

# 目 录

## CONTENTS

1-2	S1141	UV BLOCKING FR-4
3-4	S1130	Traditional FR-4
5-6	S1130N	Natural Color/UV Blocking
7-8	S1600	High CTI FR-4
9-10	S1141 170	High Tg FR-4
11-12	S1141 150	Tg 150
13-13	S1170	High Performance CCL
14-14	S1141 KF	CAF Resistance/UV Blocking
15-15	S1170 KF	CAF Resistance/High Performance
16-17	S1155	Halogen-Free FR-4
18-20		PREPREG
21-22		LASER- DRILLABLE PREPREG
23-24	S6018	Resin Coated Copper Foil
25-26	S2130	CEM-3
27-28	S2131	UV BLOCKING CEM-3
29-30	S2132	CEM-3 for color TV
31-32	S2136	CEM-3 for LED Display
33-34	S2600	High CTI CEM-3
35-36	S2155	Halogen-free CEM-3
37-38	S3110	CEM-1
39-40	S3116	High CTI CEM-1
41-41		Testing Equipment

# S1141

(ANSI:FR-4)UV BLOCKING

## 特点

- UV Blocking 和 AOI兼容，可提高PCB生产效率。
- 优良的耐热性。
- 优良尺寸稳定性。
- 优秀的机械性能和电性能。

## FEATURES

- UV Blocking and AOI compatible, so as to Increase productivity.
- Good soldering reliability .
- Good dimensional stability.
- Excellent mechanical and electrical properties.

## 应用领域

电脑、仪器仪表、摄象机、通讯设备、电子游戏机等。

## APPLICATIONS

Computer, Instrumentation, VCR, Communication equipment, Electronic game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		130	140
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	120
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.015
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz Cu. Foil	N/mm	288 ,20s	1.05
			125	1.8
Flexural Strength	LW	MPa	0.70	1.6
	CW		A	415
Water Absorption	D-24/23	%	345	500
			0.35	0.15
CTE Z-axis	Before Tg	TMA	μ m/m	-
	After Tg	TMA	μ m/m	55
CTI	IEC-112 Method	V	-	260
				175

Specimen Thickness:1.6mm

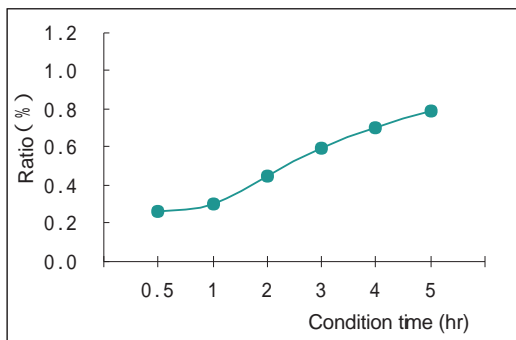
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

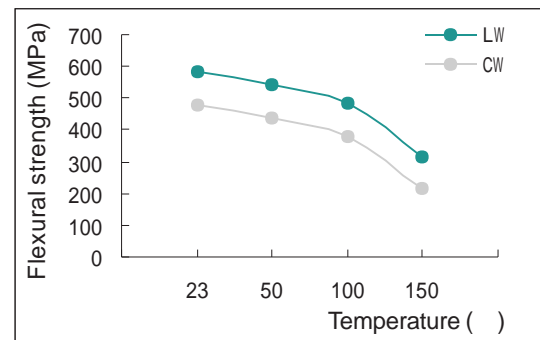
# S1141

(ANSI:FR-4)UV BLOCKING

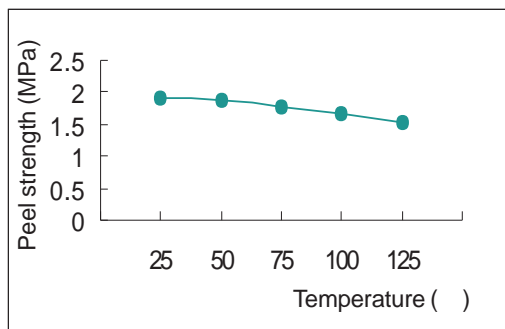
## Water absorption at pressure cooker



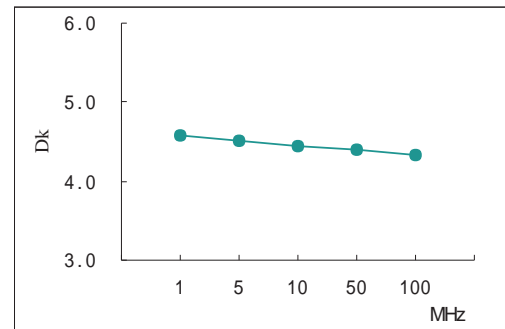
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.1mm to 3.2mm	12 μm	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
	to 105 μm	1,070 × 1,220mm (42 × 48 )	

※ Other sheet size and thickness could be available upon request.

# S1130

(ANSI:FR-4)Traditional FR-4

## 特点

- 优良的尺寸稳定性。
- 优秀的耐热性。
- 优秀的机械性能和电性能。

## FEATURES

- Excellent dimensional stability.
- Good soldering reliability.
- Excellent mechanical and electrical properties.

## 应用领域

电脑、仪器仪表、摄象机、电视机、电子游戏机等。

## APPLICATIONS

Computer, Instrumentation, VCR, Television, Electronic game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		125	135
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	120
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz	N/mm	1.05	1.8
	Cu. Foil		0.70	1.6
Flexural Strength	LW	MPa	415	600
	CW		345	500
Water Absorption	D-24/23	%	0.35	0.15
CTE Z-axis	Before Tg	TMA	-	55
	After Tg	TMA	-	270
CTI	IEC-112 Method	V	-	200

Specimen Thickness:1.6mm

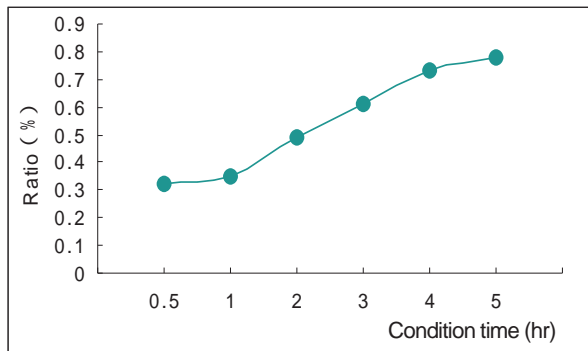
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

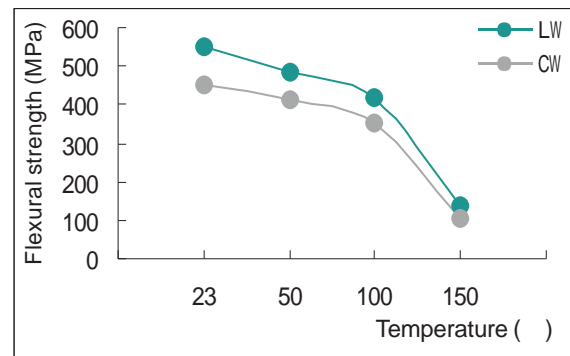
# S1130

(ANSI:FR-4)Traditional FR-4

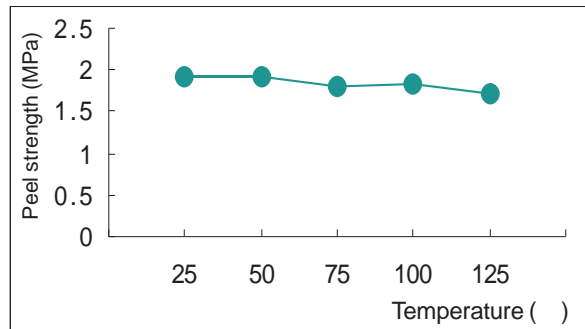
## Water absorption at pressure cooker



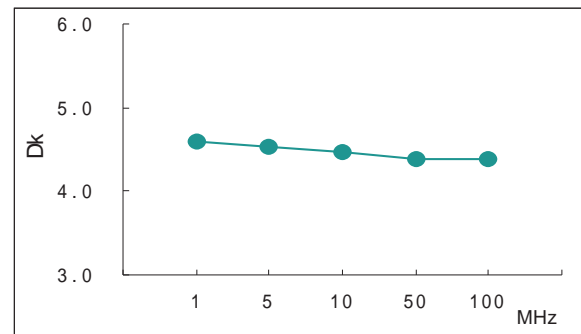
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
		0.1mm to 3.2mm	12 $\mu$ m to 105 $\mu$ m

❖ Other sheet size and thickness could be available upon request.

# S1130N

(ANSI:FR-4) Natural colour / UV blocking

## 特点

- 自然色，UV Blocking与AOI兼容可提高PCB生产效率。
- 优秀的耐热性和尺寸稳定性。
- 优秀的机械性能和电性能。

## FEATURES

- Natural color, UV Blocking and AOI compatible increased productivity.
- Good soldering reliability and dimensional stability.
- Excellent mechanical and electrical properties.

## 应用领域

电脑、仪器仪表、摄象机、电视机、电子游戏机等。

## APPLICATIONS

Computer, Instrumentation, VCR, Television, Electronic game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		125	135
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	120
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	288 ,20s	-	No delamination
	Etched			
Peel Strength	1oz	288 ,10s	N/mm	1.05
	Cu. Foil			
Flexural Strength	LW	A	MPa	415
	CW			345
Water Absorption	D-24/23	%	0.35	0.15
CTE z-axis	Before Tg	TMA	μ m/m	55
	After Tg		μ m/m	270

Specimen Thickness:1.6mm

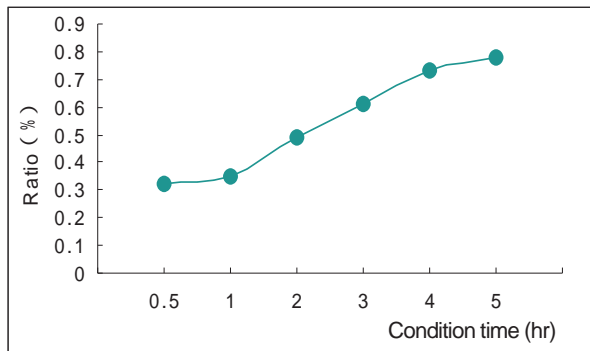
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

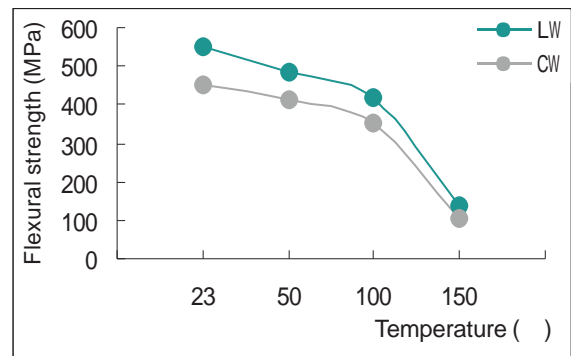
# S1130N

(ANSI:FR-4) Natural colour / UV blocking

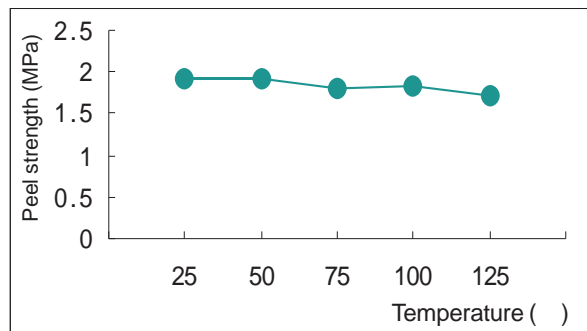
## Water absorption at pressure cooker



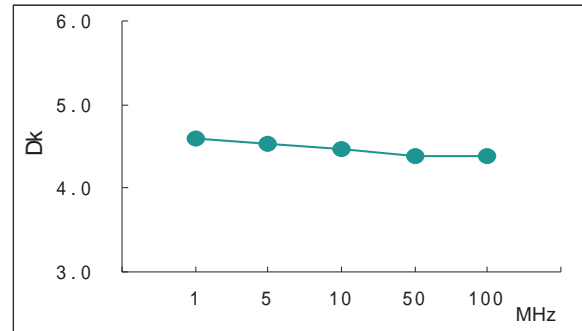
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
		0.1mm to 3.2mm	12 $\mu$ m to 105 $\mu$ m

❖ Other sheet size and thickness could be available upon request.

