370HR

High Performance Laminate and Prepreg

370HR is the industry's "best in class" lead-free compatible product for high-reliability applications across a wide range of markets.

370HR laminates and prepregs are made using a patented high performance 180°C Tg FR-4 multifunctional epoxy resin system that is designed for multilayer Printed Wiring Board (PWB) applications where maximum thermal performance and reliability are required. We manufacture 370HR laminates and prepregs with a patented high performance resin and high quality E-glass glass fabric for superior Conductive Anodic Filament (CAF) resistance. This system provides superior thermal performance with low Coefficient of Thermal Expansion (CTE) and the mechanical, chemical and moisture resistance properties that equal or exceed the performance of traditional FR-4 materials.

370HR is used in thousands of PWB designs and has proven to be best in class for thermal reliability, CAF performance, ease of processing and proven performance on sequential lamination designs.

Product Attributes

High Thermal Reliability , High Density Interconnect

Typical Market Applications

Computing, Storage & Peripherals , Consumer Electronics , Networking & Communication Systems , Aerospace & Defense , Medical, Industrial & Instrumentation , Automotive & Transportation

High Thermal Reliability

Data Sheet

Tg 180°C
Td 340°C
Dk 4.04
Df 0.0210

IPC-4101/101 /98 /99 /126

UL - File Number E41625

Last Updated December 7, 2017
Revision No: 72

Product Features

Product Availability

370HR Typical Values

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Property		Typical Value	Units Metric (English)	Test Method IPC-TM-650 (or as noted)
Glass Transition Temperature (Tg) by DSC		180	°C	2.4.25C
Decomposition Temperature (Td) by TGA @ 5% weight loss		340	°C	2.4.24.6
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	60 30	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	45 230 2.8	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	13/14	ppm/°C	2.4.24C
Thermal Conductivity		—	W/mK	ASTM E1952
Thermal Stress 10 sec @ 288ºC (550.4ºF)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	4.24 4.17 4.04 3.92 3.92	—	2.5.5.3 2.5.5.9 Bereskin Stripline Bereskin Stripline Bereskin Stripline
Df, Loss Tangent	A. @ 100 MHz B. @ 1 GHz C. @ 2 GHz D. @ 5 GHz E. @ 10 GHz	0.0150 0.0161 0.0210 0.0250 0.0250	— — —	2.5.5.3 2.5.5.9 Bereskin Stripline 2.5.5.5 2.5.5.5
Volume Resistivity	A. After moisture resistance B. At elevated temperature	3.0×10^8 7.0×10^8	MΩ-cm	2.5.17.1
Surface Resistivity	A. After moisture resistance B. At elevated temperature	3.0×10^6 2.0×10^8	MΩ	2.5.17.1
Dielectric Breakdown		>50	kV	2.5.6B
Arc Resistance		115	Seconds	2.5.1B
Electric Strength (Laminate & laminated prepreg)		54 (1350)	kV/mm (V/mil)	2.5.6.2A
Comparative Tracking Index (CTI)		3 (175-249)	Class (Volts)	UL 746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile copper foil all copper foil >17 µm [0.669 mil] B. Standard profile copper 1. After thermal stress 2. At 125ºC (257ºF) 3. After process solutions	1.14 (6.5) 1.25 (7.0) 1.25 (7.0) 1.14 (6.5)	N/mm (lb/inch)	2.4.8C 2.4.8.2A 2.4.8.3 2.4.8.3
Flexural Strength	A. Length direction B. Cross direction	90,000 77,000	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	55,900 35,620	ksi	ASTM D3039
Young's Modulus	A. Length direction B. Cross direction	3744 3178	ksi	ASTM D790-15e2
Poisson's Ratio	A. Length direction B. Cross direction	0.177 0.171	—	ASTM D3039
Moisture Absorption		0.15	%	2.6.2.1A
Flammability (Laminate & laminated prepreg)		V-0	Rating	UL 94
Max Operating Temperature		130	°C	UL 796

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.

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