

## GW4011

ANSI Type: GW4011 FR-4 UV Blocking

### FEATURES

- ◆  $T_g \geq 135^\circ\text{C}$
- ◆ UV blocking and AOI compatibility
- ◆ Good dimensional stability, good punching and low warp property
- ◆ Conform to IPC-4101C/21 standard

### GENERAL PROPERTIES

Characteristic Item		Treatment Condition	Unit	SPEC	Typical Value
Thermal stress	(unetched)	288°C dip	-	>10s no delamination	60S no delamination
	(etched)				
Tg		DCS	°C	$\geq 135^\circ\text{C}$	137
Flexural strength	LW	A	MPa	$\geq 415$	512
	CW			$\geq 345$	405
Flammability		UL-94	—	V-0	V-0
Surface Receptivity		C-96/35/90	M $\Omega$	$\geq 10^4$	$1.41 \times 10^8$
Volume Receptivity		C-96/35/90	M $\Omega$ -CM	$\geq 10^6$	$8.18 \times 10^8$
Dielectric Breakdown		D-48/50+D-0.5/23	KV	$\geq 40$	60
Arc Resistance		D-48/50+D-0.5/23	S	$\geq 60$	120
Dielectric Constant (1GHz)	Constant	C-40/23/50	-	$\leq 5.4$	4.5
Dissipation Factor (1GHz)	Factor	C-40/23/50	-	$\leq 0.035$	0.015
Peel Strength		288°C dip10S	N/mm	$\geq 1.05$	1.8
Z-CTE	Before Tg	TMA	PPM/°C	-	65
	After Tg		PPM/°C	-	300
	50~260°C		%	-	4.5
Moisture Absorption		E-1/105+des+D-24/23	%	$\leq 0.80$	0.15
Td		5% Wt Loss, 10°C/min, N2	°C	-	310
T260		TMA	min	-	15
T288		TMA	min	-	2
CTI		IEC60112	V	PLC3	PLC3

Sample Thickness: 0.27mm 、 1.6mm



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### Specification

基板厚度(Thickness)		覆铜箔(Copper Foil)		尺寸(size) (L*W)	厚度公差标准 (Thickness Tolerance Standard)
inch	mm	oz	μ m	inch	
0.0039~ 0.1181	0.1~ 3.0	0.5	18	37×49	IPC-4101C CLASS L/M
		1.0	35	41×49	
		2.0	70	43×49	
		3.0	105		

Note:

1. Other sheet size and thickness could be available on request.
2. We can supply special performance materials to satisfy the request of the customer.



## GW4011P

ANSI Type: GW4011 PREPREG

### Performance list for prepreg

PP style	Resin content (%) ± 3	Resin flow (%) ± 5	Gel time (s) ± 20	Volatile (%)
7628/41	41	20	140	0.5 ↓
7628/43	43	22		
7628/48	48	30		
7628/50	50	30		
1506/43	43	23		
1506/46	46	27		
2116/48	48	26		
2116/56	56	33		
2116/58	58	36		
2313/53	53	30		
2313/55	55	30		
2313/56	56	34		
1080/61	61	35		
1080/62	62	35		
1080/63	63	37		
1080/66	66	42		

**Note:** 1. we can supply special performance materials to satisfy the request of customer.  
 2. Data shown above are nominal values for reference only because the thickness of PP after press will be different on different status.

### Standard Size

Style	Length	Width
1080	300m/roll	1260 ± 0.2
2313/2116	200m/roll	
1506	150m/roll	
7628	150m/roll 125m/roll	



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Single PP 's thickness

规格	布基重, g/m <sup>2</sup>	RC, %	半固化片成形厚度 (mm),						
			全铜面	10Z 铜厚残铜率			HOZ 铜厚残铜率		
				75%	50%	25%	75%	50%	25%
7628/43	210	43	0.192	0.183	0.175	0.166	0.188	0.183	0.179
7628/45	210	45	0.201	0.192	0.184	0.175	0.197	0.192	0.188
7628/50	210	50	0.229	0.220	0.212	0.203	0.225	0.220	0.216
1506/45	165	45	0.158	0.149	0.141	0.132	0.154	0.149	0.145
1506/48	165	48	0.171	0.162	0.154	0.145	0.167	0.162	0.158
2116/52	105	52	0.121	0.112	0.104	0.095	0.117	0.112	0.108
2116/53	105	53	0.124	0.115	0.107	0.098	0.120	0.115	0.111
2116/54	105	54	0.128	0.119	0.111	0.102	0.124	0.119	0.115
2116/55	105	55	0.131	0.122	0.114	0.105	0.127	0.122	0.118
2116/56	105	56	0.135	0.126	0.118	0.109	0.131	0.126	0.122
2313/55	81	55	0.101	0.092	0.084	0.075	0.097	0.092	0.088
2313/57	81	57	0.107	0.098	0.090	0.081	0.103	0.098	0.094
1080/62	48	62	0.074	0.065	0.057	0.048	0.070	0.065	0.061
1080/63	48	63	0.077	0.068	0.060	0.051	0.073	0.068	0.064
1080/68	48	68	0.091	0.082	0.074	0.065	0.087	0.082	0.078

