	°F
Feeding zone temperature	**374 - 392**	°F
Zone1 temperature	**464 - 482**	°F
Zone2 temperature	**464 - 482**	°F
Zone3 temperature	**473 - 491**	°F
Zone4 temperature	**473 - 491**	°F
Nozzle temperature	**482 - 500**	°F
Melt temperature	**482 - 500**	°F
Mold temperature	**167 - 185**	°F
Hot runner temperature	**482 - 500**	°F

Speed	Value
Injection speed	**fast**

Other text information

Pre-drying

CELANEX should in principle be predried. Because of the necessary low maximum residual moisture content the use of dry air dryers is recommended. The dew point should be =< - 30° C. The time between drying and processing should be as short as possible.

Longer pre-drying times/storage

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

Injection molding

Melt Temperature 250-260 °C
Mold Temperature 75-85 °C
Maximum Barrel Residence Time *) 5-10 min
Injection Speed fast
Peripheral screw speed max.0,3 m/sec
Back Pressure 10-30 bar
Injection Pressure 600-1000 bar
Holding Pressure 400-800 bar
Nozzle Design open design preferred

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. For grades containing flame retardants, a maximum temperature of 265 °C should not be exceeded.

Celanese recommends only externally heated hot runner systems.

*) If the cylinder temperatures are higher than the recommended maximum temperatures, the max. residence time in the barrel has to be reduced.

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%. The drying should be done in a dry-air dryer (dew point < -30°C) with a temperature of 120 to 140 °C and a drying time of 4 to 2 hours. In case of longer residence times in the dry-air dryer, the temperature should be reduced to 100°C.
The time between drying and processing should be kept as short as possible. The processing machine feed hopper should be closed during the processing operation.

Characteristics

Product Categories	Unfilled
Processing	Injection molding
Regulatory	FDA food contact compliant
Delivery Form	Pellets
Additives	Release agent

Other Approvals

Developed for food contact applications in the EU, US [FDA] and China.