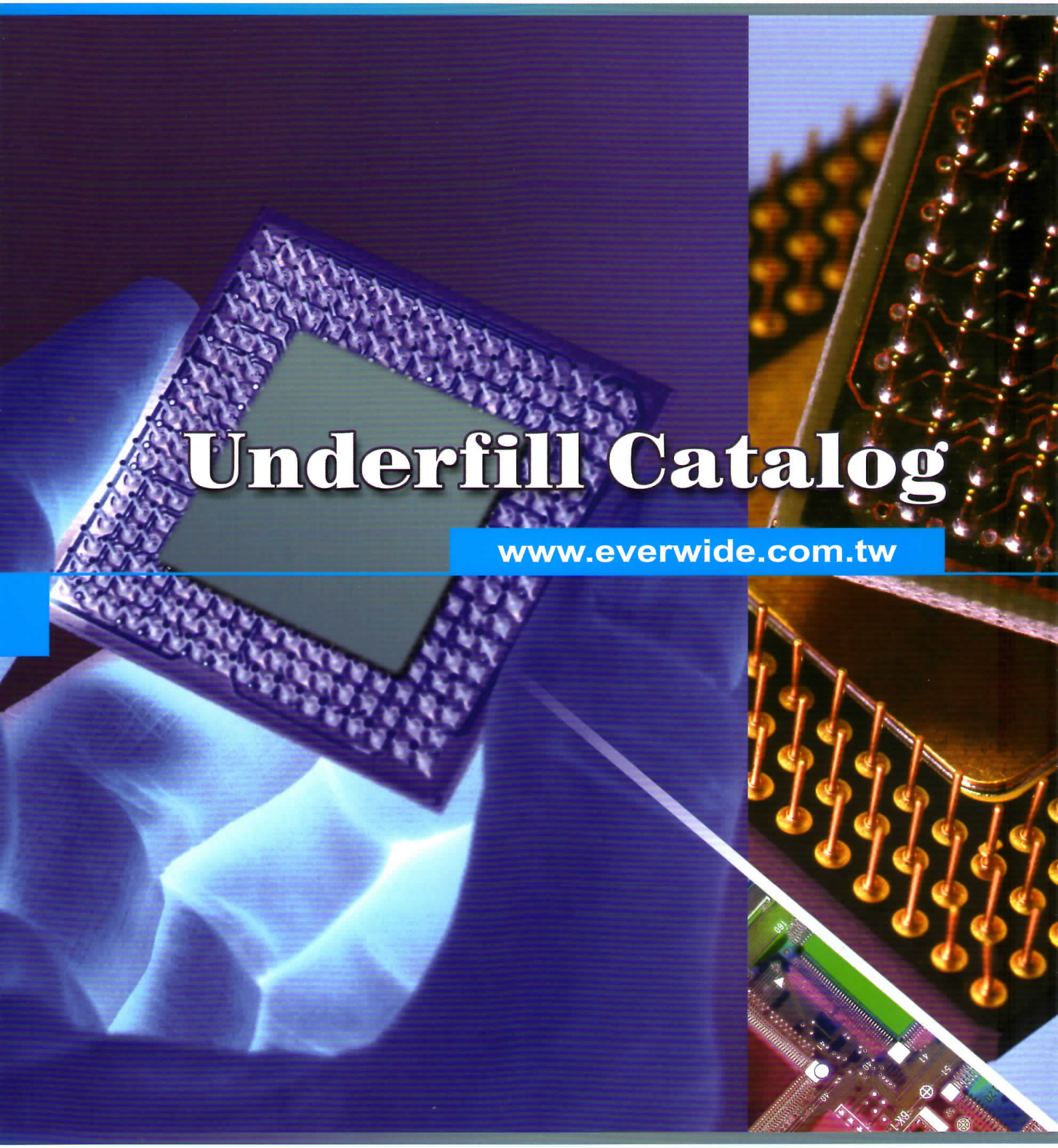
EVERWIDE

Everwide Chemical Co., Ltd.



