

## Ceramic Filled High Tg Polyimide Hole Fill Compound

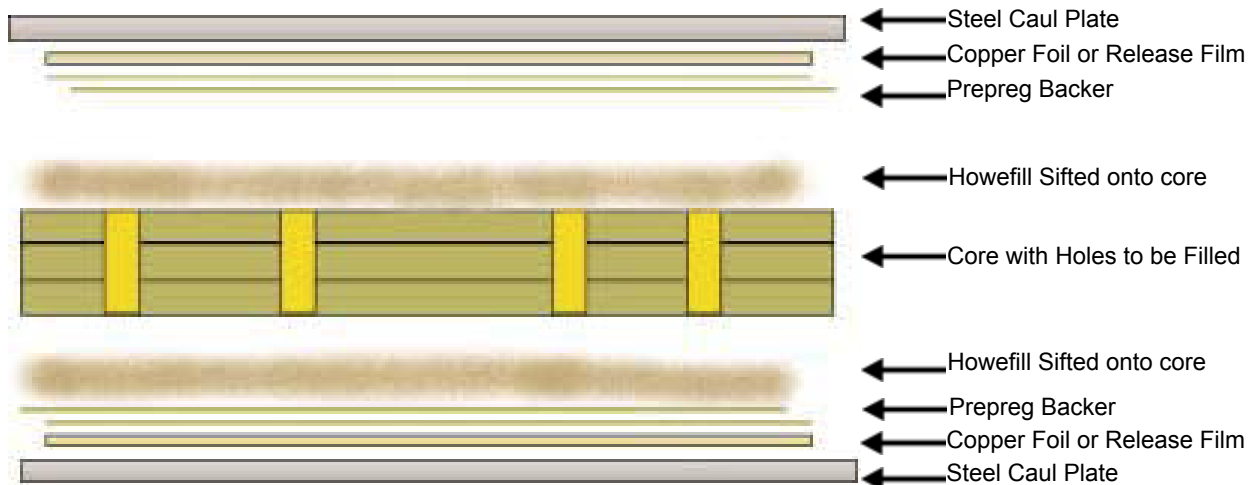
Howefill® HF 50 is a polyimide compound for use in filling clearance holes in metal core printed wiring boards, providing the user with an optimized material to fill holes that have been drilled through the metal for through hole interconnections. Based on a unique polyimide chemistry, this material 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.

### Features:

- Tg greater than 250°C
- Non-MDA Polyimide
- Low Z-axis CTE (26 PPM/°C)
- Low Shrinkage
- Excellent Thermal Conductivity

### Typical Applications:

- Compatible with 33N, 35N, 84N, 85N , 85HP Polyimide Products
- Use with heavy metal cores in PWB's
  - Copper-Invar-Copper
  - Copper Cores
  - Aluminum Cores



# HF-50

## Typical Properties:

Property	Units	Value	Test Method
<b>Electrical Properties</b>			
Electrical Strength	Volts/mil (kV/mm)	1000	IPC TM-650 2.5.6.2
<b>Thermal Properties</b>			
Glass Transition Temperature (Tg)			
TMA	°C	260	IPC TM-650 2.4.24C
CTE (Z)	ppm/°C	26	IPC TM-650 2.4.24C
<b>Physical Properties</b>			
Water Absorption (0.062")	%	0.4	IPC TM-650 2.6.2.1A
Thermal Conductivity	W/mK	>0.5	ASTM E-1225

Results listed above are typical properties, provided without warranty, expressed or implied, and without liability. Properties may vary, depending on design and application. Arlon reserves the right to change or update these values.

## Recommended Process Conditions:

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, (illustrated on page 1), drive the powder uniformly into the holes.

3) Laminate as standard polyimide. Heatup rate should be controlled at 4.5-6.5 °C/min (8-12 °F/min) between 95 and 150 °C (200-300 °F). Apply full pressure, 300-400 psi, depending on panel size.

Cure at 218 °C (425 °F) for 120 minutes. When laminating a full package (core board plus laminate and prepreg) 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.

## ...Challenge Us!

For samples, technical assistance and customer service, please contact Arlon Electronic Materials at the following locations:

### NORTH AMERICA:

Arlon EMD, 9433 Hyssop Drive, Rancho Cucamonga, CA  
Tel: (909) 987-9533 • Fax: (909) 987-8541

### FRANCE:

CCI Eurolam  
9, rue Marcelin Bertholet  
92160 Antony, France  
Phone: (33) 146744747  
Fax: (33) 146666313

### GERMANY:

CCI Eurolam  
Otto-Hahn-Str. 46 63303  
Dreiech Germany  
Phone: (49) 610339920  
Fax: (49) 610339929

### UK & SCANDINAVIA:

CCI Eurolam – UK  
Ulness Walton Lane  
Leyland, PR26 8NB, UK  
Phone: (44) 1772452236  
Fax: (44) 1772456859

### ITALY:

CCI Eurolam  
9, rue Marcelin Bertholet  
92160 Antony, France  
Phone: (33) 146744755  
Fax: (33) 146666313

### ISRAEL:

Tech Knowledge, Ltd. 159 Yigal  
Alon Street,  
Tel Aviv 6744367, Israel  
Phone: (972) 36958117  
Fax: (972) 36917117

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493 Wen-zhong Jia Zhai ~ a Á  
County HONG KONG  
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### SINGAPORE:

C.T.S. Industries Pte Ltd  
47 Kaki Bukit Place  
Singapore 416225  
Phone: (65) 6276 3328  
Fax: (65) 6276 3336

### JAPAN:

Nakao Corp.  
12-8 Nihonbashi Hisamatsu-Cho Tokyo  
103-0005 Japan  
Phone: (81) 336623201  
Fax: (81) 336617118

### KOREA:

UniMicrotek Co. Ltd.  
478 Baekbeom-Ro, Bupyeong-Gu  
Incheon, Korea  
Phone: (82) 32-424-1776  
Fax: (82) 505-720-1785

### CHINA:

Zack Peng  
Room 6A, Unit 2, Bldg 2  
Jin Cheng Shi Dai, Tian Road  
Shenzhen, China 518103  
Phone: (86) 75528236491  
Fax: (86) 75528236463

### INDIA:

Synertec  
301 Raheja Chambers, 12 Museum Rd  
Bangalore, India 560001  
Phone: (91) 80-25585432  
Fax: (91) 80-25588565