

HYTAC[®] - V

Thermoplastic Syntactic Tooling Material

Preliminary Technical Bulletin



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Innovative Tooling Materials for Thermoforming

Overview

HYTAC-V is the most recent introduction to the *HYTAC* family of plug assist materials. An adaptation on CMT's patented thermoplastic syntactic plug material, this product was tailored as a balance of the important processing and preparation properties. The formulation was modified to allow for ease in polishing to an extremely smooth surface with improved toughness over thermoset based syntactics. The compromise produced a material with moderate-to-good temperature resistance and durability. *HYTAC-V* eliminates the machining difficulties of conventional epoxy syntactic foams producing easily managed chips with no dust. The smooth finish also helps to reduce mark-off and scratching on the final part surface for improved clarity.

Like other *HYTAC* syntactic foams, *HYTAC-V* has low thermal conductivity and specific heat, translating to better material distribution and shorter start-up and cycle times. The low heat transfer also results in less haze and higher gloss on clear parts, as well as overall lower operating temperatures.

Thermoformers should expect the following:

- **Excellent Polishing Characteristics for a Smooth Plug Surface**
- **Moderate-to-Good Toughness and Durability**
- **Good Temperature Resistance**
- **Available in a Variety of Shapes and Sizes**

Applications

HYTAC-V may be used in a wide variety of applications but is most ideally suited for parts that require highly polished surfaces and clarity. Conventional high speed cutting, machining and polishing techniques may be used to attain smooth plug surfaces.



Typical Properties

Property	<i>HYTAC - V</i>
Color	Violet
Density (ρ)	46-50 lb/ft ³ [735- 810 kg/m ³]
Thermal Conductivity (k)	0.07 BTU /hr-ft-°F [0.12 W/m°K]
Specific Heat (C_p) per unit weight	0.28 BTU/(lb•°F) [1.18 kJ/(kg•°C)]
Coefficient of Thermal Expansion (CTE)	41.7×10^{-6} in/in/°F [75.1×10^{-6} m/m/°C]
Compressive Strength	6,300 psi [43.7 Mpa]
Compressive Modulus	343 Ksi [2.36 Gpa]
Service Temperature	350 °F [176 °C]