Cyclics CORPORATION

PRODUCT INFORMATION

Introducing Cyclics® Engineered Products

Cyclics offers a new line of engineered thermoplastic tooling products made from our flagship product, CBT® resin. Cyclics carries a range of cast products to meet your needs, and we can customize our polymeric material to cover numerous applications and highlight advantages such as high service temperature, abrasion resistance, machinability, surface quality, and low coefficient of thermal expansion (CTE).

Applications

- Match Plates
- Foundry Patterns
- Modeling
- Mold manufacturing
- Prototyping
- Vacuum Forming
- Test Milling
- Core Boxes

Advantages

- High Service Temperature
- Excellent Machinability
- No Dust Formation or Odor
- Little or No Residual Stress
- High-Grade Surface
- Chemical Resistance
- Recyclable

Physical Data

Cyclics Tooling Product	Application	Color	Density g/cm^3 (lb/ft^3) ASTM C128	Tensile Modulus GPa (psi) ASTM D638	Compression Strength MPa (psi) ASTM D695	HDT °C (°F)	CTE (23°C to 80°C) $10^{-6}/K$ ($10^{-6}/°F$) ASTM E831
Formlite™	Thermoforming	White	0.75 (46.8)	2.2 (3.19×10^5)	69 (1.00×10^4)	(0.45 MPa) 211 (412)	74 (41)
Cyclics C11	Core box	Tan	1.28 (79.9)	0.81 (1.17×10^5)	46 (6.67×10^3)	(0.45 MPa) 114 (237)	153 (85)
Cyclics C27	Tooling	Silver	2.01 (125.5)	9.2 (1.33×10^6)	110 (1.60×10^4)	(1.8 MPa) 214 (417)	67 (37)
Cyclics C65	Tooling	Tan	1.98 (123.6)	10.8 (1.57×10^6)	124 (1.80×10^4)	(1.8 MPa) 210 (410)	42 (23)
Cyclics C99	Modeling and prototyping	Tan	1.31 (81.8)	2.5 (3.63×10^5)	100 (1.45×10^4)	(0.45 MPa) 150 (302)	97 (54)

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Processing/Machining

The material should be machined at room temperature, and heat generation due to machining must be kept to a minimum. Heat buildup can be avoided by using sharp tools, high feed rates, good swarf removal, and the use of cool air. Machining Cyclics tooling products is easily accomplished by sawing, milling, turning, or drilling. Due to the thermoplastic characteristics, it is possible for the formation of melted burrs. This is a good indicator that the bit is dull or flute geometry was tuned for a harder material.

Milling Parameters:

- Feed: <0.05 mm/tooth
- Speed: 150-300 m/min
- Cut Direction: Conventional/climbing
- Cutter: High speed steel, tungsten carbide, ceramic, or polycrystalline diamond
- Depth of Cut: 0.8mm

Availability and Pricing

Cyclics tooling and syntactic foam products come in a variety of standard sizes. Custom sizes are also available. Contact Cyclics for pricing.

Storage

Cyclics tooling products have an extensive shelf life when stored flat at room temperature and in low humidity.

Health and Safety

Cyclics tooling products contain PBT and nonhazardous filler. The use of gloves, eye protection, and standard work clothing is advised when handling or working with Cyclics tooling blocks.

Disposal

Cyclics tooling products contain thermoplastic PBT. Treatment, storage, transportation, and disposal must be in accordance with applicable federal, state/provincial, and local regulations.

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