CBT® 200 Thermoplastic Resin – *Preliminary Data Sheet*

CBT® 200 resin melts to a water-like viscosity when heated, then polymerizes into the engineering thermoplastic polybutylene terephthalate (PBT). CBT 200 resin has a processing range between 170-240C and is available in both one and two-part systems. CBT 200 resin is formulated for various casting, low pressure moulding, coatings and composite applications where the lower melt temperature allows for longer working time than CBT 100 resin before polymerizing into PBT.

CBT 200 resin has melt temperature of 165ºC (329ºF) which is 15ºC (37ºF) lower than Cyclics CBT 100 resin. Some of the typical properties of CBT 200 resin are listed in Table 1.

Table 1 - Typical Properties of CBT 200 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		165	°C	330	°F
Melt viscosity @ 170°C/338°F	Cone and plate 10 1/s shear rate	37	mPa.s	37	cps
Melt viscosity @ 180°C/356°F	Cone and plate 10 1/s shear rate	28	mPa.s	28	cps
Melt viscosity @ 190°C/374°F	Cone and plate 10 1/s shear rate	22	mPa.s	22	cps
Melt viscosity @ 200°C/392°F	Cone and plate 10 1/s shear rate	17	mPa.s	17	cps
Melt viscosity @ 210°C/410°F	Cone and plate 10 1/s shear rate	13	mPa.s	13	cps
Melt viscosity @ 220°C/428°F	Cone and plate 10 1/s shear rate	11	mPa.s	11	cps
Liquid density		1.14	g/cm^3		

CBT 200 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 casting applications, CBT 200 resin can be processed at temperatures between 170ºC and 240ºC (338ºF and 464ºF).

For injection moulding applications, CBT 200 resin can be processed between 230ºC and 260ºC (446ºF and 500ºF), 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 200 resin can be injected as liquid into a hot mould between 180ºC and 200ºC (356ºF and 390ºF) with a barrier temperature of between 120ºC and 140ºC (250ºFand 284ºF). In the hot mould, CBT 200 resin is converted to PBT, and can be de-moulded without cooling the mould. Typical properties of injection moulded CBT 200 resin are listed in Table 2.

Table 2 - Typical Properties of Moulded CBT 200 Resin (polymerized)

Moulded by: 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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