# S1600

(ANSI:FR-4) High CTI

## 特点

- 优异的耐漏电起痕性, CTI 600。
- UV Blocking, 可提高PCB生产效率。
- 加工性能及其他性能与普通FR-4相同。

## FEATURES

- Superior tracking resistance, CTI 600.
- UV Blocking, so as to increase productivity.
- PCB processing and other properties similar to conventional FR-4.

## 应用领域

电源基板、电视机、电冰箱、洗衣机等。

## APPLICATIONS

Power supply, TV, refrigerator, washing machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		125	135
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>9</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>7</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>6</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	126
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.7
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz	N/mm	1.05	1.8
	Cu. Foil		125	0.70
Flexural Strength	LW	Mpa	415	550
	CW		A	345
Water Absorption	D-24/23	%	0.35	0.10
CTI	IEC-112 Method	V	600	600
CTE z-axis	Before Tg	TMA	-	55
	After Tg		-	308

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

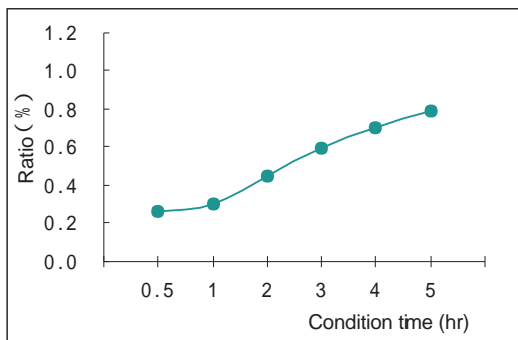
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.



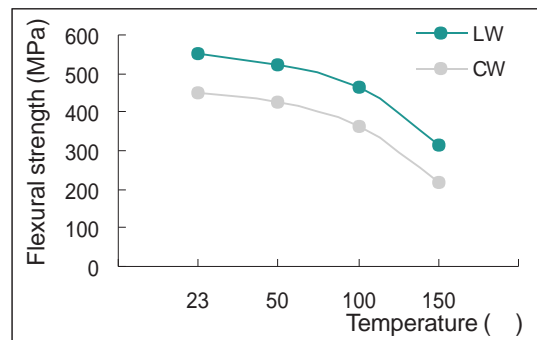
# S1600

(ANSI:FR-4) High CTI

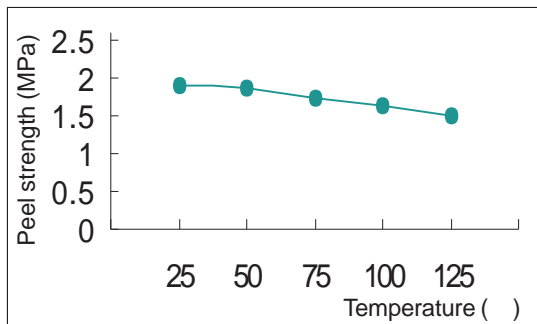
## Water absorption at pressure cooker



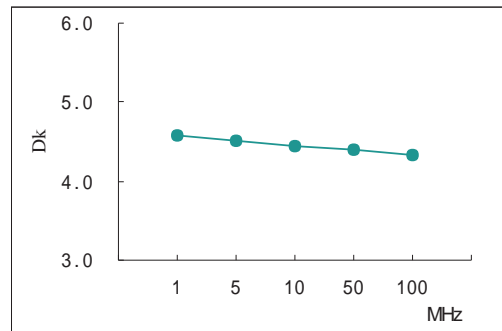
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.1mm to 3.2mm	12 $\mu$ m to 105 $\mu$ m	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
		1,070 × 1,220mm (42 × 48 )	

※ Other sheet size and thickness could be available upon request.

# S1141 170

(ANSI:FR-4)UV BLOCKING/High Tg

## 特点

- 高Tg170 (DSC)。
- UV Blocking 和 AOI兼容。
- 优秀的耐热性和耐化学性。
- 能通过多次的热冲击测试。
- 从环境温度到260℃，板材具备较低的热膨胀系数。
- PCB制作工艺与标准FR-4相同。

## FEATURES

- Higher Tg170 (DSC).
- UV Blocking and AOI compatible.
- Superior thermal and chemical reliability.
- Passes multiple hot shock testing.
- Lower CTE from ambient to 260℃.
- Standard FR-4 processing.

## 应用领域

计算机及外围设备、通讯设备、仪器仪表、办公自动设备等。

## APPLICATIONS

Computer, communication equipment instrumentation, OA equipment, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		165	175
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	115
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.5
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	288℃, 20s	-	No delamination
	Etched			
Peel Strength	1oz Cu. Foil	288℃, 10s	N/mm	1.05
	125			0.70
Flexural Strength	LW	A	MPa	415
	CW			345
Water Absorption	D-24/23	%	0.35	0.15

Specimen Thickness:1.6mm

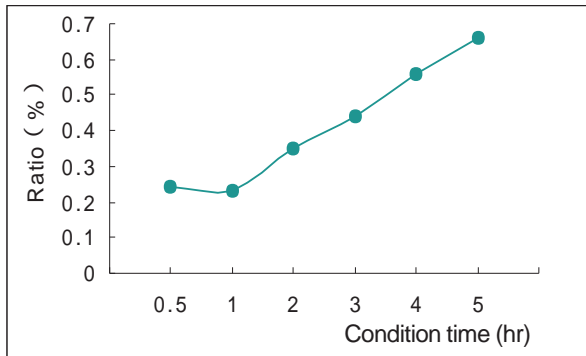
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in °C and with the third digit the relative humidity.

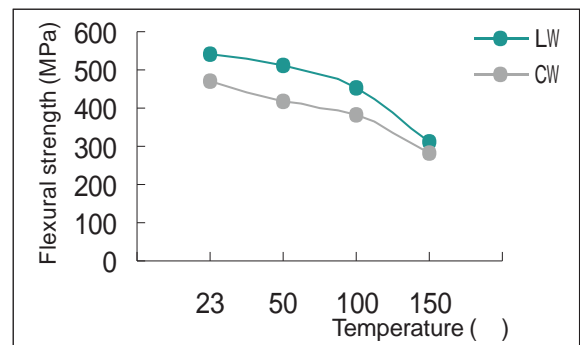
# S1141 170

(ANSI:FR-4)UV BLOCKING/High Tg

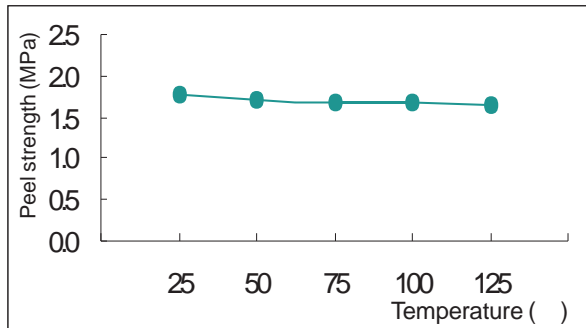
## Water absorption at pressure cooker



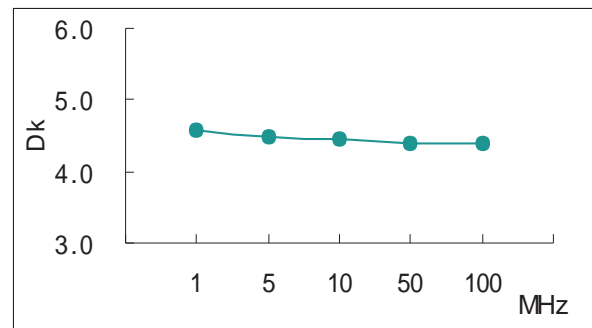
## Flexural strength



## Peel strength



## Dielectric constant



## S1141 170 VS. Standard FR-4

Property	S1141 170	Standard FR-4 (S1130)
Tg (°C)	175	135
Z CTE (ppm/°C) [30-260 °C]	160	190

## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size
0.1mm to 3.2mm	12 μm to 105 μm	1,020 × 1,220mm (40 × 48 ) 915 × 1,220mm (36 × 48 ) 1,070 × 1,220mm (42 × 48 )

\* Other sheet size and thickness could be available upon request.

# S1141 150

(ANSI:FR-4)Tg 150

## 特点

- Tg(DSC)=150。
- UV Blocking 和 AOI兼容，可提高PCB生产效率与准确率。
- 优良的耐热性和尺寸稳定性。
- 优秀的机械性能和电性能。

## FEATURES

- Tg(DSC)=150。
- UV Blocking and AOI compatible, so as to increase productivity and accuracy.
- Good soldering reliability and dimensional stability.
- Excellent mechanical and electrical properties.

