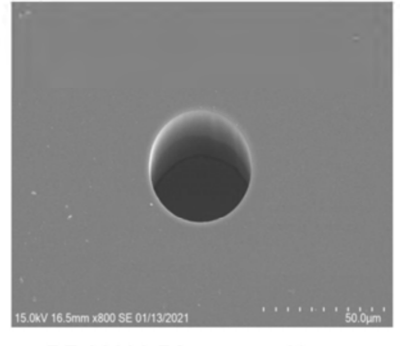
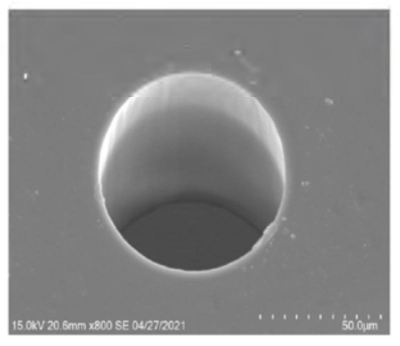
ETERTEC® BR41000

DRY FILM PHOTORESIST

FEATURES	特性
∗80/120/160/240μm thick film	∗80/120/160/240μm 厚膜
∗High resolution, high aspect ratio	∗極佳線路解析度與深寬比
∗Excellent adhesion	∗極佳線路附著力
∗Copper pillar bump for semiconductor package	∗適用於半導體封裝銅柱凸塊



BR41120 Diameter=40μm



BR41240 Diameter=80μm

BR41120 Diameter=50μm

CHARACTERISTICS

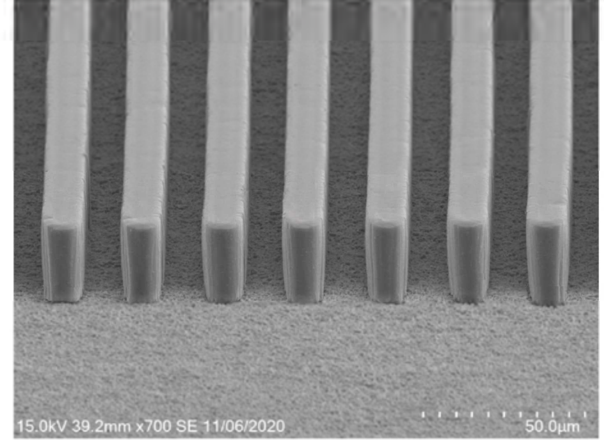
Item	BR41080	BR41120	BR41160	BR41240
Thickness (μm)	80	120	160	240
Exposure Energy (mj/cm^2)	220	250	275	410
41 STOUFFER STEP HELD	22	22	22	25
Minimum Developing Time x2 (sec)	150	230	300	460
Adhesion (μm)*1	25	40	50	70
Resolution (μm) *1	30	40	60	80
Stripping Break Time (min) *2	10	20	30	40

*1：50 % BP, 28 °C *2: 70 °C, organic resist stripper by dipping

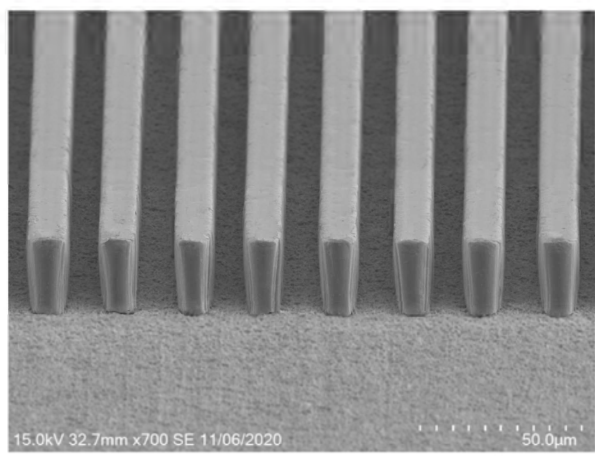
ETERTEC®UDH5400

***LDI* DRY FILM PHOTORESIST**

FEATURES	特性
∗Designed for UV laser direct imaging applications	∗針對雷射曝光製程設計
∗For **i-line & h-line** (wavelength:365 & 405nm)	∗適用 i-line & h-line
∗For pitch **40μm**	∗可用 pitch **40μm**
∗Excellent chemical resistance	∗優良抗化性
∗Excellent resolution and adhesion	∗優良線路解析度及附著力



