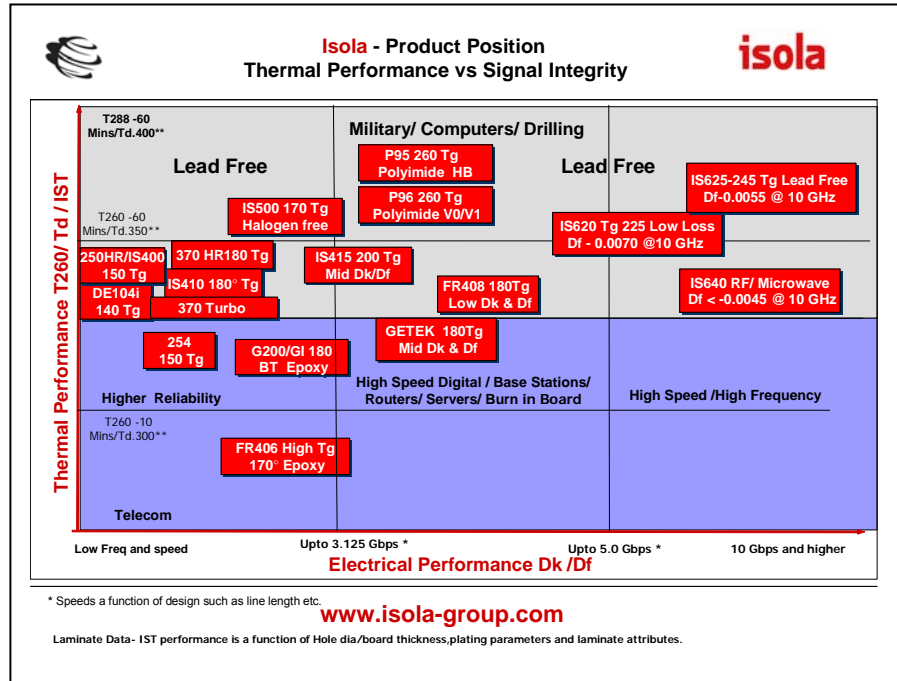




FR-370HR Laminate
PCL-FRP-370HR Prepreg

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 photoimagable soldermask imaging.



Performance and Processing Advantages

- **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

Purchasing Information

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

370HR Typical Laminate Properties

	English			Metric			Test Method		
	Value	Specification	Units	Value	Specification	Units	IPC-TM-650 (or as noted)		
Glass Transition Temperature (Tg) by DSC, spec minimum	180	150 - 200	°C	180	150 - 200	°C	2.4.25		
Decomposition Temperature (Td) by TGA	@ 5% weight loss	340	—	°C	340	—	°C	ASTM D3850	
T260	Minutes	60		min	60		min	2.4.25	
T288		>10		min	>10		min		
CTE, Z-axis	Pre-Tg	45	AABUS	ppm/°C	45	AABUS	ppm/°C	2.4.24	
	Post-Tg	220	—		220	—			
CTE, X-, Y-axes	Pre-Tg	13	AABUS	ppm/°C	13	AABUS	ppm/°C	2.4.24	
	Post-Tg	14	—		14	—			
Z-Axis Expansion (50 – 260C) %		2.8	AABUS	%	2.8	AABUS	%	2.4.24	
Thermal Stress 10 Sec @ 288°C (550.4°F), spec minimum	Unetched	Pass	Pass Visual	Rating	Pass	Pass Visual	Rating	2.4.13.1	
	Etched	Pass	Pass Visual		Pass	Pass Visual			
Dk (Permittivity, Laminate & prepreg as laminated) Berskin Strip line Method	2 Ghz	4.04	5.4		4.04	5.4		2.5.5.3	
	5 Ghz	3.92	—	—	3.92	—	—	2.5.5.9	
	10 Ghz	3.92	—		3.92	—		2.5.5.5	
Df, Loss Tangent, spec maximum (Laminate & prepreg as laminated) Berskin Stripline Method	2 Ghz	0.021	0.035		0.021	0.035		2.5.5.3	
	5 Ghz	0.025	—	—	0.025	—	—	2.5.5.9	
	10 Ghz	0.025	—		0.025	—		2.5.5.5	
Volume Resistivity, spec minimum	96/35/90		—			—		2.5.17.1	
	After moisture resistance At elevated temperature	3x10 ⁷ 7x10 ⁶	1X10 ⁴ 1x10 ⁴	Mξ -cm	3x10 ⁷ 7x10 ⁶	1x10 ⁴ 1x10 ³	Mξ -cm		
Surface Resistivity, spec minimum	96/35/90		—			—		2.5.17.1	
	After moisture resistance At elevated temperature	3x10 ⁶ 2x10 ⁹	1X10 ⁴ 1x10 ³	Mξ	3x10 ⁶ 2x10 ⁹	1x10 ⁴ 1x10 ³	Mξ		
Thermal Conductivity		.3-.4	—	W/mK	.3-.4	—	W/mK	ASTM D5930	
Dielectric Breakdown, spec minimum		>50	40	kV	>50	40	kV	2.5.6	
Arc Resistance, spec minimum		115	60	Seconds	115	60	Seconds	2.5.1	
Electric Strength, spec minimum (Laminate & prepreg as laminated)		1350	736	V/mil	54000	29000	V/mm	2.5.6.2	
Peel Strength, spec minimum	Low profile copper foil and very low profile – all copper weights >17 microns Standard profile copper -----1. After thermal stress 2. At 125°C (257°F) 3. After process solutions	7	4	(lb/inch)	123	70	N/mm	2.4.8	
									2.4.8.2
		9	6		158	105		2.4.8.3	
		7	4		123	70			
		9	4.5		158	80			
Moisture Absorption, spec maximum		0.15	0.8	%	0.15	0.8	%	2.6.2.1	
CTI		3	175 -249	volts					
HWI		0							
HAI		3							
Max Operating Temp		130							
DSR		yes							
		Grain		Fill					
Flexural Strength (Ksi)		102		80					
Tensile Strength (Ksi)		na		na					
Poisson's Ratio		na		na					
Youngs Modulus (million psi)		na		na					
Taylor's Modulus (million psi)		na		na					

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

Data Sheet
 Rev 1-24-04