## GW4011P

ANSI Type: GW4011 PREPREG

### Dielectric constant & dielectric loss of single PP

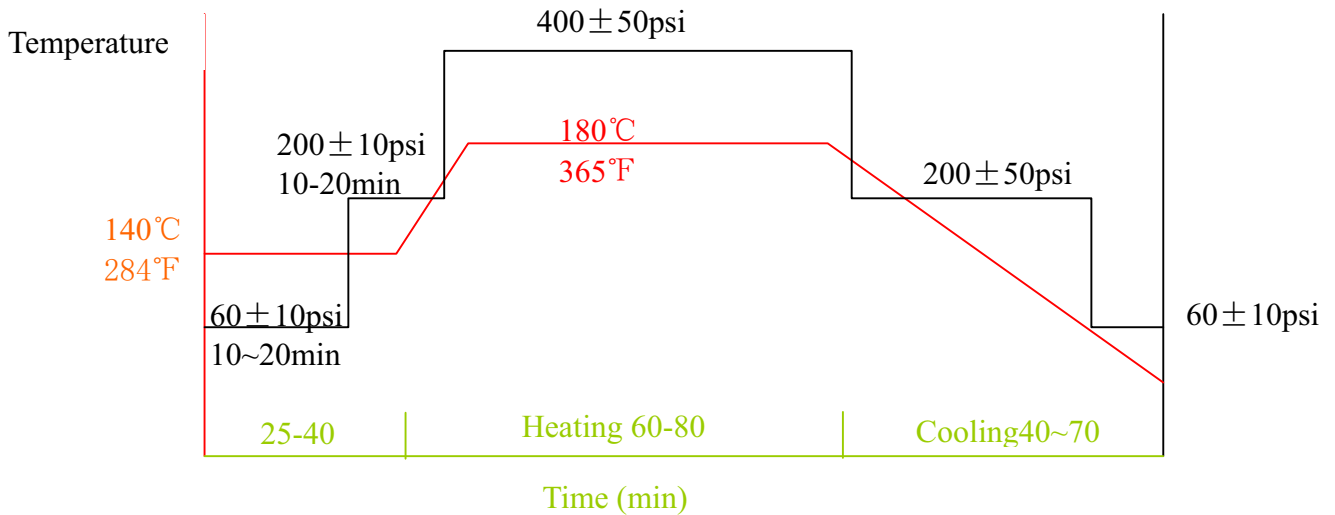
类型: GW4011

规格型号/RC, %	芯板厚度 (不带铜) mm	性能	1GHZ
7628/43	0.192	$\epsilon$	4.2
		$\text{tg } \delta$	0.014
7628/45	0.201	$\epsilon$	4.1
		$\text{tg } \delta$	0.014
7628/50	0.229	$\epsilon$	4
		$\text{tg } \delta$	0.014
1506/43	0.151	$\epsilon$	4.3
		$\text{tg } \delta$	0.015
1506/45	0.158	$\epsilon$	4.2
		$\text{tg } \delta$	0.014
2116/46	0.103	$\epsilon$	4.2
		$\text{tg } \delta$	0.014
2116/52	0.121	$\epsilon$	4
		$\text{tg } \delta$	0.015
2116/56	0.135	$\epsilon$	4
		$\text{tg } \delta$	0.014
2313/50	0.088	$\epsilon$	4.1
		$\text{tg } \delta$	0.015
2313/55	0.101	$\epsilon$	4
		$\text{tg } \delta$	0.015
2313/57	0.107	$\epsilon$	4
		$\text{tg } \delta$	0.015
1080/58	0.066	$\epsilon$	3.8
		$\text{tg } \delta$	0.016
1080/61	0.072	$\epsilon$	3.8
		$\text{tg } \delta$	0.015
1080/63	0.077	$\epsilon$	3.7
		$\text{tg } \delta$	0.016

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### Hot Pressing Cycle



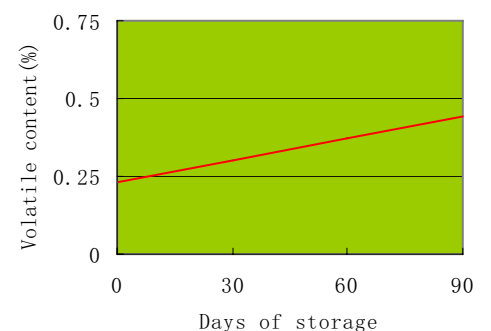
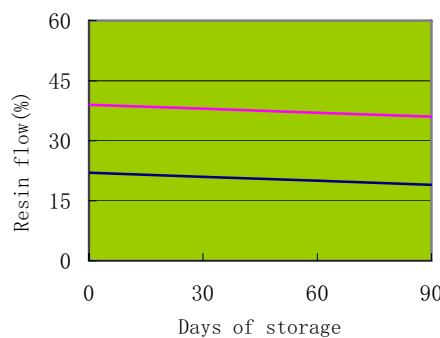
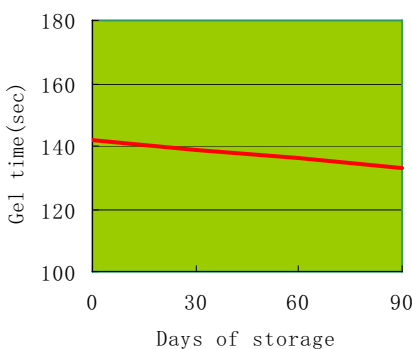
### Suggestions

- ◇ The prepreg should be kept under room temperature and with sealed pack well before use if it stored in low temperature warehouse
- ◇ The heating rate for 1080 and 2116PP should be controlled in 1.5~2.5°C/min. When temperature of material range 80~140°C, the heating rate should be controlled at about 1.5°C/min for 7628
- ◇ Temperature of material over 170°C must be held for at least 40minutes to ensure resin to fully cure
- ◇ These datum shown above for reference only, they may be changed depending on machine and material structure and the quality status of the pressed product
- ◇ Cooling rate of material should be kept under 2.5°C/min when temperature of material range 100-150°C to avoid product twist

### Storage Condition

- ◇ <23°C, <50% RH for 3 months
- ◇ Below 5°C for 6 months

### Prepreg Storage Stability



— 7628 — 1080