

UV Block FR4-97 / MTC-97 / MPP-97

Glass cloth based Multi-functional epoxy flame retardant CCL and prepreg

UV Block FR4-97

■ 產品特點

- 富熒光樹脂,可增加 A.O.I 自動光學檢查机之對比性.
- 通用 UV 型阻焊劑,可雙面同時曝光增加產量
- 加入高性能樹脂后其耐熱性能比 FR4-97 更好
- 其它性能与 FR4-97 類似.

■ Features

- High luminescent epoxy for better laser type AOI characteristics.
- General UV Solder mask may be applied simultaneously to both sides increasing productivity.
- High performance epoxy blend which yields a higher heat resistance than FR4-97.
- Other properties are similar to FR4-97.

■ 規格說明

■ Specification Introduction

UV Block FR4-97	單雙面覆銅板(Tg140) Single or double side CCL(Tg140)	ANSI 等級: FR-4 ANSI grade: FR-4
MTC-97	多層線路板用芯板(Tg140) Thin core for multi-layer PCB(Tg140)	
MPP-97	多層線路板用半固化片(Tg140) Prepreg for multi-layer PCB(Tg140)	

■ 基板(UV Block FR4-97/MTC-97)性能表(符合 IPC-4101A/21)

■ Performance List for UV Block FR4-97/MTC-97(Specification: IPC-4101A/21)

Characteristic	Unit	Conditioning	Typical value		SPEC	
			UV Block FR4-97	MTC-97	UV Block FR4-97	MTC-97
Volume Resistivity	MΩ-cm	C-96/35/90	5×10 ⁸ -5×10 ⁹		10 ⁶ ↑	
Surface Resistivity	MΩ	C-96/35/90	5×10 ⁶ -5×10 ⁷	4×10 ⁷ -5×10 ⁸	10 ⁴ ↑	
Permittivity 1MHZ	-	C-24/23/50	4.2-4.8		5.4↓	
Loss Tangent 1MHZ	-	C-24/23/50	0.010-0.020		0.035↓	
Arc Resistance	sec	D-48/50+D-0.5/23	120↑		60↑	
Dielectric Breakdown	KV	D-48/50	60↑		40↑	
Water Absorption	%	D-24/23	0.10-0.15	0.30-0.35	0.35↓	0.80↓
Flammability	-	C-24/23/50+E-24/125	94V-0		94V-0	
Peel Strength	HTE 1 OZ	288°C×10" solder floating	10-14(1.8~2.5)		8↑(1.4↑)	
	RTF 1 OZ		7~9(1.2~1.6)		6↑(1.1↑)	
Thermal Stress Test	-	288°C×10"×6cycle floating	Pass		-	
Flexural strength	LW	N/mm ²	A	480-650	-	415↑
	CW	N/mm ²	A	415-550	-	345↑
Dimensional Stability X-Y Axis	ppm	E-4/105+E-2/150	300↓		400↓	
Z-axis Coefficient of thermal Expansion	before Tg	ppm/°C	50-70		-	
	after Tg	ppm/°C	250-350		-	
Total Z-axis CTE(50~260°C)	%		4.5		-	
T260	Min	TMA	10 ↑		-	
Td (5% Weight Loss)	°C	TGA	305		-	
Glass Transition Temperature	°C	DSC	140±5		-	

注: 對於 UV Block FR4-97 基板,表中所列數據為樣品 0.062" 1/1 的測試值; 對於 MTC-97 則取自 0.015" 1/1.

*Note: For UV Block FR4-97, the average value in the table refers to samples of 0.062" 1/1; For MTC-97 is 0.015" 1/1..

■ 基板標準規格

■ Normal Product Size & Thickness

THICKNESS INCH(mm)	COPPER CLADDING OZ(μm)		SIZE		THICKNESS TOLERANCE
	INCH	mm	INCH	mm	
0.002 (0.051)	1/3(12)	0.5(17)	49×36.8	1244×0935	IPC4101A Class C/M
to	1.0(35)	2.0(70)	49×40.7	1244×1035	
0.125 (3.2)	3.0(103)	4.0(137)	49×42.7	1244×1085	

注:

- 1.層壓板有效面積為 36”(經)×48”, 40”(經)×48”, 42”(經)×48”
- 2.我們承諾: 對於客戶之特殊訂單,我 司基板厚度符合 IPC-4101A Class C/M 的要求.
- 3.可根據客戶的不同需要選用高溫伸長率銅箔, 超高溫伸長率銅箔, 雙面處理銅箔, 反轉銅箔, VLP 銅箔及超薄銅箔等 多種不同類型的覆銅箔.
- 4.保持芯板與基材經緯方向的一致對保證多層板的平整度非常重要, 其經緯方向標識參考品質保證書.