UDH5425 L/S=10μm/14μm



UDH5425 L/S=9μm/13μm

CHARACTERISTICS

Item	UDH5425	UDH5425
Thickness (μm)	24	24
Exposure Energy (mj/cm²) *1	45	60
41 STOUFFER STEP HELD	16	19
Minimum developing Time x2 (sec)*2	32	32
Line/Space (μm)	10/14	9/13
Stripping Break Time (sec) *3	37	37

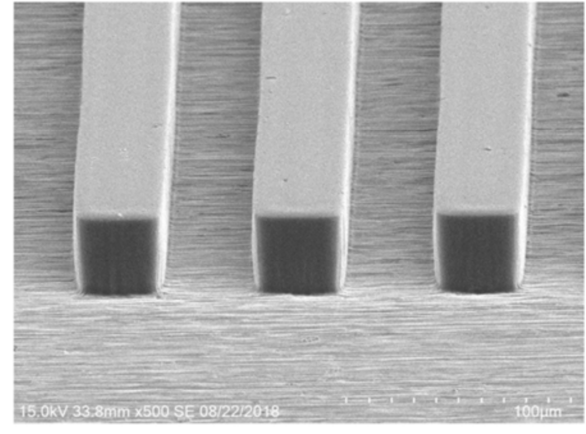
*1:Test by Orbotech Nuvogo fine 10 (375/405nm 33/67) *2: 50 % BP, 28 °C *3: 3% NaOH by dipping.

ETERTEC®UDF7200E

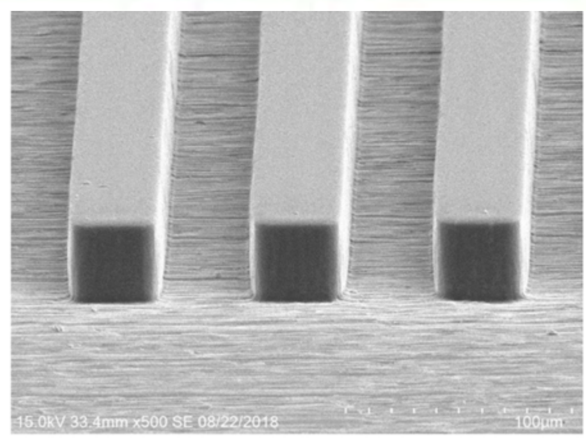
LDI DRY FILM PHOTORESIST

FEATURES　特性

＊Designed for UV laser direct imaging applications	＊針對雷射曝光製程設計
＊For **i-line**(λ :365nm) and **h-line**(λ :405nm)	＊適用 i-line 與 h-line 波長
＊Excellent **tenting ability**	＊優良蓋孔能力
＊Excellent high resolution and adhesion	＊優良線路解析度及附著力



UDF7240E L/S=40μm/40μm(i- line)



UDF7240E L/S=40μm/40μm(h- line)

CHARACTERISTICS

Item	UDF7240E		UDF7250E	
Thickness (μm)	38		49	
Exposure Wavelength	i-line	h-line	i-line	h-line
Exposure Energy (mj/cm²) *1	12	16	17	28
41 STOUFFER STEP HELD	19	19	22	22
Minimum developing Time x2 (sec) *2	43	43	58	58
Adhesion (μm)*2	32	32	34	34
Resolution (μm)*2	32	32	36	36
Tenting ability (strength, g/mm²)	958		1115	
Tenting ability (elongation, mm)	3.37		3.57	
Stripping Break Time (sec) *3	55		65	

*1:Test by **Orbotech Nuvogo800**　*2: 50 % BP, 28 ˚C　*3: 3% NaOH by dipping.

