

HYTAC - [®] FLX

**Durable/High Finish
Syntactic Material**

Preliminary Technical Bulletin



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Innovative Tooling Materials for Thermoforming

Overview

HYTAC-FLX is the newest and most exciting addition to CMT's *HYTAC* family of high performance syntactic materials. This thermoset copolymer syntactic is quite unique, providing the toughness and flexibility of a thermoplastic, with the thermal stability of a thermoset. Like other syntactic materials, *FLX* has the low thermal conductivity and specific heat needed by thermoformers for their process; yielding better material distribution and clarity, reduced mark-off, lower start-up and cycle times, and lower plug operating temperatures. It also offers the added machining benefit of little or no dust and minimal wear on tools. Further, this tough syntactic may be easily polished to a smooth surface for better part finish.

FLX may be used in plug applications with a wide range of polymer sheet material, but is especially suited to areas requiring high durability. As compared to standard thermoset epoxy syntactics, *FLX* has been designed with 1.5 times the flex strength and more than 5 times the toughness. Most importantly, with more than 4 times the elongation to break, *FLX* will withstand the most rigorous plug environment without the brittle failure often encountered in epoxy syntactics.

New *HYTAC-FLX* has these outstanding attributes:

- **Good Dimensional Stability**
- **Excellent Toughness and Durability**
- **Superb Machinability**
- **Temperature Resistance**
- **Low Thermal Conductivity**



Property	<i>HYTAC-FLX</i>
Color	Almond
Density (lb/ft ³)	58-62 lb/ft ³ [0.92 - 0.99 g/cc]
Hardness Shore D	86
Flexural Strength	10,000 psi [68.9 Mpa]
Flexural Modulus	503 ksi [3.49 Gpa]
Thermal Conductivity	0.10 BTU /hr-ft-°F [0.17 W/m ² K]
Specific Heat	0.28 BTU/(lb•°F) [1.19 kJ/(kg•°C)]
Coefficient of Thermal Expansion (in/in/°F)	40.0 x 10 ⁻⁶ (in/in/°F) 72 x 10 ⁻⁶ (mm/mm/°C)
Service Temperature	350 °F [180 °C]