



### 370HR Laminate 370HR Prepreg

370HR is a high performance 180°C glass transition temperature (Tg) FR-4 system for multilayer printed wiring board (PWB) applications where maximum thermal performance and reliability are required. 370HR laminate and prepreg products are manufactured with a unique high performance multifunctional epoxy resin, reinforced with electrical grade (E-glass) glass fabric. This system provides improved thermal performance and low expansion rates in comparison to traditional FR-4 while retaining FR-4 processability. In addition to this superior thermal performance the mechanical, chemical and moisture resistance properties all equal or exceed the performance of traditional FR-4 materials. The 370HR system is also laser fluorescing and UV blocking for maximum compatibility with automated optical inspection systems (AOI), optical positioning systems and photoimageable soldermask imaging.

#### Industry Approvals

IPC-4101B /21, /24, /26, /98, /99, /101, /126  
 UL Recognized – FR-4, File Number E45456  
 Qualified to UL's MCIL Program

#### High Thermal Performance

Tg of 180 C (DSC)  
 Low CTE for reliability

#### UV Blocking and AOI Fluorescence

High throughput and accuracy during PCB fabrication and assembly

#### Superior Processing

Closest to conventional FR-4 processing of all high speed materials

#### Standard Availability

**Thickness:** 0.002" [.05 mm] to 0.093" [2.4 mm]

Available in sheet or panel form

**Copper Foil Cladding:** Grade 3 (HTE), ½, 1 and 2 oz.

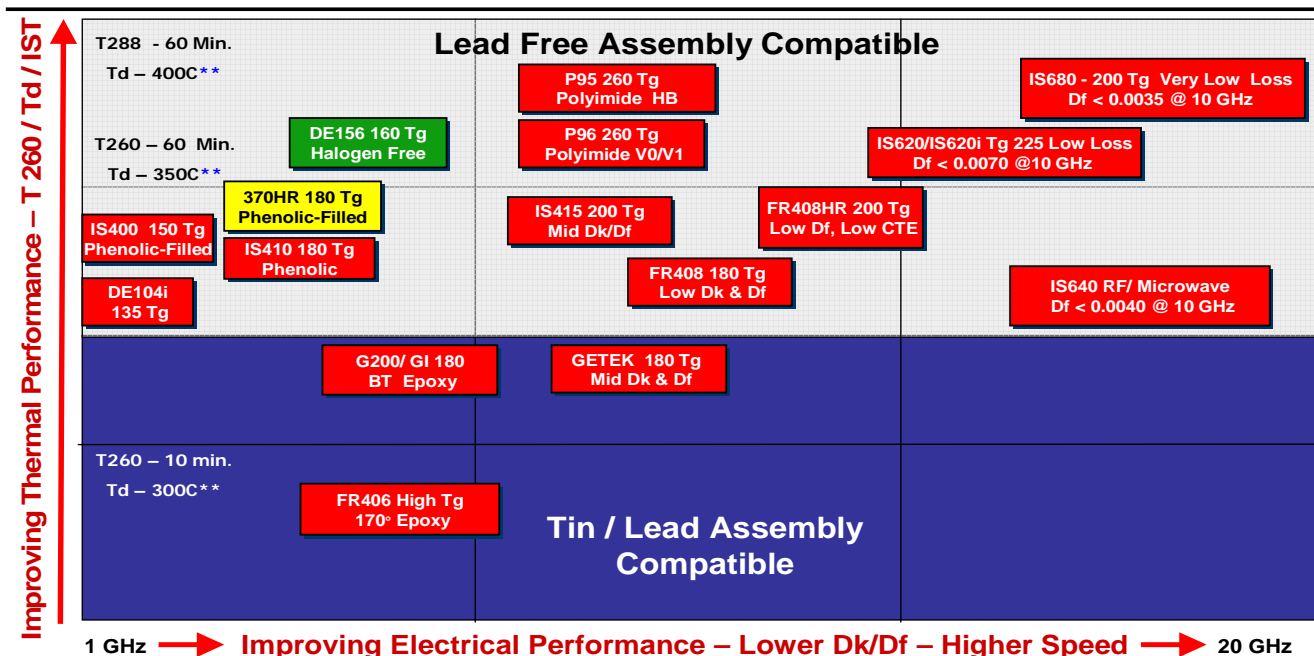
Foil Options: Reverse treat

**Prepregs:** Available in roll or panel form

**Glass Styles:** standard fabrics



### Isola - Product Position Thermal Performance vs Signal Integrity



Speed is a function of design such as line length etc.