Note:

1. The effective area of laminate is 36”(Grain)×48”, 40”(Grain)×48”, 42”(Grain)×48”.
2. We will guarantee the thickness tolerance in accordance with IPC4101A Class C/M for special orders.
3. Copper cladding type can be selected from HTE, Super HTE, Double treated, Reverse, Very low profile or Ultra thin copper foil, depend on customer needs.
4. Keeping the core and prepreg in the same grain direction is critical to ensure flatness of the multilayer boards. Grain direction is shown on the Certificate of Conformance.

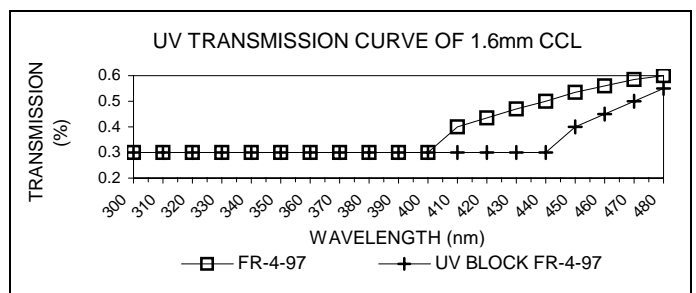
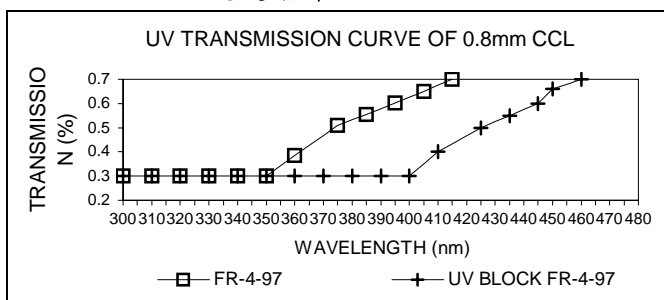
■ UL 認證 (證書號: E186152)

■ Certification UL (File No: E186152)

UL 746 Recognition

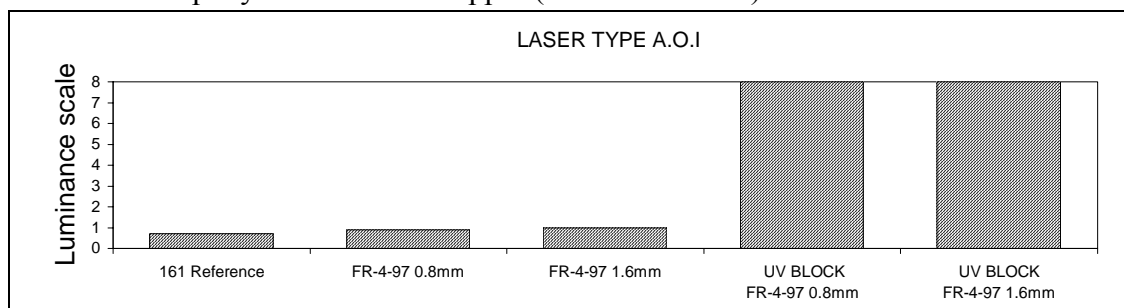
Model	Minimum Material Thickness Inch (mm)	Clad cond. Thickness		Max. Area Diameter Inch (mm)	Solder Lts. Temp. °C	Time sec	UL 94 Flame Class	Max. Operation Temp
		Min. Mils (mic)	Max. Mils (mic)					
MTC-97/MPP-97	0.002 (0.051)	0.68 (17)	4.00 (102)	2.0 (50.8)	288	30	94V-0	130
UV Block FR4-97	0.015 (0.38)	0.68 (17)	4.00 (102)	2.0 (50.8)	288	30	94V-0	130

■ 低 UV 光透射率 Low UV Transmission



■ 高亮度易与銅箔對比(FR-4-97 1.6mm)

■ High luminance of epoxy contrast with copper (FR-4-97 1.6mm)



■ 半固化片(MPP-97)性能表(符合 IPC-4101A/21)
 ■ Performance List for MPP-97(Specification: IPC-4101A/21)

