



HRH-4170/ HRHP-4170

1) Features:

- Excellent appearance
- High TG170°C (DSC)
- Excellent heat resistance property
- Low Z-CTE and excellent through-hole reliability
- Processability is similar to FR-4
- Low Moisture absorption
- Meets IPC-4101B/26 specifications

2) Performance List for HRH-170

Property to Test		Test Condition	Unit	Guideline	Typical Value
Peel Strength	After thermal stress	A	N/mm	≥ 1.05	10Z 1.70 1/20Z 1.35
Surface resistivity	C-96/35/90		M Ω	$\geq 10^4$	3.1×10^7
	After moisture resistance	F		$\geq 10^3$	5.2×10^6
	At elevated temperature	E-24/125			
Volume resistivity	C-96/35/90	---	M Ω	---	---
	After moisture resistance	F	-cm	$\geq 10^6$	2.8×10^8
	At elevated temperature	E-24/125		$\leq 10^3$	3.4×10^7

Moisture absorption(Thickness of Laminates: $\geq 0.5\text{mm}$)	E-1/105+DES+D-24/23	%	≤ 0.80	0.20	
Tg	E-1/125	$^{\circ}\text{C}$	≥ 170	175	
Dielectric breakdown(parallel to laminate)	D-48/50+D-0.5/23	KV	≥ 40	65	
Loss tangent at 1MHZ	C-40/23/50	—	≤ 0.035	0.020	
Permittivity at 1MHZ	C-40/23/50	—	≤ 5.4	4.3	
Pressure Vessel Method	260 $^{\circ}\text{C}$ /20S	---	Appearance pass	Appearance pass	
TD	10 $^{\circ}\text{C}/\text{min}$, N ₂ , 5%Wt LOSS	$^{\circ}\text{C}$	≥ 325	335	
Flammability	E-24/125+DES	S	94V-0	94V-0	
Dimensional stability	After bake	E-2/105	ppm	± 300	± 180
	After stress	E-4/150		± 300	± 180
Flexural strength of laminate	Length direction	A	N/mm ²	≥ 415	580
	Cross direction	A		≥ 345	450

3) Normal Product Size and Thickness

THICKNESS		COPPER FOIL oz (μm)	SIZE		THICKNESS TOLERANCE
Inch	mm		Inch	mm	
0.002		1/3 (12) 1/2 (17)	36 \times 48	915 \times	IPC4101B C/M
0.05			1220		
to		1.0 (35) 2.0 (70)	40 \times 48	1020 \times	
0.125		3.0 (103) 4.0	42 \times 48	1070 \times	
3.2		(137)	1220		

Notes:

Special guideline should be agreed by sellers and buyers

4) Features and Properties List of Prepregs

Features:

- High Tg170°C (DSC)
- Excellent varnish viscosity and good PCB processability.

Properties List:

Glass Style	RC (%)	GT (S)	RF (%)	VC (%)	Cure Thickness (mm)	Length (roll)
1080	61±3	130±20	40±5	< 0.75	0.059±0.008	1260mm×114.3m (125yd)
1080	68±3		46±5		0.064±0.008	
2113	58±3		37±5		0.079±0.008	
2116	50±3		28±5		0.100±0.010	
2116	53±3		33±5		0.102±0.010	
1506	50±3		30±5		0.146±0.010	
7628	43±3		23±5		0.180±0.015	
7628	48±3		25±5		0.185±0.015	

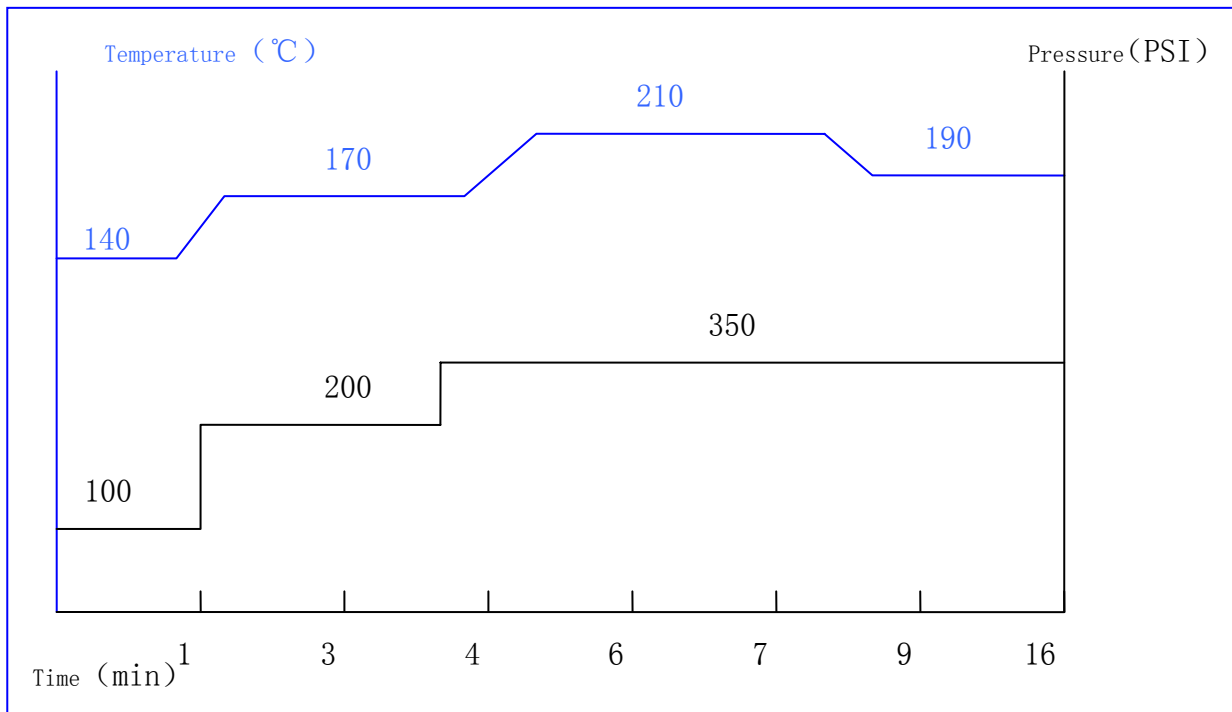
Notes:

1. As for customers' requests, HAORONG can produce special performance materials.
2. All above values are for reference.

5) Items and Methods for Testing Prepreg:

R/C(%), Resin Flow(%), Gel Time(Sec): IPC-TM-650

6) Recommended Press Cycle



- Recommended Rate of Heating: 1.5—2.5°C/min
- Temperature of material over 185°C, must be held for at least one hour
- Recommended Rate of Cooling: $\leq 3^{\circ}\text{C}/\text{min}$

7) Storage Condition

- Storage for short time: $\leq 20^{\circ}\text{C}$, $\leq 50\% \text{RH}$, for 3 months
- Storage for long time: Max 5°C , for 6 months;
- Be set at Min 12 hours in the rooms of normal temperature before being used
- Avoid ultraviolet (UV) rays and violent shines