

## Welcome to Cyclics

Known for polymer innovations, Cyclics Corporation has combined **water-like viscosity** with superior material properties in its flagship product line of **CBT<sup>®</sup>** resins. Cyclics is also proud to introduce its line of **engineered products** for plug assist and tooling markets.

### CBT<sup>®</sup> Resin Systems:

CBT resins are the cyclic form of polybutylene terephthalate (PBT), having ultra low viscosity making them well-suited for numerous low-pressure processes such as casting, rotational molding, and composite processing methods. Thermal stability and compatibility in combination with numerous polymer and filler systems make CBT resins useful in various applications. CBT resins produce negligible volatile organic compounds (VOCs) during processing. CBT resins polymerize to PBT, an engineering thermoplastic, providing excellent stiffness, superior chemical resistance, and outstanding dimensional stability.

*Cyclics is pleased to present its current line of **resins**:*

- CBT<sup>®</sup> 100:** Ideal for use as an additive for flow enhancement and as a masterbatch carrier
- CBT<sup>®</sup> 160:** CBT resin with catalyst for use in composites
- CBT<sup>®</sup> 500:** For use in composites and casting where greater processing flexibility is required
- CBT<sup>®</sup> XL101:** Developmental grade resin for use in dual-layer rotational molding



### Cyclics<sup>®</sup> Engineered Products:

Cyclics Corporation also offers a revolutionary line of recyclable engineered thermoplastic plug assist and tooling products. Cyclics tooling products offer excellent machinability, high-grade surface, chemical resistance, little or no residual stress, high service temperature, and no dust formation or odor during tooling.

*Cyclics is pleased to present its current line of **engineered products**:*

- Cyclics<sup>®</sup> Formlite™:** Low thermal conductivity syntactic foam material for the plug assist thermoforming market
- Cyclics<sup>®</sup> C11:** High abrasion-resistant material for core box applications
- Cyclics<sup>®</sup> C27:** Material with high HDT for tooling
- Cyclics<sup>®</sup> C65:** Material with high HDT for tooling
- Cyclics<sup>®</sup> C99:** High abrasion-resistant PBT tooling block for modeling applications



Cyclics Corporation's experienced engineers can help you meet the most demanding production challenges. **Call today** and discover all we can do for you.

**CBT<sup>®</sup> Resin Descriptions and Properties: Typical Values**

Property	Unit	CBT <sup>®</sup> 100	CBT <sup>®</sup> 160	CBT <sup>®</sup> 500	CBT <sup>®</sup> XL101
Product Description		Cyclic polybutylene terephthalate used as an additive	Cyclic polybutylene terephthalate with polymerization catalyst for use with composites	Cyclic polybutylene terephthalate used for casting and composites	Cyclic polybutylene terephthalate containing polyester modifier, polymerization catalyst, and processing stabilization package used for rotational molding
CAS #		263244-54-8	263244-54-8	263244-54-8	Pending
Appearance		White pellets or powder	White pellets or powder	White pellets or powder	White pellets
Melting Range	°C (°F)	120—200 (250—390)	120—200 (250—390)	120—200 (250—390)	120—200 (250—390)
Heat of Melting	J/g (Btu/lb)	64 (6.07 x 10 <sup>-2</sup> )	64 (6.07 x 10 <sup>-2</sup> )	64 (6.07 x 10 <sup>-2</sup> )	40-50 (4.27 x 10 <sup>-2</sup> )
Viscosity 200°C <sup>1</sup>	mPa·s	20	n/a	20	n/a
Density 20°C (solid)	g/cm <sup>3</sup> (lb/ft <sup>3</sup> )	1.3 (81.2)	1.3 (81.2)	1.3 (81.2)	1.3 (81.2)
Density 200°C <sup>1</sup>	g/cm <sup>3</sup> (lb/ft <sup>3</sup> )	1.14 (71.2)	n/a	1.14 (71.2)	n/a
Bulk Density (as pellets)	g/cm <sup>3</sup> (lb/ft <sup>3</sup> )	0.7 (43.7)	0.7 (43.7)	0.7 (43.7)	0.7 (43.7)
Water Content	ppm	<2000 target <1000 typical	<2000 target <1000 typical	<2000 target <1000 typical	<1000 <50 (dry bagged)
Specific Heat	J/(g·°C) (Btu/[lb·°F])	1.25 solid (0.30) 1.96 liquid (0.47)	1.25 solid (0.30) 1.96 liquid (0.47)	1.25 solid (0.30) 1.96 liquid (0.47)	n/a
Typical Processing Temp	°C (°F)	n/a	180—250 (355—480)	180—210 (355-410)	Similar to PE profile in rotomolding
Max Processing Temp	°C (°F)	340 (645)	260 (500)	260 (500)	260 (500)
Decomposition Temp	°C (°F)	290 air (555) 370 nitrogen (700)	290 air (555) 370 nitrogen (700)	290 air (555) 370 nitrogen (700)	290 air (555) 370 nitrogen (700)
Polymerization Molecular Weight <sup>2</sup>	g/mol	n/a	>100,000	>100,000	>100,000

<sup>1</sup> Prepolymerization

<sup>2</sup> Gel permeation chromatography (GPC) relative to polystyrene standards

**About Cyclics:**

Cyclics Corporation is headquartered in Schenectady, NY with a subsidiary manufacturing plant in Schwarzheide, Germany – Cyclics Europe GmbH. Cyclics is a privately held company that employs 100 talented people globally.

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