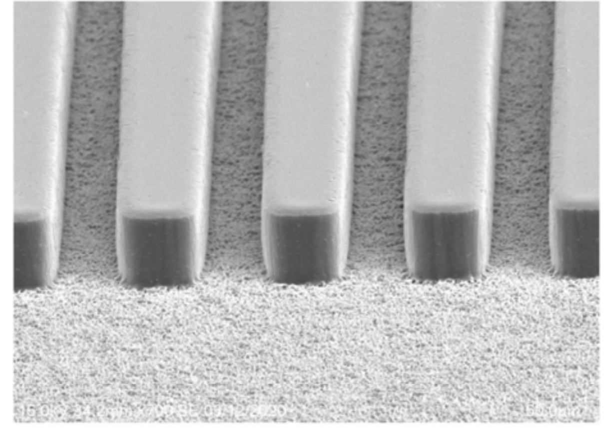
長興材料
Eternal Materials

For LDI

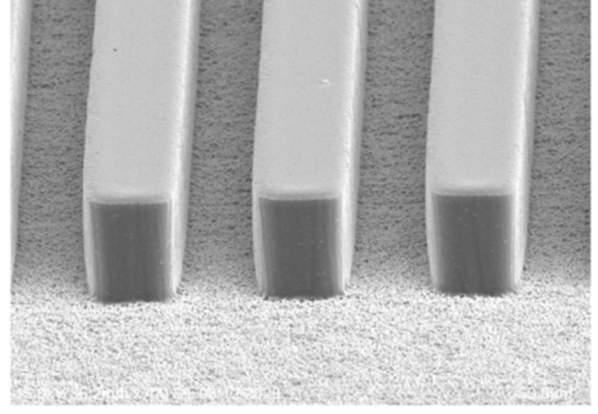
ETERTEC ®UDF3200

LDI DRY FILM PHOTORESIST

FEATURES	特性
＊Designed for UV laser direct imaging applications	＊針對雷射曝光製程設計
＊For **i-line**(λ :365nm) and **h-line**(λ :405nm)	＊適用 i-line 與 h-line 波長
＊Excellent **tenting ability**	＊優良蓋孔能力
＊Excellent high resolution and adhesion	＊優良線路解析度及附著力



UDF3227 L/S=22μm/22μm (h-line)



UDF3238 L/S=26μm/26μm (h-line)

CHARACTERISTICS

Item	UDF3227		UDF3238	
Thickness (μm)	27		38	
Wavelength	i-line	h-line	i-line	h-line
Exposure Energy (mj/cm²) *1	12	17	14	20
41 STOUFFER STEP HELD	19	19	19	19
Minimum Developing Time x2 (sec) *2	31	31	42	42
Adhesion (μm)*2	18	18	26	24
Resolution (μm)*2	22	22	24	24
Tenting ability (strength, g/mm²)	732		1000	
Tenting ability (elongation, mm)	3.5		3.6	

*1:Test by **Orbotech Nuvogo800** *2: 50 % BP, 28 °C

長興材料工業股份有限公司
Eternal Materials Co., Ltd.

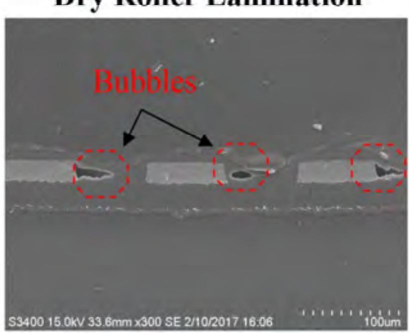
Dry Film Photosensitive Polyimide (DF-PSPI) makes Ultra-thin Structure FPC with Fine Pitch, High Heat Resistance , Great Chemical Resistances, High Flexibility, and R2R Process possible!