Underfill Catalog

www.everwide.com.tw

永寬"黏"接全世界

由於現今的電子產業需求超薄和有彈性的 PCB (印刷電路板)，印刷電路板開始朝向具有耐震性並且增加電子元件的可信賴性。
永寬的覆晶液態封裝用環氧樹脂符合高溫環境製程以及無鉛配件的需求。本系列樹脂具有低應力，良好的接著強度和高度的可信賴性，在灌注於電子元件時不會變形使元件受損。此外，為了利於微晶片的接著，本系列樹脂皆具有低介電常數，符合晶圓級和良好的耐化學藥劑的特性，適合作為覆晶用的液態封裝材料。

For today's thinner and less rigid PCBs in modern electronic industry, it demands for improved shock resistance and increased electronic devices reliability.
Everwide package level underfill resins are compatible high temperature process and lead-free assembly requirements. These series resins exhibit low stress, excellent adhesion strength and high reliability. The products have excellent flexibility and embedment stress properties. Besides, these resins have low dielectric constant for microchips bonding. Our products are suited for underfill with its wafer-applied properties and good chemical and solvent resistance.

本系列產品不僅可以提供良好的可重工特性，還有具備優良的耐震以及耐衝擊特性。本系列樹脂具有良好的操作性，可廣泛應用在電子產品的填縫和封裝。本系列產品具有高流動性，基板預熱40°C可以降低膠材的黏度，增加在BGA晶片底部的流動性，適合做為CSP/micro BGA覆晶零件用的液態封裝材料，可應用的產品包含ASIC (專用積體電路)，數位信號處理器，微處理機，晶片組和繪圖晶片...等。由於本系列樹脂皆有良好的接著強度，即使經過高溫高濕環境測試後，樹脂並不會坍塌毀壞，具有超強的環測特性。

These series products provide easy reworkability as well as excellent impact resistance. The resins are easy to operate and suited for various applications of electronic components, such as sealing and encapsulation. These products are excellent fluidity and used as board level underfill for IC packages, such as CSP and micro BGA for ASIC, digital processors, microprocessors, chipsets and graphic chips. The substrates can be preheated to 40°C to reduce the viscosity of the resin and fill the space underneath the IC packages quickly. These series resins have outstanding thermal shock resistance with the excellent adhesion strength.

產品特性 Feature

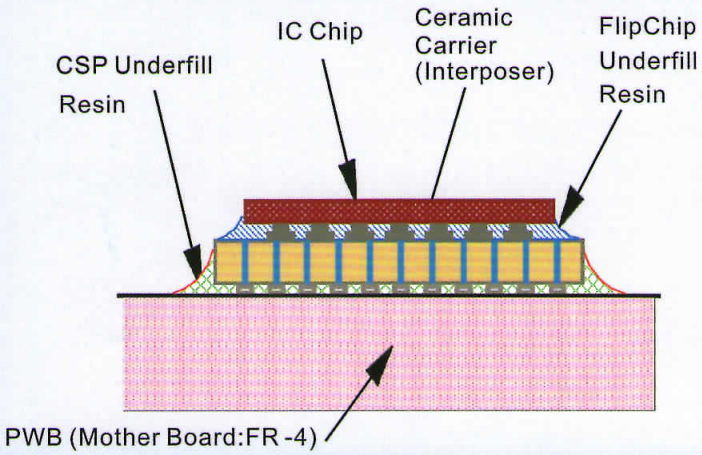
- 黏度低，高流動性和操作方便
  The resins are low viscosity, high fluidity and easy to operate.
- 本系列產品硬化物的表面不會出現油膩，低光澤的現象
  The hardening surface will not exhibit a surface oiliness and poor gloss.
- 本系列樹脂具有高度的反覆可撓性，耐疲勞性與抵抗龜裂的能力
  These products excel where high rebound, fatigue and crack resistance is critical.
- 具有極佳的柔軟性，不會對電子元件產生過大的應力，避免造成零件的損壞
  These resins have excellent flexibility and embedment stress properties.