Glass Style	Resin Content (%)	Treated Weight (g/16 In ²)	Resin Flow (%)	Gel Time (sec)	Volatile Content (%)	Scaled Flow Thickness (per ply)	
						mm	mil
7628RC52	52 ± 3	4.516±0.266	34 ± 5	140±20	0.75↓	0.170±0.010	6.7±0.4
7628RC50	50 ± 3	4.335±0.245	31 ± 5			0.168±0.010	6.6±0.4
7628RC48	48 ± 3	4.169±0.227	30 ± 5			0.165±0.010	6.5±0.4
7628RC43	43 ± 3	3.803±0.190	22 ± 5			0.160±0.010	6.3±0.4
1506RC50	50 ± 3	3.406±0.193	30 ± 5			0.147±0.010	5.8±0.4
2116RC53	53 ± 3	2.306±0.138	33 ± 5			0.102±0.010	4.0±0.4
2116RC50	50 ± 3	2.168±0.123	29 ± 5			0.097±0.010	3.8±0.4
2116RC48	48 ± 3	2.084±0.114	27 ± 5			0.094±0.010	3.7±0.4
2112RC60	60 ± 3	1.806±0.126	39 ± 5			0.071±0.008	2.8±0.3
1080RC61	61 ± 3	1.270±0.091	39 ± 5			0.058±0.008	2.3±0.3
106RC68	68 ± 3	0.787±0.067	43 ± 5			0.046±0.008	1.8±0.3

注:

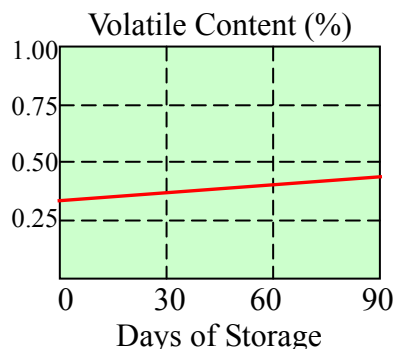
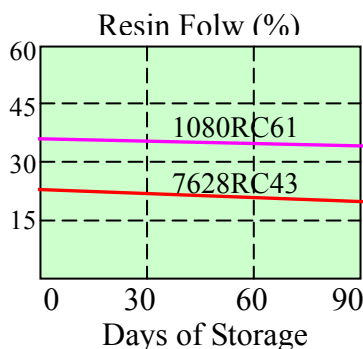
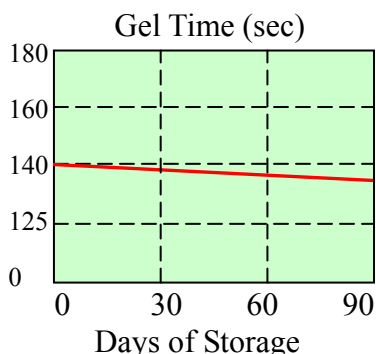
- 1.針對客戶的需求,我司可提供特殊的規格.
- 2.以上所列數據僅供參考.

Note:

- 1.At customer request, Grace can produce special performance materials.
- 2.Data shown above are nominal values for reference only.

■ 儲存穩定性

■ Storage Stability



■ 儲存條件

■ Storage Condition:

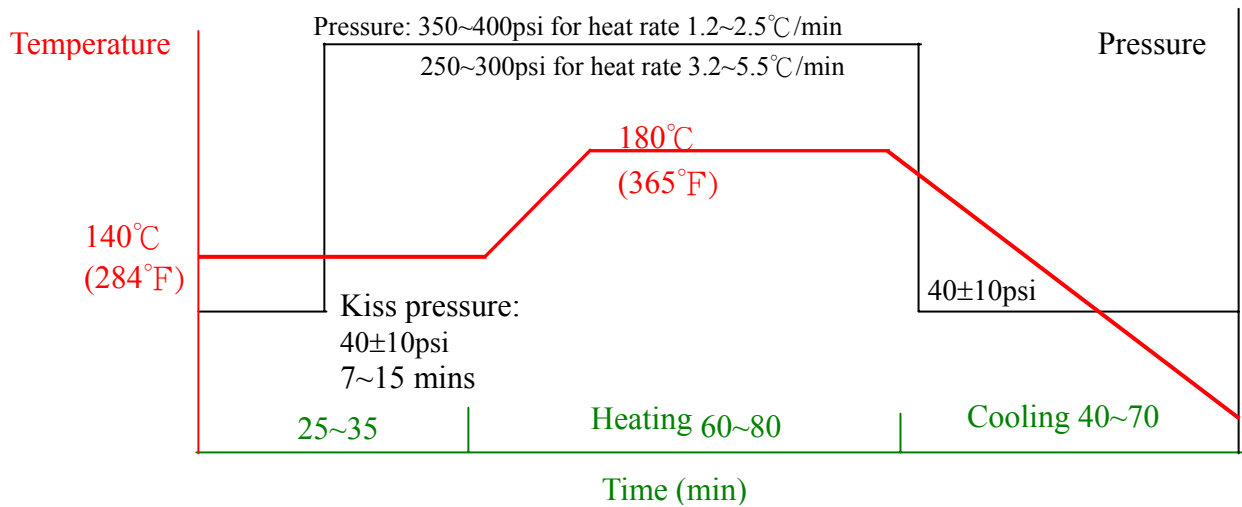
20°C, 50%RH, 儲存三個月 (20°C, 50% RH for 3 months)