Dry film PSPI Lamination by using wet roller laminator

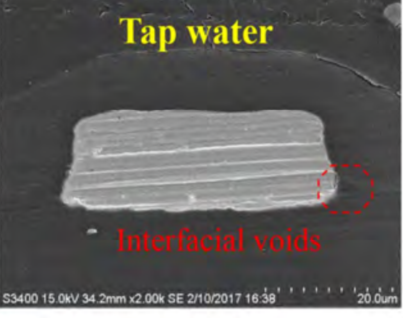
- Wide range of thickness (<15 µm) and suitable for ultra-thin FPC application.
- An efficient, high-volume, and full roll-to-roll production for FPC manufacturer is available.
- Pure polyimide composition after postcure.
- Negative-tone photosensitive polyimide (PSPI), and Alkali-aqueous developer (1% Na_2CO_3/K_2CO_3 or 0.238% TMAH).

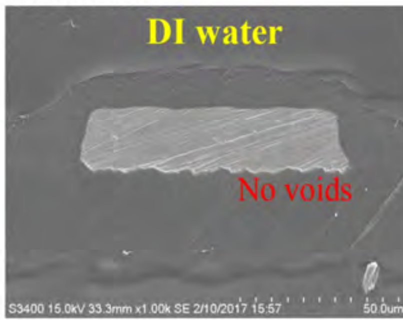
An Efficient, High-Volume, Cheaper, and Full Roll-to-Roll production by using Wet Roller Lamination.

Dry Roller Lamination



Wet Roller Lamination





CEM-1 環氧複合銅箔積層板

COPPER CLAD COMPOSITE EPOXY LAMINATE

- ETL-CEM1-507 (W TYPE)
- ETL-CEM1-507 (Y TYPE)

(For CEM-1, Green TYPE Laminate)

試驗項目 Test Item		單位 Unit	處理條件 Condition	品管規格值 Guarantee Value	實測標準值 Standard Value
體積阻抗 Volume Resistivity		Ω-cm	C-96/20/65	Above 5×10^{13}	1×10^{14}–1×10^{15}
			C-96/20/65+C-96/40/90	Above 5×10^{12}	1×10^{13}–5×10^{14}
表面阻抗 Surface Resistance	蝕刻面 EtchedSide	Ω	C-96/20/65	Above 1×10^{12}	1×10^{13}–1×10^{14}
			C-96/20/65+C-96/40/90	Above 1×10^{11}	1×10^{12}–1×10^{13}
	積層板面 Laminate Surface		C-96/20/65	Above 1×10^{12}	1×10^{13}–1×10^{14}
			C-96/20/65+C-96/40/90	Above 1×10^{11}	1×10^{12}–1×10^{13}
絕緣阻抗 Insulation Resistance		Ω	C-96/20/65	Above 5×10^{12}	5×10^{13}–5×10^{14}
			C-96/20/65+D-2/100	Above 5×10^{10}	5×10^{12}–5×10^{13}
介電常數(1 MHz) Dielectric Constant		–	C-96/20/65	Less than 4.8	4.1–4.6
			C-96/20/65 +D-24/23	Less than 5.2	4.5–5.0
散發因子(1 MHz) Dissipation Factor		–	C-96/20/65	Less than 0.035	0.029–0.033
			C-96/20/65+D-24/23	Less than 0.045	0.034–0.038
焊錫耐熱性(260℃) Solder Heat Resistance		sec	A	Above 20	60–80
焊錫耐熱性(288℃) Solder Heat Resistance		sec	A	Above 10	20–30
銅箔剝離強度 Peel Strength	銅箔(35μm) Copper Foil	kgf/cm	A	Above 1.5	1.80–2.20
			S4 (260℃, 20 sec)	Above 1.5	1.80–2.20
彎曲強度 Flexural Strength		kgf/mm^2	A	Above 22.5	33–40
吸水率 Water Absorption		%	E-24/50+D-24/23	Less than 0.3	0.25–0.30
耐熱性 Heat Resistance		–	A	190℃ /30 min No blistering	200℃ /30 min No blistering
				150℃ /60 min No blistering	150℃ /60 min No blistering
難燃性 Flame Resistance (UL 94 method)		sec	A& E-168/70	Less than $\bar{X}$=5 Max=10	94 V-0
耐鹼品性 Alkali Resistance		–	Immersion in 3% NaOH 40℃ (3 mins)	無異常 No abnormality	無異常 No abnormality
加工沖孔性 Punchability		–	A	Suitable temp. 50–70 ℃	GOOD
耐漏電破壞性 CTI (IEC 60112)		Volt	A	≧600	≧600