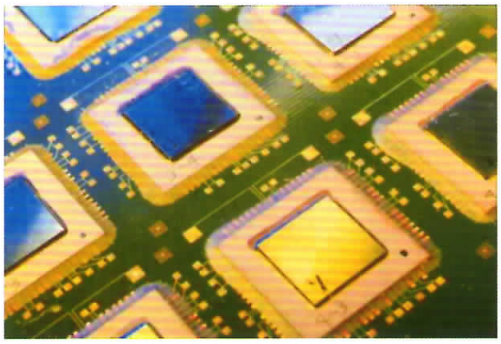
產品性質 Typical Cured Properties

產品編號 Product No.	化學類別 Chemical Type	顏色 Color	黏度值 Viscosity, cps	體積電阻 Volume resistivity ohm-cm	硬度 Hardness	玻璃轉換溫度 Tg, °C	吸水率 Water absorption 25°C *24hr, %	吸水率 Water absorption 80°C *24hr, %
JC123-1	One Component Epoxy	白色 White	400	$4.5 * 10^{15}$	A 77	12	0.95	2.40
JC123-6	One Component Epoxy	黑色 Black	2,550	$4.5 * 10^{15}$	A 77	34	0.95	2.40

硬化條件 Typical Curing Properties

JC123-1		JC123-6	
可使用時間 Pot Life, 25°C, days	3	可使用時間 Pot Life, 25°C, days	3
完全硬化時間 Through Cure Time 100°C, min	40	完全硬化時間 Through Cure Time 100°C, min	40
完全硬化時間 Through Cure Time 120°C, min	20	完全硬化時間 Through Cure Time 120°C, min	20
完全硬化時間 Through Cure Time 150°C, min	10	完全硬化時間 Through Cure Time 150°C, min	10



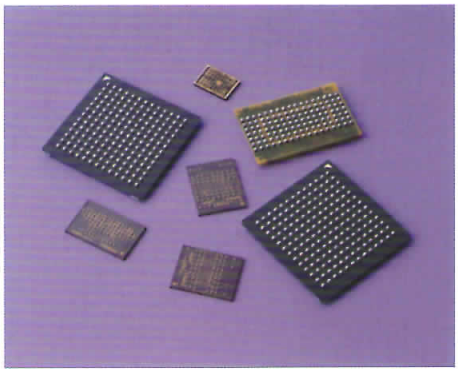


本系列產品具有高流動性，基板預熱 35°C 可以降低膠材的黏度，增加在 BGA 晶片底部的流動性，適合做為 CSP / micro BGA 覆晶零件用的液態封裝材料。本系列樹脂能在中溫快速硬化，可以減低其他電子元件安裝在PCB板上所產生的熱應力，也可以降低基板摔落時衝擊力造成的晶片四角應力的破壞。

These series products are excellent fluidity and used as board level underfill for IC packages, such as CSP and micro BGA. The substrates can be preheated to 35°C to reduce the viscosity of the resin and fill the space underneath the IC packages quickly. These resins can fast cure at middle temperature to reduce thermal stress to other components on PCB and the impact stress when the board are dropped.

產品特性 Feature

- 黏度低，可重工，高流動性和操作方便
  The resins are low viscosity, reworkable, high fluidity and easy to operate.
- 具有高度的反覆可撓性，耐疲勞性與抵抗龜裂的能力
  These products excel where high rebound, fatigue and crack resistance is critical.
- 具備良好的剪切強度與撕裂強度
  These resins offer outstanding shear and peel strength.
- 對於元件具有極佳的保護效果和耐震作用
  The products are highly vibrate-resist at ordinary temperature.



產品性質 Typical Cured Properties

產品編號 Product No.	化學類別 Chemical Type	顏色 Color	黏度值 Viscosity, cps	體積電阻 Volume resistivity ohm-cm	硬度 Hardness	玻璃轉換溫度 Tg, °C	吸水率 Water absorption 25°C *24hr, %	吸水率 Water absorption 80°C *24hr, %
JC823	One Component Epoxy	淡黃色 Light Yellow	660	$4.5 * 10^{15}$	A77	12	0.95	2.40
JC823-6	One Component Epoxy	黑色 Black	3,040	$4.5 * 10^{15}$	A77	30	0.95	2.40

