

# CELANEX® 3400-2

## CELANEX® PBT

Celanex 3400-2 is a general purpose, 40% glass reinforced polybutylene terephthalate that offers a good combination of mechanical, electrical, and thermal properties. This grade provides outstanding processability and good chemical resistance. Celanex 3400-2 is a high flow material.

### Product information

Resin Identification	PBT-GF40	ISO 1043
Part Marking Code	>PBT-GF40<	ISO 11469

### Rheological properties

Melt mass-flow rate	8 g/10min	ISO 1133
Melt mass-flow rate, Temperature	250 °C	
Melt mass-flow rate, Load	2.16 kg	
Moulding shrinkage range, parallel	0.3 - 0.5 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.7 %	ISO 294-4, 2577

### Typical mechanical properties

Tensile modulus	12100 MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	140 MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	2.4 %	ISO 527-1/-2
Flexural modulus	11000 MPa	ISO 178
Flexural strength	220 MPa	ISO 178
Charpy impact strength, 23°C	47 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy impact strength, -30°C	45 kJ/m <sup>2</sup>	ISO 179/1eU
Charpy notched impact strength, 23°C	11 kJ/m <sup>2</sup>	ISO 179/1eA
Charpy notched impact strength, -30°C	9.5 kJ/m <sup>2</sup>	ISO 179/1eA
Izod notched impact strength, 23°C	10 kJ/m <sup>2</sup>	ISO 180/1A
Hardness, Rockwell, M-scale	93	ISO 2039-2
Poisson's ratio	0.33 <sup>[C]</sup>	
Shore D hardness, 15s	85	ISO 48-4 / ISO 868

[C]: Calculated

### Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Glass transition temperature, 10°C/min	45 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	212 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	225 °C	ISO 75-1/-2
Coefficient of linear thermal expansion (CLTE), parallel	15 E-6/K	ISO 11359-1/-2
Coefficient of linear thermal expansion (CLTE), normal	101 E-6/K	ISO 11359-1/-2

### Flammability

Burning Behav. at thickness h	HB class	IEC 60695-11-10
Thickness tested	0.71 mm	IEC 60695-11-10

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### Electrical properties

Relative permittivity, 100Hz	3.5	IEC 62631-2-1
Relative permittivity, 1MHz	3.4	IEC 62631-2-1
Dissipation factor, 1MHz	130 E-4	IEC 62631-2-1
Volume resistivity	1E13 Ohm.m	IEC 62631-3-1
Surface resistivity	1E15 Ohm	IEC 62631-3-2
Electric strength	19 kV/mm	IEC 60243-1
Comparative tracking index	350	IEC 60112
Arc Resistance	127 s	UL 746B

### Physical/Other properties

Humidity absorption, 2mm	0.15 %	Sim. to ISO 62
Water absorption, 2mm	0.05 %	Sim. to ISO 62
Water absorption, Immersion 24h	0.07 %	Sim. to ISO 62
Density	1610 kg/m <sup>3</sup>	ISO 1183

### 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

### Characteristics

Processing	Injection Moulding
Delivery form	Pellets

### 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)  
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)

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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.

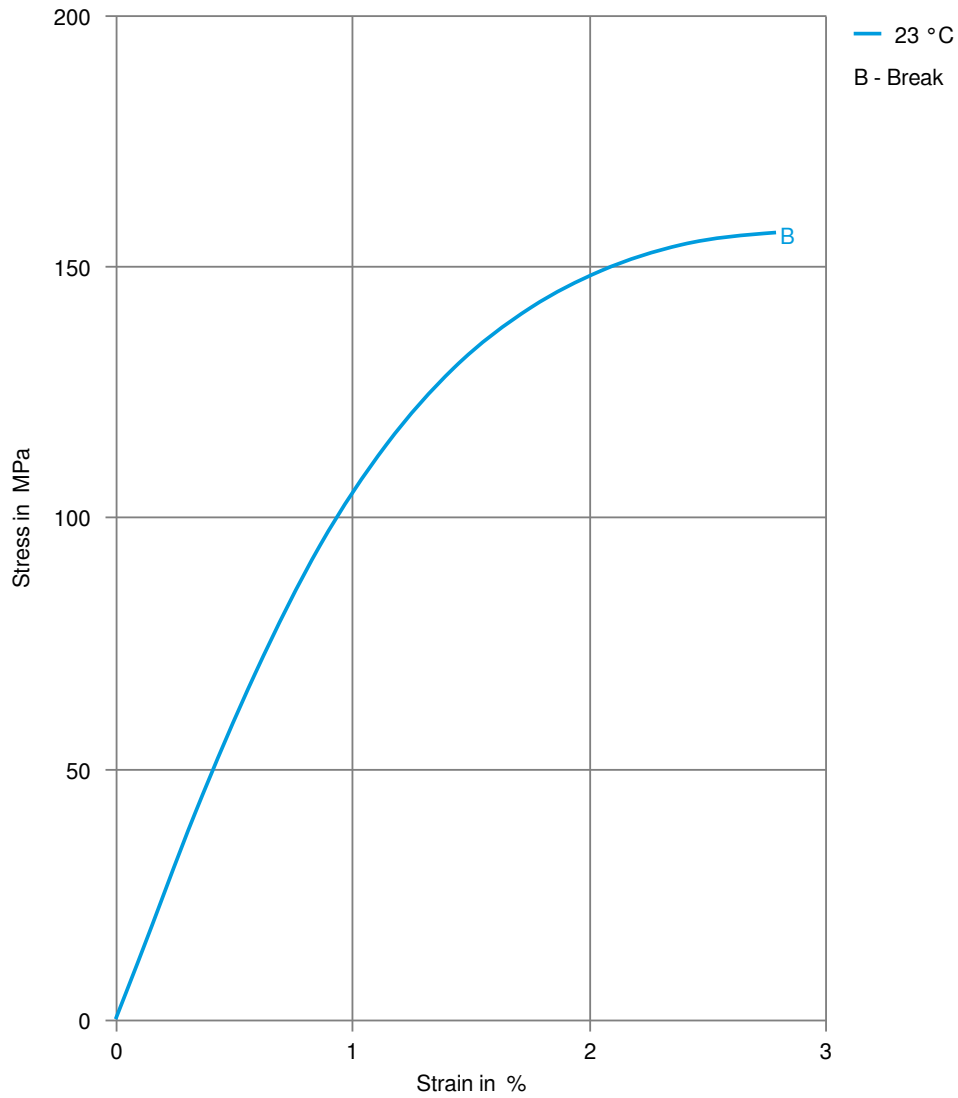
### Storage

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

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## Stress-strain



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## Secant modulus-strain