## 应用领域

电脑、仪器仪表、摄象机、通讯设备、电子游戏机等。

## APPLICATIONS

Computer, Instrumentation, VCR, Communication equipment, Electronic Toy, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		145	150
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125+des			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	120
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.015
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz	N/mm	1.05	1.8
	Cu. Foil		125	0.70
Flexural Strength	LW	MPa	415	600
	CW		345	500
Water Absorption	D-24/23	%	0.35	0.15

Specimen Thickness:1.6mm

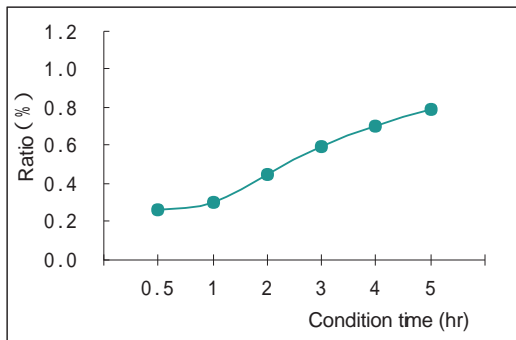
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

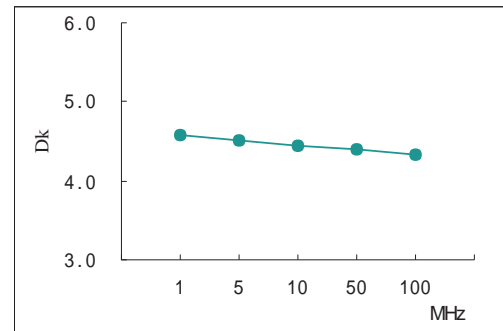
# S1141 150

(ANSI:FR-4)Tg 150

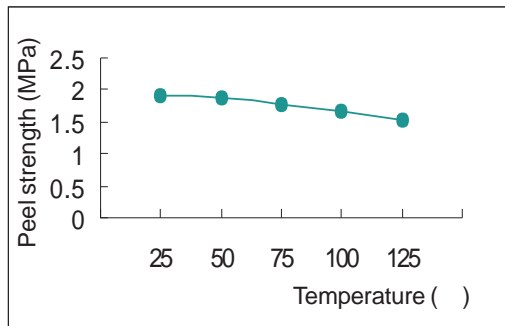
## Water absorption at pressure cooker



## Dielectric constant



## Peel strength



## S1141 150 VS. Standard FR-4

Property	S1141 150	Standard FR-4 (S1130)
Tg (°C)	150	135
Z CTE (ppm/°C) [30-260 °C]	175	190

## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size
0.1mm to 3.2mm	12 μm to 105 μm	1,020 × 1,220mm (40 × 48 ) 915 × 1,220mm (36 × 48 ) 1,070 × 1,220mm (42 × 48 )

\* Other sheet size and thickness could be available upon request.

# S1170

(ANSI:FR-4)High performance Epoxy Copper Clad Laminate

## 特点

- 优异的耐热性，热分解温度更高，T260 > 30min。
- 高Tg 170 (DSC)。
- 优良的耐化学性能与较低的吸水率。
- 可耐多次热冲击测试。
- 从环境温度到260，板材具备较低的热膨胀系数。
- 有优良的耐离子迁移性。
- UV Blocking与AOI兼容。

## FEATURES

- High thermal performance, higher decomposition temperature, T260 > 30min.
- High Tg 170 (DSC).
- Excellent chemical resistance and lower water absorption.
- Through multiple thermal shock test.
- Lower CTE from ambient to 260.
- Excellent CAF resistance.
- UV Blocking and AOI compatible.

## 应用领域

计算机与通讯设备，工业控制用高档仪器仪表、路由器等。

## APPLICATIONS

Computer, Communication equipment precise apparatus and instrument, router, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		170	175
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125+des			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	3.5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	2.3 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	1.8 × 10 <sup>5</sup>
	E-24/125		10 <sup>3</sup>	5.1 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	123
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	62
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.012
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz	N/mm	1.05	1.45
	Cu. Foil		0.70	1.23
Flexural Strength	LW	MPa	415	587
	CW		345	531
Water Absorption	D-24/23	%	0.35	0.10
Z-CTE	TMA	μm/m	-	150

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

# S1141KF

(ANSI:FR-4) CAF Resistance/UV Blocking

## 特点

- 优良的耐CAF性。
- UV Blocking 和 AOI兼容，可提高PCB生产效率。
- 优良的耐热性。
- 优良的尺寸稳定性，低吸水率。
- 优秀的机械性能和电性能。

## FEATURES

- Excellent CAF resistance.
- UV Blocking and AOI compatible, so as to Increase productivity.
- Good soldering reliability .
- Good dimensional stability, lower water absorption.
- Excellent mechanical and electrical properties.

## 应用领域

电脑、仪器仪表、摄象机、通讯设备、电子游戏机等。

## APPLICATIONS

Computer, Instrumentation, VCR, Communication equipment, Electronic game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		130	140
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	3 × 10 <sup>10</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	120
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	60
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.015
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz	N/mm	1.05	1.4
	Cu. Foil		125	0.70
Flexural Strength	LW	MPa	415	600
	CW		345	500
Water Absorption	D-24/23	%	0.35	0.12
CTE Z-axis	Before Tg	TMA	μ m/m	55
	After Tg	TMA	μ m/m	260

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

# S1170KF

(ANSI:FR-4) CAF Resistance/ High Performance

## 特点

- 有优异的耐离子迁移性。
- 高Tg 170 (DSC)。
- 优良的耐化学性能与较低的吸水率。
- 可耐多次热冲击测试。
- 从环境温度到260，板材具备较低的热膨胀系数。
- 优异的耐热性，热分解温度更高，T260 > 30min。
- UV Blocking与AOI兼容。

## FEATURES

- Excellent CAF resistance.
- High Tg 170 (DSC).
- Excellent chemical resistance and lower water absorption.
- Through multiple thermal shock testing.
- Lower CTE from ambient to 260.
- High thermal performance, higher decomposition temperature, T260 > 30min.
- UV Blocking and AOI compatible.

## 应用领域

计算机与通讯设备，工业控制用高档仪器仪表、路由器等。

## APPLICATIONS

Computer, Communication equipment precise apparatus and instrument, router, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		170	175
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125+des			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	3.5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	2.3 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	1.8 × 10 <sup>5</sup>
	E-24/125		10 <sup>3</sup>	5.1 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	123
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	62
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.012
Thermal Stress	Unetched	288 ,20s	-	No delamination
	Etched			
Peel Strength	1oz	288 ,10s	N/mm	1.05
	Cu. Foil			1.45
Flexural Strength	LW	A	MPa	0.70
	CW			1.23
Water Absorption	D-24/23	%	415	587
Z-CTE	TMA	μm/m	345	531
			0.35	0.10
			-	150

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.



# S1155

## (ANSI:FR-4) Halogen-Free Copper Clad Laminate

### 特点

- 不含卤素、锑、红磷等有毒成分。
- 燃烧时，不产生剧毒气体和残留有毒成分。
- 加工性能及其他性能与普通FR-4相同。

### FEATURES

- Free of toxic constituents such as halogen, antimony, red phosphorous, etc..
- No toxic gas emission and no hazardous residue during waste combustion.
- PCB processing and other properties similar to conventional FR-4.

### 应用领域

电脑、仪器仪表、摄象机、电视机、电子游戏机等。

### APPLICATIONS

Computer, Instrumentation, VCR, TV, electronic game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		125	135
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	4.5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	4.9 × 10 <sup>6</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	8.6 × 10 <sup>6</sup>
	E-24/125		10 <sup>3</sup>	2.0 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	115
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.7
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.010
Thermal Stress	Unetched	-	No delamination	No delamination
	Etched			
Peel Strength	1oz Cu. Foil	N/mm	1.05	1.4
			125	0.70
Flexural Strength	LW	MPa	415	590
	CW		A	345
Water Absorption	D-24/23	%	0.35	0.11
CTE z-axis	Before Tg	TMA	μm/m	40.5
	After Tg		μm/m	254

Specimen Thickness:1.6mm

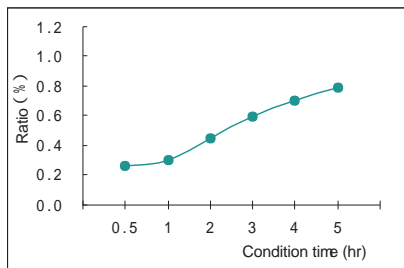
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

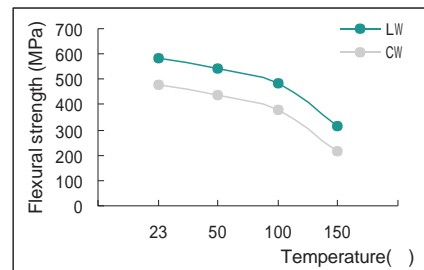
# S1155

## (ANSI:FR-4) Halogen-Free Copper Clad Laminate

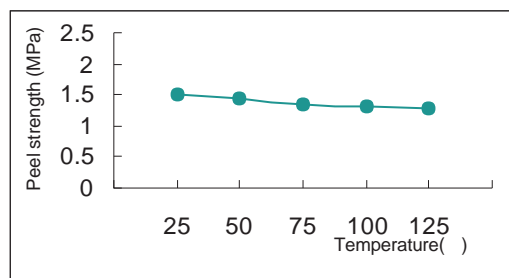
### Water absorption at pressure cooker



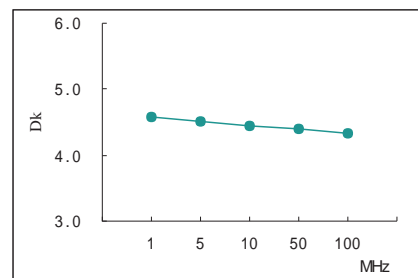
### Flexural strength



### Peel strength



### Dielectric constant

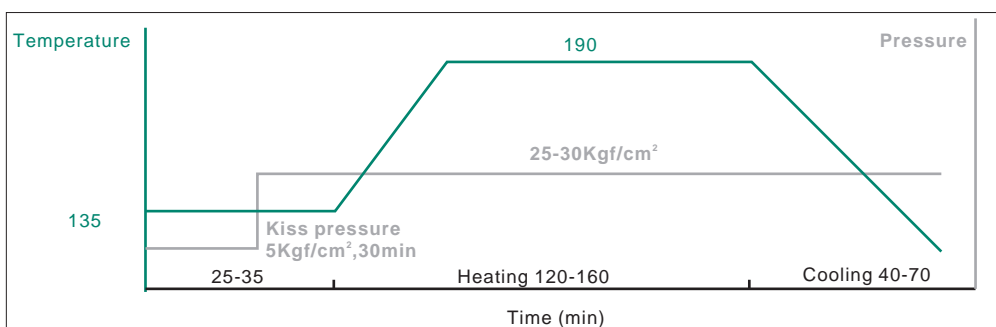


## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.1mm to 3.2mm	12 $\mu$ m to 105 $\mu$ m	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
		1,070 × 1,220mm (42 × 48 )	

❖ Other sheet size and thickness could be available upon request.

## RECOMMENDED PRESS CYCLES



### ❖ Recommended multilayer cure condition

Hold for 190 at least 60 minutes, to allow the resin to cure completely.

# PREPREG

## (ANSI:FR-4) BONDING PREPREG FOR MULTILAYER

### 特点

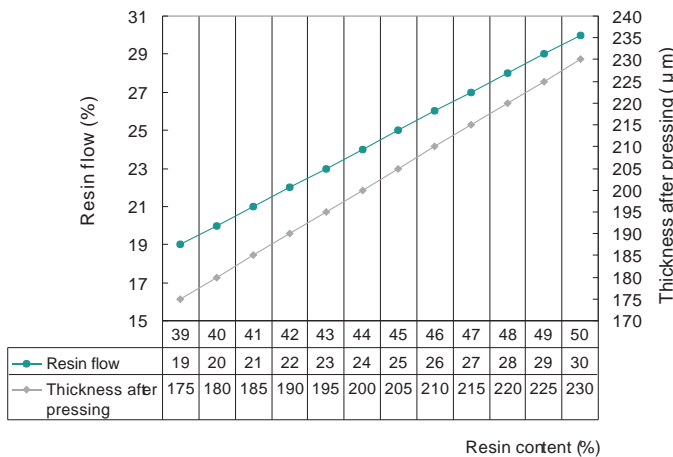
- 优良的粘结强度。
- 优异的固化稳定性，适用于各种不同的层压程序。
- 优秀的工艺性能，作业窗口宽。

### FEATURES

- Excellent bonding strength.
- Excellent cure stability towards various processing cycles.
- Excellent processing characteristics with wide operating window.