※以上數據試片厚度 1.6mm (Note : Test specimen thickness is 1.6mm

■特性

- 尺寸變化、彎曲度小
- 優越之電氣火災安全性
- IEC 60112 耐漏電破壞試驗可達 600V 以上
- 符合 UL 746E 規範及 RoHS 法規要求
- 不含鹵素(Br、Cl...)及銻(Sb)化合物

■一般物性 GENERAL PROPERTIES

■CHARACTERS

- Dimensional change and warpage are small
- Electrical fire safety is excellent
- IEC 60112 Comparative Tracking Index 600+Volts
- Meet UL 746E and conform to the request of RoHS
- It includes neither halongen nor antimony.

ETERNAL MATERIALS CO.,LTD.

NFP 低流膠膠片介紹

NO FLOW PREPREG INTRODUCTION

- EC-515

(NFP, No Flow Prepreg)

■特性

- 高 Tg&無鹵材料
- 流膠量均勻
- 厚度均勻與平坦度佳
- 低粉塵性
- 各種材料的黏結性佳

■應用領域

- 智慧手機與穿戴裝置的 OLED 顯示器
- 智慧手機與平板的相機模組
- 智慧手機,平板,筆電與電腦的電池管理模組
- 無線藍芽耳機

■一般物性 GENERAL PROPERTIES

試驗項目 Test Item		單位 Unit	處理條件 Condition	品管規格值 Guarantee Value	實測標準值 Standard Value
玻璃溫度(Tg) Glass Temperature(Tg)	DSC	℃	A	Above 150	170
	DMA				160
裂解溫度(Td) Decomposition Temperature (Td)	TGA (5%W.L.)	℃	A	Above 325	370
銅箔剝離強度 1/2oz Peel Strength with 1/2oz Cu		kgf/cm	A	Above 1.0	1.0–1.2
覆蓋膜剝離強度 Peel strength with CVL		kgf/cm	A	-----	1.0–1.2
吸水率 MoistureAbsorption		%	E-24/50+D-24/23	Less than 0.80	0.15–0.25
熱膨脹係數(X, Y 軸) CTE (X,Y-axis)	50-260℃	ppm/℃	A	——	11–15
熱膨脹係數(Z 軸) CTE (Z-axis)	α 1 (Before Tg)	ppm/℃	A	——	80–100
	α 2 (After Tg)		A	-----	320–400
熱應力 Thermal Stress	Solder Float288℃	sec	A	——	> 600
	TMA (T-288)	min		——	> 10
介電常數(1G Hz) Dielectric Constant		–	C-24/23/50	——	3.8
散發因子(1G Hz) Dissipation Factor		–	C-24/23/50	——	0.016
難燃性 Flame Resistance (UL 94 method)		sec	A& E-168/70	Less than x=5 Max=10	94 V-0

※以上的測試數據均為典型值，並非規格值。All test data provided are typical values and not intended to be specification values.

