



P95 Polyimide-based Prepreg and Laminate

Isola offers a **P95** product line of polyimide-based prepreg and copper-clad laminates for high temperature printed circuit applications. These products consist of a flame resistant, polyimide-resin system suitable for military, commercial or industrial electronic applications requiring superior performance and the utmost in thermal properties. These products utilize a polyimide and thermoplastic blend resin, fully cured without the use of MDA (Methylenedianiline). This results in a polymer with a high Tg without the characteristic difficulties of brittleness and low initial bond strength associated with traditional thermoset polyimides.

www.isola-group.com/products/P95

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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High Performance

P95 Data Sheet

Tg 260, Td 416
Dk 3.76, Df 0.017
/40 /41 /42

Features

- High Thermal Performance
 - ▶ Tg: 260°C (TMA)
 - ▶ Greater thermal performance over epoxy-bismaleimide blends
- T260: 60 minutes
- T288: 60 minutes
- RoHS Compliant
- Maintains Bond Strength at High Temperature
- Tough Resin System
 - ▶ Improved processing due to less brittleness
 - ▶ Less delamination from machining
- Non-brominated Chemistry, Thermally Stable Laminate System
 - ▶ Full benefits of 100% polyimide performance
- Non-MDA (Methylenedianiline) Chemistry
 - ▶ Meets all OSHA 1910.1050 requirements
- Core Material Standard Availability
 - ▶ Thickness: 0.002" (0.05 mm) to 0.125" (3.2 mm)
 - ▶ Available in full size sheet or panel form
- Prepreg Standard Availability
 - ▶ Roll or panel form
 - ▶ Tooling of prepreg panels available
- Copper Foil Type Availability
 - ▶ Standard HTE Grade 3
 - ▶ RTF (Reverse Treat Foil)
- Copper Weights
 - ▶ ½, 1 and 2 oz (18, 38 and 70 µm) available
 - ▶ Heavier copper available upon request
 - ▶ Thinner copper foil available upon request
- Glass Fabric Availability
 - ▶ Standard E-glass
 - ▶ Square weave glass fabric available
- Industry Approvals
 - ▶ IPC-4101C /40 /41 /42
 - ▶ UL - File Number E41625

P95 Specifications

Property	Typical Values				
			Units	Test Method	
	Typical Value	Specification	Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC	260	250	°C	2.4.25	
Decomposition Temperature (Td) by TGA @ 5% weight loss	416	–	°C	ASTM D3850	
T260	60	–	Minutes	ASTM D3850	
T288	60	–	Minutes	ASTM D3850	
CTE, Z-axis	A. Pre-Tg B. Post-Tg	AABUS –	ppm/°C	2.4.24	
CTE, X-, Y-axes	A. Pre-Tg B. Post-Tg	AABUS –	ppm/°C	2.4.24	
Z-axis Expansion (50-260°C)	–	–	%	2.4.24	
Thermal Conductivity	0.4	–	W/mK	ASTM D5930	
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass Pass Visual	Rating	2.4.13.1	
Dk, Permittivity (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 100 MHz (HP4285A)	3.90	5.4	2.5.5.3	
	B. @ 1 GHz (HP4291A)	3.95	–	2.5.5.9	
	C. @ 2 GHz (Bereskin Stripline)	3.76	–	2.5.5.5	
	D. @ 5 GHz (Bereskin Stripline)	3.74	–	2.5.5.5	
	E. @ 10 GHz (Bereskin Stripline)	3.74	–	2.5.5.5	
Df, Loss Tangent (Laminate & prepreg as laminated) Tested at 50% resin	A. @ 100 MHz (HP4285A)	0.0180	0.035	2.5.5.3	
	B. @ 1 GHz (HP4291A)	0.0180	–	2.5.5.9	
	C. @ 2 GHz (Bereskin Stripline)	0.0170	–	2.5.5.5	
	D. @ 5 GHz (Bereskin Stripline)	0.0190	–	2.5.5.5	
	E. @ 8 GHz (Bereskin Stripline)	0.0210	–	2.5.5.5	
Volume Resistivity	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 3.0x10 ⁹ 7.0x10 ⁹	1.0x10 ⁶ – 1.0x10 ³	MΩ-cm	2.5.17.1
Surface Resistivity	A. 96/35/90 B. After moisture resistance C. At elevated temperature	– 3.0x10 ⁶ 2.0x10 ⁸	1.0x10 ⁴ – 1.0x10 ³	MΩ	2.5.17.1
Dielectric Breakdown	–	>55	–	kV	2.5.6
Arc Resistance	–	130	60	Seconds	2.5.1
Electric Strength (Laminate & prepreg as laminated)	–	44 (1100)	30 (750)	kV/mm (V/mil)	2.5.6.2
Comparative Tracking Index (CTI)	–	2 (250-399)	–	Class (Volts)	UL-746A ASTM D3638
Peel Strength	A. Low profile copper foil and very low profile – all copper weights >17 microns	1.14 (6.5)	0.70 (4.0)	–	2.4.8
	B. Standard profile copper	–	–	N/mm (lb/inch)	2.4.8.2
	1. After thermal stress	1.25 (7.0)	0.80 (4.5)	–	2.4.8.3
	2. At 125°C (257°F)	1.25 (7.0)	0.70 (4.0)	–	–
	3. After process solutions	1.14 (6.5)	0.55 (3.0)	–	–
Flexural Strength	A. Lengthwise direction	58,700	–	lb/inch ²	2.4.4
	B. Crosswise direction	66,200	–	–	–
Tensile Strength	A. Lengthwise direction	54,540	–	lb/inch ²	–
	B. Crosswise direction	36,111	–	–	–
Young's Modulus	A. Grain direction	3892	–	ksi	ww
	B. Fill direction	3490	–	–	–
Poisson's Ratio	A. Grain direction	0.187	–	–	xx
	B. Fill direction	0.164	–	–	–
Moisture Absorption	–	0.5	–	%	2.6.2.1
Flammability (Laminate & prepreg as laminated)	–	HB	–	Rating	UL 94
Max Operating Temperature	–	140	UL Cert	°C	–

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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