

# CELANEX® 3100-2

## CELANEX® PBT

Celanex 3100 is a general purpose, 7.5% glass reinforced polybutylene terephthalate with a good balance of mechanical properties and processability. Celanex 3100 is a high flow material.

### Product information

Resin Identification	PBT-GF7	ISO 1043
Part Marking Code	>PBT-GF7<	ISO 11469

### Rheological properties

Melt volume-flow rate	18 cm <sup>3</sup> /10min	ISO 1133
Temperature	250 °C	
Load	2.16 kg	
Melt mass-flow rate	14 g/10min	ISO 1133
Melt mass-flow rate, Temperature	250 °C	
Melt mass-flow rate, Load	2.16 kg	
Moulding shrinkage range, parallel	0.6 - 1 %	ISO 294-4, 2577
Moulding shrinkage range, normal	1 - 1.4 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile modulus	3700 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	78 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	8 %	ISO 527-1/-2
Flexural modulus	3550 MPa	ISO 178
Flexural strength	100 MPa	ISO 178
Charpy impact strength, 23°C	N kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	190 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	6 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	5.5 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	3.8 kJ/m <sup>2</sup>	ISO 180/1A
Izod impact strength, 23°C	23 kJ/m <sup>2</sup>	ISO 180/1U
Poisson's ratio	0.36 <sup>[C]</sup>	

[C]: Calculated

### Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	60 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	143 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	206 °C	ISO 75-1/-2
Vicat softening temperature, 50°C/h 50N	185 °C	ISO 306
Coefficient of linear thermal expansion (CLTE), parallel	130 E-6/K	ISO 11359-1/-2
Thermal conductivity of melt	0.131 W/(m K)	ISO 22007-2
Specific heat capacity of melt	1970 J/(kg K)	ISO 22007-4

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### Flammability

Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.71 mm	IEC 60695-11-10
Oxygen index	22 %	ISO 4589-1/-2

### Electrical properties

Relative permittivity, 100Hz	4	IEC 62631-2-1
Relative permittivity, 1MHz	3.6	IEC 62631-2-1
Dissipation factor, 100Hz	13 E-4	IEC 62631-2-1
Dissipation factor, 1MHz	200 E-4	IEC 62631-2-1
Volume resistivity	1E11 Ohm.m	IEC 62631-3-1
Surface resistivity	>1E15 Ohm	IEC 62631-3-2
Electric strength	23 kV/mm	IEC 60243-1
Arc Resistance	130 s	UL 746B

### Physical/Other properties

Humidity absorption, 2mm	0.2 %	Sim. to ISO 62
Water absorption, 2mm	0.6 %	Sim. to ISO 62
Density	1350 kg/m <sup>3</sup>	ISO 1183
Density of melt	1110 kg/m <sup>3</sup>	

### Injection

Drying Recommended	yes
Drying Temperature	120 °C
Drying Time, Dehumidified Dryer	4 h
Processing Moisture Content	≤0.02 %
Melt Temperature Optimum	250 °C
Min. melt temperature	240 °C
Max. melt temperature	260 °C
Screw tangential speed	0.1 - 0.3 m/s
Mold Temperature Optimum	80 °C
Min. mould temperature	60 °C
Max. mould temperature	130 °C
Ejection temperature	219 °C

### Characteristics

Processing	Injection Moulding
Delivery form	Pellets
Additives	Release agent
Special characteristics	Heat stabilised or stable to heat

### 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

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dehumidifying hopper dryer capable of dewpoints  $<-30^{\circ}\text{F}$  ( $-34^{\circ}\text{C}$ ) at  $250^{\circ}\text{F}$  ( $121^{\circ}\text{C}$ ) 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 470-500(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  $<-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ) at  $250^{\circ}\text{F}$  ( $121^{\circ}\text{C}$ ) for 4 hours.

### Storage

For subsequent storage of the material in the dryer until processed ( $\leq 60$  h) it is necessary to lower the temperature to  $100^{\circ}\text{C}$ .