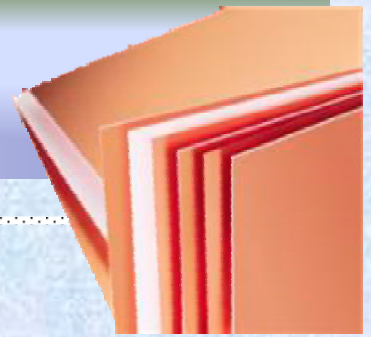




HF-140/PP-HF140

HIGH PERFORMANCE LAMINATE AND PREPREG



Halogen, antimony and red phosphorus free

High reliability

Product Description

The PIC HF-140 is an environmental friendly material. It meets UL94V-0 level of flammability without containing any compound with halogen, antimony and red phosphorous. It is a multi-functional epoxy resin with High thermal reliability and Low CTE for high complexity, halogen free and lead-free PCB design and applications.

Applications

- Hard disk drivers
- Personal computers / Notebooks
- Wireless communication infrastructure
- Digital audio and video equipment

Product Features

- Glass transition temperature: >150°C (measured by DSC)
- High degradation temperature
- Halogen, antimony, and red phosphorous free, flammability meets UL 94V-0
- Compatible with lead-free assembly environment - passed the lead-free reflow requirement at peak temperature of 260°C
- Lower CTE will provide excellent through-hole reliability
- Able to withstand high thermal excursion during PCB fabrication and assembly
- Provide high thermal resistance and long term thermal reliability
- Withstand stringent requirements of Accelerated Thermal Cycling and IST cycles
- UV blocking for maximum compatibility with automated optical inspection



UL:E115974

Shenzhen Pacific Insulating Material Co. Ltd.

Qi-Lin Ave, Bei-Huan Road, Nanshan District, Shenzhen, China.

Tel: (086)0755-26619698 ext 228 Fax: (086)0755-26619047

Website : www.piclaminare.com.cn

Kaiping Pacific Insulating Material Co. Ltd

318 SIQIAN XI RD., SHAGANG, Kaiping City, Guangdong China.

Tel: (086)0750- 220 6998 Fax: (086)0750- 220 3091

Email : szsale-order@piclaminare.com.cn

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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	1.30(7.50)	>0.80(4.57)	1.30(7.50)	>1.05(6.00)	2.4.8.2
2. At 125°C		1.15(6.50)	>0.70(4.00)	1.05(6.00)	>0.70(4.00)	2.4.8.3
3. After process solution		1.05(6.00)	>0.55(3.14)	1.15(6.50)	>0.80(4.57)	
Flexural Strength						
1. Length direction	N/mm ²	---	---	550	>415	2.4.4
2. Cross direction		---	---	450	>345	
Z-Axis CTE						
1. Alpha 1	ppm/°C	---	---	45	<60	2.4.24
2. Alpha 2	ppm/°C	---	---	250	<300	
3. 50 -260°C	(%)	---	---	3.3	<4.0	
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)	---					2.5.5.9
1 MHz		4.6	<5.4	4.8	<5.4	
1 GHz		4.4	<5.2	4.6	<5.2	
Loss Tangent						
(Laminate & Prepreg as laminated)	---					2.5.5.9
1 MHz		0.011	<0.035	0.011	<0.035	
1 GHz		0.012	---	0.012	---	
Volume Resistivity						
1. C-96/35/90	MΩ-cm	4.0 x 10⁷	>10 ⁶	---	---	2.5.17.1
2. After moisture resistance		---	---	4.9 x 10⁸	>10 ⁴	
3. At elevated temperature E-24/125		4.0 x 10⁶	>10 ³	5.4 x 10⁶	>10 ³	
Surface Resistivity						
1. C-96/35/90	MΩ	3.0 x 10⁶	>10 ⁴	---	---	2.5.17.1
2. After moisture resistance		---	---	3.1 x 10⁵	>10 ⁴	
3. At elevated temperature E-24/125		1.5 x 10⁶	>10 ³	1.7 x 10⁶	>10 ³	
Dielectric Breakdown						
	kV	---	---		>40	2.5.6
Arc Resistance						
	S	126	>60	126	>60	2.5.1
Electric Strength						
(Laminate & Prepreg as laminated)	kV / mm	37	>30	---	---	2.5.6.2
Thermal / Physical Property						
Glass Transition Temperature						
	°C	---	---	152	>150	2.4.25
Td (5% wt loss)						
	°C	---	---	350	>325	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	Minutes			>15	>5	
3. T300	Minutes			>5	AABUS	
Moisture Absorption						
	%	----	---	0.10	<0.8	2.6.2.1
Flammability						
(Laminate & Prepreg as laminated)	rating	V-0	V-0	V-0	V-0	UL94

* Measure up to IPC-4101C/128

* Data shown are nominal value for reference only.

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

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HF-140 Laminate Product List

Thin Cores				
Thickness	Construction	Tolerance (IPC-4101B)	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	40"x48" (1020x1220mm)	HTE Copper Foil
0.0080"	1x7628, 2x2116	Class C		
0.0120"	2x1506	Class C	42"x48" (1070x1220mm)	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.

HF-140 Prepreg Product List

Glass style	Product	Resin Content (%)	Gel Time (second)	Thickness	Volatile (%)
106	106RC70	70±2	95±20	0.0018"	<1.5
	106RC72	72±2	95±20	0.0019"	<1.5
	106RC74	74±2	95±20	0.0021"	<1.5
	106RC76	76±2	95±20	0.0023"	<1.5
1080	1080RC60	60±2	95±20	0.0026"	<1.5
	1080RC62	62±2	95±20	0.0027"	<1.5
	1080RC65	65±2	95±20	0.0030"	<1.5
2116	2116RC50	50±2	95±20	0.0043"	<1.5
	2116RC53	53±2	95±20	0.0047"	<1.5
	2116RC58	58±2	95±20	0.0051"	<1.5
1506	1506RC44	44±2	95±20	0.0058"	<1.5
	1506RC50	50±2	95±20	0.0067"	<1.5
7628	7628RC42	42±2	95±20	0.0070"	<1.5
	7628RC47	47±2	95±20	0.0079"	<1.5
	7628RC50	50±2	95±20	0.0085"	<1.5

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

HF-140 Prepreg storage

Condition	Shelf Life
@ Max. 50% RH, Max. 20°C	30 day (from delivery)
@ Max .-5°C (Normal in room temperature for at least 4h before using)	90 day(from delivery)

*Beware of moisture, always keep wrapped in damp-proof material. Were kept in normal condition, prepreg might absorb moisture and its Peel strength would be weakened.

*Avoid UV-rays and strong light.

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