## PREPREG PARAMETERS

### 7628 TYPE PREPREG PARAMETERS

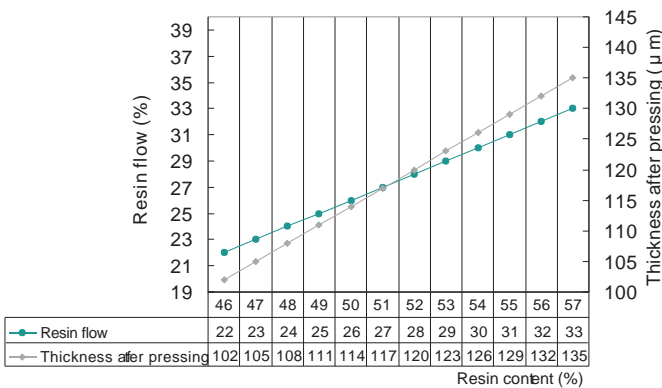


Designation	Glass fabric type	Performance	Gel time (sec)
S0101	7628	Standard FR-4	170 ± 20
S0401		UV blocking	140 ± 20
S0401 170		High Tg (Tg=170 )	140 ± 20

### ✧ Tolerance

Resin content (%)	Resin flow (%)	Thickness after pressing (μm)
± 3	± 5	± 20

### 2116 TYPE PREPREG PARAMETERS



Designation	Glass fabric type	Performance	Gel time (sec)
S0101	2116	Standard FR-4	170 ± 20
S0401		UV blocking	140 ± 20
S0401 170		High Tg (Tg=170 )	140 ± 20

### ✧ Tolerance

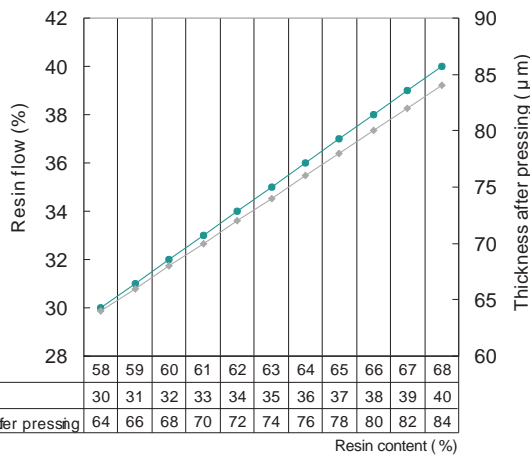
Resin content (%)	Resin flow (%)	Thickness after pressing (μm)
± 3	± 5	± 15

# PREPREG

## (ANSI:FR-4) BONDING PREPREG FOR MULTILAYER

### PREPREG PARAMETERS

#### 1080 TYPE PREPREG PARAMETERS



Designation	Glass fabric type	Performance	Gel time (sec)
S0101	1080	Standard FR-4	170 ± 20
S0401		UV blocking	140 ± 20
S0401 170		High Tg (T <sub>g</sub> =170 °C)	140 ± 20

#### ✧ Tolerance

Resin content (%)	Resin flow (%)	Thickness after pressing (μm)
± 3	± 5	± 10

#### OTHER TYPE PREPREG PARAMETERS

Glass fabric type	Resin content (%)	Resin flow (%)	Thickness after pressing (μm)	Gel time (sec)		
				S0101	S0401	S0401 170
106A	71 ± 3	37 ± 5	50 ± 10	170 ± 20	140 ± 20	140 ± 20
1500A	45 ± 3	22 ± 5	160 ± 18			
2165A	52 ± 3	26 ± 5	140 ± 15			
3313A	55 ± 3	26 ± 5	95 ± 15			

Resin Content, Resin Flow and Gel Time Could be Available Upon Request

#### Prepreg Test Method

- Resin content, Resin Flow, Gel Time: IPC-TM-650

#### SIZE & THICKNESS

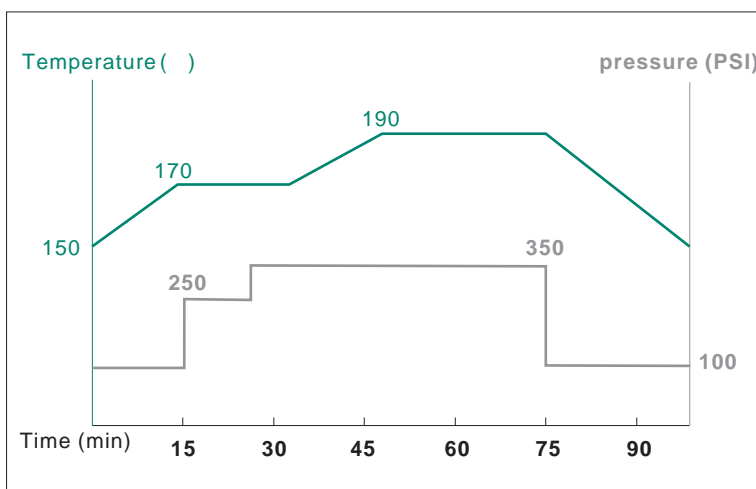
Designation	Type	Standard Size (roll type)
S0101, S0401 S0401 170	1080, 2116, 7628, 106A, 1500A, 2165A, 3313A	1,260mm x 114.3m (125yards)

- ✧ Other sheet type and size could be available upon request.

# PREPREG

(ANSI:FR-4) BONDING PREPREG FOR MULTILAYER

## PRESSING CYCLE



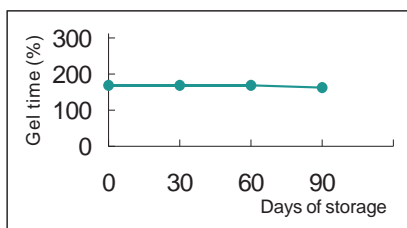
## PREPREG STORAGE

### STORAGE CONDITION

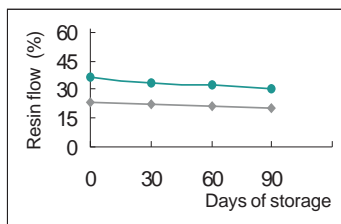
- For short term storage, it is good to keep it in 20 °C and 50% RH.
- For long term storage, keep it in 5 °C and 50%RH. After such a long term storage, it should be normalized in the room temperature at least 4 hours before use.
- Beware of moisture, if kept in normal conditions, prepreg absorbs moisture and its bonding strength is weakened. So always keep it wrapped in damp proof material.
- Avoid strong lights.

### STORAGE STABILITY

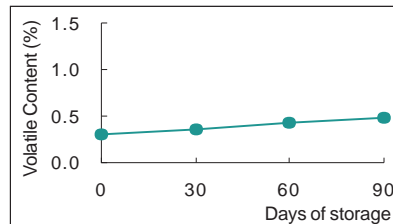
#### ■ Gel time



#### ■ Resin flow



#### ■ Volatile Content (%)



# LASER-DRILLABLE PREPREG

(ANSI:FR-4) Bonding Prepreg For Laser process

## 特点

- 优良的激光钻孔性能。
- 有利于积层法多层板的高刚性化。
- 可使用过去常规的层压、蚀刻等加工工艺进行加工。

## FEATURES

- Good laser drilling performance .
- Contributes to superior rigidity in Build-up Multilayer boards.
- Can be used for usual processes such as pressing and etching.

## PREPREG PARAMETERS

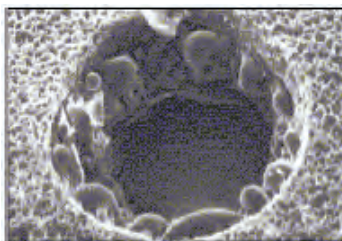
Designation	Glass fabric type	Performance	Gel time (sec)	Resin content (%)	Resin flow (%)	Thickness after pressing ( μ m)
S0401LD	106	UV blocking	140 ± 20	72 ± 3	42 ± 5	50 ± 10
	1080			64 ± 3	40 ± 5	75 ± 10
	2116			52 ± 3	30 ± 5	115 ± 10
S0101LD	106	Standard FR-4	170 ± 20	72 ± 3	42 ± 5	50 ± 10
	1080			64 ± 3	40 ± 5	75 ± 10
	2116			52 ± 3	30 ± 5	115 ± 10

*Resin Content, Resin Flow and Gel Time Could be Available Upon Request*

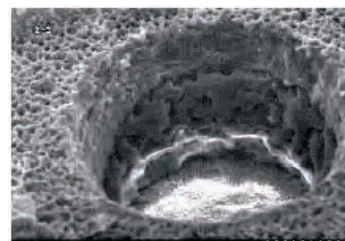
## Prepreg Test Method

- Resin content, Resin Flow, Gel Time: IPC-TM-650

## LASER VIA PICTURE



Conventional prepreg



Laser-drillable prepreg

## SIZE & THICKNESS

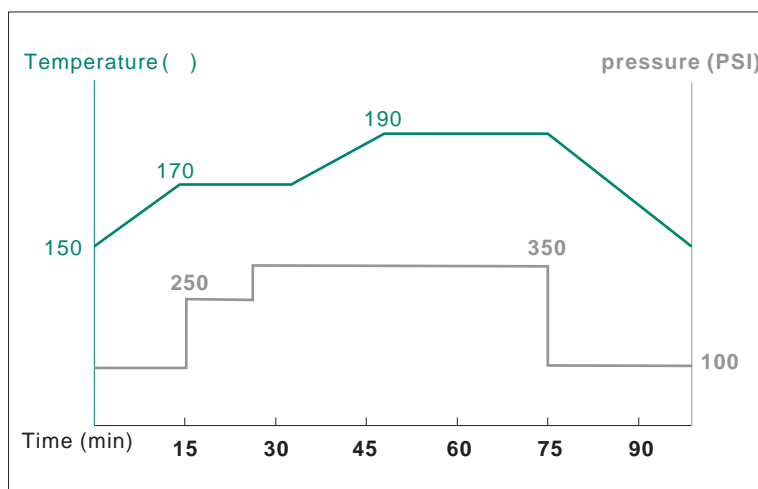
Designation	Type	Standard Size (roll type)
S0101, S0401 S0401 170	1080, 2116, 7628, 106A, 1500A, 2165A, 3313A	1,260mm × 114.3m (125yards)

❖ Other sheet type and size could be available upon request.