試驗項目 Test Item	測試方法 Method of test IPC-TM-650	單位 Unit	玻纖布種 Glass fiber cloth 1067	1078	1078	1078	1078
含膠量 Resin Content	2.3.16	%	66±2	58±2	62±2	65±2	68±2
流膠量 Circle Flow	EC-test	mm	<1.0	<1.0	<1.0	<1.0	<1.0
揮發份 Volatile Content	2.3.19	%	1.0↓	1.0↓	1.0↓	1.0↓	1.0↓
剝離強度 Peel Strength	2.4.8	Kg/cm	0.8↑	0.8↑	0.8↑	0.8↑	0.8↑
厚度 Thickness	-	μm	60±10	70±10	80±10	90±10	100±10

※上表厚度是標準值，並非保證值，僅供參考，實際厚度受不同的壓合條件、銅殘留、測量方法等因素影響。Thickness in above chart is normal data, just for reference and not guarantee data. The actual thickness will be different under various press ondition ,copper remaining, measurement method and so on.

■CHARACTERS

- High Tg& Halogen Free
- Uniform Resin Flow
- Good Thickness Uniform and Flatness
- Low Resin Powder Dust
- Adhesive with varied Materials

■APPLICATIONS

- OLED Displays of Smartphone and wearables
- Camera Modules of Smartphones and Tablets
- Battery Management of Smartphones, Tablets, NB and PC
- Wireless Headphones of wearables

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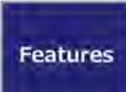
ALPHO® Dry Film Photoresist

For Inner Etching, High Photosensitivity DI Grade LIP2100 Series



- It is Dry Film Photo Resist to realize high photosensitivity, high resolution and low foaming performance for inner etching process.
- Designed for LDI exposure machine (h-line).

Resist Pattern after Developing

LIP2129 L/S=15/15μm	LIP2125 L/S=15/15μm	LIP625F L/S=27/27μm
X750 20μm	X750 20μm	X750 20μm

Resist Performance

Dry film	LIP2129	LIP2125	LIP625F
Resist Thickness (μm)	29	25	25
Break Point (sec.)	21	18	13
Exposure Energy (mJ/cm^2)	24	21	20
Resolution L/S=x/x (μm)	15	15	27
Adhesion L/S=x/9x (μm)	17	17	20

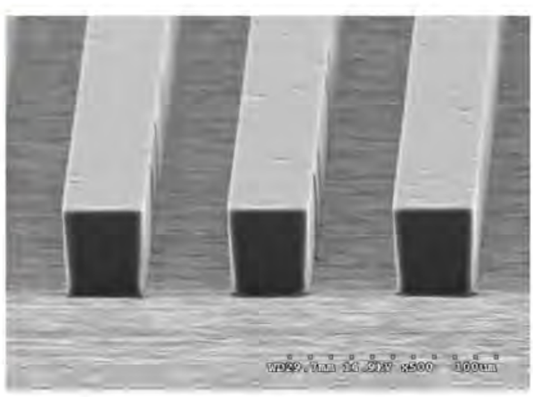
※1 Development condition: 1.0%Na_2CO_3, 30℃, BP x 2
※2 ORC h-line LDI

LAMINAR® E7700M
DRY FILM PHOTORESIST

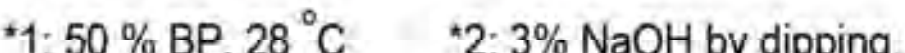
FEATURES	特性
∗Excellent resistance to **ENIG**	∗對化鎳浸金製程具優良抗化性
∗Excellent resistance to **Alkaline etching**	∗對鹼性蝕刻製程具優良抗化性
∗Excellent tenting ability	∗蓋孔能力佳
∗High resolution	∗線路解析力高
∗Low developing foaming	∗顯影泡沫低
∗Good contrast after exposure	∗曝光後對比佳

