

Arlon Howefill HF 50

Electronic Substrates

Ceramic Filled High Tg Polyimide Hole Fill Compound

- **Resists Shrinkage, Radial Cracking in Clearance Holes**
- **Compatible with Arlon 33N, 35N, 84N and 85N Polyimide Products**
- **Use with heavy metal cores in PWB's**
 - Copper-Invar-Copper
 - Copper Cores
 - Aluminum Cores
- **Thermal and Mechanical Properties Optimized for Polyimide Multilayer Board Designs**
 - Tg greater than 250°C
 - Non-MDA Polyimide
 - Low Shrinkage
 - Low Z direction CTE (26 ppm/°C)
 - Excellent Thermal Conductivity

Description: Howefill® HF 50

Arlon's HF 50 replaces Howefill® 60B, using a non-MDA polyimide. HF 50 is a polyimide compound for use in filling clearance holes in metal core printed wiring boards, providing the user with an optimized material to fill holes that have been drilled through the metal for through hole interconnections. Based on a unique solid-state polyimide chemistry, this material provides full compatibility with other Arlon polyimide materials and processes.

HF 50 has been formulated to improve thermal conductivity, crack resistance, and minimal resin shrinkage back into the holes.

Typical Data

Property	Test Method	Result
Tg by TMA	IPC-TM-650 2.4.24	260°C
CTE (ppm/°C)	IPC-TM-650 2.4.24	26
Water Absorption (%)	IPC-TM-650	0.4%
Thermal Conductivity (W/m-K)	ASTM E-1225	>0.5
Electric Strength (V/mil)	IPC-TM-650	1000

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MATERIALS FOR ELECTRONICS



Steel Caul Plate
Copper Foil or Release Film
Prepreg Backer



Howefill Sifted onto PWB

PWB with Holes to be Filled



Howefill Sifted onto Prepreg
Prepreg Backer
Copper Foil or Release Film
Steel Caul Plate

HF 50 Processing Recommendations:

HF 50 is a free-flowing powder. It is advised that the sample be tumbled prior to use to ensure thorough distribution of contents after receipt, as some settling may occur during shipping or storage.

Bonds to metal can be enhanced by treating copper surfaces with an oxide process and aluminum surfaces by passivation and chemical film deposition.

1. Howefill should be sifted onto the package on both sides of the core to be filled. Sift the HF 50 onto the material at the bottom of the core board as shown, above. Sift additional HF-50 on top of the core board itself, concentrating on the areas with holes or cutouts as required. A template may help with this. Level the surface.
2. Use of one or more pieces of prepreg on either side of the sifted HF-50 as illustrated above will help drive the powder uniformly into the holes.
3. Laminate as standard polyimide. Heatup rate should be controlled at 8-12 degrees F per minute between 200 and 300F. Apply full pressure, 300-400 psi, depending on panel size). Cure at 415 F for 120 minutes. When laminating a full package (core board plus laminate and Pre preg) follow laminating instructions for the specific polyimide system being used to ensure full cure of all components.
4. Cool very slowly in the press after cure. Suggested cooling rate is 2-4 degrees F per minute.
5. Panel can be ground or sanded if needed prior to subsequent operations.

Plating, drilling and other post-processing will be similar to polyimide. Drill life may be reduced due to the ceramic filler in HF 50.

Data provided herein is provided for reference purposes only and are not intended to be sales specifications. Determination of the suitability of any of these materials for a particular application is the sole responsibility of the user. Furthermore, no suggestion for use, or material supplied shall be construed as a recommendation or inducement to violate any law or infringe any patent. Product is currently developmental. Commercialization status undetermined and Ardon does not guarantee future commercial availability.