# LASER-DRILLABLE PREPREG

(ANSI:FR-4) Bonding Prepreg For Laser process

## PRESSING CYCLE



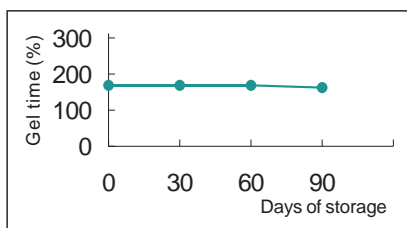
## PREPREG STORAGE

### STORAGE CONDITION

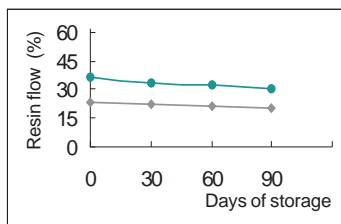
- For short term storage, it is good to keep it in 20 °C and 50% RH.
- For long term storage, keep it in 5 °C and 50%RH. After such a long term storage, it should be normalized in the room temperature at least 4 hours before use.
- Beware of moisture, if kept in normal conditions, prepreg absorbs moisture and its bonding strength is weakened. So always keep it wrapped in damp proof material.
- Avoid strong lights.

### STORAGE STABILITY

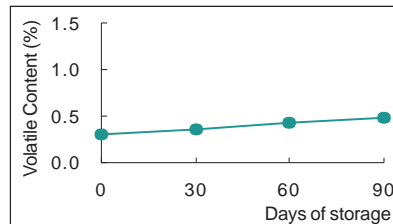
#### ■ Gel time



#### ■ Resin flow



#### ■ Volatile Content (%)



# S6018

## Resin Coated Copper Foil for HDI multi-layer board

### 特点

- 不包含玻纤布，适合于大规模激光钻孔或等离子蚀孔，用于制造高密度、高精度线路板。
- 不掉树脂粉，污染少。
- 精确控制的树脂流动度，能满足埋孔及绝缘层厚度控制的要求。
- 低介电常数，有利于特性阻抗控制及提高信号传输速度。
- 可与现有PCB加工工艺相适应。

### FEATURES

- Glass-free dielectric, suitable for mass microvia formation by laser or plasma ablation technique for high density, fine circuits.
- No resin powder and reduced contamination.
- Precisely controllable resin flow, satisfactory via plugging and dielectric layer thickness accuracy.
- Low Dk for improved impedance control, higher operation speed.
- Compatible with conventional PCB fabrication process.

### 应用领域

用于制作更轻、更薄的电子产品如手机、PDA，数码摄象机等用的高密度多层板。

### APPLICATIONS

High density interconnect multilayer PCB for thinner and lighter products such as mobile phone, PDA, digital VCR, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		145	150
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	After moisture resistance	M -cm	10 <sup>6</sup>	5 × 10 <sup>9</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>7</sup>
Surface Resistance	After moisture resistance	M	10 <sup>4</sup>	5 × 10 <sup>5</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>5</sup>
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	3.8
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.019
Thermal Stress	Unetched	288 ,20s	-	No delamination
	Etched			
Peel Strength	12 μ Cu. Foil	288 ,10s	N/mm	1.05
		125		0.70
Flexural Strength	LW	A	MPa	415
	CW			345
Water Absorption	D-24/23	%	0.35	0.30

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

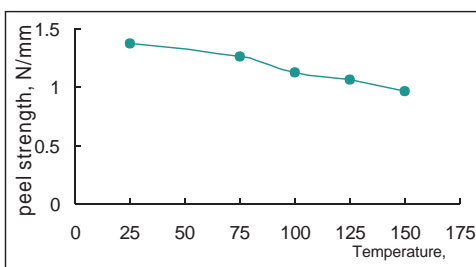
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.



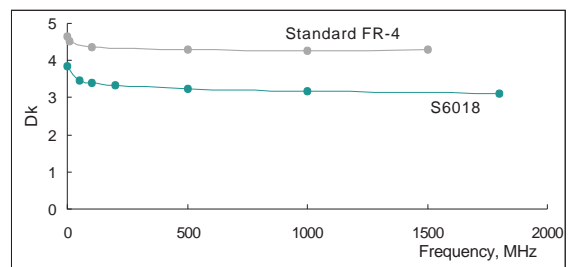
# S6018

## Resin Coated Copper Foil for HDI multi-layer board

### ■ Peel strength



### ■ Dielectric constant



### ■ Overview of buried via hole

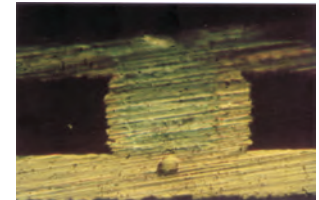


Core board thickness: 0.65mm  
buried via hole diameter:  $\varnothing$ 0.30mm  
Aspect ratio: 2.2

### ■ Overview of laser via hole(CO<sub>2</sub> laser)



Laser via hole after metallization



Laser via hole after 288 /10sec-6cycles

## PURCHASING INFORMATION

Copper foil	Resin Thickness	Thickness tolerance	Product Size
9,12,18 $\mu$ m	40 $\mu$ m to 100 $\mu$ m	$\pm$ 2 $\mu$ m	Available on request

✧ Other sheet size and thickness could be available upon request.

## HANDLING

- S6018 must be stored in vendor package, and avoid exposure to excessive moisture or temperature.
- Recommended storage conditions are 22 °C maximum at 45%  $\pm$  5% relative humidity.

# S2130

(ANSI:CEM-3)

## 特点

- 优秀的机械加工性，可冲孔加工，钻孔加工钻头使用寿命可延长2-5倍。
- 电性能与FR-4相当，加工工艺与FR-4相同。
- PTH可靠性与FR-4相当的机械性能和电性能。

## FEATURES

- Excellent mechanical processability, punching process applicable, longer drill bit life up to 2-5 times.
- Electrical properties and PCB processing similar to FR-4.
- Excellent PTH reliability equivalent to FR-4.

## 应用领域

仪器仪表、信息家电、汽车电子、自动柜员机、摄象机等。

## APPLICATIONS

Test & measurement equipment, Information home appliances, Car electronics, ATM, VCR, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data		
			SPEC	Typical Value	
Tg	DSC		-	132	
Flammability	C-48/23/50	-	V-0	V-0	
	E-24/125				
Volume Resistivity	C-96/35/90	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>	
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>	
Surface Resistance	C-96/35/90	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>	
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>	
Arc Resistance	D-48/50+D-0.5/23	S	60	115	
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55	
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6	
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016	
Thermal Stress	Unetched Etched	260 ,20s	-	No delamination	
					1oz Cu. Foil
Flexural Strength	LW CW	A	MPa	276	
				186	320
Water Absorption	D-24/23	%	0.35	0.11	
CTE z-axis	Before Tg After Tg	TMA	μ m/m	46	
			μ m/m	334	
CTI	IEC-112 Method	V	-	225	

Specimen Thickness:1.6mm

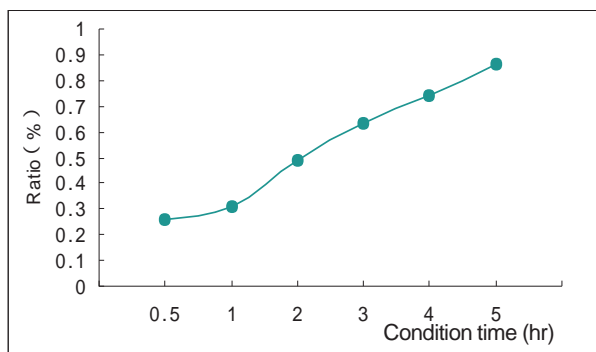
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

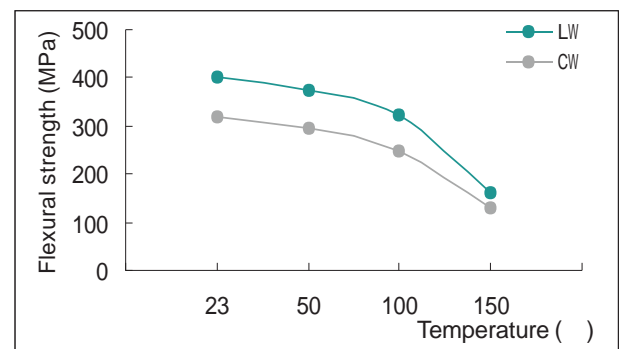
# S2130

(ANSI:CEM-3)

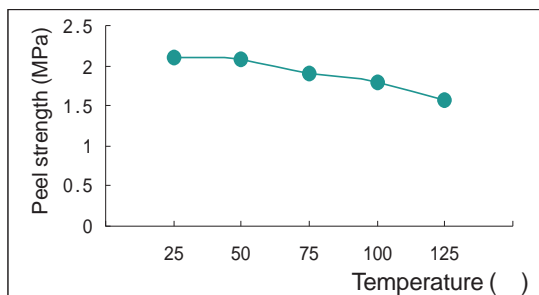
## Water absorption at pressure cooker



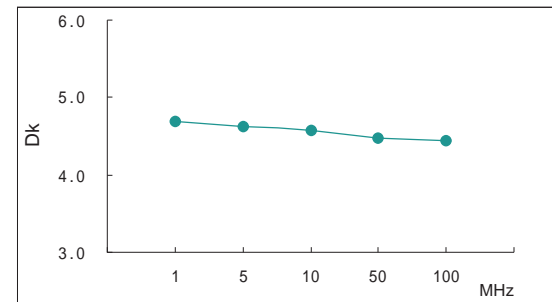
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
		0.6mm to 3.2mm	18 $\mu$ m to 105 $\mu$ m

❖ Other sheet size and thickness could be available upon request.

# S2131

(ANSI:CEM-3) UV Blocking

## 特点

- 优秀的机械加工性，可冲孔加工，钻孔加工钻头使用寿命可延长2-5倍。
- UV Blocking与AOI兼容，可提高PCB生产效率。
- 电性能与FR-4相当，加工工艺与FR-4相同。

## FEATURES

- Excellent mechanical processability, punching process applicable, longer drill bit life up to 2-5 times.
- UV Blocking and AOI compatible.
- Electrical properties and PCB processing similar to FR-4.

