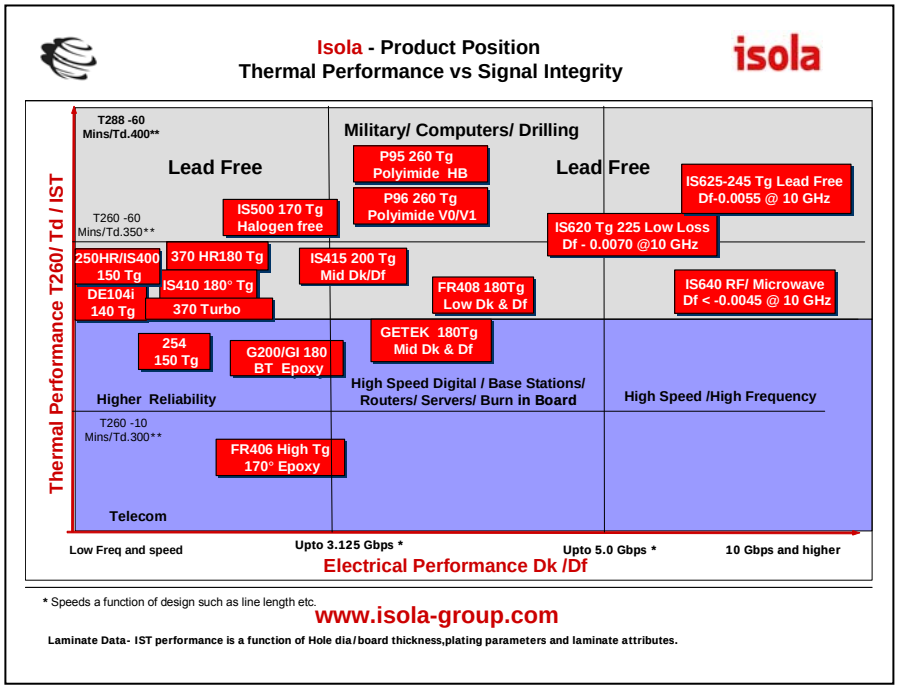
FR-370HR Laminate
PCL-FRP-370HR Prepreg

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	**Unetched**	Pass	Pass Visual	Rating	Pass	Pass Visual	Rating	2.4.13.1
@ 288°C (550.4°F), spec minimum	**Etched**	Pass	Pass Visual		Pass	Pass Visual		
Dk (Permittivity, Laminate & prepeg 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**		—	MΩ -cm		—	MΩ -cm	2.5.17.1
	After moisture resistance	$3x10^7$	$1X10^4$		$3x10^7$	$1x10^4$		
	At elevated temperature	$7x10^6$	$1x10^3$		$7x10^6$	$1x10^3$		
Surface Resistivity, spec minimum	**96/35/90**		—	MΩ		—	MΩ	2.5.17.1
	After moisture resistance	$3x10^6$	$1X10^4$		$3x10^6$	$1x10^4$		
	At elevated temperature	$2x10^9$	$1x10^3$		$2x10^9$	$1x10^3$		
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**	7	4	(lb/inch)	123	70	N/mm	2.4.8
	Standard profile copper							2.4.8.2
	------1. After thermal stress	9	6		158	105		2.4.8.3
	2. At 125°C (257°F)	7	4		123	70		
	3. After process sssolutions	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
Taylors Modulus (million psi)	na		na

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