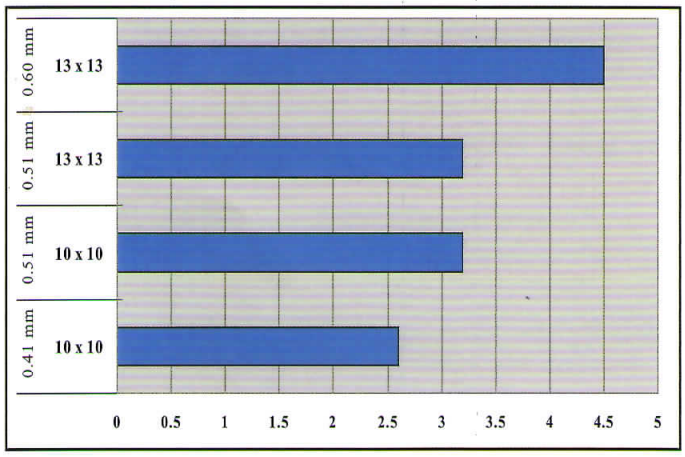
硬化條件 Typical Curing Properties

JC823		JC823-6	
可使用時間 Pot Life, 25°C, days	5 ~ 7	可使用時間 Pot Life, 25°C, days	5 ~ 7
完全硬化時間 Through Cure Time 80°C, min	30	完全硬化時間 Through Cure Time 80°C, min	30
完全硬化時間 Through Cure Time 100°C, min	15	完全硬化時間 Through Cure Time 100°C, min	15
完全硬化時間 Through Cure Time 120°C, min	10	完全硬化時間 Through Cure Time 120°C, min	10
完全硬化時間 Through Cure Time 150°C, min	5	完全硬化時間 Through Cure Time 150°C, min	5

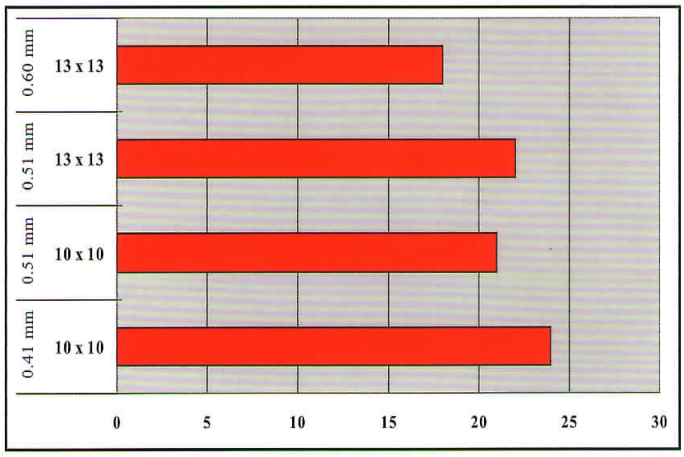
JC823-1 UNDERFILL DISPENSING TEST
底部填充點膠測試

針頭內徑 Dispense Needle Inner Diameter (mm)	玻璃片尺寸 Glass Slide Size (mm x mm)	間隙 Gap (μm)	點膠形式 Dispense Pattern	點膠速度 Dispense Speed (mm/sec)	底部填充流動時間 Underfill Flow Time (sec)	基材溫度 Substrate Temp. (°C)
0.41 mm	10mm x 10mm	75	L Shape	2.6	24	25 ~ 30
0.51 mm	10mm x 10mm	75	L Shape	3.2	21	25 ~ 30
0.51 mm	13mm x 13mm	250	L Shape	3.2	22	25 ~ 30
0.60 mm	13mm x 13mm	250	L Shape	4.5	18	25 ~ 30

Dispense Speed 點膠速度
mm / secretary



Underfill Flow 底部填充流動時間
Time (sec)