## 应用领域

仪器仪表、信息家电、汽车电子、自动柜员机、摄象机等。

## APPLICATIONS

Test & measurement equipment, information Home Appliances, Cas electronics, ATM, VCR, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		-	132
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	C-96/35/90	M -cm	$10^6$	$5 \times 10^8$
	E-24/125		$10^3$	$5 \times 10^6$
Surface Resistance	C-96/35/90	M	$10^4$	$5 \times 10^7$
	E-24/125		$10^3$	$5 \times 10^6$
Arc Resistance	D-48/50+D-0.5/23	S	60	115
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.5
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	260 ,20s	-	No delamination
	Etched			
Peel Strength	1oz Cu. Foil	260 ,10s	N/mm	1.05
Flexural Strength	LW	A	MPa	276
	CW			186
Water Absorption	D-24/23	%	0.35	0.11
CTE z-axis	Before Tg	TMA	$\mu\text{m/m}$	46
	After Tg		$\mu\text{m/m}$	334

Specimen Thickness:1.6mm

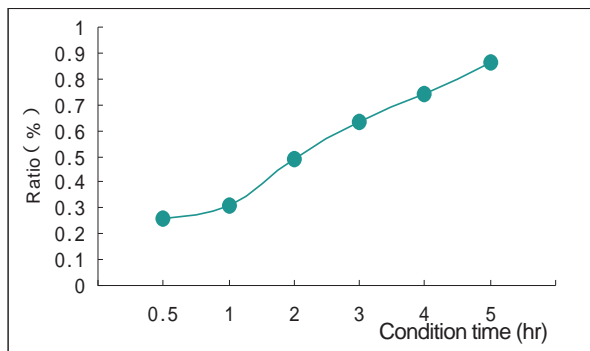
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

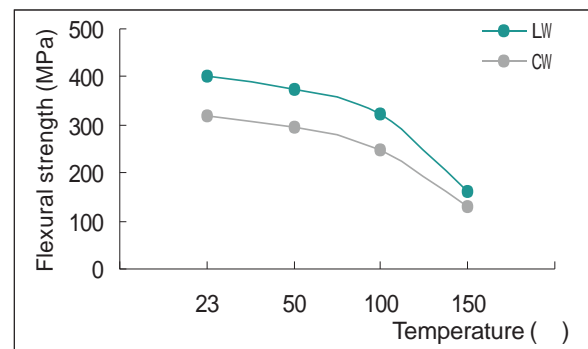
# S2131

(ANSI:CEM-3) UV Blocking

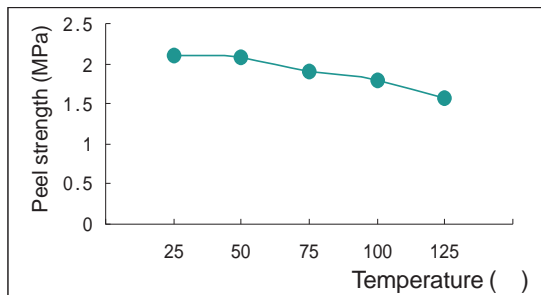
## Water absorption at pressure cooker



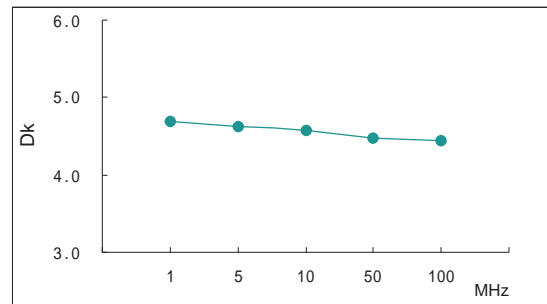
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.6mm to 3.2mm	18 μm to 105 μm	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
		1,070 × 1,220mm (42 × 48 )	

❖ Other sheet size and thickness could be available upon request.

# S2132

(ANSI:CEM-3) CEM-3 for color TV

## 特点

- 优秀的机械加工性，可冲孔加工，钻孔加工钻头使用寿命可延长2-5倍。
- 优秀的介电性能，介电常数（1MHz）3.9-4.3。
- 电性能与FR-4相当，加工工艺与FR-4相同。

## FEATURES

- Excellent mechanical processability, punching process applicable, longer drill bit life up to 2-5 times.
- Superior dielectric performance .
- Electrical properties and PCB processing similar to FR-4.

## 应用领域

非常适于彩电用高频头和接收器。

## APPLICATIONS

Especially suitable for tuner for color TV and receiver.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data		
			SPEC	Typical Value	
Tg	DSC		-	135	
Flammability	C-48/23/50	-	V-0	V-0	
	E-24/125				
Volume Resistivity	C-96/35/90	M -cm	$10^6$	$5 \times 10^8$	
	E-24/125		$10^3$	$5 \times 10^6$	
Surface Resistance	C-96/35/90	M	$10^4$	$5 \times 10^7$	
	E-24/125		$10^3$	$5 \times 10^6$	
Arc Resistance	D-48/50+D-0.5/23	S	60	115	
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55	
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.1	
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.018	
Thermal Stress	Unetched	260 ,20s	-	No delamination	
	Etched				
Peel Strength	1oz Cu. Foil	260 ,10s	N/mm	1.05	2.15
				105	0.70
Flexural Strength	LW	A	MPa	276	500
	CW			186	330
Water Absorption	D-24/23	%	0.35	0.11	
CTE z-axis	Before Tg	TMA	$\mu\text{m/m}$	-	46
	After Tg		$\mu\text{m/m}$	-	334

Specimen Thickness:1.6mm

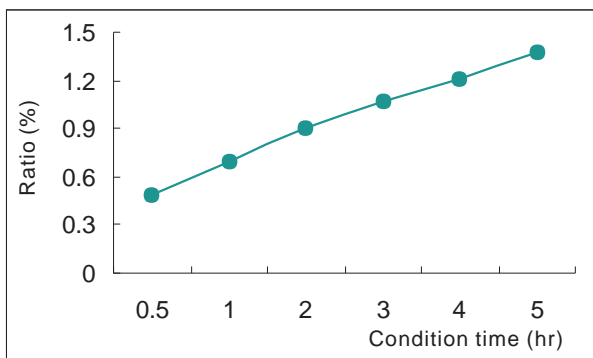
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

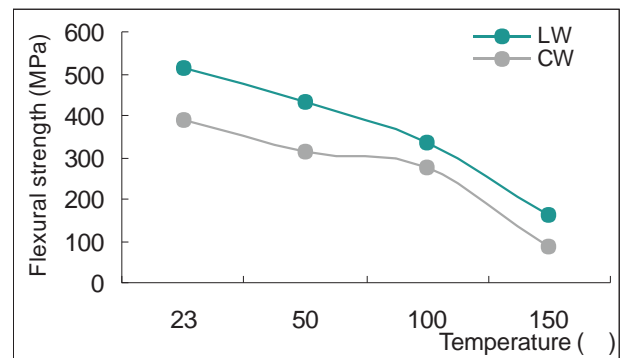
# S2132

(ANSI:CEM-3) CEM-3 for color TV

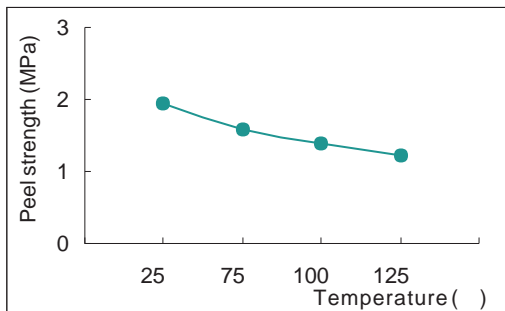
## Water absorption at pressure cooker



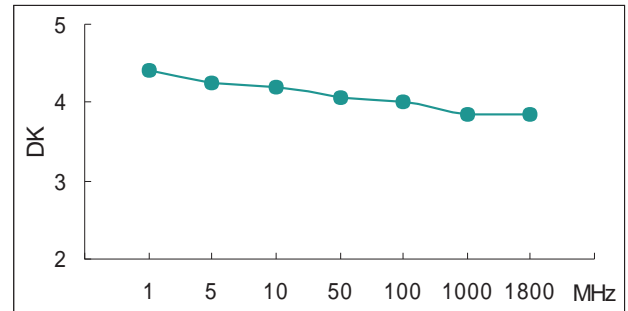
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.6mm to 3.2mm	18 μm to 105 μm	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
		1,070 × 1,220mm (42 × 48 )	

※ Other sheet size and thickness could be available upon request.

# S2136

(ANSI:CEM-3) CEM-3 for LED Display

## 特点

- 基材白色，不透明，遮光性和耐泛黄性好。
- 优秀的机械加工性，可冲孔加工。
- 电性能与FR-4相当，加工工艺与FR-4相同。

## FEATURES

- White and opaque with good color-change resistance.
- Excellent mechanical processability, punching process applicable, longer drill bit life up to 2-5 times.
- Electrical properties and PCB processing similar to FR-4.

## 应用领域

非常适合制作LED 显示用印制线路板。

## APPLICATIONS

Especially suitable for making PCB for LED display.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		-	132
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	C-96/35/90	M -cm	$10^6$	$5 \times 10^8$
	E-24/125		$10^3$	$5 \times 10^6$
Surface Resistance	C-96/35/90	M	$10^4$	$5 \times 10^7$
	E-24/125		$10^3$	$5 \times 10^6$
Arc Resistance	D-48/50+D-0.5/23	S	60	115
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.7
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	260 ,20s	No delamination	No delamination
	Etched			
Peel Strength	1oz	260 ,10s	N/mm	1.05
	Cu. Foil			
Flexural Strength	LW	A	MPa	276
	CW			340
Water Absorption	D-24/23	%	0.35	0.12
CTE z-axis	Before Tg	TMA	$\mu\text{m/m}$	46
	After Tg		$\mu\text{m/m}$	334

Specimen Thickness:1.6mm

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

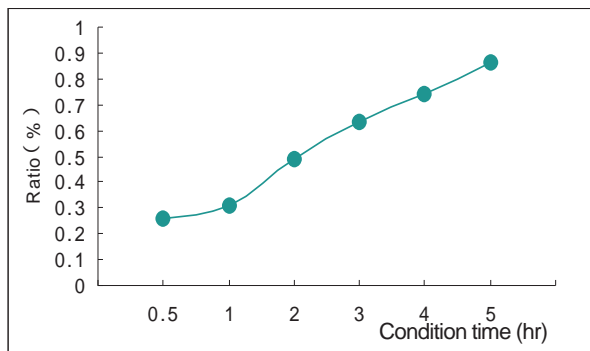
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.



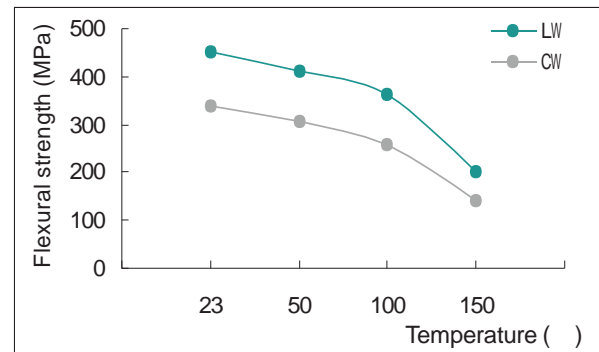
# S2136

(ANSI:CEM-3) CEM-3 for LED Display

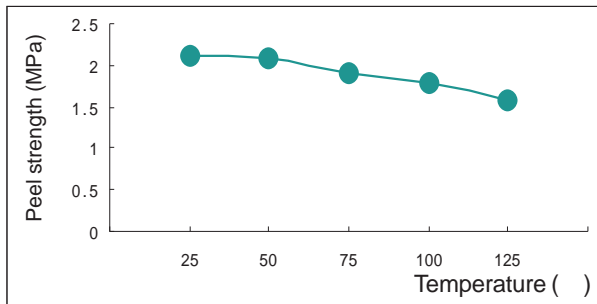
## Water absorption at pressure cooker



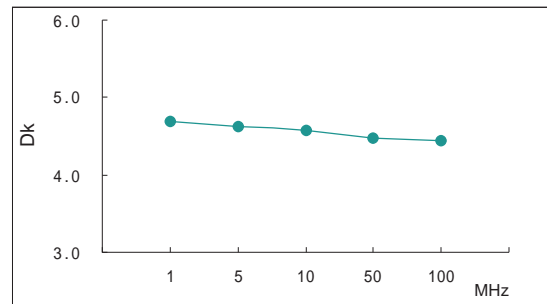
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.6mm to 3.2mm	18 μm	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
	to 105 μm	1,070 × 1,220mm (42 × 48 )	

❖ Other sheet size and thickness could be available upon request.

