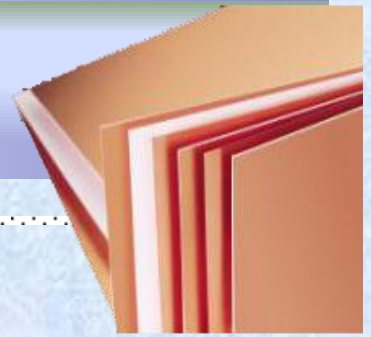




DF-170/PP-DF170

HIGH PERFORMANCE LAMINATE AND PREPREG



High Reliability, High Tg, CAF Resistant

Product Description

The PIC DF-170 is specially formulated to cope with the increasing stringent demand in high complexity, high layer count, lead-free PCB design and applications. This material is a High Tg, High thermal resistant and CAF resistant multi-functional epoxy resin.

Applications

- Personal computers / Notebooks
- High-layer count designs
- High complexity multi-layers
- Backpanel
- High-end servers
- Wireless communication infrastructure
- Automotive applications requiring high thermal resistance

Product Features

- High Tg Glass transition temperature: >170°C (measured by DSC)
- High degradation temperature
- Low water absorption
- Compatible with lead-free assembly environment - passed the lead-free reflow requirement at peak temperature of 260°C
- Excellent CAF resistance
- Able to withstand high thermal excursion during PCB fabrication and assembly
- Provide high thermal resistance and long term thermal reliability
- Wide operating window for multilayer processing
- Excellent thermal shock reliability
- Withstand stringent requirements of Accelerated Thermal Cycling and IST cycles
- UV blocking for maximum compatibility with automated optical inspection



UL:E115974

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Laminate Specification*

Mechanical Property	Units	Typical Value	Specification <0.0197"	Typical Value	Specification ≥0.0197"	Test Method
Peel Strength						
Standard profile copper foil						
1. After thermal stress	N/mm lb/inch	1.15(6.57)	0.80(4.57)	1.22(7.00)	1.05(6.00)	2.4.8.2
2. At 125°C		1.00(5.71)	0.70(4.00)	1.05(6.00)	0.70(4.00)	2.4.8.3
3. After process solution		0.87(5.00)	0.55(3.14)	0.87(5.00)	0.80(4.57)	
Flexural Strength						
1. Length direction	N/mm ²	---	---	515	415	2.4.4
2. Cross direction		---	---	435	345	
Z-Axis CTE						
1. Alpha 1	ppm/ °C	---	---	55	<60	2.4.24
2. Alpha 2		---	---	260	<300	
3. 50 -260°C		(%)	---	---	3.2	
X,Y-Axis CTE						
1. Alpha 1	ppm/°C	---	---	15-20	AABUS	
2. Alpha 2	ppm/ °C	---	---	15-20	AABUS	
Electrical Property						
Permittivity						
(Laminate & Prepreg as laminated)						
1 MHz	---	4.5	<5.4	4.6	<5.4	2.5.5.9
1 GHz		4.2	<5.2	4.3	<5.2	
Loss Tangent						
(Laminate & Prepreg as laminated)						
1 MHz	---	0.017	<0.035	0.017	<0.035	2.5.5.9
1 GHz		0.019		0.019		
Volume Resistivity						
1. C-96/35/90	MΩ-cm	1.6 x 10¹⁰	>10 ⁶	---	---	2.5.17.1
2. After moisture resistance		---	---	8.3 x 10⁸	>10 ⁴	
3. At elevated temperature E-24/125		3.0 x 10¹⁰	>10 ³	9.0 x 10⁸	>10 ³	
Surface Resistivity						
1. C-96/35/90	MΩ	1.2 x 10⁸	>10 ⁴	---	---	2.5.17.1
2. After moisture resistance		---	---	8.1 x 10⁷	>10 ⁴	
3. At elevated temperature E-24/125		5.0 x 10⁸	>10 ³	7.1 x 10⁷	>10 ³	
Dielectric Breakdown						
	kV	---	---	42	>40	2.5.6
Arc Resistance						
	S	115	>60	115	>60	2.5.1
Electric Strength						
(Laminate & Prepreg as laminated)	kV / mm	65	>30	---	---	2.5.6.2
Thermal / Physical Property						
Glass Transition Temperature						
	°C	---	---	175	>170	2.4.25
Td (5% wt loss)						
	°C	---	---	350	>340	2.4.24.6
Thermal Stress 10s at 288°C						
1. Unetched	rating	Pass	Pass Visual	Pass	Pass Visual	2.4.13.1
2. Etched		Pass	Pass Visual	Pass	Pass Visual	
Thermal Resistance[1]						
1. T260	Minutes	---	---	>60	>30	2.4.24.1
2. T288		---	---	>15	>15	
3. T300		---	---	>5	>2	
Moisture Absorption						
	%	0.12	---	0.09	<0.5	2.6.2.1
Flammability						
(Laminate & Prepreg as laminated)	rating	V-0	V-0	V-0	V-0	UL94

* Measure up to IPC-4101C/129

* Data shown are nominal value for reference only.

[1] Measure by laminate without copper (1.6mm,7628*8ply)

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DF-170 Laminate Product List

Thin Cores						
Thickness	Construction	Tolerance	Size	Copper Foil Type		
0.0030"	1x1080	Class C	36"x48" (920x1220mm)	RTC Copper Foil		
0.0035"	1x1080, 2x106	Class C				
0.0040"	1x2116,2x106	Class C				
0.0045"	1x2116, 2x1080	Class C				
0.0050"	1x2116, 2x1080	Class C				
0.0060"	1x1506, 2x1080	Class C				
0.0070"	1x7628, 2x1080	Class C				
0.0080"	1x7628, 2x2116	Class C				
0.0120"	2x1506	Class C			40"x48" (1020x1220mm)	HTE Copper Foil
0.0160"	2x7628	Class C				
0.0240"	3x7628	Class C				
0.0310"	4x7628	Class C				
0.0370"	5x7628	Class C				
0.0450"	6x7628	Class C				
0.0600"	8x7628	Class C				

* All thickness measured do not include copper

* Laminates of special requirements also available upon request and agreement between users and suppliers.

DF-170 Prepreg Product List

Glass style	Product	Resin Content (%)	Gel Time (second)	Thickness	Volatile (%)
106	106RC70	70±2	70±20	0.0019"	<1.5
	106RC72	72±2	70±20	0.0021"	<1.5
	106RC74	74±2	70±20	0.0023"	<1.5
	106RC76	76±2	70±20	0.0025"	<1.5
1080	1080RC62	62±2	70±20	0.0028"	<1.5
	1080RC65	65±2	70±20	0.0032"	<1.5
	1080RC68	68±2	70±20	0.0035"	<1.5
2116	2116RC50	50±2	70±20	0.0046"	<1.5
	2116RC53	53±2	70±20	0.0049"	<1.5
	2116RC58	58±2	70±20	0.0056"	<1.5
1506	1506RC44	44±2	70±20	0.0062"	<1.5
	1506RC50	50±2	70±20	0.0071"	<1.5
7628	7628RC42	42±2	70±20	0.0073"	<1.5
	7628RC45	45±2	70±20	0.0079"	<1.5
	7628RC50	50±2	70±20	0.0090"	<1.5

*The width and length is 49.5" and 120 meters / roll respectively. For 106 & 1080, the length is 240 meters / roll.

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