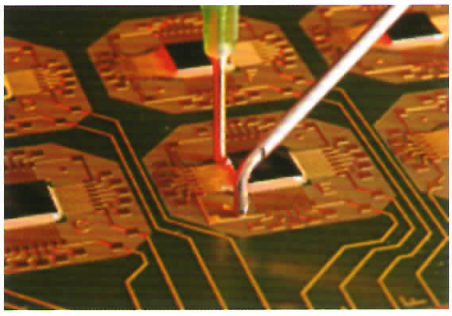


本系列產品能夠在低溫30°C時降低黏度，使其快速滲入基材後，再利用高溫快速硬化，讓樹脂充分的保護基材的焊接點，適合做為CSP / micro BGA覆晶用的液態封裝材料。

These series products are designed for CSP and micro BGA underfill. These resins can be preheated at 30°C to reduce its viscosity to fast flow underneath the substrates. Then, the resins are full curing at higher temperature in order to protect of solder joint against mechanical stress.

產品特性 Feature

- 黏度低，高流動性和操作方便
  The resins are low viscosity, high fluidity and easy to operate.
- 具有高度的反覆可撓性，耐疲勞性與抵抗龜裂的能力
  These products excel where high rebound, fatigue and crack resistance is critical.
- 具備良好的韌性，較低的熱應力和耐冷熱衝擊的特性
  These resins exhibit excellent toughness, low thermal stress and thermal shock resistance.
- 對於元件具有極佳的保護效果和耐震作用
  The products are highly vibrate-resist at ordinary temperature.



產品性質 Typical Cured Properties

產品編號 Product No.	化學類別 Chemical Type	顏色 Color	黏度值 Viscosity, cps	體積電阻 Volume resistivity ohm-cm	硬度 Hardness	玻璃轉換溫度 Tg, ℃	吸水率 Water absorption 25°C *24hr, %	吸水率 Water absorption 80°C *24hr, %
JC823-3	One Component Epoxy	黑色 Black	700	$4.5 * 10^{15}$	A77	12	0.95	2.40
JC823-6	One Component Epoxy	黑色 Black	3,040	$4.5 * 10^{15}$	A77	30	0.95	2.40

硬化條件 Typical Curing Properties

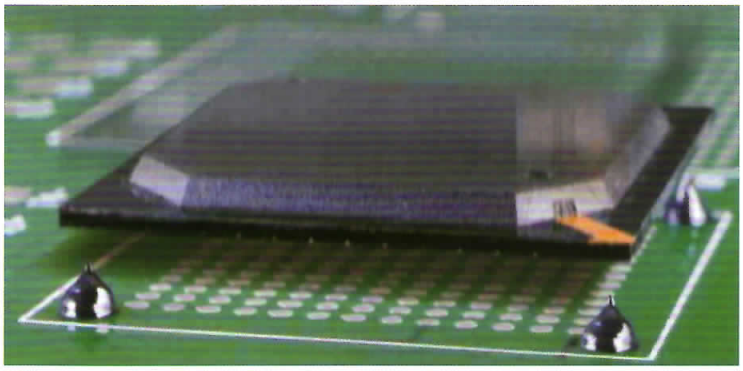
JC823-3		JC823-6	
可使用時間 Pot Life, 25°C, days	5 ~ 7	可使用時間 Pot Life, 25°C, days	5 ~ 7
完全硬化時間 Through Cure Time 80°C, min	30	完全硬化時間 Through Cure Time 80°C, min	30
完全硬化時間 Through Cure Time 100°C, min	15	完全硬化時間 Through Cure Time 100°C, min	15
完全硬化時間 Through Cure Time 120°C, min	10	完全硬化時間 Through Cure Time 120°C, min	10
完全硬化時間 Through Cure Time 150°C, min	5	完全硬化時間 Through Cure Time 150°C, min	5

本系列產品適用於CSP或BGA的底部填充。樹脂的硬化物對於水氣和水分具有良好的抵抗能力。硬化後的樹脂產生極佳的柔軟性和韌性，能夠忍受因溫度變化造成的尺寸差異，且具有良好的耐冷熱衝擊性和反應放熱量低等特性，在高溫狀態下具備原有的伸長量和低應力。本系列產品使用反應型的內部塑化劑，不會隨著時間的增加而慢慢的擴散到硬化物的表面。

These series products are suited for CSP and BGA underfill. The cured resins are effective against moisture and water. Cured products exhibit high outstanding flexibility and toughness, is recommended as general adhesives for bonding dissimilar surface where thermal stress induced by temperature may be an issue. These resins offer low thermal stress and thermal shock resistance. When the substrates are at high temp erature, the products provide the original elongation and low stress. The plasticizer which is used in the resins is totally reactive and will not migrate to the cured surface for a long time.