CHARACTERISTICS

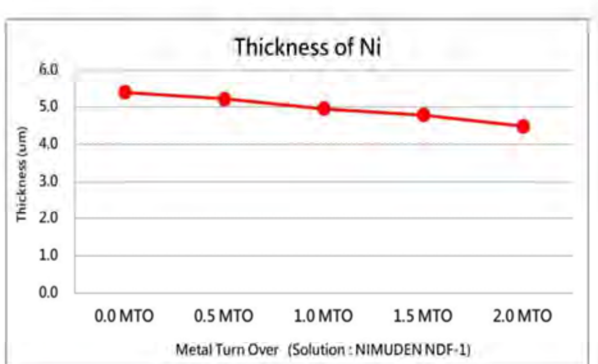
Item		E7720M
Thickness (μm)		49
Exposure Energy (mj/cm²)		80
41 STOUFFER STEP HELD		22
Minimum developing Time x2 (sec)		42
Adhesion (μm) *1		22
Resolution (μm) *1		36
Tenting ability (strength, g/mm²)		928
Tenting ability (elongation, mm)		3.43
Stripping Break Time (sec) *2	On Copper	59
	On Solder Mask	57



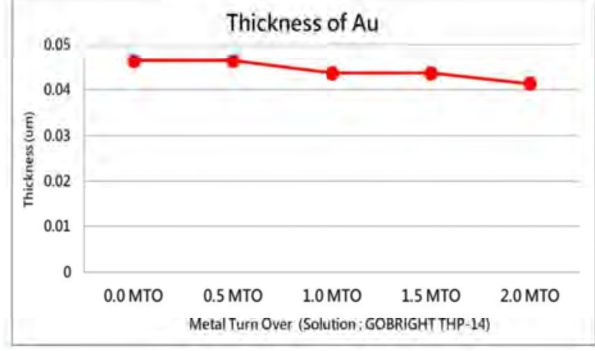
E7720M L/S=40μm /40μm



*1: 50 % BP, 28 °C *2: 3% NaOH by dipping.



Thickness of Ni



Thickness of Au

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Eternal Materials Co., Ltd.

長興材料
Eternal Materials

White DFSM for Mini-LED
CONFORMASK® CM2600 series

CONFORMASK® CM2600 適用於 LED 照明的高反射率防焊乾膜光阻材料，透過配方工藝達到出色的高分辨率、優異的耐光熱變色性以及耐候性、濕熱電絕緣性。

CONFORMASK® CM2600 series are photosensitive dry film solder mask, with high reflectance, low color deviation with long-term optical/thermal treatment, and good weather/electric reliability, developed for Mini-LED application.

- 適用於 Mini-LED
- 高反射率、平整性佳
- 耐候性佳
- 優異耐光熱變色性
- 不毒化矽封裝膠

- Suitable for Mini-LED Application
- High reflectance and good flatness
- No crack under 85℃/85%RH storage
- Low color deviation with long-term optical/thermal treatment
- Silicone glue curing ratio >80%

	CONFORMASK® CM2600 series
Thickness	30 / 40 / 55μm
Reflectance	88~90%@30μm ; 91~92%@40μm ; 92~93%@55μm
Shelf-life	3 months (In dark room below 0~5℃)
Exposure	DI exposure machine ; 300-500 mJ/cm^2
Step	8-10 Step (x/21)
Development	1.0 wt% Na_2CO_3aq. 30℃, 60 sec (50% break point under 0.15~0.2 MPa shower)
IR Reflow	265℃2cycles ; Reflectance fluctuation <2%

<耐熱變色性>

IR Reflow Test (265℃)

<耐光變色性>

QUV Test (340nm)

<耐候性>

HTHH 85C 85%RH

<濕熱電絕緣性>

HAST Test (85℃ 85%RH)

<矽封裝膠反應性>

Silicone cure ratio

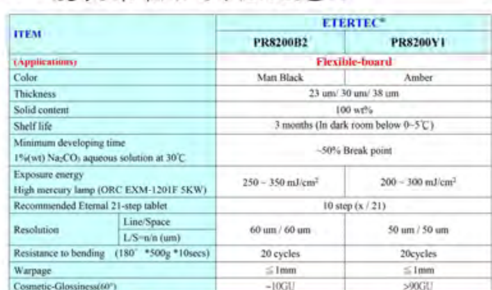
Photo-Imageable Coverlay (PIC)
ETERTEC® PR8200 series

ETERTEC® PR8200 是**低溫 150℃烘烤型**的高精密度乾膜感光弱鹼顯像型光阻，應用於高精密度亞醯胺基板(PI)/金屬基板外層線路保護.