# S2600

(ANSI:CEM-3) High CTI

## 特点

- 优异的耐漏电起痕性，CTI 600。
- 优秀的机械加工性，可冲孔加工。
- 电性能与FR-4相当，加工工艺与FR-4相同。

## FEATURES

- Excellent tracking resistance, CTI 600.
- Electrical mechanical processability, punching process applicable, lower bit wearing while drilling.
- Electrical properties and PCB processing similar to FR-4.

## 应用领域

电源基板、电视机、冰箱、洗衣机等。

## APPLICATIONS

Power supply, TV, refrigerator, washing machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		-	132
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	C-96/35/90	M -cm	10 <sup>6</sup>	5 × 10 <sup>8</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Surface Resistance	C-96/35/90	M	10 <sup>4</sup>	5 × 10 <sup>7</sup>
	E-24/125		10 <sup>3</sup>	5 × 10 <sup>6</sup>
Arc Resistance	D-48/50+D-0.5/23	S	60	129
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	55
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.6
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.016
Thermal Stress	Unetched	260 ,20s	-	No delamination
	Etched			
Peel Strength	1oz Cu. Foil	260 ,10s	N/mm	1.05
		105		0.70
Flexural Strength	LW	A	MPa	276
	CW			186
Water Absorption	D-24/23	%	0.35	0.1
CTI	IEC-11-2 Method	V	600	600
CTE z-axis	Before Tg	TMA	μ m/m	46
			After Tg	μ m/m

Specimen Thickness:1.6mm

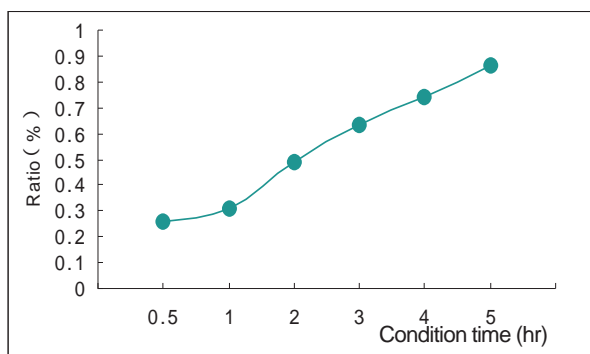
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

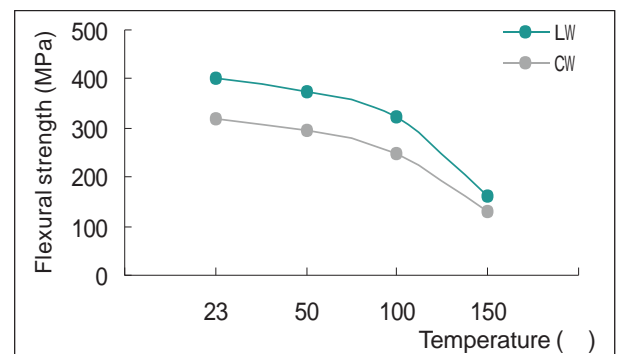
# S2600

(ANSI:CEM-3) High CTI

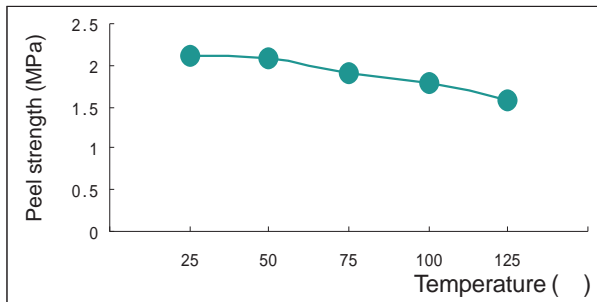
## Water absorption at pressure cooker



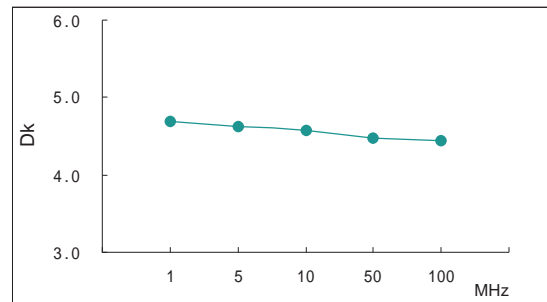
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size	
0.6mm to 3.2mm	18 μm to 105 μm	1,020 × 1,220mm (40 × 48 )	915 × 1,220mm (36 × 48 )
		1,070 × 1,220mm (42 × 48 )	

❖ Other sheet size and thickness could be available upon request.

# S2155

(ANSI:CEM-3) Halogen-Free CEM-3 Copper Clad Laminate

## 特点

- 不含卤素、锑、红磷等有毒成分。
- 燃烧时的发烟量和气味少，不产生剧毒气体和不残留有毒成分。
- 机械加工性优秀，对钻孔、冲模磨损小。
- PCB加工工艺与普通CEM-3相同。
- 符合IPC-4101标准及JPCA标准。

## FEATURES

- Toxic constituents free such as halogen, antimony and red phosphorus.
- Low emitting of smoke and odors in combustion, fewer emitting of poisonous gas and no residue of harmful constituents.
- Significant mechanical workability, lower wearing of bits and punching die.
- Same processability of PCB as conventional CEM-3.
- Conform to IPC-4101 standard & JPCA standard.

## 应用领域

家电、OA设备、电源基板、仪器仪表、游戏机等。

## APPLICATIONS

Appliance, OA equipment, power base board, apparatus and instrument, game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data		
			SPEC	Typical Value	
Tg	DSC		-	128	
Flammability	C-48/23/50	-	V-0	V-0	
	E-24/125				
Volume Resistivity	C-96/35/90	M -cm	10 <sup>6</sup>	2.8 × 10 <sup>8</sup>	
	E-24/125		10 <sup>3</sup>	1.6 × 10 <sup>7</sup>	
Surface Resistance	C-96/35/90	M	10 <sup>4</sup>	3.2 × 10 <sup>6</sup>	
	E-24/125		10 <sup>3</sup>	2.7 × 10 <sup>6</sup>	
Arc Resistance	D-48/50+D-0.5/23	S	60	138	
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	45+kv NB	
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.8	
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.010	
Thermal Stress	Unetched Etched	260 ,20s	-	No delamination	
					Peel Strength
105	0.70	1.40			
Flexural Strength	LW CW	A	MPa	276	356
				186	301
Water Absorption	D-24/23	%	0.35	0.10	
CTE z-axis	Before Tg	TMA	μm/m	-	47
	After Tg		μm/m	-	316

Specimen Thickness:1.6mm

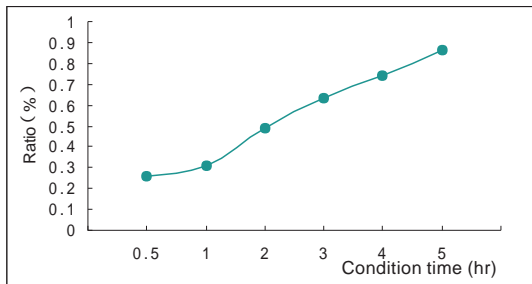
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

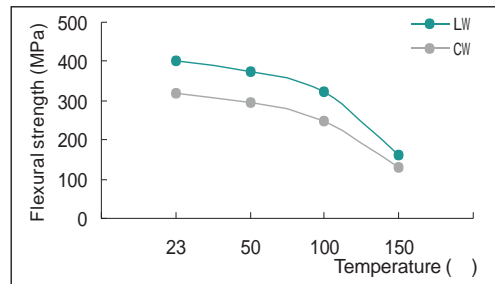
# S2155

(ANSI:CEM-3) Halogen-Free CEM-3 Copper Clad Laminate

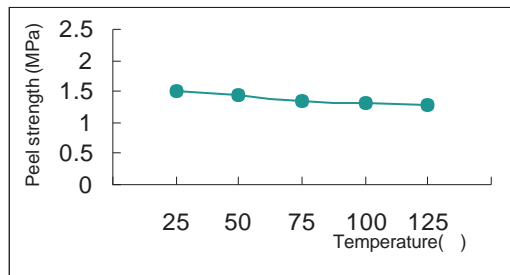
## Water absorption at pressure cooker



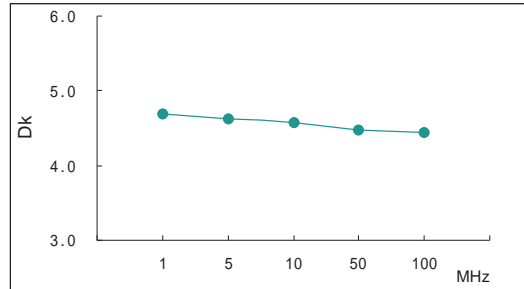
## Flexural strength



## Peel strength



## Dielectric constant



## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size
0.6mm to 3.2mm	18 $\mu$ m to 105 $\mu$ m	1,020 × 1,220mm (40 × 48 ) 915 × 1,220mm (36 × 48 ) 1,070 × 1,220mm (42 × 48 )

❖ Other sheet size and thickness could be available upon request.

## HALOGEN CONTENT TEST

❖ JPCA-ES-01-1999 Standard " Test method of halogen-free materials "

Halogen	JPCA Standard	S2155
Cl	0.09%	0.04%
Br	0.09%	0.00%

# S3110

(ANSI:CEM-1)

## 特点

- 优异的冲孔性，可冷冲，有利于提高生产效率，冲模使用寿命长。
- 良好的耐热性、耐湿性、良好的机械性能和电性能。

## FEATURES

- Excellent punching property, cold punching applicable, increased throughput, long punching tool life.
- Good heat resistance and moisture resistance, good mechanical properties and electrical properties.

## 应用领域

汽车电子、电视机、电源基板、键盘仪器仪表、游戏机等。

## APPLICATIONS

Automotive radio, television, power supply, keyboard, instrument, game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		-	105
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	C-96/35/90	M -cm	$10^6$	$7.86 \times 10^8$
	E-24/125		$10^3$	$2.96 \times 10^6$
Surface Resistance	C-96/35/90	M	$10^4$	$5.65 \times 10^6$
	E-24/125		$10^3$	$2.83 \times 10^6$
Arc Resistance	D-48/50+D-0.5/23	S	60	118
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	49
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.4
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.022
Thermal Stress	260 ,20s	-	No delamination	No delamination
Peel Strength	1oz	N/mm	1.05	1.80
	Cu. Foil		105	-
Flexural Strength	LW	MPa	242	420
	CW		A	172
Water Absorption	D-24/23	%	0.35	0.13

Specimen Thickness:1.6mm single side board

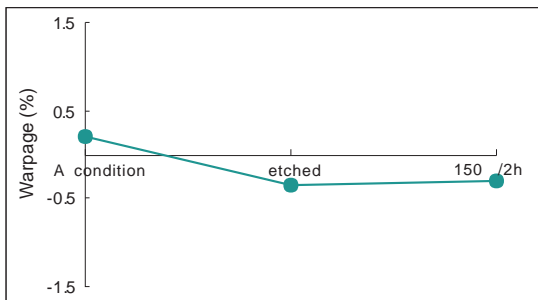
Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.

