AGC

Your Dreams, Our Challenge

TACONIC

HB-Series Low Loss Thermoset Bondply

HB-Series prepregs are designed to have reduced electrical loss and improved ease of fabrication for multilayer packages with high performance and high reliability. This thermosetting prepreg is based on a ceramic filled hydrocarbon resin system constructed with woven fiberglass reinforcement.

HB-Series is engineered to provide a cost effective bondply with low dielectric loss for RF and high speed multilayer boards with well controlled electrical and mechanical properties. Lower dielectric loss along with sufficient thermal conductivity can reduce heat dissipation in high power RF applications.

HB-Series prepreg is well suited for bonding in multilayer applications with most laminates. The innovative resin system in HB-Series shows very good adhesion strength. It is compatible in multilayer constructions with almost all laminate materials such as PTFE, FR-4, other hydrocarbons and is especially optimized for flow and fill of difficult artwork.

HB-Series prepreg is a non-PTFE material which can be sheared, drilled, milled and plated using standard PCB processes, especially without hole-wall preparation with plasma or sodium chemicals.

HB-Series shows lower Z-axis expansion for plated through hole reliability in extreme thermal multilayer environments and applications.

Benefits & Applications:

- Stable Multilayer Performance
- Low Loss Ceramic Filled Thermoset Resin System
- Tightly Controlled DK Tolerance
- Bonds Well to Most Laminates
- Single Ply of Prepreg can Flow and Fill Difficult Artwork, Heavier Copper Layers
- Utilizes Standard FR-4 Process
- Excellent Dimensional and Thermal Stability
- Excellent Price/Performance Ratio

- RF/Multilayer Components
- Military
- Multilayer Power Modules
- High Speed Digital
- Aerospace Components

Storage

1. After receipt, all bondplies should be immediately moved into a controlled environment.
2. Store the HB-Series material flat in a cool dry area away from catalytic conditions such as high radiation, UV light, and direct sunlight, avoiding material contamination.

   HB-360 shall be certified to meet all the requirements specified when stored as per condition 2 for not less than 90 days after receipt of the shipment by user. For extended storage, products can be stored as per condition 1. Continuous refrigeration is always a good practice for storing prepregs.

   - Condition 1: <4 °C
   - Condition 2: 21 ±2 °C, Relative Humidity 30~50%

Handling

We recommend the following procedures for handling: (1) Do not mechanically scrub the surface. (2) Do not pick up a panel horizontally by one end or edge. (3) Do not stack panels directly on top of each other. (4) Care should always be taken to avoid contamination. (5) Cavities and tooling holes can be punched, drilled or cut. Thin entry and a backer board may be needed to support the bondply.

AGC

Your Dreams, Our Challenge

TACONIC

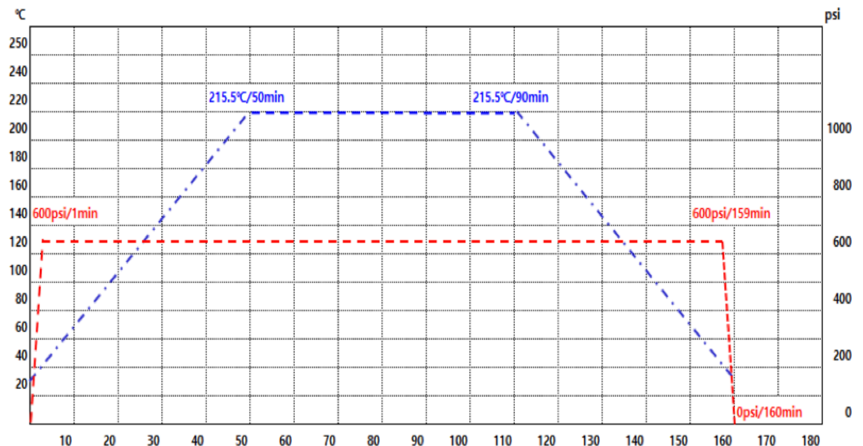
HB-Series Typical Values					
Property	Test Method	Unit	HB-360 (HB-360-0050)	HB-350F (HB-350F-0040)	HB-300F (HB-300F-0040)
Dk @ 1.9 GHz (After Pressing)	IPC-650 2.5.5.5.1 Mod.		3.67 ± 0.05	3.52 ± 0.05	3.02 ± 0.05
Dk @ 10 GHz (After Pressing)	IPC-650 2.5.5.5.1 Mod.		3.65 ± 0.05	3.50 ± 0.05	3.00 ± 0.05
Df @ 1.9 GHz (After Pressing)	IPC-650 2.5.5.5.1 Mod.		0.0027	0.0029	0.0029
Df@ 10 GHz (After Pressing)	IPC-650 2.5.5.5.1 Mod.		0.0032	0.0032	0.0032
Thickness (After Pressing) ↓	IPC-650 2.2.18	mils	5	4	4
Volume Resistivity	IPC-650 2.5.17.1	Mohm/cm	6.0×10^{8}	5.8×10^{9}	1.3×10^{9}
Surface Resistivity	IPC-650 2.5.17.1	Mohm	1.0×10^{7}	2.7×10^{9}	5.6×10^{9}
Moisture Absorption	IPC-650 2.6.2.1	%	0.08	0.08	0.14
Peel Strength (1 oz. RTF copper)	IPC-650 2.4.8 (Solder)	lbs/in	7	5	5
Tensile Strength (MD)	IPC-650 2.4.19	psi	9400	12,000	14,000
Tensile Strength (CD)	IPC-650 2.4.19	psi	7000	9500	10,000
Density (Specific Gravity)	IPC-650 2.3.5	g/cm^3	1.80	1.80	1.80
Specific Heat	IPC-650 2.4.50	J/g°C	0.9	0.8	0.8
Thermal Conductivity (Unclad)	IPC-650 2.4.50	W/M*K	0.6	0.5	0.4
T_g	IPC-650 2.4.24/TMA	°C	>250	>250	>250
T_d (5% wt. loss)	IPC-650 2.4.24.6/TGA	°C	370	362	365
CTE (X -Y axis) (50 to 150 °C)	IPC-650 2.4.41	ppm/°C	15-20	4-5	15-20
Color			Ivory	Ivory	Ivory
Flammability	Internal	-	Non-FR	V-0	V-0
Lead Free Process Compatible			Yes	Yes	Yes

All reported values are typical and should not be used for specification purposes. In all instances, the user shall determine suitability in any given application.

↓The actual thickness of each ply that will be added to a multilayer construction can be different based on the weight and distribution of the remaining copper circuitry on the inner-layer surfaces.

Recommended Bonding Cycle

- Vacuum lamination recommended.
- Heat rise +3.5~6.5 °C/min to 215 °C.
- Maintain pressure up to 600 psi through whole cycle.
- Hold at 215 °C for 60 minutes.
- Cool package under full pressure with -3 °C/min rate



An example of a 5 mil prepreg for Bondply (HB-360) is part# :

HB-360-0050 12” x 18” (HB-360-0050 305 mm x 457 mm)