ETERTEC® PR8200 series are alkaline developable photosensitive dry film permanent photoresist of **low temperature 150℃ Post-bake** used for the high accuracy polyimide substrate (PI) / metal substrate to protect wiring.

- 操作範圍寬
- 優良解析能力與結構完整性
- 底材密著性佳
- 優良耐熱焊錫性
- 優良耐化學鎳金
- 優良柔韌性與低反翹力

- Wide operation
- High resolution and conformation
- Excellent adhesion to substrate
- Excellent high temperature solder resistance
- Excellent Electro-less Ni/Au plating resistance
- Excellent flexibility and low warpage / sharp memory



ITEM		ETERTEC®	
		PR8200B2	PR8200Y1
(Applications)		Flexible-board	
Color		Matt Black	Amber
Thickness		23 um/ 30 um/ 38 um	
Solid content		100 wt%	
Shelf life		3 months (In dark room below 0~5℃)	
Minimum developing time 1%(wt) Na_2CO_3 aqueous solution at 30℃		~50% Break point	
Exposure energy High mercury lamp (ORC EXM-1201F 5KW)		250 ~ 350 mJ/cm^2	200 ~ 300 mJ/cm^2
Recommended Eternal 21-step tablet		10 step (x / 21)	
Resolution	Line/Space L/S=n/n (um)	60 um / 60 um	50 um / 50 um
Resistance to bending (180° *500g *10secs)		20 cycles	20cycles
Warpage		≦1mm	≦1mm
Cosmetic-Glossiness(60°)		~10GU	>90GU

Resolution

Conformation

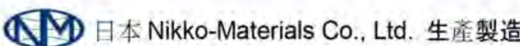
Low warpage / Sharp-memory

長興材料工業股份有限公司
Eternal Materials Co., Ltd.

EFV-1000 VACUUM LAMINATOR 真空壓膜機

Features 特色

- High vacuum lamination prevents the occurrence of micro void
  高效能的真空壓膜方式,可以預防微小氣泡不良的產生
- High vacuum performance → 1hpa within 30sec from starting vacuum
  高效率的抽真空速度 → 抽真空開始後 30 秒內可以達到 1hpa
- Easy operation and maintenance
  簡易的操作介面及維護保養工作
- Design with customization demand
  可配合客製化需求的設計



Applications 應用

Market	Process	Structure	Materials	Products
PCB/ FPC/ IC substrate	Second Image Tech. - Selective Gold - Copper Pillar	(A) Film (B) Board (A) Film □Single ：■Double Pressing	(A) Dry film (B) PCB / FPC / IC substrate	
FPC	PIC Process (Coverlay+Solder Mask)	(A) Film (B) Board (A) Film □Single ：■Double Pressing	(A) PIC film (Eternal...) (B) FPC	
PCB/FPC	Rigid-Flex Process Special Process	(A) Film (B) Board (A) Film ■Single ：■Double Pressing	(A) Dry film / Other film Materials (B) Rigid-Flex / PCB / FPC	
IC/Passive Components	Dry film / DFSM Process	(A) Film (B) Board ■Single ：■Double Pressing	(A) Dry film / DFSM (B) Substrate	

➤ ***適用各類 Film 材料 → 表面有高低差壓合作業***
Suitable for Film materials
→ Laminating on Surface Pattern

➤ ***選配預貼機系統 → 實現全自動生產線***
Optional Pre-tack system
→ Automatic Production Line