\*\* Laminate Data - IST performance is a function of Hole diameter, board thickness, plating parameters and laminate attributes.

370HR					
Property	Typical Values				
	Typical Value	Specification	Units	Test Method	
			Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC, spec minimum	180	170-200	°C	2.4.25	
Decomposition Temperature (Td) @ 5% wt loss	340	—	°C	ASTM D3850	
T260 Deg C (TMA)	60	—	Min	ASTM D3850	
T288 Deg C (TMA)	10	—	Min	ASTM D3850	
CTE, Z-axis	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
CTE, X-, Y-axes	A. Pre-Tg	AABUS	ppm/°C	2.4.24	
	B. Post-Tg	—			
% Z-Axis Expansion (50-260C)	2.8	—	%	2.4.24	
Thermal Conductivity	0.4	—	W/mK	ASTM D5930	
Thermal Stress 10 Sec	A. Unetched	pass	Rating	2.4.13.1	
@ 288°C (550.4°F), spec min	B. Etched	pass			
Permittivity, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	4.24	—	2.5.5.3	
	B. @ 1 GHz HP4291A	4.17		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	4.04		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	3.92		2.5.5.5	
	E. @ 10 GHz Bereskin Stripline	3.92		2.5.5.5	
Loss Tangent, spec maximum (Laminate & prepreg as laminated)	A. @ 100 MHz HP4285A	0.0150	—	2.5.5.3	
	B. @ 1 GHz HP4291A	0.0161		2.5.5.9	
	C. @ 2 GHz Bereskin Stripline	0.0210		2.5.5.5	
	D. @ 5 GHz Bereskin Stripline	0.0250		2.5.5.5	
	E. @ 8 GHz Bereskin Stripline	0.0250		2.5.5.5	
Volume Resistivity, spec minimum	A. 96/35/90	—	1.0 x 10 <sup>6</sup>	MΩ -cm	
	B. After moisture resistance	3x10 <sup>8</sup>	—		
	C. At elevated temperature	7x10 <sup>8</sup>	1.0 x 10 <sup>3</sup>		
Surface Resistivity, spec minimum	A. 96/35/90	—	1.0 x 10 <sup>4</sup>	MΩ	
	B. After moisture resistance	3x10 <sup>6</sup>	—		
	C. At elevated temperature	2x10 <sup>8</sup>	1.0 x 10 <sup>3</sup>		
Dielectric Breakdown, spec minimum	>50	—	kV	2.5.6	
Arc Resistance, spec minimum	115	60	Seconds	2.5.1	
Electric Strength, spec minimum (Laminate & prepreg as laminated)	54	30	kV/mm	2.5.6.2	
	1350	750	(V/mil)		
Comparative Tracking Index (CTI)	3 (175 - 249)	-	Class (volts)	UL-746A ASTM D3638	
Peel Strength, Spec Minimum	A. Low profile copper foil and very low profile – all copper weights >17 microns	6.5(1.14)	4.0(0.70)	lb/inch(N/mm)	2.4.8
	B. Standard profile copper	—	—	lb/inch(N/mm)	2.4.8.2
	1. After thermal stress	7.0(1.25)	4.5(0.8)		2.4.8.3
	2. At 125°C (257°F)	7.0(1.25)	4.0(0.70)		
	3. After process solutions	6.5(1.14)	3.0(0.55)		
Flexural Strength, minimum	A. Lengthwise direction	90,000	—	lb/inch <sup>2</sup>	2.4.4
	B. Crosswise direction	77,000	—		
Moisture Absorption, spec maximum	0.15	—	%	2.6.2.1	
Flammability (Laminate & prepreg as laminated), spec min	V0	—	Rating	UL-94	
HWI	0	—			
Max Operating Temperature	130 (150)	UL Cert (tested)	Deg C		
DSR	yes	—			

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

#### ORDERING INFORMATION:

Contact your local sales representative or the Customer Service Department in Chandler, AZ  
 Isola Group 3100 W Ray Road, Chandler, AZ 85226  
 Phone: 480-893-6527  
 For further information visit [www.isola-group.com](http://www.isola-group.com)