低於 5°C, 儲存六個月 (Below 5°C for 6 months)

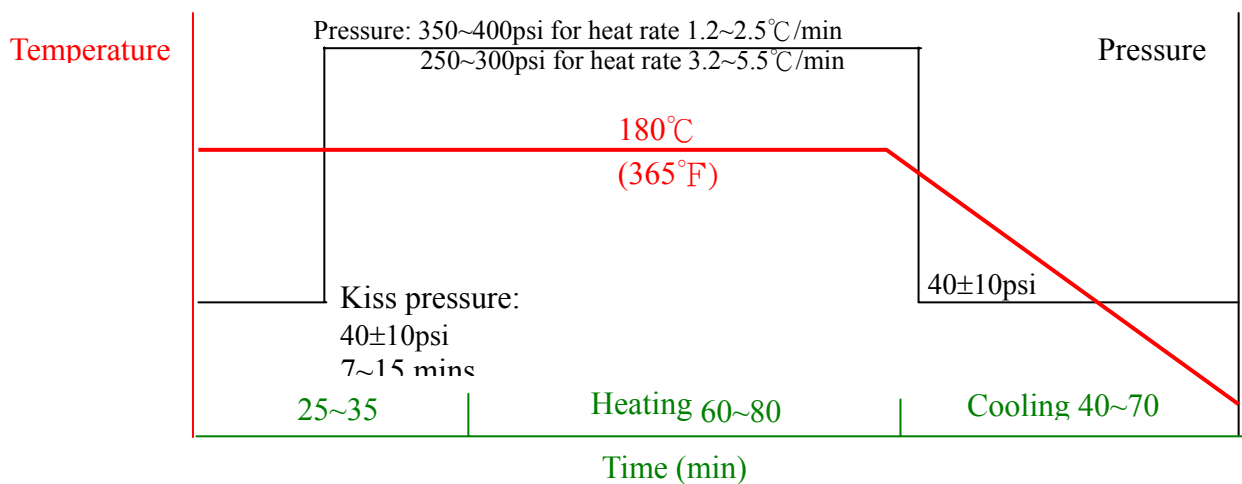
■ 建議壓合程式

■ Recommended press cycles:

A:2T2P(2 段溫/2 段壓 2 temperature step/2 pressure step)



B:1T2P(1 段溫/2 段壓 1 temperature step/2 pressure step)



■建議:

1. 升溫速率:

a) 溫度範圍: 90 - 130°C.

b) 建議升溫速率和高壓壓力:

低升溫速率: 1.2~2.5°C/min 高壓: 350~400psi

高升溫速率: 3.2~5.5°C/min 高壓: 250~300psi

2. 溫度升至 170°C 后, 必須保溫 40 分鐘以上, 環氧樹脂得以完全固化.

3. 冷卻過程中, 物料溫度高于 100°C 時, 降溫速率應在 1.5°C/min 以下, 以避免引起板翹.

注: 以上設定僅供參考, 具體程式須依熱壓機及排版狀況作相應調整

■Suggestions:

1. Heating:

a) Temperature Range = 90 - 130°C.

b) Heating rate suggestions:

Heat rate: 1.2~2.5°C/min for 350~400psi pressure

Heat rate: 3.2~5.5°C/min for 250~300psi pressure

2. Temperature of material over 170°C must be held for at least 40 min to allow epoxy resin to cure fully.

3. Cooling rate of material should be kept under 1.5°C/min when the temperature of material is over 100°C, in order to avoid introducing twist.

Note: These values are reference values, they may change depending on machine and material structure.