

CBT[®] 100 Thermoplastic Resin - *Preliminary Data Sheet*

CBT[®] 100 resin melts to a water-like viscosity when heated, then polymerizes into the engineering thermoplastic polybutylene terephthalate (PBT). CBT 100 resin has a processing temperature range between 190-240°C (370-460°F) and will be available in both one and two-part systems. This resin is formulated for compounding, injection moulding, nanocomposites, rotational moulding and as a carrier resin for color and filler concentrates.

CBT 100 resin has a melt temperature of 180°C (356°F). It is supplied in pellet form and does not require grinding for most rotational moulding applications. Some of the typical properties of CBT 100 resin are listed in Table 1.

Table 1 - Typical Properties of CBT 100 resin (*not* polymerized)

Typical Properties	Test Method	SI Units		English Units	
Solid heat capacity	ASTM E1269	1.25	J/g.°C		
Liquid heat capacity @ 180°C/356°F	ASTM E1269	1.96	J/g.°C		
Heat of melting	ASTM E793	64	J/g		
Melting point		180	°C	356	°F
Melt viscosity @ 180°C/356°F	Cone and plate 10 1/s shear rate	33	mPa.s	33	cps
Melt viscosity @ 190°C/374°F	Cone and plate 10 1/s shear rate	26	mPa.s	26	cps
Melt viscosity @ 200°C/392°F	Cone and plate 10 1/s shear rate	18	mPa.s	18	cps
Melt viscosity @ 210°C/410°F	Cone and plate 10 1/s shear rate	15	mPa.s	15	cps
Melt viscosity @ 220°C/428°F	Cone and plate 10 1/s shear rate	12	mPa.s	12	cps
Liquid density		1.14	g/cm ³		

CBT 100 resin must be dried prior to moulding. The drying conditions are similar to other engineering thermoplastic polyesters such as PBT. Please refer to the Processing Guide or contact Cyclics Corporation for additional information.

For rotational moulding applications and spin casting applications, CBT 100 resin can be processed at temperatures between 190°C and 240°C (374°F and 464°F).

For injection moulding applications, CBT 100 resin can be processed between 230°C and 260°C (450°F and 500°F), similar to standard PBT resins. It can also be processed at much lower temperatures and lower pressures similar to thermoset injection moulding. In this case, CBT 100 resin can be injected as a liquid into a hot mould between 190°C and 200°C (370°F and 390°F) with a barrier temperature of between 130°C and 160°C (266°F and 320°F). In the hot mould, CBT 100 resin is converted into PBT, and can be de-moulded without cooling the mould. Typical properties of injection moulded CBT 100 resin are listed in Table 2.

Table 2 - Typical Properties of Moulded CBT 100 Resin (polymerized)

Process: Injection Moulding

Properties	Test Method	SI Units	English Units
MECHANICAL			
Tensile Strength @ Yield	ISO 527	54 MPa	7.8 ksi
Yield Strain	ISO 527	3.2 %	3.2 %
Break Strain, 5 mm/min strain rate	ISO 527	> 50 %	> 50 %
Tensile Modulus	ISO 527	2700 MPa	392 ksi
Flexural Modulus	ISO 178	2380 MPa	345 ksi
Flexural Strength	ISO 178	74 MPa	10.7 ksi
IMPACT			
Notched Izod Impact @ +23°C / 73°F	ISO 180/1A	6.7 KJ/m ²	
Unnotched Izod Impact @ +23°C / 73°F	ISO 180/1U	NB	NB
PHYSICAL			
Specific Gravity @ 23°C / 73°F	ASTM D792	1.31 g/cm ³	1.31
Melting point	ASTM D3418	225 °C	437 °F
Linear Mould Shrinkage with flow, 4mm /0.16" thick	ASTM D955	1.5 %	1.5%
FLAMMABILITY			
Flame rating 4mm / 0.16" thickness	UL 94	HB	HB

PBT resin is highly resistant to many chemicals, including automotive fluids, alcohols, esters, ethers, and hydrocarbons. PBT resin also has very good retention of mechanical properties in weather exposure studies.

Consult Material Safety Data Sheet (MSDS) for safety and handling information.

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