產品特性 Feature

- 黏度低，操作方便
  The resins are low viscosity and easy to operate.
- 良好的滲透性和流動性
  These products provide good permeation and fluidity.
- 具有極佳的柔軟性，用於灌注電子元件時不會產生過大的應力，而造成零件損壞
  These resins have excellent flexibility and embedment stress properties.
- 可長時間於室溫下使用
  These resins have long pot life at room temperature.



產品性質 Typical Cured Properties

產品編號 Product No.	化學類別 Chemical Type	顏色 Color	黏度值 Viscosity, cps	體積電阻 Volume resistivity ohm-cm	硬度 Hardness Shore D	玻璃轉換溫度 Tg, ℃	吸水率 Water absorption 25°C *24hr, %	吸水率 Water absorption 80°C *24hr, %	吸水率 Water absorption 97°C *1.5hr, %
JB727	One Component Epoxy	黑色 Black	3,500	$4.5 * 10^{15}$	67	-5	0.66	2.14	1.69

硬化條件 Typical Curing Properties

JB727	
可使用時間 Pot Life, 25°C, weeks	2
膠化時間 Gel Time 120°C, min	10
完全硬化時間 Through Cure Time 160°C, min	20

本系列產品適用於CSP或BGA的角落補強固定。此光硬化型樹脂對於PCB基板有良好的接著力。硬化後的樹脂產生極佳的柔軟性和韌性，能夠忍受因溫度變化造成的尺寸差異，且具有良好的耐冷熱衝擊性和反應放熱量低等特性，在高溫狀態下具備原有的伸長量和低應力。本系列產品特別著重於返修的方便性，幾乎不會傷害到基板的表面。

These series products are suited for CSP and BGA corner bond. The UV cured resins are good bonding with PCB substrate. Cured products exhibit high outstanding flexibility and toughness, is recommended as general adhesives for bonding dissimilar surface where thermal stress induced by temperature may be an issue.
These resins offer low thermal stress and thermal shock resistance. The series product especially focus on the benefit that easy to rework, the products provide the original . The plasticizer which is used in the resins is totally reactive and will not migrate to the cured surface for a long time.

產品特性 Feature

- 黏度高，不垂流
  The resins are high viscosity and non-sag.
- 具有極佳的柔韌性，用於補強電子元件時不會產生過大的應力，而造成零件損壞
  These resins have excellent flexibility and embedment stress properties.
- 可長時間於室溫下使用
  These resins have long pot life at room temperature.

光硬化產品性質 Photo Cured Product Properties

產品編號 Product No.	化學類別 Chemical Type	顏色 Color	黏度值 Viscosity, cps	硬化條件 Typical Curing mj/cm2, sec	硬度 Hardness Shore D	玻璃轉換溫度 Tg, ℃	吸水率 Water absorption 25℃ *24hr, %	抗拉強度 (25 ℃) Tensile strength Kg/cm²	耐溫範圍 Temperature resistance,℃
FP80856	One Component Acrylate resin	乳白色 Milk White	25000~30000	800~1200	65	40.5	1.12	79.59	-30~120

硬化條件 Typical Curing Properties

光硬化條件：以PHILIPS HPA400S 波長 365nm 的紫外線燈源照射能量累積至1000~2000 mj /cm² 的條件下硬化。UV累積能量表：德製Baier-UV/UV-RADCOL advanced。

預固定照射時間 sec	3~5
建議照射時間 sec	10~15

重工製程：

一、剝除元件

為了減少重工製程對基板的傷害，元件剝除前，元件的焊接點須先加熱到比回流溫度更高的溫度。元件溫度加熱至高於錫球的熔點約是220~240°C時，同時間底膠會軟化而且可以輕易的從元件上剝除。加熱速度太慢或過度加熱，可能會將基板上的金屬焊墊拔出。基板加熱後，元件可利用旋轉的方式輕易剝除，或者利用真空吸嘴將元件拔除。