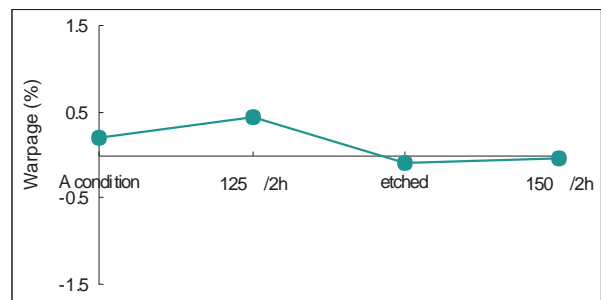
# S3110

(ANSI:CEM-1)

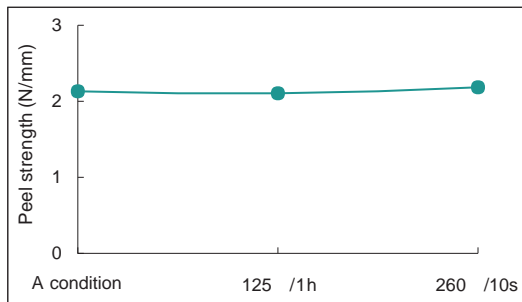
## Warpage of S3110 (No-treating)



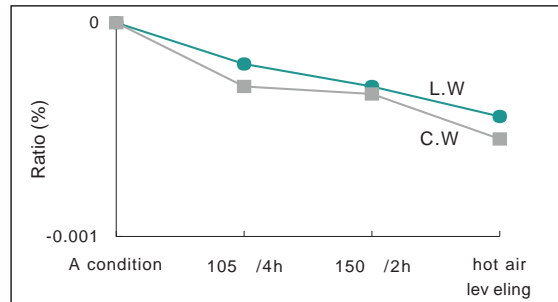
## Warpage of S3110 (After treating: 125 /2h)



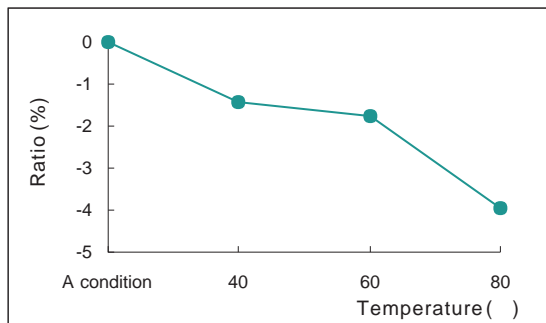
## Peel strength



## Dimensional stability



## Hole diameter shrinkage Punching process



❖ Specimen Thickness: 1.6mm single side board

## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size
0.6mm to 3.2mm	18 μm	1,020 × 1,220mm (40 × 48 ) 915 × 1,220mm (36 × 48 )
	to 105 μm	1,070 × 1,220mm (42 × 48 )

❖ Other sheet size and thickness could be available upon request.

# S3116

(ANSI:CEM-1) High CTI

## 特点

- 优异的耐漏电起痕性，CTI 600。
- 优异的冲孔性，可冷冲，有利于提高生产率，冲模使用寿命长。
- 良好的耐热性、耐湿性、良好的机械性能和电性能。

## FEATURES

- Superior tracking resistance, CTI 600.
- Excellent punching property, cold punching applicable, increased throughput, long punching tool life.
- Good heat resistance and moisture resistance, good mechanical properties and electrical properties.

## 应用领域

汽车电子、电视机、电源基板、键盘仪器仪表、游戏机等。

## APPLICATIONS

Automotive radio, television, power supply, keyboard, instrument, game machine, etc.

## GENERAL PROPERTIES

Test Item	Treatment Condition	Unit	Property Data	
			SPEC	Typical Value
Tg	DSC		-	105
Flammability	C-48/23/50	-	V-0	V-0
	E-24/125			
Volume Resistivity	C-96/35/90	M -cm	$10^6$	$7.86 \times 10^8$
	E-24/125		$10^3$	$2.96 \times 10^6$
Surface Resistance	C-96/35/90	M	$10^4$	$5.65 \times 10^6$
	E-24/125		$10^3$	$2.83 \times 10^6$
Arc Resistance	D-48/50+D-0.5/23	S	60	118
Dielectric Breakdown	D-48/50+D-0.5/23	KV	40	49
Dielectric Constant (1MHz)	C-24/23/50	-	5.4	4.4
Dissipation Factor (1MHz)	C-24/23/50	-	0.035	0.022
Thermal Stress	Unetched	260 ,20s	-	No delamination
	Etched			
Peel Strength	1oz	260 ,10s	N/mm	1.05
	Cu. Foil	105		-
Flexural Strength	LW	A	MPa	242
	CW			172
Water Absorption	D-24/23	%	0.35	0.13
CTI	IEC-112 Method	V	600	600

Specimen Thickness:1.6mm single side board

Explanations: C = Humidity conditioning;  
D = Immersion conditioning in distilled water;  
E = Temperature conditioning.

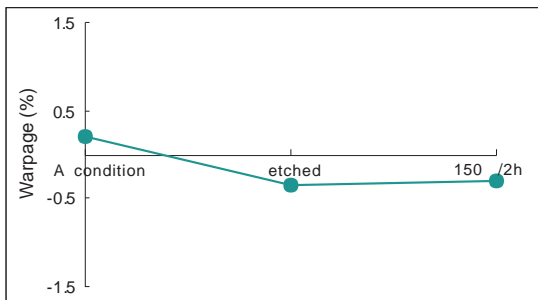
The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in and with the third digit the relative humidity.



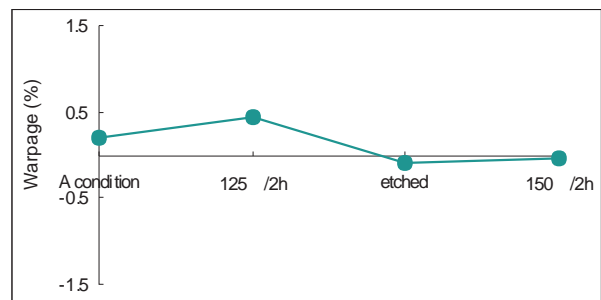
# S3116

(ANSI:CEM-1) High CTI

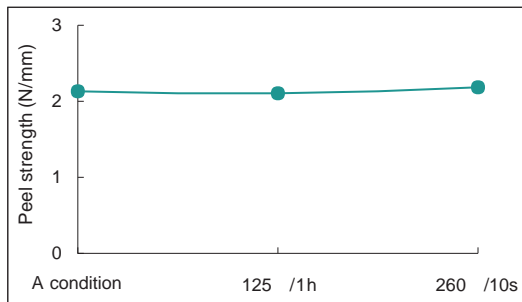
## Warpage of S3116 (No-treating)



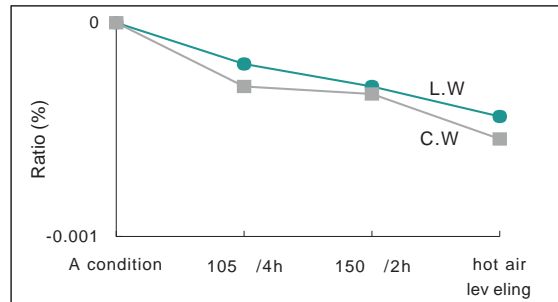
## Warpage of S3116 (After treating: 125 /2h)



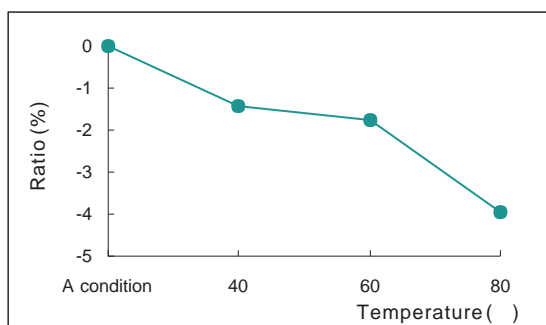
## Peel strength



## Dimensional stability



## Hole diameter shrinkage Punching process



❖ Specimen Thickness: 1.6mm single side board

## PURCHASING INFORMATION

Thickness	Copper foil	Standard Size
0.6mm to 3.2mm	18 μm	1,020 × 1,220mm (40 × 48 ) 915 × 1,220mm (36 × 48 )
	to 105 μm	1,070 × 1,220mm (42 × 48 )

❖ Other sheet size and thickness could be available upon request.

# Testing Equipment

## ■ List of major items and equipments

	Inspection item	Instrument	From
<b>Raw Material</b>	Halogen-free CCL	Ion Chromatography	U.S.A
	Molecule Weight Distribution	High performance Liquid Chromatography	U.S.A
	Epoxy Equivalent weight	Electronic Titration	SWISS
	Tensile Strength Elongation rate	Material test	U.K.
	Soften point Molten point Boiling point	Thermal Analyst System	SWISS.
<b>Product</b>	Peel Strength	Peel Strength Tester	U.S.A
	Etching Copper	Etching Machine	China
	Tg	Thermomechanical Analyzer	U.S.A
	Material Performance	Impedance/Material Analyzer	U.S.A
	Material Performance	Thermogravimetric Analyzer	U.S.A
	Solder resistance	Solder furnace	China
	Material Performance	Temp & Humidity Chamber	Japan
	Heating	Oven	Japan
	Weight	Electrical Scale	German
	Dielectric breakdown	Dielectric Breakdown Tester	U.S.A
	Arc Resistance	Arc Resistance Meter	U.S.A
	Resistivity	High Resistance Meter	U.S.A
	Thermal Stress	Heat Water Pot	German
Dimensional Stability	Coordinate Measuring Machine	Japan	
<b>Varnish</b>	GT	Gel Time Tester	U.S.A
	Dicy Content	Scale and Oven	U.S.A
<b>Prepreg</b>	GT	Gel time Tester	U.S.A
	Resin Content	Scale and oven	U.S.A
	V.C.	Scale and oven	U.S.A
	Flow	Press and Scale	German
<b>Laminate</b>	Thickness	Macrometer	China
<b>R&amp;D</b>	Chemical Analyzer	Fourier Transform Infrared Spectrometer	U.S.A
	CTI	CTI Tester	China
	CCL Mechanical Performance	Dynamic Mechanical Analyzer	U.S.A
	Q-1000	Super High-Low Temperature Cycle oven	Japan
	CAF Resistance	CAF Resistance autotester	U.S.A