

Cyclics® Engineered Products

Cyclics® Formlite™

Cyclics **Formlite** is a thermoplastic syntactic foam plug assist material, designed specifically for the thermoforming industry. Unlike alternative plug assist materials, Formlite is manufactured using advanced engineering CBT and high-quality glass microspheres. Formlite provides low thermal conductivity, excellent thermal stability, and superior properties required to achieve fine details in the formed part.

Cyclics developed Formlite to meet the demands for a high-temperature plug assist material that machines freely to a superior-quality surface. The unique formulation provides virtually dust-free machining while giving the user extended durability, lower heat-up times, greater throughput, and clearer parts.

Benefits

- **Easy Machinability**
Plugs can be machined much faster than traditional materials due to increased cutting speeds. The ribbon swarf formation and dust elimination creates a much healthier work environment and reduces machine wear.
- **Smooth Surface Finish**
Formlite offers a superior surface finish, allowing fine details to be replicated.
- **Higher Heat Distortion Temperature**
Formlite has a heat distortion temperature (HDT) of 211°C (412°F).
- **Excellent Durability**
Reduced wear and tear during production equates to reduced machine downtime, reduced costs, and increased quality consistency.
- **Dimensional Stability**
Formlite offers lower thermal distortion at elevated temperature, proven to increase plug life.
- **Clarity**
Formlite eliminates swirl and chill marks, thus improving visual impact of the formed component.
- **Custom Casting**
Due to the high degree of flexibility and the unique properties, Cyclics offers a custom shape casting service.



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Applications

Formlite syntactic foam can be used to form a variety of polymer sheet materials, including in-line and sheet-feed systems and is widely used in the food, medical and packaging industries to form a wide variety of components. Formlite works exceptionally well with polyolefin, polypropylene, APET, and CPET.

Cyclics recommends performing validation trials to evaluate performance in your specific application.

Safety

Formlite is safe to handle without the need for specialized equipment. Additionally there are no requirements for storage. Always wear suitable eye protection when machining the product. Please consult the MSDS for the full safety requirements.

Availability and Pricing

Cyclics offers a variety of Formlite sizes to meet your needs. Custom sizing is also available. Contact Cyclics for pricing.

Technical Assistance

To help maximize the benefits of Formlite, our application engineers are available to assist. Please call with any questions.



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Physical and Mechanical Data

Property	Value Metric (Imperial)	Unit	ASTM Standard
Density	0.75 (46.8)	g/cm ³ (lb/ft ³)	C-128
Tensile Modulus	2,200 (3.19 x 10 ⁵)	MPa (psi)	D638
Compression Strength	69 (1.0 x 10 ⁴)	MPa (psi)	D695
CTE (23°C—80°C)	74 (41)	10 ⁻⁶ /K (10 ⁻⁶ /°F)	E831
Hardness	66	Shore D	ISO 868
HDT 0.45 MPa	211 (412)	°C (°F)	D648
Thermal Conductivity	0.16 (0.09)	W/(m·K) @ 25°C (BTU·ft/[h·ft ² ·°F])	D5470

Machining

To achieve the optimum results, Cyclics recommends the following machining parameters:

Cutter	2 or 3 Flute Tungsten Carbide
Speed	3,000 to 3,500 RPM
Cut Depth	6 mm max (0.24 in max)
Feed	0.76 — 0.89 m/min (30 — 35 in/min)

Available Sizes

24" Rods Diameter (inches)	24" x 24" Plates Thickness (inches)
2.0	1.0
2.5	1.5
3.0	2.0
3.5	2.5
4.0	3.0
4.5	3.5
5.0	4.0