二、元件座的準備

元件拔除後，可利用下列兩種方式將元件座上的殘餘物清除乾淨。

1、刮除法：

將電焊棒加熱至 250~300°C ，然後小心地刮除底膠。或者將基材的底部加熱，然後利用金屬刮刷將底膠刮除乾淨。

2、迴轉毛刷：

將迴轉毛刷施加壓力，以便清除殘餘的底膠。清除的過程中，請勿施加過大的壓力，以免磨損刷頭或者損壞基板。元件的類型或錫球的成分將決定是使用錫膏還是使用助焊劑。

三、元件貼放

元件座清除乾淨後，使用者可利用異丙醇或助熔筆仔細檢查是否還有殘膠在基板上。

在基板上刷塗錫膏或者助焊劑，將新的元件排列之後，利用真空吸嘴，熱風回流和底膠，依照覆晶的步驟重新將元件貼放在基板上，即完成重工製程。

Rework Process :

I、Component Removal

Before component removal, component solder joints must be heated above their reflow temperature in order to reduce the damage to the circuit board. When the temperature of the circuit board is about 200~240oC, the underfill will be soft and easy to remove. It may pull out the pads if the circuit board is heated too slowly or to an excessive temperature. After heating the circuit board, the component can be easily removed by twisting or a vacuum pick-up nozzle.

II、Site preparation

After component removal, there are two methods to clean the residues.

(I) Scraping

Heat the soldering iron up to 250~300°C and scrape off the underfill without any damage of pads on the circuit board. Alternatively, heat the bottom of substrate and scrape off the underfill with a metal squeegee.

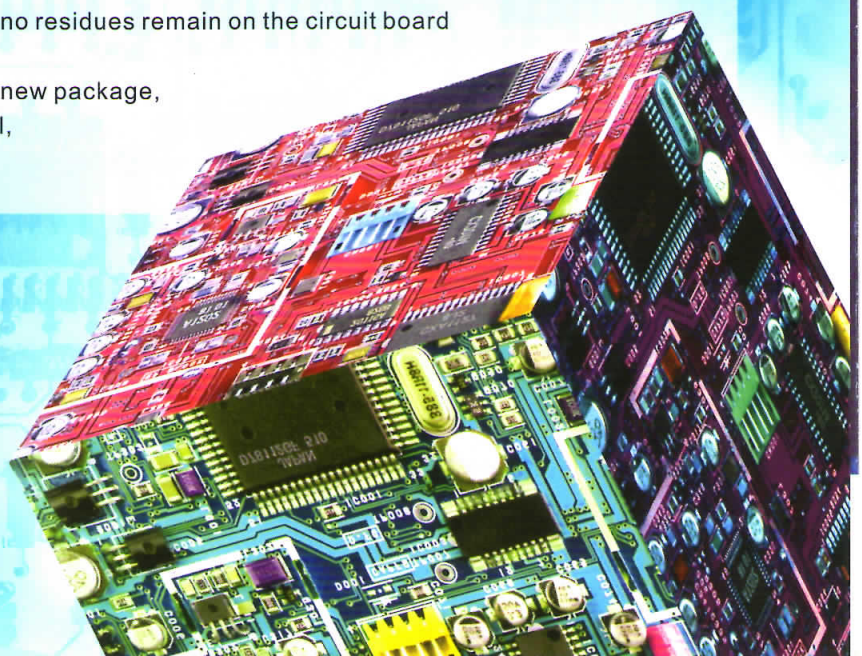
(II) Rotating Brush

Apply pressure onto the brush to clean the residues. Too large pressure may wear out the brush or increase the board damage. The types of the circuit board or the solderball composition will influence the decision to apply solderpaste or flux.

III、Component Replacement

The user can use isopropanol or a flux pen to make sure that no residues remain on the circuit board after cleaning.

Brush the solderpaste or flux on the board. After aligning the new package, it will be placed by vacuum, reflowed with hot air and underfill, followed by the underfill cure step.



通過ISO 9001 國際品保認證

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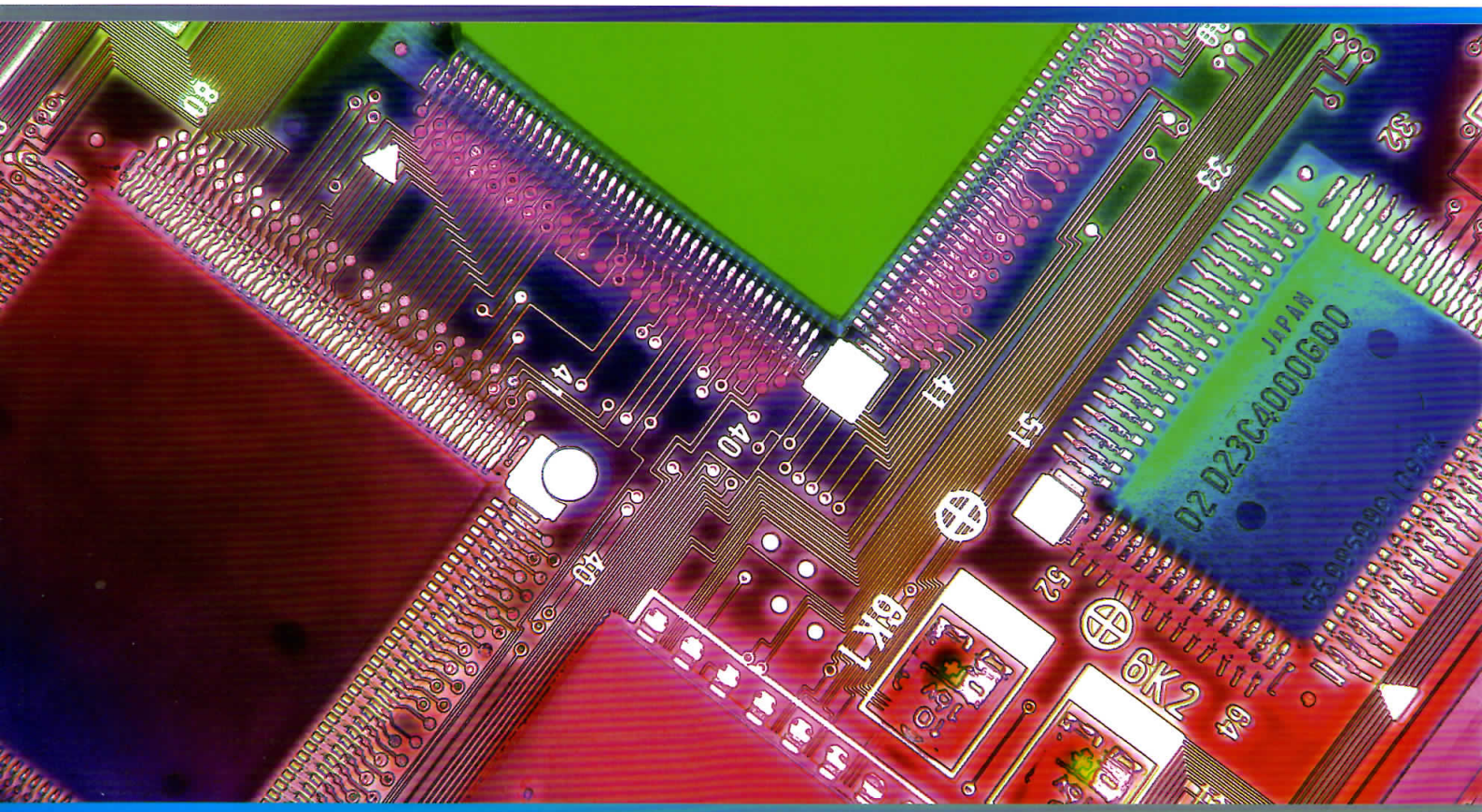

永寬化學股份有限公司

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